Page

Course Numbering

To simplify the task of maintaining accurate and complete academic records for all students at the College, an alpha-numeric code is used to identify all courses. In this code, the alpha digits indicate the subject area. For example, World Regional Geography carries the course number GEOG-1010. The letters GEOG refer to the subject area, Geography. The number 1010 has been assigned to a specific course, World Regional Geography, within that subject area.

Subject areas are listed in alphabetical order by subject title, not by the course code. Courses are listed in numerical order within each subject area. The semester course numbering system defines the type of course it is. Courses numbered 09xx generally are designed to provide students with basic skills necessary for freshman studies. ENG-0980, for example, is Language Fundamentals I. Courses that begin with the number "1xxx" normally represent freshman-level courses. Courses that begin with the number "2xxx" are usually sophomore-level courses. The numbering scheme for the semester system courses may be found in Appendix IV.

Modular courses may be offered in some subject areas. A modular course is a component of an approved semester course and is identified with a final letter of A, B, C, D or E. The course content of a modular course must be contained in the original course.

A special topics course permits the teaching of a variety of topics not currently contained in its subject area. An "18xx" numbered course indicates a freshmen-level special topics course; a "28xx" is assigned to a sophomore-level course. The beginning of the Course Description section lists course descriptions for Special Topics courses, Independent Study/Research courses, and Cooperative Education courses. These courses have a generic course description and thus are not repeated in their subject area.

Honors courses are also discussed at the beginning of the Course Description section. Some standard courses have an equivalent honors course that may replace the standard course if the student meets the honors program requirements. Course descriptions for honors courses are listed within their subject area. A listing of current available honors courses may be found in the Equivalent Courses list which is located in Appendix V.

Course numbers do not indicate whether or not a course will be accepted for transfer to other institutions. Students are advised to consult with their counselors regarding transfer of courses and credits to other institutions.

Credits

The number of semester credits for each course described in the Catalog is indicated after the course title. For example, three credits are indicted as 03 Semester Credits. The number of credits for a course does not necessarily equal the number of hours that the course meets in one week.

Prerequisites

Prerequisites, if any, are listed at the end of each course description. Prerequisites are established by each department, for each course in that department, to ensure that the student has an adequate and sufficient background to enroll in the course and achieve success. Students must have completed the prerequisite course with a grade of "C" or higher to meet the prerequisite requirement.
It is the student's responsibility to ensure that he or she has met the prerequisites for any course in which he or she enrolls. PREREQUISITES WILL BE CHECKED BY THE COMPUTER AT THE TIME OF REGISTRATION. If the student is unsure that the prerequisite has been met, he or she should consult with the department PRIOR to registering for that course.

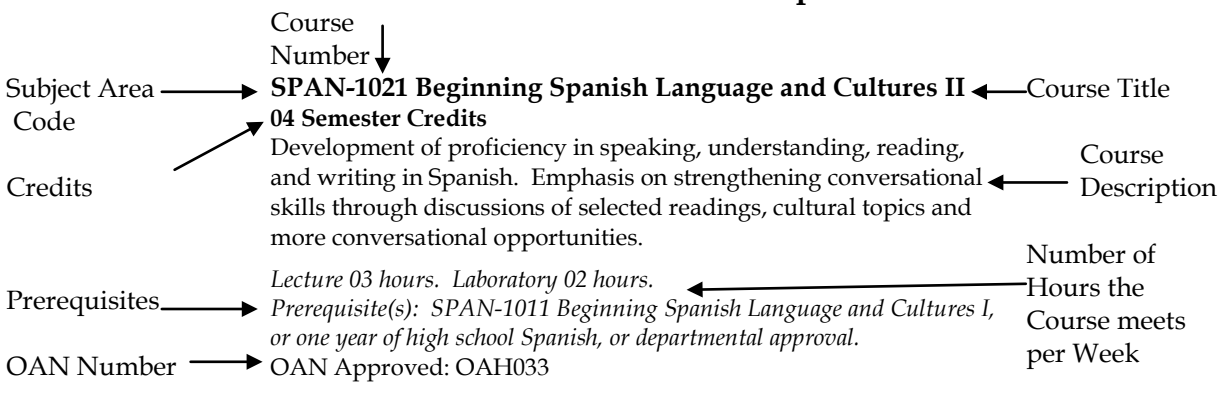
Ohio Articulation Number (OAN)

Number assigned by the State of Ohio to denote that course has been accepted as part of a specific state-wide Transfer Assurance Guide (TAG).

Schedule of Classes

Courses described in this Catalog are those approved by the Cuyahoga Community College Board of Trustees at the time of publication. Inclusion of a course description does not obligate the College to offer the course in any given semester or academic year. A Credit Schedule of classes is published each semester prior to the registration period. The schedule of classes contains a list of classes to be offered and general registration information. Courses approved by the Board of Trustees after the publication of this Catalog are reflected in the Credit Schedule of classes.

How to Read the Course Descriptions



Subject Areas	Subject Code
Accounting	**ACCT**
Administrative Office Systems	**AOS**
American Sign Language	**ASL**
Anthropology	**ANTH**
Applied Industrial Technology	**AIT**
Bricklaying & Allied Crafts	**ATBL**
Building Construction	AIT
Carpentry	**ATCT**
Cement Masonry	**ATCM**
Construction Tending and Hazardous Material Abatement	**ATLB**
Drywall Finishing	**ATDW**
Electrical Construction	**ATEL**
Floorlaying	**ATFL**
Glazing	**ATGL**
Ironworking	**ATIW**
Manufacturing Technology	**ATMT**
Millwrighting	**ATMW**
Operating Engineers	**ATOE**
Painting	**ATPT**
Pile Driving	**ATPD**
Pipefitting	ATPF
Plumbing	ATPL
Sheet Metal Working	ATSM
Sign and Display	**ATSD**
Teledata	**ATTC**
Art	**ART**
Automotive Technology	**AUTO**
Biology	**BIO**
Business Administration	**BADM**
Chemistry	**CHEM**
Chinese	**CHIN**
Captioning and Court Reporting	**C&CR**
Construction Engineering Technology	**CNST**
Criminal Justice	CJ
Dance	**DANC**
Deaf Interpretive Services	**DIS**
Dental Assisting	**DAST**
Dental Hygiene	**DENT**
Diagnostic Medical Sonography	**DMS**
Dietetic Technology	**DIET**
Early Childhood Education	**ECED**
Earth Science	**ESCI**
Economics	**ECON**
Education	**EDUC**
Electrical/Electronic Engineering Technology	**EET**
Electroneurodiagnostic	**END**
Emergency Medical Technology	**EMT**
English	**ENG**
English as a Second Language	**ESL**
Environmental, Health & Safety Technology	**EHST**
Financial Management	**FIN**
Fire Technology	**FIRE**
French	**FREN**
General Studies	**GEN**
Geography	**GEOG**
German	**GER**
Health	**HLTH**
Health Information Management	**HIM**
Health Technologies	**HTEC**
History	**HIST**
Hospitality Management	**HOSP**
Human Services	**HS**
Humanities	**HUM**
Information Technology	**IT**
Networking Software	**ITNT**
Programming and Development	**ITMP/ITWM**
Integrated Systems Engineering Technology	**ISET**
Interior Design	**INTD**
Italian	**ITAL**
Japanese	**JAPN**
Journalism and Mass Communication	**JMC**
Latin	**LAT**
Marketing	**MARK**
Massage Therapy	**MT**
Mathematics	**MATH**
Manufacturing Industrial Engineering Technology	**MET**
Mechanical Engineering Technology	**MET**
Media Arts and Studies	**MARS**
Medical Assisting	**MA**
Medical Laboratory Technology	**MLT**
Music	**MUS**
Nuclear Medicine	**NMED**
Nursing	**NURS**
Occupational Therapy Assistant Technology	**OTAT**
Optical Technology	**OPT**
Paralegal Studies	**PL**
Pharmacy Technology	**PHM**
Philosophy	**PHIL**
Physical Education	**PE**
Physical Science	**PSCI**
Physical Therapist Assisting Technology	**PTAT**
Physician Assistant	**PA**
Physics	**PHYS**
Plant Science and Landscape Technology	**PST**
Political Science	**POL**
Practical Nursing	**PNUR**
Psychology	**PSY**
Radiography	**RADT**
Recording Arts and Technology	**RAT**
Religious Studies	**REL**
Respiratory Care	**RESP**
Russian	**RUSS**
Sociology	**SOC**
Spanish	**SPAN**
Sport and Exercise Studies	**SES**
Speech Communication	**SPCH**
Surgical Technology	**SURT**
Theatre Arts	**THEA**
Urban Studies	**UST**
Veterinary Technology	**VT**
Visual Communication and Design	**VC&D**
Digital Video and Digital Filmmaking	**VCDV**
Graphic Design	**VCGD**
Illustration	**VCIL**
Web and Interactive Media	**VCIM**
Photography	**VCPH**
Women's Studies	**WST**

The College offers a variety of courses in each discipline which carry a common description. The course descriptions are listed below. Students should see the current semester Credit Schedule of classes for specific semester offerings.

SPECIAL TOPICS

xxxx-1800 - 1819 Special Topics in *(subject area name)*
01-03 Semester Credits
Study of selected topics or current issues in ***(subject area name)***. Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics may be applied toward elective and/or program graduation degree requirements.
Lecture 01-03 hours. Laboratory 02-09 hours.
Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

xxxx-2800 - 2819 Special Advanced Topics in *(subject area name)*
01-03 Semester Credits
Study of selected advanced topics or current issues in ***(subject area name)***. Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics courses may be applied toward elective and/or program graduation degree requirements.
Lecture 01-03 hours. Laboratory 02-09 hours.
Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

INDEPENDENT STUDY/RESEARCH

xxxx-1820 Independent Study/Research in *(subject area name)*
01-03 Semester Credits
Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Lecture 01-03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

xxxx-182S Independent Laboratory Study/Research in *(subject area name)*
01-03 Semester Credits
Independent two-hour lab per credit. Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Lecture 00 hours Laboratory 02-06 hours
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

xxxx-182T Independent Laboratory Study/Research in *(subject area name)*
01-03 Semester Credits
Independent three-hour lab per credit. Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Lecture 00 hours. Laboratory 03-09 hours.
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

xxxx-2820 Independent Advanced Study/Research in *(subject area name)*
01-03 Semester Credits
Directed individual advanced study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Lecture 01-03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

xxxx-282S Independent Advanced Laboratory Study/Research in *(subject area name)*
01-03 Semester Credits
Independent two-hour lab per credit. Directed individual advanced study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Lecture 00 hours. Laboratory 2-6 hours.
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

xxxx-282T Independent Advanced Laboratory Study/Research in *(subject area name)*
01-03 Semester Credits
Independent three-hour lab per credit. Directed individual advanced study. Study/research title and specific content arranged between instructor and student

(see current Credit Schedule of classes for semester offerings). May be repeated for a maximum of six credits of different topics.
Lecture 00 hours. Laboratory 03-09 hours.
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

COOPERATIVE EDUCATION

xxxx-2830 Cooperative Field Experience
01-03 Semester Credits
Open to students eligible for the Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): See campus CO-OP Advisor for the Cooperative Education Program application.

Available in some disciplines (see current Credit Schedule of classes for semester offerings).

HONORS COURSES

Honors courses at Cuyahoga Community College are based upon a commitment to college, a commitment to scholarship and a commitment to community. Interested students of high academic potential who wish to join specially selected faculty in a partnership dedicated to learning and personal growth should consider taking Honors courses. Students enrolled in Honors courses can expect university parallel curriculum, strong faculty mentoring relationships and contractual-independent learning opportunities. These students may also be eligible to join the Honors Program, which offers honors scholarships and a variety of cultural, community and academic activities, and the Phi Theta Kappa Honor Society, which provides opportunities for development of leadership, service and scholarship. Both of these organizations offer a variety of activities that complement class work and form an important extra- and co-curricular component of an honors education.

Besides regular Honors courses, a one-hour Honors Contract (179H/279H) is available as an addition to almost any honors or non-honors class with the approval of the instructor. Honors courses are open to both new and current students. Honors courses normally end with an "H" in the fourth position of the course number.

For information about admission to Honors courses, contact the Counseling Department or the Campus Honors Coordinator. For more information about Phi Theta Kappa, visit http://www.tri-c.edu/programs/honors/Pages/PhiThetaKappa.aspx. For more information about the Tri-C Honors Program, visit the Honors Website at www.tri-c.edu/honors.

xxxx-179H Honors Contract
01 Semester Credit
Honors Contract complements and exceeds requirements and expected outcomes for an existing 1000-level honors course through formulation of a contract with a faculty mentor. This independent study at the honors level may also be taken with a non-honors course. When taken with a non-honors course the Honors Contract adds an honor experience to that course. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. The student is required to meet on a regularly scheduled basis with the instructor for mentor-student tutorial sessions. A maximum of six Honor Contracts (six credit hours) may be taken at the College (includes 179H and 279H).
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: 00.
Prerequisite(s): Must be taken concurrently with a 1000-level course whose instructor agrees to mentor the student in this contract. Departmental approval required.

Available in some disciplines (see current Credit Schedule of classes for semester offerings).

xxxx-279H Sophomore (Second Year) Honors Contract
01 Semester Credit
Sophomore Honors Contract in (subject area) complements and exceeds requirements and expected outcomes for an existing [subject area] 2000-level course (not an honors course) through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract that upon completion will result in distinctive scholarship appropriate to honors 2000-level. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. A maximum of six Honors Contracts (six credits) may be taken at the College (includes 179H and 279H).
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: 00.
Prerequisite(s): Must be taken concurrently with a 2000-level course (not an honors course) in (subject area), whose instructor agrees to mentor the student in the sophomore honors contract. Departmental approval required.

Available in some disciplines (see current Credit Schedule of classes for semester offerings).

xxxx-182H Honors Independent Study
01-03 Semester Credits
Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.
Lecture 01-03 hours. Laboratory 00 hours.
Other Required Hours: 00.
Prerequisite(s): Departmental approval and instructor approval, and eligibility for ENG-1010 College Composition I or eligibility for ENG-101H Honors College Composition I, and must have earned an A or B in at least 3 honors courses.

xxxx-282H Honors Independent Study
01-03 Semester Credits
Advanced Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.
Lecture 01-03 hours. Laboratory 00 hours.
Other Required Hours: 00.
Prerequisite(s): Departmental approval and instructor approval, and eligibility for ENG-1010 College Composition I or eligibility for ENG-101H Honors College Composition I, and must have earned an A or B in at least 3 honors courses.

xxxx-180H Honors Special Topics in *(subject area name)*
Honors study of selected topics or current issues in ***(subject area name).*** Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics may be applied toward elective and/or program graduation degree requirements.
Prerequisite(s): Departmental approval: Member of the Honors Program; successfully completed a minimum of one Honors course (3 or more credit hours) with a grade of A or B.

xxxx-280H Honors Special Advanced Topics in *(subject area name)*
Honors study of selected advanced topics or current issues in ***(subject area name).*** Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics may be applied toward elective and/or program graduation degree requirements.
Prerequisite(s): Departmental approval: Member of the Honors Program; successfully completed a minimum of two Honors courses (6 or more credit hours) with a grade of A or B.

APPLIED MUSIC COURSE ENROLLMENT

Cuyahoga Community College offers students the opportunity to study a particular musical instrument or vocal music in an intensive class setting for credit. Before registering for any of the Applied Music courses, students must contact the Applied Music Coordinator at the campus of enrollment:

Metropolitan Campus: 216-987-4256
Eastern Campus: 216-987-2210
Western Campus: 216-987-5532

All students are eligible to take the basic Applied Music courses, MUS 1290 or MUS 2290. If the student plans to enroll in the Music Major courses (MUS 1460, MUS 1470, MUS 2460, or MUS 2470), an audition performed for the coordinator and applied faculty in the particular musical instrument may be required.

Students enrolled in Applied Music are required to pay a non-refundable private lesson fee each semester in addition to the credit hour cost, ($150.00 for half-hour lessons, and $300.00 for hour lessons).

Applied Music courses at Cuyahoga Community College are private, one-on-one lessons with College Music Faculty. Students will have 16 weekly lessons or 15 weekly lessons and one jury, upon the recommendation of the individual instructor. The College absence policy will be followed in this program.

A one-credit Applied Music course requires a minimum of 7 hours of rehearsal/practice outside of lessons per week. A two-credit Applied Music course requires a minimum of 14 hours of rehearsal/practice per week. Individual instructors may decide how to monitor this requirement.

A jury is required each semester for students enrolled in the music major classes: MUS 1460, MUS 1470, MUS 2460, and MUS 2470. Students' progress through these courses shall be judged at the end of each term of enrollment, and faculty will make recommendations about the students' placement. Faculty approval and a grade of "C" or higher are required to move onto the next level of study.

ACCOUNTING - ACCT

ACCT-1011 Business Math Applications
03 Semester Credits
Application of applied quantitative procedures to typical accounting, financial, and business situations. Includes percents in business, simple and compound interest, financing, property and sales taxes, applied statistics, present and future values, and other accounting/business topics. Required use of financial (business analyst) calculator in problem-solving.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ACCT-1020 Applied Accounting
03 Semester Credits
Fundamentals of accounting procedures as used in a double-entry bookkeeping system. Emphasis on application of techniques and procedures to record financial information in an accounting system and to generate financial statements. Introduction to use of commercial general ledger software in recording business transactions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ACCT-1030 Payroll
03 Semester Credits
Detailed study of payroll, record-keeping regulations, reporting requirements, accounting procedures and federal labor laws. Computations of gross wages, salaries, mandatory deductions of federal, state and local taxes, and optional deductions. Covers employer's related taxes and preparation of various payroll tax forms.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1310 Financial Accounting, or departmental approval: equivalent coursework or experience.

ACCT-1041 Individual Taxation
04 Semester Credits
Individual income taxes with concentration at federal level. History, assumptions and objectives of federal income tax law. Determination of filing status, exemptions, inclusions, exclusions, adjustments, deductions, credits, tax liability and reporting requirements. Completions of tax returns, tax planning and introduction to federal tax research. Use of commercial tax-preparation software. Determination of sole proprietorship income and taxes thereon.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1310 Financial Accounting, or departmental approval.

ACCT-1310 Financial Accounting
04 Semester Credits
Introduction to methodology and logic of accounting procedures, principles, and standards used in preparing financial information for external users. Emphasis on measuring, describing, recording, interpreting, and analyzing economic activities within for-profit business entities.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-1250 Contemporary Mathematics.
OAN Approved: OBU001

ACCT-1340 Managerial Accounting
04 Semester Credits
Theory and practice of accounting procedures used by management to plan operations, control activities, and make sound business decisions. Create and interpret budgets, standard cost systems, breakeven analysis, activity based costing (ABC) and job costing systems. Discuss other tools necessary to effectively manage companies.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1310 Financial Accounting, or departmental approval.
OAN Approved: OBU002

ACCT-2041 Business Taxation
04 Semester Credits
Concentration on corporate federal income taxes and taxation of partnership income. Preparation of various tax forms including 1120, 1120S, and 1065 and related schedules. Payroll taxes, sales and use tax, personal property taxes, franchise taxes, and other taxes related to business.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1041 Individual Taxation, or departmental approval: equivalent coursework or experience.

ACCT-2050 Volunteer Income Tax Assistance
02 Semester Credits
Train in the basics of individual taxation for federal, Ohio and local tax compliance as well as in the use of professional level tax preparation software. Students must successfully pass Ethics, Part A - Basic, and Parts B - Intermediate of the Volunteer Income Tax Assistance (VITA) Exam provided by the Internal Revenue Service in order to qualify as a volunteer tax preparer at a VITA Tax Clinic.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Recommend completing ACCT-1041 Individual Taxation prior to enrolling in this course.

ACCT-2310 Intermediate Accounting I
04 Semester Credits
Focuses on increasing understanding and application of accounting theory and the underlying financial accounting principles, procedures and reporting requirements used primarily in the for-profit sector. Topics include: financial reporting, accounting cycle, financial statement analyses, business segment and interim reports, income statement, receivables, cash cycle, asset valuation, liabilities, and earnings management.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1310 Financial Accounting, and MATH-1250 Contemporary Mathematics, or departmental approval: equivalent course work or experience. Recommend IT-1010 Introduction to Microcomputer Applications for students who are not already proficient in Microsoft Excel, Word, and PowerPoint.

ACCT-2320 Intermediate Accounting II
04 Semester Credits
Continuation of Intermediate Accounting I. Emphasis on analysis, methods of valuation and statement presentation of current and long-term liabilities, including leases and pensions, corporate equity in both simple and complex structures, including earnings per share computations; income tax accounting; error correction and financial statement analysis.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-2310 Intermediate Accounting I and recommend IT-1010 Introduction to Microcomputer Applications for students who are not already proficient in Microsoft Excel, Word, and PowerPoint.

ACCT-2340 Cost Accounting
04 Semester Credits
Theory and practice of cost accounting as applied to management of manufacturing, retail, and service industries. Emphasis on advanced terminology, job and process costing schedules, budgeting and variances, joint costing, pricing decisions, and capital budgeting. Application of Cost-Volume-Profit (CVP) models, the Equivalent Units (EOQ) model, Just-in-time (JIT) and other analytical tools used by management in the decision-making process.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1340 Managerial Accounting or departmental approval: equivalent coursework or experience.

ACCT-2500 Governmental/Non-Profit Accounting
04 Semester Credits
Accounting principles, standards and procedures for government entities and non-profit service entities, including school systems, colleges and universities, hospitals, charitable and religious organizations, and fraternal organizations. Application of current Financial Accounting Standards Board (FASB) and Government Accounting Standards Board (GASB) standards. Modular courses.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1020 Applied Accounting, or ACCT-1310 Financial Accounting, or departmental approval: equivalent coursework or experience.

ACCT-2510 Auditing
04 Semester Credits
Audit regulatory environment, approach, planning, and procedures; compliance and substantive testing; treatment of audit adjustments, subsequent events, and discovered irregularities; preparing various audit worksheets and final product, the auditor's report.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1340 Managerial Accounting and FIN-2100 Financial Management.

ACCT-2520 QuickBooks Immersion
02 Semester Credits
Fundamentals of accounting procedures as used in a double-entry bookkeeping system. Emphasis is on application of techniques and procedures to record financial information in an accounting system and to customize and generate financial statements for a small business. Introduction to commonly used commercial general ledger software in recording business transactions and preparing business documents and reports.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1020 Applied Accounting, or ACCT-1310 Financial Accounting, or departmental approval.

ACCT-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

ACCT-2995 Accounting Technology
03 Semester Credits
Capstone course in Accounting. Integrates business and accounting core curriculum and application of accounting concepts requiring critical thinking and teamwork skills. Builds on students' existing technology skills and utilizes various applications to research, present and support financial management decision making and reporting. Spreadsheet, data management, accounting software applications, tax and other research concepts.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ACCT-1041 Individual Taxation and FIN-2100 Financial Management and departmental approval: completion of a 2000 level accounting (ACCT) course with a "C" or better grade. This course should be taken in the last semester of a student's tenure with the college.

ADMINISTRATIVE OFFICE SYSTEMS - AOS

AOS-1201 Word Processing I
04 Semester Credits
Basic and intermediate techniques and skills using word processing software applied to practical business applications. Introduction to and formatting of a variety of documents will be taught. Professionalism and soft skills emphasized (e.g. punctuality, getting along with others, etc.)
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1000 Keyboarding or departmental approval: equivalent proficiency.

AOS-1220 Speed Building
02 Semester Credits
For individuals with ability to type by touch. Focuses on improving speed and accuracy in keyboarding at the microcomputer. May be repeated; only 2 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): IT-1000 Keyboarding or departmental approval.

AOS-1241 Records Management
03 Semester Credits
Fundamentals of records, including basic rules for filing, five basic methods, and records handling from creation to destruction or archival storage. Study of electronic office filing, micrographics, electronic media, and optical storage. Applications on microcomputer.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications.

AOS-1250 Electronic Spreadsheet Use and Design
03 Semester Credits
Study of electronic spreadsheet concepts and software applications as used in a business environment. Spreadsheet theory, design, manipulation, and implementation techniques. Hands-on applications, case studies, and problem-solving strategies using spreadsheet software for accurate and timely storage, retrieval, manipulation, and interpretation of data.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: comparable knowledge or skills.

AOS-2200 Word Processing II
03 Semester Credits
Study and application of advanced text editing features of word processing software as applied to complex business documents. Includes document assembly, advanced merge techniques, sort, forms, complex tables and columns, math functions, styles, outlines, templates, macros, graphics, and web applications.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): AOS-1201 Word Processing I, or departmental approval: equivalent proficiency.

AOS-2210 Presentation Software
03 Semester Credits
Comprehensive instruction in the major features of presentation software. Students learn to create professional-quality slide presentations. Instruction in design strategy-importing and creating graphics; sound-creating, editing, playing and downloading from the Internet; and video-capturing, playing, and editing video.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: comparable knowledge or skills.

AOS-2250 Virtual Assistant/Virtual Cyber Office
03 Semester Credits
Explore concepts and issues to learn how to establish and successfully develop a virtual assistant business including how to locate customers, set fees, and develop client contracts. Students will also use integrated applications software to complete tasks and projects.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications or departmental approval.

AOS-2270 Desktop Publishing
03 Semester Credits
Hands-on applications using desktop publishing software package. Application of desktop publishing techniques and design concepts, applied to a variety of business publications. Course assumes prior word processing experience/knowledge.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): AOS-1201 Word Processing I, or departmental approval: equivalent proficiency.

AOS-2370 Office Meeting and Events Coordination
03 Semester Credits
Presents sound principles and practices for office professionals and public relations practitioners who coordinate events, meetings, conferences, or conventions. Students will complete assignments, activities, and projects utilizing "current" integrated office suite applications software such as Microsoft Office 2007.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, and AOS-2210 Presentation Software, and AOS-2270 Desktop Publishing, or concurrent enrollment; and AOS-2990 Office Procedures and Practices or concurrent enrollment.

AOS-2400 Virtual Portfolio Project
03 Semester Credits
This course requires students to write a business plan for creating a virtual office; plan, design, create and publish a Virtual Assistant website. Students will also develop a marketing strategy and promotional materials for the virtual office. Upon completion, students will have prepared a professional portfolio.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications and AOS-2210 Presentation Software and AOS-2270 Desktop Publishing.

AOS-2410 Office Management
03 Semester Credits
Basic principles of office organization and management. Emphasis on problem-solving and communications necessary to administer office functions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business.

AOS-2600 Voice Recognition Technology
02 Semester Credits
Presents an overview of current technology, getting started using the technology, learning the basics, making speech recognition part of the computer routine, and using speech recognition and digital input tools routinely as communication tools.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): AOS-1201 Word Processing I, or departmental approval: equivalent proficiency.

AOS-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

AOS-2990 Office Procedures and Practices
03 Semester Credits
Designed to update knowledge of rapidly changing office environment and preparation for initial employment as well as promotion to supervisory and administrative positions.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): AOS-1201 Word Processing I and IT-1010 Introduction to Microcomputer Applications and AOS-2410 Office Management; or departmental approval .

AMERICAN SIGN LANGUAGE - ASL

ASL-1001 Fingerspelling
02 Semester Credits
Elementary proficiency of the manual alphabet and numbers of Fingerspelling ASL in conversational settings, with emphasis on fingerspelled words used as signs in ASL (loan signs) and acronyms, clubs and organizations related to the Deaf community. Emphasizes accuracy, clarity, speed, and rhythm in application of comprehension and production skills.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

ASL-1010 Beginning American Sign Language I
04 Semester Credits
First in two-course sequence. Introduction to American Sign Language (ASL) and its history with emphasis on basic communication skills, focusing on principles of ASL grammar, body language, and facial expressions. Practice in expressive and receptive skills.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

ASL-1020 Beginning American Sign Language II
04 Semester Credits
Second in two-course sequence. Focuses on enhancing American Sign Language vocabulary. Daily practice in expressive and receptive skills in paragraph form. Introduction to conversational skills along with verb and adjective inflection. Introduction of various aspects of Deaf culture and common occurrences in the daily lives of people who are deaf.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ASL-1010 Beginning American Sign Language I, or departmental approval.

ASL-1100 Deaf Culture
03 Semester Credits
Cultural differences and similarities between the hearing and Deaf communities. History of ASL, deafness and its causes. Deaf education, ADA laws, and special devices utilized by people who are deaf. Examine selected vocabulary and facial expressions and learn their relevance to Deaf culture. One visit outside classroom may be required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ASL-2010 Intermediate American Sign Language I
04 Semester Credits
First in two-course sequence. Focuses on signs, body language, and facial expressions with emphasis on more complex conversational situations. Practice at intermediate level. Visitation outside the classroom is required.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ASL-1020 Beginning American Sign Language II, or departmental approval.

ASL-2020 Intermediate American Sign Language II
04 Semester Credits
Second in two-course sequence. Integrates facial expressions, body language, and ASL vocabulary at an increasingly complex level. Practice receptive skills in dialogue mode. Keep current in the field of deafness and interpreting by reading articles from various sources. Students participate in activities outside the classroom with persons who are deaf.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ASL-2010 Intermediate American Sign Language I, or departmental approval.

ASL-2411 Advanced American Sign Language
04 Semester Credits
Study of particular dialogues and drills, both from text and original work. Practice at advanced level, receptively and expressively. Visitation outside the classroom may be required.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ASL-1100 Deaf Culture, and ASL-2020 Intermediate American Sign Language II, and DIS-1402 American Sign Language Linguistics; or departmental approval.

ANTHROPOLOGY - ANTH

ANTH-1010 Cultural Anthropology
03 Semester Credits
Introduction to cultural study of human societies. Examples from various cultures within the United States and around the world used to provide understanding of cultural differences and similarities. Will relate current findings, perspectives and methods used by anthropologists in all fields.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS001

ANTH-1020 Physical Anthropology
03 Semester Credits
Study of humans as biological organisms. Major topics include genetics, evolution and variation, the fossil record, and living primates.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS002

ANTH-1030 Archaeology
03 Semester Credits
Investigation of the past through current methods and perspectives of archaeology. Presentation of significant archaeological findings and interpretation from selected parts of the world.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS003

ANTH-179H Honors Contract in Anthropology
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing Anthropology 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion, will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Anthropology, whose instructor approves the Honors Contract.

ANTH-2010 Peoples and Cultures of the World
03 Semester Credits
Cross cultural understanding of universal human concerns and issues affecting particular regions and cultures, using a variety of anthropological perspectives and theories. Emphasis on concerns of non-Western peoples and cultures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ANTH-1010 Cultural Anthropology, or SOC-1010 Introductory Sociology, or departmental approval.

ANTH-2030 Archaeological Field Methods
04 Semester Credits
Overview of methods used in field archaeology as applied to actual archaeological sites. Students receive training and experience in surveying, mapping, excavation, artifact processing and data analysis. Requires on-site student participation in the field. (See course schedule bulletin for specific requirements.)
Lecture 01-03 hours. Laboratory 03 hours.
Other Required Hours: 75 hours of supervised field experience.
Prerequisite(s): Departmental approval: approval of instructor.

APPLIED INDUSTRIAL TECHNOLOGY - AIT

AIT-1010 Construction Measurements and Calculations
04 Semester Credits
Covers fundamental measuring and calculation skills essential to the skilled craftsperson working in the construction industry. Provides a basic level of knowledge and understanding of practical measurements used to establish building, wall and equipment locations as well as material sizes and quantities. Field application and measurement conversions are stressed. Basic mathematical concepts are explained and applied in job situations.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and eligibility for MATH-0950 Beginning Algebra I, and concurrent enrollment in the following courses: AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1020 Comprehension and Communication for Construction
02 Semester Credits
Covers basic skills necessary for reading factual information used in construction with concentration on supporting details, clarifying information, and end results needed for success in the construction industry.
Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and eligibility for MATH-0950 Beginning Algebra I, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1030 Basic Construction Language
02 Semester Credits
Study of construction drawings to determine specifications, lines and line weights, measurements related to laying out, dimensioning, estimating and planning.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and eligibility for MATH-0950 Beginning Algebra I, and concurrent enrolment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1040 Spatial and Mechanical Reasoning
01 Semester Credits
Introduces the student to spatial development skills and mechanical reasoning. Included are practical applications of orthographic projections, figure conceptualization and cubic translations. Also included are mechanical analysis of pulley and gear systems and simple machines including basic properties of physics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and eligibility for MATH-0950 Beginning Algebra, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1050 Construction Industry Orientation
03 Semester Credits
An introduction to the construction industry and to respective construction apprenticeship programs and respective entry requirements. Included are soft skills for industry success, introduction to green building techniques and apprenticeship training center visits. Instruction site exploration will be included whenever possible.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and eligibility for MATH-0950 Beginning Algebra I, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1060 Construction Tools
02 Semester Credits
Covers the hand tools and materials of the respective building trades. Introduces the student to basic operations of respective crafts using hand tools of the trade. In addition, construction safety will be covered in depth and a certificate for an Occupational Safety and Health Administration (OSHA -10) card will be granted upon successful completion.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and eligibility for MATH-0950 Beginning Algebra I, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, and AIT-1120 Building Construction Trades Lab.

AIT-1120 Building Construction Trades Lab
03 Semester Credits
An introduction to work in building construction trades through discussion and hands- on training, providing an understanding of the history, practices, technologies, and factors of influences upon the industry. Extensive project work will include completion of masonry, carpentry, roofing, interior finishing, residential electrical, plumbing, and construction measurement. Emphasis to be placed upon safety principles include preparation for the OSHA 10 certification in construction. Construction site visits may be included.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for MATH-0950 Beginning Algebra I and eligibility for ENG-0980 Language Fundamentals I and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, and AIT-1060 Construction Tools.

AIT-2990 Contracting In A Diverse World
03 Semester Credits
Capstone course in Applied Industrial Technology. Study of construction contracting principles, procedures and practices including estimating and subcontracting practices. Includes working with diverse workforce groups in union and non-union settings utilizing teamwork.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: completion of more than fifty percent of the respective trade apprenticeship.

APPLIED INDUSTRIAL TECHNOLOGY (Bricklaying) - ATBL

ATBL-1300 Basic Bricklaying Trade Skills
02 Semester Credits
Basic study of bricklaying trade skills involving positioning, laying up, mixing and applying mortar and joint formation.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATBL-1310 Bricklaying Materials, Tools and Equipment
02 Semester Credits
Study of materials, tools and equipment used in brick and block construction.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

ATBL-1320 Basic Construction Drawings
01 Semester Credit
Study of construction drawings to determine specifications, layout of pattern bonds, measurements related to laying out, laying up, dimensioning, estimating and planning.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ATBL-1310 Bricklaying Materials, Tools and Equipment or concurrent enrollment, or departmental approval.

ATBL-1330 Wall Construction I
02 Semester Credits
Study of wall construction, grouting, layout, laying up, pattern bond pointing, parqing, and caulking. Use of reinforced masonry also studied.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1300 Basic Bricklaying Trade Skills or concurrent enrollment, or departmental approval.

ATBL-1340 Arch Construction I
02 Semester Credits
Beginning study of construction of arches. Topics include types of arches, parts and dimension of arches, and laying out centers for arches. Focuses on constructing segmental and jack arches.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1300 Basic Bricklaying Trade Skills or concurrent enrollment, or departmental approval.

ATBL-1370 Construction Trades Safety
01 Semester Credit
Study of safe practices on job, basic first aid, and OSHA requirements for construction trades.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATBL-1530 Wall Construction II
02 Semester Credits
Advanced study of wall construction to include cavity, retaining, cantilever, gravity retaining, intersecting, and garden and foundation/basement walls.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1330 Wall Construction I or concurrent enrollment, or departmental approval.

ATBL-1540 Arch Construction II
02 Semester Credits
Study of basic plans to identify information included in a set of written specifications pertaining to concrete and to estimate amount of materials needed for project.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1340 Arch Construction I or concurrent enrollment, or departmental approval.

ATBL-1950 Construction Trades Field Experience
01-03 Semester Credits
Limited to students in the Apprenticeship Program of the Construction Trades Joint Apprenticeship Training Committees. Employment in an approved training facility. Students may earn up to three credits in one semester and repeat to a cumulative maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 12-36 hours per week.
Prerequisite(s): Formal acceptance into the Joint Apprenticeship Training Committee Apprenticeship Program; and ATBL-1300 Basic Bricklaying Trade Skills, and ATBL-1310 Bricklaying Materials, Tools and Equipment, and departmental approval.

ATBL-2510 Advanced Brick-Block Construction
02 Semester Credits
Advanced study of brick-block construction of corners, piers, pilasters and columns.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1530 Wall Construction II, and ATBL-1540 Arch Construction II or concurrent enrollment; or departmental approval.

ATBL-2520 Step and Paving Assembly Construction
02 Semester Credits
Study of masonry steps and paving assembly construction procedure, layout and lay-up.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1320 Basic Construction Drawings, or concurrent enrollment, or departmental approval.

ATBL-2530 Door and Window Construction
02 Semester Credits
Study of door and window construction to produce rough and finish masonry openings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1320 Basic Construction Drawings, and ATBL-1340 Arch Construction I or concurrent enrollment; or departmental approval.

ATBL-2710 Advanced Bricklaying Skills
03 Semester Credits
Study of advanced bricklaying skills for the construction of flashings, lintels, chases, chimneys, vents and control joints.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATBL-1320 Basic Construction Drawings, and ATBL-2530 Door and Window Construction or concurrent enrollment; or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Carpentry) - ATCT

ATCT-1301 Introduction to Carpentry
02 Semester Credits
Introduction to carpentry apprenticeship. Includes in-depth overview of OSHA regulations as related to construction industry. A history of labor management association as it was in past, and how Joint Apprenticeship Committees interact today. Safety principles, including first aid and CPR.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1310 Carpentry Safety
02 Semester Credits
Introduction to hazards and dangers of elevated working conditions, including those that involve use of ladders and scaffolds. Hazards of working in confined spaces of limited means of egress with limited natural ventilation that are not meant for continuous occupancy will be examined. Introduction to Material Safety Data Sheets and their use to reduce chemical accidents in the workplace. Use of proper safety procedures and safety equipment as prescribed by OSHA and/or safety enforcement agencies will be emphasized.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1320 Introduction to Hand and Power Tools
02 Semester Credits
Study of wood properties, measurement techniques, types and applications of various common fasteners, properties of different woods, identification and use of hand tools, safety considerations, and use of circular portable saw, belt sander, edge sander, router, jigsaw, finish sander, and drill.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1331 Concrete Footers and Walls
02 Semester Credits
Introduction to construction of concrete form work. Includes reading of construction working drawings, layout, fabrication, and erection of standard wall, column, and footing forms.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1351 Metal Studs and Dry Walls
02 Semester Credits
Introduction to the Interior Systems industry. Construction practices, materials, and equipment used to lay out, fabricate and install metal stud systems. Related blueprint reading skills, math concepts, soffits, door frames and hardware are also an integral part of this course. An emphasis on safety regulations as according to OSHA standards.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1370 Layout
02 Semester Credits
Introduction to use of builder's level, level transit, and digital theodelite in the construction industry for establishment of elevations and grades and building layout. Course includes required math and geometry concepts and interpretation of site drawings and topographical plans generally used in construction industry.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1381 Wood Framing
02 Semester Credits
Introduction to basic principles of framing including terminology, print information, design, codes and systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1390 Welding for Carpentry
02 Semester Credits
Introduction to base level knowledge and skill in elementary shielded metal arc welding techniques and practices. Included are general theory of arc welding process, operation of welding equipment, welding safety practices, electrode characteristics and selection, identification of types of weld joints, and guided instruction and practice in arc welding.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1491 Residential Steel Framing
02 Semester Credits
Introduction to fundamentals of residential framing with steel. Course will include techniques on floor construction, interior/exterior wall construction and roof framing assemblies using steel trusses and/or rafters.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1381 Wood Framing and departmental approval: admission to any Applied Industrial Technology program.

ATCT-1550 Roof Framing I
02 Semester Credits
Introduction to construction of common roof types to include reading of construction working drawings, application of mathematical concepts and calculations related to roof structure, layout, fabrication, and erection of roof members.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1610 Interior Finish
02 Semester Credits
Introduction to skills required to determine materials and installation of finish elements. Included are window and door trim, interior door installation, standing and running trims.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1381 Wood Framing or departmental approval.

ATCT-1710 Stairs Layout
02 Semester Credits
Introduction to basic principles of stair layout including stair terminology, print information, design, codes, and types.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-2220 Roof Framing II
02 Semester Credits
Introduction to construction of hip roofs and intersecting roofs to include reading of construction working drawings, applying terminology and math concepts related to hip roof type construction, and layout, fabrication, and erection of hip roof members.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1550 Roof Framing I or departmental approval.

ATCT-2330 Trade Show
02 Semester Credits
Installation and dismantling of trade show exhibits. Includes techniques and procedures, aerial lift, welded frame/mobile tower scaffold erector, and rigging.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-2341 Concrete Specialties
02 Semester Credits
Heavy construction methods for forming piers, columns and decks are an integral part of this course. The techniques to form elevated decks, ramps and stairways will be emphasized. This course will focus on forming procedures as well as related mathematical concepts.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1331 Concrete Footers and Walls, and departmental approval: admission to any Applied Industrial Technology program.

ATCT-2361 Suspended Ceilings
02 Semester Credits
Skills and techniques required to install a variety of suspended ceiling systems. Includes identification and correct use of tools, reading blueprints, and focus on suspended grid systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1351 Metal Studs and Dry Walls or departmental approval.

ATCT-2370 Interior Systems Layout
02 Semester Credits
Includes elementary concepts of the interior systems industry construction methods used to layout and fabricate standard metal stud partition walls and soffit systems. Includes related blueprint reading skills, angle and octagon wall layout, applicable math concepts, and safety regulations as prescribed by Occupational Safety and Health Administration (OSHA) standards.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1351 Metal Studs and Dry Walls, and ATCT-2361 Suspended Ceilings, and departmental approval: admission to any Applied Industrial Technology program.

ATCT-2380 Advanced Stairs
02 Semester Credits
This is an advanced stair building course covering the calculation of stair design numbers needed to construct a set of curved stairs. Applied math with specific emphasis on the geometry of circles will be covered. In addition techniques necessary to layout, cut and fabricate curved stairs will be covered and applied in shop exercises.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1710 Stairs Layout and departmental approval: admission to an Applied Industrial Technology Program.

ATCT-2390 Trussed Roofs
02 Semester Credits
Covers the framing of common roof types using manufactured trusses. Includes reading of truss design and placement drawings, truss design and layout. Also included will be the erection, bracing and sheathing of trussed roofs and the construction of blind valleys according to installation standards. Fall protection and crane safety will also be an integral part of this course.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1550 Roof Framing I, and departmental approval: enrollment in a union carpenter's apprenticeship program.

ATCT-2500 Exterior Finish
02 Semester Credits
Introduction to basic elements of exterior finish which includes roofing, door and window framing, wall finish. Product types, weather and heat considerations are examined.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1610 Interior Finish or concurrent enrollment, or departmental approval.

ATCT-2511 Concrete Columns and Decks
02 Semester Credits
Interpretation of plans and specifications to lay out concrete foundations and construct columns, beams and decks for large commercial buildings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1331 Concrete Footers and Walls, and ATCT-2341 Concrete Specialties, and ATCT-1370 Layout, or departmental approval.

ATCT-2520 Stairs Installation
02 Semester Credits
Introduction to the art and science of laying out, fabricating, and installing fine staircases which are mitered and have hard balustrades using newel posts, rails, and balusters.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-2540 Roof Framing III
02 Semester Credits
Introduction to layout procedures and mathematical derivation of rafter lengths found in roofs, having more than one slope and containing various offsets. Includes roofs containing all or part of hexagonal shapes or octagonal shapes. Cutting and fabrication of all rafters is an integral part of course.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1550 Roof Framing I and ATCT-2220 Roof Framing II and departmental approval.

ATCT-2560 Interior Systems III
02 Semester Credits
In depth study of interior systems including barrel and dome ceilings and commercial door hardware used in the construction industry. Topics include use of specific tools and machining techniques required to install doors and door hardware, frames, exit devices, and associated items. Applicable math concepts, door and hardware schedules; and safety practices as prescribed by OSHA also included. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-2361 Suspended Ceilings or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Cement Masonry) - ATCM

ATCM-1300 Fundamentals of Concrete Construction
02 Semester Credits
Study of concrete: ingredients, steps in production, factors of concrete mix design, uses for various types of concrete, admixtures and tests for various types of fresh concrete.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1310 Applied Technical Communications and Economics
02 Semester Credits
Principles of effective industrial reports and letters; obtaining data; analysis of data; outlining and organizing of materials; letter writing techniques. Effective communication in writing, listening and speaking to meet industrial needs emphasized.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1320 Basic Plan Reading
02 Semester Credits
Study of basic plans to identify information included in a set of written specifications pertaining to concrete and to estimate amount of materials needed for project.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1330 Concrete Construction Equipment
02 Semester Credits
Study of tools used in concrete construction for testing, forming, placing and finishing fresh concrete with emphasis on care and safe use of equipment.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

ATCM-1340 OSHA Standards for the Construction Industry
03 Semester Credits
Study of occupational safety and health standards for construction industry.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1370 Construction Trades Safety
01 Semester Credit
Study of safe practices on job, basic first aid, and OSHA requirements for construction trades.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1390 Basic Welding Skills
02 Semester Credits
Basic welding skills emphasized to obtain a thorough knowledge of welding safety related to electrical shock, body protection, accident prevention, reporting, and ventilation. Fundamentals of arc and oxy-acetylene welding studied.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Department approval: admission to any Applied Industrial Technology program.

ATCM-1400 Concrete/Cement Forming and Finishing
03 Semester Credits
Study of various types of forms, placement of forms, placing leveling and finishing of concrete.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-1300 Fundamentals of Concrete Construction or concurrent enrollment, or departmental approval.

ATCM-1410 Commercial/Residential Form and Finish Work
04 Semester Credits
Study of building of steps, sidewalks, patios and driveways. Discussion includes types, finishes, and nosing.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2320 Blueprint Fundamentals-Construction
02 Semester Credits
Study of basic plans to identify information included in a set of written specifications pertaining to concrete and estimating amount of materials needed for the project.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-1320 Basic Plan Reading or concurrent enrollment, or departmental approval.

ATCM-2500 Fundamentals of Concrete Curing
01 Semester Credit
Study of fundamentals associated with concrete curing, reason for curing and types of curing.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2510 Fundamentals of Concrete Joints
01 Semester Credit
Study of joints in concrete to include types, locations, sealants, maintenance and reason for joints.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ATCM-1410 Commercial/Residential Form and Finish Work or concurrent enrollment, or departmental approval.

ATCM-2520 Basic Cement Patching
02 Semester Credits
Study of essentials to properly rub and sack walls for patching and steps necessary to take when preparing the walls.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2530 Concrete Restoration
03 Semester Credits
Study of surface defects in concrete and how to recognize, recommend preventative treatment, techniques and remedies to restore surface.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-2520 Basic Cement Patching or concurrent enrollment, or departmental approval.

ATCM-2700 Advanced Concrete Finishing
03 Semester Credits
Advanced study of placing and finishing a slab; placing and finishing concrete floors with various types of finishes.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2710 Concrete Specialty Products
01 Semester Credit
Study of pavements: types of equipment used on pavement, procedures necessary to finish pavements and operation of paving machine.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ATCM-2530 Concrete Restoration or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Construction Tending and Hazardous Material Abatement) - ATLB

ATLB-1010 Craft Orientation for Laborers
01 Semester Credits
Course designed for Laborer apprentices in their first year. History of the labor movement in North America and the Laborers' International Union of North America (LIUNA). Fringe benefits, the apprenticeship program, union organization, work site management structure and work ethics. Basic construction math, measuring, terminology and tool identification are included.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1020 Measurements and Leveling
02 Semester Credits
Construction measuring using rulers and tapes. Introduction to leveling and layout instruments. Elevation transfer and standard building layout procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1040 Pipelaying
02 Semester Credits
Calculation and application of grades, distances and elevations of storm water and sanitary sewer piping. Procedures for preparing the site for the pipe and its installation. Safety regulations and practices.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1210 Concrete Placement
02 Semester Credits
History of concrete, its properties and calculation of material quantities. Site preparation, form layout and installation. Placement and consolidation of concrete, and finishing and curing procedures will be discussed, demonstrated and practiced in field applications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1220 Traffic Control
02 Semester Credits
Covers the procedure for establishing traffic control including flagging operations for asphalt placement, barrier and control sign stationing and placement of asphalt on roadways. Presentations covering estimating asphalt quantities. Care and use of hand tools for installation procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1230 Radiation Worker
01 Semester Credits
Fundamentals of radiation, how it affects the worker and the importance of recognizing the health hazards associated with it. Methods used to clean contaminated sites and measures that are taken to avoid radiation on jobsites, including energy producing facilities and nuclear plants. Operation, maintenance and repair of the respective equipment.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1340 Mason Tending
03 Semester Credits
Study of scaffolds related to masonry work, mortar components, and materials requirements. Includes concrete properties and ingredients, steps in making concrete, properties of cement, erection and stocking of scaffolds, mortar preparation, and tools required. Extensive guided instruction and practice provided.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-1600 Asbestos Abatement
02 Semester Credits
Study of concepts related to EPA, OSHA, and ODH requirements for asbestos abatement. Includes types of asbestos, diseases linked to asbestos exposure, sampling techniques, stages of development, and safe work practices.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2110 Small Engines and Concrete Saws
02 Semester Credits
Start-up procedures and safety requirements of small engine machines and gas powered saws. Trenching equipment, chain saw safety and 2-cycle and 4-cycle engines will be covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2120 Pneumatic Tools and Carpenter Tending
02 Semester Credits
The care and use of pneumatic tools including compressors and pavement breaking equipment, carpenter tending duties, and hydraulic splitters. The safe operation of a sandblaster. A review of OSHA Subpart I, pneumatic tools and personal protective equipment (P.P.E.) is given.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2130 Pressure Pipe
02 Semester Credits
Types of pressure pipe waterline, including asbestos and ductile iron pipe, and installation techniques required to meet industry standards. Bedding requirements, trenching safety standards, and tapping procedures. Applied math concepts required for pressure and volume loss tests are also covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2150 Gunite
02 Semester Credits
Properties of Gunite, its mixture and use and applications in the construction industry. Discussion and application of equipment operation and maintenance, including various nozzles for special conditions.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement apprenticeship program.

ATLB-2160 Tunnel Construction
04 Semester Credits
History and terminology of tunneling in the construction industry. The need for tunnels and methods of boring is addressed. Skill development using specialty tools and equipment including jack-leg drills and hand tools for tunneling is included. Installation procedures, alignment and bolting of steel liner plates are demonstrated and practiced.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2200 Surveying Techniques and Applications
03 Semester Credits
Study of modern surveying techniques, applications, and methodology. Includes equipment, data collection methods, field records, plane transformations, software, and routine procedures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2310 Advanced Instruments
06 Semester Credits
Instrumentation used for highway and building construction and layout. Includes calculations required for determining local coordinates, staking and road alignments, and the pinning of a building with offsets and open and closed transverses. Also included are procedures and techniques required for setting up and using total station equipment. Field applications and exercises.
Lecture 06 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Construction Tending and Hazardous Material Abatement apprenticeship program.

ATLB-2320 Gas Pipe Line Worker
02 Semester Credits
Introductory course covering the general skills, safety and mainline operations required to work on gas pipe line installations. Included are exercises intended to develop job skill proficiency for site clearing and specialty operations needed to restore Right of Ways to their original state.
Lecture 02 hours. Laboratory 00 hours.
Departmental approval: admission to Construction Tending and Hazardous Material Abatement apprenticeship program.

ATLB-2400 Pipelaying Techniques
02 Semester Credits
Study of standard pipelaying techniques, practices, and procedures. Includes trenching, excavation safety, line and grade determination, and gravity flow systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2600 Scaffolds and High Elevation Techniques
03 Semester Credits
In-depth study of scaffolding and high elevation procedures. Set up and erection procedures, scaffold types, scaffold parts, and safety requirements.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2650 Demolition Techniques
03 Semester Credits
Study of industry standard demolition techniques. Topics include use of cutting tools, use of cutting torches, and safe removal of materials and clean-up procedures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2660 Grade Checking
04 Semester Credits
The layout and interpretation of surveyor stakes for highway construction. Included is the application of math concepts required for determining slope and elevation of roadways at sub-grade and top of pavement, centerlines and shoulders. The set up and operation of curbing machines and grade lasers is covered.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2740 Lead Abatement
03 Semester Credits
Concepts related to OSHA lead abatement regulations. Includes areas of lead abatement, responsibility of lead abatement workers, effects of lead in the body, personal protective equipment, collection methods, and labeling systems. Extensive guided instruction and practice provided.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Drywall Finishing) - ATDW

ATDW-1310 Tools and Methods of Drywall Finishing
02 Semester Credits
Introduction to basic tools and procedures of drywall finishing trade including identification, components, and use of hand and power tools, and cleaning, drying, and storage of tools.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to any Applied Industrial Technology program, or departmental approval.

ATDW-1330 Materials and Methods of Drywall Finishing
02 Semester Credits
Introduction to basic materials and procedures of drywall finishing trade including identification of boards, fasteners, adhesives, beads, and trim; measuring and cutting beads and trim; application of beads to various surfaces and structures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to any Applied Industrial Technology program, or departmental approval.

ATDW-1620 Taping Tools and Procedures
02 Semester Credits
Instruction in tools and procedures in drywall taping and wiping including tools and materials, dry taping, wet taping, hopper and banjo taping methods, and wiping procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to any Applied Industrial Technology Program, or departmental approval.

ATDW-2310 Automatic Taping Tools
02 Semester Credits
Instruction in principles and procedures of automatic tool taping including tools and equipment, the Bazooka automatic taping tool, loading, holding positions, and procedures for automatic tool taping individually and in teams.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATDW-1620 Taping Tools and Procedures, or departmental approval.

ATDW-2330 Finishing Boxes
02 Semester Credits
Instruction in use of finishing boxes including preparing, repairing, and loading flat finishing boxes; procedures for filling flats, butt joints and ceiling joints; procedures for using fastener spotters and angle finishing boxes; and cleanup procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATDW-1310 Tools and Methods of Drywall Finishing or concurrent enrollment, or departmental approval.

ATDW-2340 Texturing
02 Semester Credits
Instruction in texturing, including types of textures, surface preparation, texturing machines and application, spraying techniques, using color, texturing large areas, repairing damaged areas, and hand texturing.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATDW-1310 Tools and Methods of Drywall Finishing, or departmental approval.

ATDW-2350 Filling Compounds and Procedures
02 Semester Credits
Instruction in basic elements and procedures for using filling compounds including terminology, selection of filler, elements of drying, application of filler with trowel and broad knife, and finish sanding.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATDW-1310 Tools and Methods of Drywall Finishing or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Electrical Construction) - ATEL

ATEL-1300 Direct Current Fundamentals
03 Semester Credits
Study of Ohm's Law, electronic theory, series, and parallel circuits, Kirchhoff's Law, motor sizes, wire sizes, voltage drop, wiring systems, and troubleshooting.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Electrical Construction program.

ATEL-1310 Alternating Current Fundamentals
03 Semester Credits
Study of three and four wire two-phase circuits, three-phase induction star and delta circuits, power balanced and unbalanced loads, transformer principles, characteristics and connection, electrical instruments, self synchronous systems, protective relays, lamps and illumination.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-1300 Direct Current Fundamentals, or departmental approval: admission to any Applied Industrial Technology program.

ATEL-1330 National Electric Code
02 Semester Credits
Study of the National Electrical Code (NEC) for wiring and apparatus. Topics include wiring design and protection, wiring methods and materials, general use equipment, special occupancies, special equipment, and use of table and diagrams for the solution of practical wiring problems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Electrical Construction program, or departmental approval.

ATEL-1350 Industrial Safety
01 Semester Credit
Study of selected topics to cover occupational safety and health. The student will become familiar with rules and regulations for Occupational Safety and Health Administration (OSHA) compliance.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATEL-1360 Blueprint Fundamentals - Electrical
02 Semester Credits
Introduction to blueprints. Topics include identifying components, mechanical and electrical symbols, diagrams, architectural views, and common scales. Also includes blueprint specification, schedules, and system integration.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATEL-2300 Industrial Electronics Fundamentals I
03 Semester Credits
Introduction to electronics which includes semi-conductor theory and circuits, transistor theory and circuits, power supplies, integrated circuits, oscillator circuits, photosensitive devices, and pulse circuits.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-1310 Alternating Current Fundamentals, or departmental approval.

ATEL-2310 Industrial Electronics Fundamentals II
03 Semester Credits
Study of electricity as it relates to environmental control systems, fire alarms, security systems, smoke detectors, and Heating, Ventilation, and Cooling (HVAC) systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-2300 Industrial Electronics Fundamentals I, or departmental approval.

ATEL-2350 Programmable Logic Controllers
03 Semester Credits
Introduction to programming techniques, and hardware configuration and theory of operation of a programmable logic controller. Systems to be studied may include the Allen-Bradley programmable logic controller (PLC) 2 and Modicon Industrial Controllers.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-1300 Direct Current Fundamentals, or departmental approval.

ATEL-2500 AC/DC Motors and Generators
04 Semester Credits
Direct current (DC) motor construction and principles of operation, kinds of DC motors and their characteristics and control, permanent magnet meter movement, ammeter and voltmeter construction, operation care and use, watt-meter and wheatstone bridge area. Other topics include DC motors, alternators, rotating magnetic fields, alternating current (AC) motors, speed control, types of winding, and introduction to AC motor control.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-1300 Direct Current Fundamentals, and ATEL-1310 Alternating Current Fundamentals; or departmental approval.

ATEL-2510 Motor Controls
03 Semester Credits
Introduction to direct current (DC) and alternating current (AC) motor control circuits.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-2310 Industrial Electronics Fundamentals II or concurrent enrollment, or departmental approval.

ATEL-2700 Electrical Instrumentation
04 Semester Credits
Introduction into various types of instruments employed in industry, along with operating principles and actual application. Instruments covered are those used in measurement, transmission, and control of various industrial processes.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATEL-2310 Industrial Electronics Fundamentals II or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Floorlaying) - ATFL

ATFL-1300 ATFL Residential Installation Procedures
02 Semester Credits
Introduction to residential flooring products and installation procedures. Includes residential carpet and vinyl product knowledge, and custom installations (borders, insets, patterns, and upholstered stairs). Also includes customer relations, etiquette, and communication skills related to residential work.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATFL-1450 Floorlaying Concepts
02 Semester Credits
Comprehensive study of floorlaying essentials, including material properties, measurement techniques, types and applications of various sheet good adhesives, identification and use of hand tools and power equipment used in the floorlaying industry. Also included are concepts commonly found in construction blueprints including symbols, abbreviations, and conventions required in drawing interpretation. Floor preparation for installations of tile, sheet goods, carpeting, hardwood, laminates and ceramics also included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Applied Industrial Technology Floorlaying program.

ATFL-1600 Modular Tile
02 Semester Credits
Basics of modular tile installation. Includes math and geometry concepts required for estimating materials, room layouts and interpreting construction drawings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts, or departmental approval: admission to Applied Industrial Technology Floorlaying program.

ATFL-1610 Jute and Action Back Carpeting
02 Semester Credits
Carpeting and manufacturing process as related to jute and action-back product types. Topics include material, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval.

ATFL-1620 Ceramics I
02 Semester Credits
Wall and floor treatment, grouting and installation of ceramic tile. Includes related math and blueprint reading exercises.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1610 Jute and Action Back Carpeting or concurrent enrollment, or departmental approval.

ATFL-1630 Wood Flooring I
02 Semester Credits
Wood flooring materials and installation including strip, strip and plank, parquet, installation techniques and tools for installation.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1640 Sheet Goods Concepts
02 Semester Credits
Floor installation requiring special treatment of adhesives and seam, sheet good products requiring interflex systems, heat seam welding and/or chemical welding. Also presented will be product usage and handling and application of concepts and materials.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1650 Sheet Goods - Flash Coving
02 Semester Credits
Products and components used in flash cove and sanitary floor installation. Topics include techniques of installation, blueprint reading and use of applicable tools.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, and ATFL-1640 Sheet Goods Concepts or concurrent enrollment; or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1710 Velcro and Modular Carpeting
02 Semester Credits
Carpeting and manufacturing process as related to Velcro and modular product types. Includes materials, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1720 Sheet Goods - Geometric Layout and Inlay
02 Semester Credits
Study of advanced floorlaying techniques used in layout and installation of sheet goods in specialty situations including geometric shapes and producing templates.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1650 Sheet Goods - Flash Coving or concurrent enrollment, and ATFL-1450 Floorlaying Concepts or concurrent enrollment; or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1730 Unitary Back and Enhancer Back Carpeting
02 Semester Credits
Carpeting and manufacturing processes as related to Unitary Back and Enhancer Back product types. Topics include materials, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or ATFL-1710 Velcro and Modular Carpeting or concurrent enrollment; or departmental approval: admission to Applied Industrial Technology program.

ATFL-2300 Ceramics II
02 Semester Credits
Ceramics design, material and tile installation in wet areas such as food prep, pools, shower and laundry.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1620 Ceramics I or concurrent enrollment, or departmental approval.

ATFL-2320 Wood Flooring II
02 Semester Credits
Advanced flooring systems using acrylic, engineered, and laminate systems with special attention given to custom layouts such as herringbone and diagonal installations, riser, tread, bullnose installation, and proper floor sanding techniques.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval.

ATFL-2400 Sheet Goods - Specialty Products
02 Semester Credits
Study of specialty flooring systems, requiring antibacterial protection and wet areas needing moisture close tolerance installation. Course also includes presentations, one-piece flash coving demonstrations, heat welded seams demonstrations, and cutting and fitting special components such as cove steps and cap metals.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1640 Sheet Goods Concepts, or concurrent enrollment, and ATFL-1650 Sheet Goods - Flash Coving, or concurrent enrollment and departmental approval.

ATFL-2430 Woven and Axminster Carpeting
02 Semester Credits
Carpeting and manufacturing process as related to woven and axminister product types. Includes materials, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Glazing) - ATGL

ATGL-1330 Hand Tools for Glaziers
02 Semester Credits
Introduction to hand tools for glazing, including basic hand tools such as screwdrivers, wrenches, pliers; levels and transits; glass, plastic, and metal cutters; pliers, lifters, and tongs, punches, chisels, rivet guns, and taps.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-1620 Glass and Mirror Replacement and Installation
02 Semester Credits
Instruction in glass replacement and mirror layout, measurement cutting, edging and mounting. Includes safety procedures, and glass installation using putty.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-1630 Basic Welding
02 Semester Credits
Introduction to arc welding and oxy-acetylene cutting including shop safety, electrode identification and classification and selection, all position welding, set up of fillet, power sources, weld size, and weld symbols.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-1640 Door Fabrication and Installation
02 Semester Credits
Door fabrication and installation, including installation and maintenance of manual and power assisted revolving doors; fabrication and installation of aluminum doors; installation of specialty doors and showcases; and safety procedures and regulations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-2330 Transits, Leveling Instruments and Lasers
02 Semester Credits
Use of transits, levels, and lasers for glazing installation including elements of instruments; types of instruments; care and handling; setting up, leveling, and using instruments; and specific applications of leveling and installation.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATGL-1330 Hand Tools for Glaziers; or departmental approval.

ATGL-2340 Advanced Welding
02 Semester Credits
Instruction in advanced welding, including oxy-acetylene, M.I.G., T.I.G., and F.C.A.W. welding processes, welding of cast iron, aluminum, copper alloys, and stainless steel, hardfacing, and plasma cutting.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATGL-1630 Basic Welding or concurrent enrollment; or departmental approval.

ATGL-2350 Curtainwall Fabrication and Installation
02 Semester Credits
Instruction in curtainwall principles and methods, including methods and standards; layout practices and tolerances; curtainwall systems and erection procedures for I-Beam, Stickwall, and Trusswall construction.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATGL-1330 Hand Tools for Glaziers; or departmental approval.

ATGL-2370 Sealants
02 Semester Credits
Instruction in use of sealants including terminology, properties, forms, classifications, and sealant selection; sealant application, testing, and remedial caulking; joint types and design; substrate preparation primers and backer rods; safety procedures and use of MSDS sheets.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATGL-1330 Hand Tools for Glaziers; or departmental approval.

ATGL-2400 Advanced Rigging and Hoisting
02 Semester Credits
Advanced procedures of rigging and hoisting including rope materials, care, and handling; knot tying; slings; rigging hardware and hoisting techniques; hand signals; and safety procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10).

APPLIED INDUSTRIAL TECHNOLOGY (Ironworking) - ATIW

ATIW-1300 Structural Steel Concepts
02 Semester Credits
Introduction to structural steel concepts, including an overview of historical use of iron and steel in construction. Fundamental principles of and preparation for erection of structural steel; blueprint reading; and proper use of tools, according to OSHA regulations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Ironworking Apprenticeship Program, or departmental approval.

ATIW-1310 Safety for Ironworkers
01 Semester Credit
Occupational safety and health standards for construction industry in general, and ironworking trade specifically. Includes regulations and procedures for fall protection; electrical work; scaffolding; confined spaces; personal protective equipment; materials handling, storage, use and disposal; hand and power tools; steel erection; and cranes, derricks, hoists, elevators, and conveyors.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Admission to Ironworking Apprenticeship Program, or departmental approval.

ATIW-1320 Steel Construction Procedures
01 Semester Credit
Steel construction procedures, including necessary individual and raising gang skills, and proper use of tools according to OSHA regulations. Introduction to bridge types and components. Blueprint reading relevant to layout and erection.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, or departmental approval.

ATIW-1330 Erection Concepts and Practices
03 Semester Credits
Principles and techniques of structural steel erection, including detailing procedures. Covers installation of temporary flooring, accurate alignment of steel assembly, safety nets and railings, and various types of connections: bolts, rivets and pins, layout and erection of bar joists, bridging, scaffolds and ladders, according to OSHA regulations. Includes blueprint reading.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, and ATIW-1310 Safety for Ironworkers or concurrent enrollment, or departmental approval.

ATIW-1400 Principles of Reinforcing Steel
02 Semester Credits
Basic principles of reinforcing steel, using tools and methods necessary for layout and fabrication, according to engineering and placing drawings. Application of basic structural building forms to reinforce concrete structures, including structural value of footings and use of beam and slab design; history of reinforced concrete and manufacturing process of reinforcing steel; and basic types of highway structures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, and ATIW-1310 Safety for Ironworkers or concurrent enrollment; or departmental approval.

ATIW-1410 Practical Applications of Reinforcing Steel
01 Semester Credit
Applications relating to placement of reinforcing steel in footings, walls, columns, beams, girders, joists and slabs and to bar splicing. Continued study of highway structures, including airport paving. Introduction to reinforcing accessories, dowels, and mechanical couplers.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, and ATIW-1310 Safety for Ironworkers or concurrent enrollment; or departmental approval.

ATIW-1600 Welding Fundamentals for Ironworkers
03 Semester Credits
Fundamentals of welding with special emphasis on the ironworking trade. Includes welding processes; cutting and gouging processes; operational and site safety; welding equipment and tools; and safety equipment and protective clothing.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-1300 Structural Steel Concepts, and ATIW-1310 Safety for Ironworkers; or departmental approval.

ATIW-2300 Shielded Metal Arc Welding
03 Semester Credits
Shielded metal arc welding principles and techniques. Includes required equipment tools and supplies, electrical and environmental safety, eye hazards associated with arc burn, and protective clothing requirements.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-1600 Welding Fundamentals for Ironworkers or concurrent enrollment, or departmental approval.

ATIW-2310 Welding Specialties
03 Semester Credits
In-depth study of welding and cutting techniques. Students will perform oxy-fuel gas welding and cutting techniques, arc cutting and gouging, and stud welding as applied to ironworking trade.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2300 Shielded Metal Arc Welding or concurrent enrollment, or departmental approval.

ATIW-2320 Welding Blueprints and Design
03 Semester Credits
In-depth study of welding blueprint lines, arrows, views, and symbols; basic layout construction; and identification of welding positions, parts of fillet welds, groove joints and welds, and backup materials. Includes recognition, drawing, measurement calculations, and problem solving.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2310 Welding Specialties or concurrent enrollment, or departmental approval.

ATIW-2330 Pre-Construction Planning of Specialty Applications
02 Semester Credits
Includes erection sequence and handling of specialty products. Installation of members and connections performed in compliance with OSHA regulations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2320 Welding Blueprints and Design, or departmental approval.

ATIW-2340 Specialty Installation Equipment
02 Semester Credits
Study and use of equipment in installation of specialty building products. Safety training including employee, equipment, and jobsite safety and procedures for material handling and inspections, according to OSHA regulations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2330 Pre-Construction Planning of Specialty Applications or concurrent enrollment, or departmental approval.

ATIW-2350 Ornamental Systems and Railings
02 Semester Credits
Installation methods for and identification of various ornamental applications, including curtainwall and window wall systems, stairs, railings, and wall handrails, and their anchors and fasteners. Use of hand and power tools for installation. Operation of various layout instruments.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2330 Pre-Construction Planning of Specialty Applications or concurrent enrollment, or departmental approval.

ATIW-2360 Ornamental Applications
02 Semester Credits
Procedures for and installation of ornamental applications, including rolling service doors, sloped walls, metal and ship ladders, toilet partitions, vanity supports, relief angles, flagpoles, and chain link fences.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2350 Ornamental Systems and Railings or concurrent enrollment, or departmental approval.

ATIW-2400 History of the Iron Workers Union
03 Semester Credits
The Iron Workers Union in America from 1896 through today, including people and events that influenced the organization.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2350 Ornamental Systems and Railings or concurrent enrollment, or departmental approval.

ATIW-2500 Rigging and Hoisting
03 Semester Credits
Procedures of rigging and hoisting including identification, handling, and storage of equipment: chains, hardware, reeving, slings with practice of knot tying and splicing. Topics include characteristics and uses of cranes, procedures for inspection, safe operation, testing and maintenance of cranes, including machine assembly and set-up procedures. Safety procedures and hand signaling, according to OSHA regulations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATIW-2360 Ornamental Applications or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Manufacturing Technology) - ATMT

ATMT-1000 Mechanical and Spatial Relations
04 Semester Credits
Relationship between two-view to three-view images, charts containing diagrams, mechanical sequences, mechanical series, tool usage, tool relationships to fasteners, object turning and problem solutions. Basics of visualizing three-dimensional object from two-dimensional front, side, and top view. Patterns with three-dimensional figures that can be made from hidden and object views of visual figures. Identifying tools, tool relationship and selection practices. Perceptual ability, spatial views, matching parts and figures. Visualization of shapes or patterns that can result from fitting together cut-up pieces; graphically describing size and shape to represent basic mechanical elements; and cube counting.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMT-1100 Manufacturing Skills I
03 Semester Credits
Stresses relationship of engineering drawing to applications of manufacturing part including lines, views, dimensioning, metric system, calculating cut of points, freehand lettering, sketching, and use of drafting tools to construct blueprint. Includes fraction to decimal conversion, drafting line using geometric equations, line types, orthographic views, isometric views, offset sections, auxiliary sections, symbols, and broken sections.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Sponsorship in approved apprenticeship program offered by a member company, or acceptance to PMT certificate program.

ATMT-1110 Manufacturing Skills II
02 Semester Credits
Provides skills in layout techniques and operations, including bolt hole circles, location of surfaces related by non-right angle triangles, and points of tangency. Includes layout drawing by sketching proper views from actual part.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-1100 Manufacturing Skills I or concurrent enrollment; or departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1120 Machine Operations I
06 Semester Credits
Introduction to machine shop practices to produce manufacturing parts. Includes operations of machinery, terminology, safety, measurement, layouts, print reading, machine set-ups, hand tools, measuring tools, cutting tools, and processes in production work flow. Emphasis on use of typical equipment found in conventional machine shop. Extensive hands-on projects.
Lecture 01 hour. Laboratory 15 hours.
Prerequisite(s): Departmental approval: Admission to any Applied Industrial Technology program.

ATMT-1200 Machine Tool Theory
04 Semester Credits
Presents foundation for study of manufacturing methods, processes, related equipment, and tools of industry, requiring student to understand shop safety practices, job planning, feeds and speeds, layout tools and procedures, hand tools and bench work, metal cutting saws, drilling machines, lathe, milling machines, jig bore and jig grinder, surface grinder, E.D.M, and abrasives.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1300 Manufacturing Procedures
02 Semester Credits
Principles of blanking and/or piercing dies; bending; screw and dowel holes; die life; punches; pilots; die block construction; strippers and stock guides; shredders and knockouts; nest gages; pushers; die stops; stock material utilization; strip layouts; and die sets. Includes techniques and theory of building stamping dies with topics including cutting and forming operations, primary die components, and internal parts of complete die.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-1200 Machine Tool Theory, or concurrent enrollment and departmental approval: admission to Applied Industrial Technology – Manufacturing Technology program.

ATMT-1500 Manufacturing Technology Skills I
04 Semester Credits
Advanced study of relationship of engineering drawings to applications of machine shop production of precise parts, die, and mold components, to provide students with theory on use of coordinate measuring machine (CMM) for machine tool trades. Machine shop engineering drawing mathematics, used in development and production of part from print in machine shop, will be stressed. Application of engineering drawing skills on projects made in shop. Emphasis on geometric dimensioning. Students will learn to read and comprehend advanced engineering drawings from various industries.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-1200 Machine Tool Theory, and departmental approval: admission into Applied Industrial Technology - Manufacturing Technology program.

ATMT-1600 Introduction to CAD
02 Semester Credits
Introduction to computer systems and computer-aided drafting (CAD) software as tools used to produce engineering drawings. Keyboarding and computer operating skills are overlaid with software commands. Command topics include line coordinate systems, circles and arcs, geometry creation, text styles, editing geometry and text, controlling drawing display, drawing aids, layers, blocks, hatching, and dimensioning.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ATMT-1300 Manufacturing Procedures or concurrent enrollment, and departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1950 Field Experience
02 Semester Credits
Practical application of manufacturing concepts in field. Limited to students in the apprenticeship program of the Manufacturing Trades with employment in approved training facility. May be repeated up to four times.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 24 hours per week.
Prerequisite(s): ATMT-1100 Manufacturing Skills I or concurrent enrollment, and departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-2120 Machine Operations II
06 Semester Credits
Theory and application of use of engine lathe, planning machines, milling machines, grinders, quality control, metallurgy, and fasteners. Emphasis on use of typical equipment found in conventional machine shop. Extensive hands-on projects.
Lecture 01 hour. Laboratory 15 hours.
Prerequisite(s): ATMT-1120 Machine Operations I.

ATMT-2300 Advanced Manufacturing Procedures
02 Semester Credits
Capabilities of computer aided design (CAD) systems are covered. Students will be required to produce working engineering drawings. Instruction in tool path generation, local CNC programming and 2D simulation, including capabilities of computer aided manufacturing (CAM) systems.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ATMT-1600 Introduction to CAD, and departmental approval.

ATMT-2400 Advanced Diemaking
02 Semester Credits
Study of most important elements of die function and performance. Resource for apprentices, tool designers, and others who need a working reference on design, construction, and use of stamping dies.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2410 Advanced Moldmaking
02 Semester Credits
Study of fundamentals of mold construction, processes and construction of plastic molds such as compression, transfer, pressure molding of non-ferrous alloys, rubber molds, dies cast molds, and injection molds. Includes foundations of mold construction, depending on design of part, material used, equipment available, and ingenuity of moldmaker.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2420 Advanced Precision Machining
02 Semester Credits
Advanced study of relationship of materials, fixtures, and special machining operations as they relate to applications of machine shop production of precise parts, dies, and mold components. Provides theory on use of machining exotic materials, hard turning, machining of plastics, fourth and fifth axis programming, coolants and specialty inserts. Included are practical applications and machine shop mathematics formulas used in fixture and holding device design. Provides knowledge of castings, weldments, tool coatings and manufacturing methods that are becoming part of today's technology such as waterjets and lasers. Student will learn advanced metallurgy processes, and standard procedures for troubleshooting all types of manufacturing projects.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2500 Manufacturing Technology Skills II
04 Semester Credits
Study of relationship of engineering drawings to applications of manufacturing parts for CNC machines, screw machines, mold, and die components. Topics include dimension and tolerance; form tolerances; calculation of tolerance using equations; calculation of tolerances using standard shop formulas; profile and run out tolerances; location tolerances; geometric dimensioning; geometric applications; transferring engineering drawing using computer graphics; and development of engineering drawing with computer.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-2300 Advanced Manufacturing Procedures or concurrent enrollment, and departmental approval.

ATMT-2600 CNC Programming / Operations
02 Semester Credits
Fundamentals of computer application as aid to machining processes. Emphasis on engineering drawing analysis, using trigonometry and other forms of mathematics to determine programming points; ascertaining implied part dimensions; determinations of machining parameters; calculation of speeds; feeds and tool offset; establishment of work zero and tool home positions. Manual programming of computer numerical control (CNC) machines using G-codes; tooling and set-up of CNC lathes and milling machines for machining operations; verification of toolpaths by simulation; and operating CNC machines to produce mechanical parts.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ATMT-2300 Advanced Manufacturing Procedures or concurrent enrollment, and departmental approval.

ATMT-2620 CAM Principles
02 Semester Credits
Study of geometric modeling, using selected CAD/CAM packages to graphically model parts in 2D, 3D wire-frame and solid, generating G-codes, post-processing G-codes into formats interpretable by given CNC controllers. Topics include editing G-codes with verification of toolpaths in 3D and solid model simulation; downloading path programs into CNC turning and milling centers; and machining parts. Use of metrology methods to check dimensional and geometrical accuracy of produced parts.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ATMT-2600 CNC Programming / Operations, and departmental approval.

ATMT-2700 Manufacturing Technology Skills III
04 Semester Credits
Advanced study of manufacturing methods, processes, related equipment, and tools of industry, requiring student to understand standard requirements to being a Journeyman Tool and Diemaker, Moldmaker, Precision Machinist, Precision Screw Machine operator, or Precision CNC operator. Topics include practices of job planning, maximum use of shop supplies, and how to work independently, efficiently and effectively. Scope is to demonstrate thin margin that is required to making a job profitable, helping student to troubleshoot problems that may occur with effective problem solving methods and technique.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2990 Manufacturing Operation Principles
03 Semester Credits
Capstone course in Manufacturing Technology. Topics include manufacturing flow, quoting, tool and materials supply inventory control, outsourcing, supplier tracking and UCC coding.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATMT-2700 Manufacturing Technology Skills III or concurrent enrollment.

APPLIED INDUSTRIAL TECHNOLOGY (Millwrighting) - ATMW

ATMW-1320 Introduction to Millwrighting
02 Semester Credits
Study of basic millwrighting concepts. Topics include hand and precision tool recognition and use, drilling and tapping, belt drive installation and application, and chain drive installation and application.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1330 Print Reading for Millwrights
02 Semester Credits
Study of print reading as applied to activities of millwrights. Topics include related math concepts, machine print components including orthographic views, line types, scale, exploded views, installation prints, revision information, optical tooling, and specifications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1340 Introduction to Pile Driving
02 Semester Credits
Study of pile driving basics. Topics include history, definition of industry specific terms, blueprint reading, types and uses of pile driving tools and equipment, types of piling, skills and duties of pile drivers, safety equipment, and review of OSHA standards relevant to pile driving.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1350 Hydraulics/Centrifugal Pumps
02 Semester Credits
Covers the operation and the maintenance of overhung centrifugal pumps and mechanical seals. Disassembly, inspection, checking clearances and rebuilding these pumps to industry standards will be an integral part of this course.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMW-1450 Heavy Rigging
02 Semester Credits
Study of rigging hardware and equipment required to lift equipment and material. Topics include mobile, fixed, tugger, and hand rigging cranes, formulating a safe lifting plan through the use of applicable calculations, weight estimation, sling loads, signaling, crane limitations, and implementing OSHA safety regulations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1490 Millwright Pile Driver Weld I
02 Semester Credits
Study of basic concepts and implementation of shielded metal arc welding. Topics include theory of arc welding, operation of welding equipment, safety practices, electrode characteristics and selection, identification of weld joint types, and personal protective equipment (PPEs).
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1600 Rotating Equipment
02 Semester Credits
Study of rotating equipment. Topics include precision equipment and tools and terminology, bearing type installation and application, math concepts, shaft alignment, reverse dial alignments, laser alignment application and interpretation, and safety measures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1720 Machinery Installation
02 Semester Credits
Introduction to layout, leveling, and installation of heavy industrial equipment. Topics include hand rigging techniques, proper forklift operations, shoring, heavy timber, false work, and installation of equipment according to OSHA regulations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry, or departmental approval.

ATMW-2120 Shaft Alignment
02 Semester Credits
In depth study of concepts related to shaft alignment. Topics include rim and face alignment procedures, indicator set up and use, soft foot identification and elimination, correction methods, mathematical alignment concepts, and coupling installation and application.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry; or departmental approval.

ATMW-2130 Shaft Alignment II
02 Semester Credits
Review of rim and face alignment procedures. Covers reverse dial indicating. Application of mathematical formulas used to solve alignment problems and graphing techniques will be covered. Laser alignment systems and all of their functions will also be included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMW-2230 Millwright Pile Driver Weld II
02 Semester Credits
In-depth study of multi-pass horizontal and vertical-up groove welds using the shielded metal arc welding process. Topics include blueprint reading for welders, introduction to D1.1 structural weld code requirements, welding safety practices, and guided practice time.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMW-1490 Millwright Pile Driver Weld I or concurrent enrollment; or departmental approval.

ATMW-2330 Precision Optics
02 Semester Credits
In depth study of concepts related to precision optics. Topics include operational theory, operation of tilting level and jig transit, interpretation and application of a Whyteface® scale, peg testing, measurement theory, and mirror usage.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-2350 Floor Conveyor
02 Semester Credits
Study of floor conveyor systems used to transfer materials in assembly line operations and related manufacturing facilities. Topics include blueprint reading, layout procedures, component installation, proper use of an aerial lift, and OSHA safety requirements.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-2400 Steam Turbines
02 Semester Credits
Covers the various types of steam turbines currently in use. Students will learn how a turbine operates and will identify the various components of a turbine. Students will disassemble a steam turbine and determine the millwrights' responsibilities while working on steam turbine.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMW-2500 Combustion Turbine
02 Semester Credits
In-depth study of combustion turbine use, installation, and repair. Topics include turbine safety concepts, component identification, maintenance, rigging procedures, installation, and fuel nozzle installation and repair.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-2520 Millwright Pile Driver Weld III
02 Semester Credits
Study of advanced topics in millwright and pile driver welding. Topics include multi-pass vertical-up groove, technical review of material presented in ATMW 1490 Weld I and ATMW 2230 Weld II, carbon arc process, non-destructive testing, alloy welding, safety practices, guided practice time, and preparation for the American Welding Society (AWS) D1.1 vertical-up unlimited thickness certificate test.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMW-2230 Millwright Pile Driver Weld II or concurrent enrollment, or departmental approval.

ATMW-2530 Advanced Welding IV
02 Semester Credits
Course covers the welding techniques and skills required for welding certification in wire feed and standard shielded metal arc welding (SMAW) or stick welding. Included are techniques required for machine set-up for Tungsten Inert Gas (TIG) welding and its welding processes.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: acceptance to any Applied Industrial Technology program.

ATMW-2700 Monorail
02 Semester Credits
Study of monorail systems used to transfer materials in assembly line operations and related manufacturing facilities. Topics include blueprint reading, layout procedures, component installation, and screen guard installation.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry; or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Operating Engineers) - ATOE

ATOE-1100 Operating Engineering Concepts
04 Semester Credits
Basic concepts of compaction, compaction equipment, design of paving operations, and design concepts of asphalt and skid steer loaders. Tractor-scraper and oiler responsibilities also included.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-1200 Basic Mechanical Concepts
03 Semester Credits
Introduction to analysis of fuels, components and principles of fuel systems, common units, air intake systems, cooling system designs and maintenance, hydraulic systems including Pascal's law, basics of engine electrical systems, history, development and theory of internal combustion engines. Discussion on function of clutches, basics of power train, use of brakes, and components of tracks and tire construction, selection, maintenance and storage.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-1650 Graders and Plans
02 Semester Credits
Introduction to graders operations, safety information fundamentals, terminology and various support grader operations, pre and post operations, methods of finish grading, and fundamentals of construction leveling. Topics include terminology of laser and laser machine controls; proper set-up procedures; safe work practices in the use of lasers and components of laser machine controls; and common highway plans for construction projects including introduction to basic plans, their purpose, and learning how to interpret them.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-1700 Paving, Tractor, Backhoe Operators
03 Semester Credits
Introduction to design concepts of paving, identifying operation controls of any hydraulic and loader equipment, basic operations and maintenance safety of equipment, standard and conventional scraper, differentiate one-engine and two-engine scrapers, inspection and start-up, and safety procedures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-2100 Mobile Crane
02 Semester Credits
In-depth focus on mobile cranes. Topics include components and parts, crane signals, communications, operational safety in set-up and OSHA standards and regulations, and using load charts to calculate load weight. Also includes wire rope and rigging, and electrical hazards.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1100 Operating Engineering Concepts, or departmental approval.

ATOE-2200 Mechanical Repair
03 Semester Credits
Study of major mechanical systems. Detailed troubleshooting practice and procedures. Clutch diagnosis and repair, types of power trains and undercarriage maintenance also included.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1200 Basic Mechanical Concepts, or departmental approval.

ATOE-2600 Bulldozer Practice
03 Semester Credits
Study of standard features, standard procedures, tools, inspection, and controls of bulldozers. Topics include attachments, terminology, inspection and controls.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1650 Graders and Plans, or ATOE-2640 Advanced Grader Practice or concurrent enrollment; or departmental approval.

ATOE-2620 Backhoe Practice
03 Semester Credits
Study of standard features, standard procedures, tools, inspection, and controls of backhoes. Topics include attachments, terminology, inspection, and controls.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1700 Paving, Tractor, Backhoe Operators, or departmental approval.

ATOE-2640 Advanced Grader Practice
03 Semester Credits
Study of standard features, standard procedures, tools, inspection, and controls of graders. Topics include attachments, terminology, inspection and controls.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1650 Graders and Plans, or ATOE-1700 Paving, Tractor, Backhoe Operator; or departmental approval.

ATOE-2650 Safety Training Passport
01 Semester Credit
Introduction to the Occupational Safety and Health Act (OSHA). Topics include employee responsibilities and rights, standards, and basic hazard training.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ATOE-1100 Operating Engineering Concepts, or departmental approval.

ATOE-2660 Grader Safety
02 Semester Credits
Application of safety operations of graders. Topics include reading warning signs and labels, avoiding general hazards, monitoring systems and cab features, operation techniques and towing.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1650 Graders and Plans, or ATOE-2640 Advanced Grader Practice or concurrent enrollment; or departmental approval.

ATOE-2670 Rough Terrain Forklift Operation
02 Semester Credits
In-depth focus on OSHA regulations regarding industrial trucks, specifically OSHA 1910.178. Also includes characteristics of forklifts, identification of components of a truck and their functions, safety operations and safety equipment used on forklifts.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1100 Operating Engineering Concepts, and ATOE-1650 Graders and Plans; or departmental approval.

ATOE-2680 Hazardous Material Handling and Field Safety
02 Semester Credits
Introduction to governmental laws and agencies involving worker's health and safety protection. In-depth study of hazardous waste and emergency response operations, including the formation of Occupational Safety and Health Administration (OSHA). Regulations pertaining to specific rights to Code of Federal Regulations - OSHA 29 CFR 1910.120 (The Access to Exposure and Medical Records Standard), and decontamination procedures. Includes advanced concepts in informational programs, heat and cold stress, normal cooling mechanisms, heat-related illnesses, identifying signs of heat and cold stress and their prevention, diesel exhaust risks, asphalt emissions, Respiratory Standard Act 1910.134 and respiratory protection.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATOE-1100 Operating Engineering Concepts, and ATOE-1650 Graders and Plans; or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Painting) - ATPT

ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing
02 Semester Credits
Introduction to basic painting trades skills, including apprenticeship rights and responsibilities; painting, drywall finishing, glazing, and sign and display terminology; tools, materials, and equipment; preparation and application procedures; and safety practices.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1320 Safety Standards for Construction (OSHA-10)
03 Semester Credits
General instruction for occupational safety and health, including safety rules and procedures for fall protection, electrical work, scaffolding, ladders, confined spaces, personal protective equipment, and other trade related safety procedures. OSHA-10 certification will be completed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1330 Filling Compounds and Procedures
02 Semester Credits
Instruction in basic elements and procedures for using filling compounds, including terminology, selection of filler, elements of drying, application of filler with trowel and broad knife, and finish sanding.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1340 Wall Preparation and Repair
02 Semester Credits
Instruction in wall preparation and repair, including pre-job inspection, preparation of job site, and repair of wallboard, painted surfaces, plaster, and stains.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1620 Wood Finishing
02 Semester Credits
Instruction in principles and procedures in wood finishing, including characteristics of woods, specifications and finishing procedures, preparation of surfaces, and maintenance and repair of finishes.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1630 Color Mixing and Matching
02 Semester Credits
Instruction in color mixing and matching, including color terminology and theory, lighting and surface effects of color, use of light boxes and viewing aids, and sequence and techniques of color mixing and matching.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1640 Rigging and Hoisting
02 Semester Credits
Introduction to basic procedures of rigging and hoisting including rope materials, care, and handling; knot tying; slings; rigging hardware and hoisting techniques; hand signals; and safety procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1320 Safety Standards for Construction (OSHA-10), or departmental approval.

ATPT-1650 Blueprints I: Construction Fundamentals
02 Semester Credits
Introduction to basic principles of blueprint reading including terminology, types of drawings, specifications and schedules, lines, symbols, scales, dimensions, and uses for painting crafts.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1660 Labor in American Society
02 Semester Credits
Instruction in nature of work and role of unions in American society, including history of workers and unions from early republic to contemporary era, role of unions at workplace and in society, relationship of workers and unions to economy, law, and democracy.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-2310 Wallcovering and Paperhanging
03 Semester Credits
Instruction in principles and application of wallcoverings including types of wallcoverings, surface preparation, rollage estimates, matching prints and patterns, pasting, and trimming techniques.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2320 Safe Work Practices
03 Semester Credits
Instruction in basic and advanced safe work practices including general safe work practices, power tools, shop machinery, and advanced OSHA-30 rules.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2330 Spray and Industrial Painting
02 Semester Credits
Introduction to basic principles of spray painting including spray painting terminology, safety procedures, conventional air spray systems, airless spray painting, and other spray systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing, and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2340 Blueprints II: Advanced Reading and Estimating
02 Semester Credits
Advanced instruction in principles and application of blueprint reading including terminology, architectural drawings, engineering drawings, and application of specifications and schedules to painting crafts.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1650 Blueprints I: Construction Fundamentals, or departmental approval.

ATPT-2350 Advanced Spray and Industrial Painting
02 Semester Credits
Advanced instruction in spray and industrial painting techniques and procedures including equipment terminology, conventional air spray systems, electrostatic spray systems, HVLP turbine spray systems, and safety for spray painting.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-2330 Spray and Industrial Painting, or departmental approval.

ATPT-2360 Foreman Training
02 Semester Credits
Instruction in foreman training including functions and responsibilities, communication skills, personnel duties, safety and substance abuse responsibilities, and legal requirements.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2370 Abrasive Blasting Techniques
02 Semester Credits
Instruction in abrasive blasting operations and procedures including types of machines and their components, materials and their characteristics, selection of machine and materials to fit job, water blasting operations, and surface preparation with abrasive blasting.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-2320 Safe Work Practices or concurrent enrollment; or departmental approval.

ATPT-2380 Special Coatings and Decorative Finishes
02 Semester Credits
Instruction in basic principles and techniques of special coatings and decorative finishes including terminology and glazing, antiquing, wood graining, marbleizing, stipple finishing, texturing, gilding, and stenciling techniques and procedures.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1630 Color Mixing and Matching, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Pile Driving) - ATPD

ATPD-1310 Technical Measurements, Hand & Power Tool Use in Pile Driving
02 Semester Credits
Introduction of safe use of pile driving tools. Topics include measurements, tool groups and tool applications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-1330 Print Reading for Pile Driving
02 Semester Credits
Introduction to blue print reading as it pertains to the Pile Driver. In depth discussion on line types, scale, views, and revision information. Use of optical tooling for layout also included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-1370 Pile Driving on Land and Water
02 Semester Credits
Introduction to basic pile types and applications. Topics include recognition and use of different types of hammers, pile families designs, structural characteristics, pile driving leads, required equipment and accessories, and pile driving on land and water.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-2020 Pile Driving Technologies
02 Semester Credits
Advanced study of set up and breakdown of various cranes and equipment types. Includes identification of crane types, hardware & hitch usage, signals, and equipment capacities.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-2220 False Work and Heavy Timber
02 Semester Credits
Efficient uses, advantages, disadvantages, and special considerations related to shoring methods. Examples of types of shoring equipment shown. Matching most efficient shoring system to application is also included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2370 Advanced Pile Driving on Land
02 Semester Credits
In depth study of pile driving. Includes caissons and drilled shafts, tie back walls, cofferdams and cells, shoring and lagging, and fundamentals of geo-technical engineering and soil.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2380 Advanced Pile Driving on Water
02 Semester Credits
In depth study of pile driving on water. Topics include sheet pile and caissons, auger cast pile, cofferdams, stone setting, and extraction.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2700 Millwright-Pile Driver Weld IV
02 Semester Credits
Reinforcement of necessary skills required for large multi-pass welds. Preparation for A.W.S. D1.5 vertical up unlimited thickness certification test. Includes in-depth review of blueprint reading for welders.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATMW-2520 Millwright Pile Driver Weld III, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2710 Millwright-Pile Driver Weld V
02 Semester Credits
Advanced welding practices as applied to pile driving. GMAW topics include innershield welding, safe set up and use of wire fed welding machines.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPD-2700 Millwright-Pile Driver Weld IV, and departmental approval: admission to Carpenter Apprentice program.

APPLIED INDUSTRIAL TECHNOLOGY (Pipefitting) - ATPF

ATPF-1070 Soldering Brazing and Pipefitting Tools
02 Semester Credits
Covers the care and use of hand and power tools that are used in the pipefitting industry. In addition, safe soldering practices, alloys, joint preparation and soldering and brazing operations are included. Emphasis will be placed on the application process where the tools and equipment will be used.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1210 Rigging
02 Semester Credits
A study of different materials used in the rigging process. Recognize a variety of knots and exhibit an ability to tie them. Includes crane operation and many alternate methods of determining load weights.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1220 Basic Pipefitting Layout
01 Semester Credits
A study of basic layout for pipefitters and technicians in the construction industry. Covers calculations involved in designing, installing and repairing piping runs. Reviews basic mathematics for preparation in to succeed in problem solving found on the job.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1260 Sprinkler Layout
01 Semester Credits
A study of layout for the sprinklerfitter and technicians in the construction industry. Covers calculations involved in designing, installing and repairing sprinkler piping runs. Review in basic mathematics for preparation of problem solving on the job.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1270 Sprinkler Drawings
04 Semester Credits
A study of sprinkler systems and techniques used to produce sprinkler drawings used by pipefitters in the construction industry. In addition, interpretation of fire suppression drawings and relative piping will be thoroughly addressed.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1360 Hydronic Heating and Cooling
02 Semester Credits
A study of hydronic heating and cooling systems used by pipefitters and service technicians in the construction industry. Course includes a discussion of various systems, equipment sizing, air control and installation techniques. Course includes a discussion of various systems, equipment sizing, air control and installation techniques and factors that affect chilled water equipment.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2340 Steam Systems
02 Semester Credits
Instructional course describing the proper installation, service and repair of steam piping systems in various commercial and industrial situations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2450 Oxy/Acetylene Cutting and Basic Welding I
02 Semester Credits
Introduction to oxy-acetylene flame cutting and Shielded Metal Arc Welding (SMAW) arc welding. Includes safe equipment assembly, layout & assembly of pipefittings and tacking & welding of pipefittings.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship Program.

ATPF-2470 Oxy/Acetylene Cutting and Basic Welding II
02 Semester Credits
Covers proper technique of oxy-acetylene flame cutting and Shielded Metal Arc Welding (SMAW) arc welding. Includes safety precautions, simple flame cutting projects, and operation of various welding machines.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2510 Sprinkler Fire Protection
02 Semester Credits
Instructional course describing the proper installation, service and maintenance of sprinkler fire protection systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2520 Valve Repair
02 Semester Credits
Course describing the proper installation, service and repair of valves in various commercial, industrial and residential situations. Also includes proper selection of valves for each situation.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

APPLIED INDUSTRIAL TECHNOLOGY (Plumbing) - ATPL

ATPL-1000 Care and Use of Tools
02 Semester Credits
Identifies the hand and power tools used in the plumbing industry and discusses the operation and respective safety concerns as prescribed in the standards found in the Occupational Safety and Health Administration (OSHA) and in the manufacturer's specifications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1010 Soldering and Brazing
02 Semester Credits
Basic principles of joining tubing used in domestic water and medical gas installations. In addition, discussion of the principles and practices used in soldering and brazing applications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1030 State of Ohio Plumbing Code I
02 Semester Credits
Introduction to the State of Ohio code for plumbing. Covers general regulations, definitions and specific installations including hot water tanks and storm water systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1040 Plumbing Heritage
02 Semester Credits
Introduction to labor history and the roles of the apprenticeship, apprentice, journeyperson, local union and union contractors in the construction industry. Also discusses good work habits and skills needed to excel in the construction industry.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1050 Construction Drawings for the Trades
02 Semester Credits
Covers residential blueprint reading as applied to mechanical and architectural trades. Includes sections explaining the use of various plans (site, foundation, floor) with building sections and details.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1060 Medical Gas
02 Semester Credits
Certification course that studies the installation, maintenance and safety concerns of medical gas and its environmental effects.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1070 Pipe Fittings, Valves, and Supports
02 Semester Credits
Identifies the pipe, pipe fittings, valves and supports that are used in the plumbing trade and discusses the fabrication and installation methods that are required for proper and safe installations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1210 State of Ohio Plumbing Code II
02 Semester Credits
A study of the State of Ohio Plumbing Code with concentration on governing provisions of venting materials, design, construction, and installation of venting systems. In addition, code provisions covering fixtures, faucets and fittings, special health care regulations, and indirect waste systems are included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1220 Gas Systems
02 Semester Credits
Study of the procedures followed in the installation of natural gas systems, pipe sizing, safety and the repair of natural gas systems.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1230 Water supply
02 Semester Credits
Overview of potable water from its source to its end use. Includes discussion of water treatment, water mains, service and building water systems including water system layout, installation and maintenance, and different effects of the introduction of heat to potable water.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2320 State of Ohio Plumbing Code III
02 Semester Credits
Review of the State of Ohio Plumbing Codes I & II with the study of storm and sanitary drainage.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2350 Electricity for Plumbers
02 Semester Credits
Fundamentals of electricity for the plumbing trade. Covers safety, transformers, direct and alternating current, and basic controls. Discussion of motors and troubleshooting exercises.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2360 Green Plumbing Systems
01 Semester Credits
Fundamentals of sustainable design, green building practices and installation procedures that are used in the plumbing industry. Includes applied green awareness and function with respect to the conservation and recycling of potable water and the reuse of storm and sanitary water disposal systems.
Lecture 01 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2410 City and State Backflow Certification
02 Semester Credits
Preparation to test and repair various backflow prevention devices that are used to protect the public water supply.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2430 Trench and Excavation Safety/Confined Space
01 Semester Credits
Introduction to hazards and dangers of working in confined spaces. Examination of spaces with limited means of egress and limited natural ventilation that are not meant for continuous occupancy and examination of permit-required work areas with compliance to OSHA standards.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2440 City of Cleveland Plumbing License
01 Semester Credits
Certification course identifies the natural gases that are installed for application in the medical industry and discusses their environmental effects. Discussion of methods of installation and maintenance while addressing safety concerns with installations.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2510 Pumps
02 Semester Credits
Pumps, pump theory, and different systems used to pump various viscous liquids in plumbing systems. Reviews basic electricity and applies that knowledge to sequence of operations of pumping controls. Includes pump installation and alignment procedures and safety.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Plumbers' apprenticeship program.

ATPL-2550 Plumbing Service and Procedures
02 Semester Credits
Discusses the service division of the plumbing industry including customer service and salesmanship. Includes sections explaining maintenance and servicing of drains, faucets, valves and hot water tanks.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Plumbers' apprenticeship program.

ATPL-2560 Foreman Certification
02 Semester Credits
Discussion on the responsibilities of foremanship including leadership roles to the employer and to the respective labor organization. Covers methods of handling job and labor disputes using effective communication techniques, efficient work practices and attention to safety and consequences resulting from failure to do so.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Plumbers' apprenticeship program.

ATPL-2580 Design and Layout
02 Semester Credits
Utilization of residential and commercial drawings to identify mechanical areas within a structure where problem situations exist including conflicting elevations, illegal venting, interferences and others. In addition, writing "requests for information" (RFI's), and change work orders will be covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

APPLIED INDUSTRIAL TECHNOLOGY (Sheet Metal Working) - ATSM

ATSM-1010 Benefits Management
01 Semester Credit
The collective bargaining process, worker wages and benefits including hospitalization and pension plans including annuities. Also covered are membership investments, dues structure and personal money management.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1020 Trade History
01 Semester Credit
An introductory course covering the sheet metal industry and its history. Included is a discussion of the roles and responsibilities of the sheet metal worker.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1030 Layout and Fabrication I
02 Semester Credits
Introduces various techniques that are required to layout and fabricate fittings from sheet metal. In addition, the transferring of measurements from mechanical and shop drawings, to fabrication of metal, and safety in using tools and machinery for cutting metal will be discussed.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1040 OSHA 16 Hour Safety Training
01 Semester Credits
Introduction to the Occupational Safety and Health Act (OSHA). Topics include employee responsibilities and rights, standards, and basic hazard training.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1210 Estimating and Bidding
01 Semester Credit
Covers the estimating and bidding process used by contractors to justify costs and to be awarded contracts for sheet metal projects. Included is bid information, contract language and field costs.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1220 Layout and Fabrication II
02 Semester Credits
Covers sheet metal layout and design applications in conjunction with parallel line and radial line development. Included are shop exercises involving applied math and geometric concepts that are required for calculating cut sizes for ductwork. Soldering techniques for assembling sheet metal patterns will also be covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1230 Field Installation
03 Semester Credits
Covers the techniques required to layout, cut and fabricate components necessary to construct plenum boxes in heating and cooling systems installations. Included are applied math concepts for layout and cutting operations and drafting exercises.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2310 Refrigeration I
01 Semester Credit
Introduces refrigeration theory, heat transfer, and the refrigeration cycle, including the piping of residential split systems using refrigeration tubing, with concentration on installation techniques including brazing and soldering. Also included are various layout procedures using mechanical and shop drawings.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2330 Layout and Fabrication III
03 Semester Credits
Covers sheet metal layout, fabrication, and design applications in conjunction with the triangulation method of development. Included are shop exercises involving applied math, trigonometry, and geometric concepts that are required for calculating cut sizes for ductwork. Soldering techniques for assembling sheet metal patterns will also be covered.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2340 Advanced Field Installation
03 Semester Credits
Develop team building skills by engaging in a group exercise that requires interaction among the participants to design, construct, and install the required ductwork for a project in accordance with the parameters of tolerance within a designated work area. Develop a set of construction and mechanical drawings that are needed for this specific learning exercise.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2350 Duct Design and Testing
02 Semester Credits
Covers duct configuration and design concepts including plenum requirements and aspect ratios covering air loss due to friction. Also included is a section on performing a system leak test.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2360 Load Calculations
01 Semester Credits
Covers heating and air conditioning load calculations required for selecting the proper size equipment for various types of buildings. Included are sections dealing with heat transmission, design temperatures, and air infiltration.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's Apprenticeship program.

ATSM-2410 Residential Heating
03 Semester Credits
Identifies the different types of heating systems, discusses the combustion process including fuel-air mixtures and atomization of fuel oil. Also covered are electrical circuitry, air circulation, controls and safety limits.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2420 Refrigeration II
02 Semester Credits
Covers the components of refrigeration systems, applications to air conditioning and the use of specialty tools including vacuum pumps and gages. Installation methods, maintenance and troubleshooting are also covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2510 Commercial Roof Top Units
02 Semester Credits
Describes the different types of heating/air conditioning systems used on commercial buildings, including the use of specialty roof mounting systems. Also covered are electrical circuitry, air circulation, gas piping and optional accessories.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2520 Project Management
02 Semester Credits
Covers the leadership and motivational aspects of project management including contract administration, project organization and site supervision.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2530 Direct Digital Controls
02 Semester Credits
Covers the different types of electronic and pneumatic control circuits that are used in the heating and air conditioning industry. Included are sections covering control components, loops and applications and installation procedures. Advantages and disadvantages of using digital controls are also covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

APPLIED INDUSTRIAL TECHNOLOGY (Sign and Display) - ATSD

ATSD-1300 Introduction to Sign and Display
02 Semester Credits
Introduction to Sign and Display crafts. Includes sign and neon sign fabrication and erection; neon tube bending, service, and repair; sign manufacturing; sign and pictorial painting; color mixing and spray painting; sign and display tools, computer software; and trade show displays.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and Allied Trade Apprenticeship program, or departmental approval.

ATSD-1330 Hand Tools for Sign and Display
02 Semester Credits
Introduction to hand tools for sign and display, including basic hand tools; levels and transits; glass, plastic, and metal cutters; pliers, lifters, and tongs; punches, chisels, rivet guns, and taps.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and Allied Trade Apprenticeship program, or departmental approval.

ATSD-1620 Plastic Face Fabrication and Techniques
02 Semester Credits
Interpretation of drawings and work orders necessary to explain and perform plastic face fabrication and techniques, including safe and accurate use of Computer Numeric Control/Computer Aided Systems (CNC/CAS), vacuum/form and press, various hand and power tools used with substrates, plastic materials, and preparation of molds to final sign production.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to Painters and Allied Trade Apprenticeship program, or departmental approval.

ATSD-2330 Sign Lighting and Wiring
02 Semester Credits
Interpretation of drawings and study of electrical theory to perform sign lighting and wiring, including knowledge of materials, industry standards and codes, fluorescent lighting, and use of tools to wire, install, and test sign lighting components.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1320 Safety Standards for Construction (OSHA-10), or departmental approval.

ATSD-2340 Advanced Welding
02 Semester Credits
Instruction in advanced welding. Includes oxy-acetylene, gas, metal inert gas (M.I.G.), tungsten inert gas (T.I.G.), and shielded metal arc welding (S.M.A.W.) welding processes; welding of cast iron, aluminum, copper alloys, and stainless steel; hardfacing; and the use of oxy-acetylene torches.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATGL-1630 Basic Welding or concurrent enrollment, or departmental approval.

ATSD-2350 Structural Steel and Support Fabrication
02 Semester Credits
Interpretation of drawings and work orders; use of tools and equipment for the fabrication and assembly of supports for signs and displays; and building jigs, welding, bolting, and painting.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATGL-1630 Basic Welding, or departmental approval.

ATSD-2360 Computerized Manufacture of Signs
02 Semester Credits
Instruction in computer skills for vinyl sign manufacturing. Includes overview of drawing software, such as Gerber Graphix Advantage, Scanvek, and Corel DRAW; creating logos, calendars, labels, and posters; new features in drawing programs; exporting to sign programs; and creating a portfolio.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1630 Color Mixing and Matching, or departmental approval.

ATSD-2370 Letter Fabrication
02 Semester Credits
Procedures used in letter fabrication, including interpreting drawings and work orders, measurements and layout of letters and templates, and use of tools and fasteners.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATSD-1620 Plastic Face Fabrication and Techniques, and ATSD-2330 Sign Lighting and Wiring, or departmental approval.

ATSD-2390 Advanced Blueprints for Sign and Display
02 Semester Credits
Study of advanced blueprints including terminology, types of drawings, specifications and schedules, lines, symbols, scales, dimensions, and uses for sign and display work.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATPT-1650 Blueprints I: Construction Fundamentals, or departmental approval.

ATSD-2460 Computerized Sign Design
02 Semester Credits
Instruction in computer skills for vinyl sign design. Includes overview, tools, and use of computerized sign designing software; creating logos; scanning images; retouching photos; saving files to sign software; outputting files to vinyl; and creating a portfolio.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ATSD-2360 Computerized Manufacture of Signs or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Teledata) - ATTC

ATTC-1340 AC Circuits/Telephony
03 Semester Credits
Study of fundamentals of alternating current (AC), basic transformer principles, telephone networks and circuitry.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Teledata apprenticeship program.

ATTC-1350 Premises Cabling
03 Semester Credits
Introduction to premises cabling and the Telecommunications Industry Association/Electronics Industry Association (TIA/EIA) standards and codes. Topics include troubleshooting structured cabling systems and the connectors and hardware used in installation and upkeep as well as performance of the system.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Teledata apprenticeship program.

ATTC-1360 Network Cabling
03 Semester Credits
Study of network cabling and standards. Topics include local area network (LAN) fundamentals and standards, an overview of the entire structured cabling system, Ethernet LAN cabling and topologies, and token ring LAN cabling and topologies.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Teledata apprenticeship program.

ATTC-2300 Advanced Telecommunications
04 Semester Credits
Advanced study of electronic components as well as security systems, smoke detectors, pagers, locks, sensors, and doors. Installation and troubleshooting included using guided instruction and practice.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ATTC-1340 AC Circuits/ Telephony or concurrent enrollment, or departmental approval: admission to Teledata apprenticeship program.

ART - ART

ART-1010 Art Appreciation
03 Semester Credits
Introduction to the nature, vocabulary, media, and history of art as well as an examination of art's themes and purposes, visual elements, and principles of design.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

ART-1040 Survey of Non-Western Art
03 Semester Credits
Provides a stylistic and historical overview of indigenous visual arts in Africa, India, Indian Surround, China, Japan, Oceania, South America, Mesoamerica, and Native North America.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

ART-1050 Drawing I
03 Semester Credits
Introduces basic drawing methods, media and concepts. Studio experiences emphasize drawing from observation and the development of line, mass, proportion, negative/positive space and shape, composition, light, relative values, and perspective. Historical precedents are discussed, master works analyzed, and relevant practical information is assimilated into the flow of class assignments.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.
OAN Approved: OAH001

ART-1060 Drawing II
03 Semester Credits
Further development of observational and conceptual drawing skills. Emphasis is on spatial, structural and compositional concepts. Introduces color media and develops additional drawing strategies to meet situations demanding advanced skills. May be repeated for up to nine credits, three of which are applicable to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing; or departmental approval: comparable skills.

ART-1070 3D Foundations
03 Semester Credits
Study of the elements of three-dimensional visual design and their application in creative expression. Recommended for students taking art related courses and programs that emphasize three-dimensional investigations.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.
OAN: OAH004

ART-1080 Visual Design I
03 Semester Credits
Study of the two-dimensional design elements and principles of organization needed to create a foundation in visual communication. Traditional media and computer assisted sections available.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.
OAN Approved: OAH003

ART-1091 Color Theory and Application
03 Semester Credits
Study visual design principles of color theory. Explore spatial, emotional, perceptual and optical properties of color organization. Use color as an effective tool in visual communication of concept. Additional work outside of class required to create a quality portfolio to use for transfer to a four/five year school or to seek employment. Traditional media and computer assisted sections available.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.

ART-1100 Sculpture I
03 Semester Credits
Introduction to sculptural forms, materials, and processes. Application of three-dimensional design principles to given spatial problems. Overview of historic significance of sculpture. Projects may vary with classroom facilities at each campus.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1070 3D Foundations; or departmental approval: comparable course.
OAN Approved: OAH047

ART-1200 Calligraphy
03 Semester Credits
Study and execution of letter forms and scripts from various cultural systems of writing. Understanding inherent beauty of scripts as graphic design elements. May be taught using hand or computer skill development.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.

ART-1260 Photography I
03 Semester Credits
[This course is cross-listed as VCPH-1261. Credit can only be earned once for either course.] Explore the fundamentals of digital capture, digital output and learn how to maximize the capabilities of a digital camera shooting in available light. Conceptual issues and stylistic characteristics of several photographic genres discussed. Visual assignments used to explore a variety of photographic traditions and increase understanding of digital technology, while expanding critical thinking and the conceptual photographic eye. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College specified digital printing paper and portfolio box also required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.

ART-1301 Graphic Design I
03 Semester Credits
Introduction to graphic design based on an organizational grid structure. Diverse approaches to solving basic design and communication problems.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.

ART-1311 Graphic Design II
03 Semester Credits
Study and execution of typography and page layout with graphics.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1301 Graphic Design I or departmental approval: comparable skills.

ART-1500 Art for Elementary Education
03 Semester Credits
Basic art education theory and practice in visual arts for elementary education majors. Emphasis on integration of visual arts disciplines with other subjects in elementary curriculum.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

ART-1600 Introduction to Art Therapy
03 Semester Credits
Introduction to basic concepts of art as therapy, provide an overview of the origins, theories, and foundations of art therapy. Students will be exposed to a variety of art media and major readings in the field utilizing art as a means of communication. Artistic talent is not required for this course.
Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ART-1610 Art Therapy II: Methods and Media
03 Semester Credits
Explore theories of art therapy and their affect on the delivery of services. Student groups experience art therapy methods and media. Heighten the student's awareness of personal goals and expectations for entering the art therapy profession, and deepen the student's understanding of the creative process. Connect the student with his/her creative potential through studio experiences.
Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ART-1600 Introduction to Art Therapy, and PSY-1010 General Psychology; and PSY-2050 Psychology of Personality, or concurrent enrollment.

ART-1700 Ceramics I
03 Semester Credits
Fundamentals of basic hand building methods, glazing and decorative techniques by creating forms of increasing complexity. Broad survey of ceramic history.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): None.
OAN Approved: OAH050

ART-179H Honors Contract in Art
01 Semester Credit
Honors Contract complements and exceeds requirements and objectives for an existing ART 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Art, whose instructor approves the Honors Contract.

ART-2000 Life Drawing I
03 Semester Credits
Introduction to drawing the human figure from a live model. Emphasis is on gesture drawing to accurately establish the proportion and pose of the figure. The elements of line and value are used to describe form, structure and space. Anatomy for artists is introduced. Various media are explored.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing I, or departmental approval: comparable skills.
OAN Approved: OAH051

ART-2010 Life Drawing II
03 Semester Credits
Continued exploration of drawing the human figure from a live model. Emphasizes anatomy lessons to portray human structure and to explore the figure's expressive nature. Craftsmanship and proficiency with various media are stressed. Control of gesture and proportion, and the representation of foreshortened forms within a three-dimensional environment will be examined. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-2000 Life Drawing I, or departmental approval: comparable skills.

ART-2020 Art History Survey: Prehistoric to Renaissance
03 Semester Credits
A stylistic and historical overview of the visual arts in western culture from inception to the fifteenth century including: Prehistoric, Egyptian, Ancient Near Eastern, Greek, Etruscan, Roman, Byzantine, Early Medieval Monastic, Carolingian and Ottonian, Romanesque, Gothic, Fourteenth-Century Art in Italy, Fifteenth-Century Art in Northern Europe and Spain, and the Early Renaissance in Italy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.
OAN Approved: OAH005 (course 1 of 2, both must be taken)

ART-2030 Art History Survey: Late Renaissance to Present
03 Semester Credits
A stylistic and historical overview of the visual arts in western culture from the sixteenth century through today including Italian Renaissance, Mannerism, Sixteenth Century Art in Northern Europe and Spain, Baroque and Rococo, Neoclassicism and Romanticism, Nineteenth, Twentieth, and Twenty-First Centuries Art in Europe and the United States.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.
OAN Approved: OAH005 (course 2 of 2, both must be taken)

ART-2050 Painting I
03 Semester Credits
Introduction to materials and techniques of opaque painting (oil and acrylic). Emphasis on use of color, composition and other perceptual concerns. Exploration of various styles of painting.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing I or departmental approval: comparable skills.
OAN Approved: OAH048

ART-2060 Painting II
03 Semester Credits
Exploration of more advanced painting problems utilizing various subjects and styles. Emphasis placed on personal expression and independent problem-solving skills. Focus on craftsmanship and a high level of proficiency with opaque painting media. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-2050 Painting I or departmental approval: comparable skills.

ART-2070 Watercolor
03 Semester Credits
Introduction and exploration of transparent watercolor as painting technique. Investigates various styles of painting. May be repeated for up to 9 credits, but only 3 credits are applicable to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing I, or departmental approval: comparable skills.

ART-2080 Portrait Drawing and Painting
03 Semester Credits
In-depth study of drawing and painting portraits from live models. The focus will be on facial anatomy and relating the model to three-dimensional environment. The psychological aspects of portraiture will also be explored. Various media will be utilized throughout the course. May be repeated up to 9 credits; only 3 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing I or departmental approval: comparable skills.

ART-2100 Computer Graphic: Raster Images
03 Semester Credits
Study raster (paint) software tools for graphic design and expressive images. Techniques relating to demands in current market include scanning, processing and compositing of images. Interactive digital portfolio output. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements. New software options available as course is repeated.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1080 Visual Design I (computer aided), or ART-1091 Color Theory and Application (computer aided), or ART-1301 Graphic Design I or departmental approval: comparable skills.

ART-2110 Computer Graphic: Drawing
03 Semester Credits
Study 2D vector object construction for graphic design images. Develop precision in Bezier curve manipulation, hand drawn images are scanned in, traced or streamlined into vector information. Filters humanize the mathematical hard edges of images. Interactive digital portfolio output. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements. New software options are available as course is repeated.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1080 Visual Design I (computer aided), or ART-1091 Color Theory and Application (computer aided), or ART-1301 Graphic Design I, or departmental approval: comparable skills.

ART-2151 Animation for Web and Media
03 Semester Credits
[This course is cross-listed as VCIM-2270. Credit can only be applied to degree requirements once for either course.] Technical and aesthetic fundamentals of 2D animation as they pertain to the Internet. Use of current software to develop interactive, animated graphics and interfaces. Various techniques including tweening, frame by frame, onion skinning, shape and color morphing as well as non-linear structure, interactivity, communication, scripting and troubleshooting. Acquisition or creation and integration of music, sound and video. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1080 Visual Design I or ART-1091 Color Theory and Application or VC&D-1015 Digital Studio Basics or departmental approval: comparable skills.

ART-2160 Computer Graphic: 3D Modeling and Rendering
03 Semester Credits
Study 3D computer-based modeling and rendering. Understanding planar views using polygon construction of objects with numeric input. Deformation tools/ techniques to soften form. May be repeated up to 12 credits; only 3 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing I, and ART-1080 Visual Design I, or departmental approval: comparable skills.

ART-2170 Computer Graphic: 3D Animation
03 Semester Credits
Study of 3D computer-based modeling, rendering, and animation. Emphasis on object construction for animation along with texture mapping, eight interactive lights, key frames, motion graph controls, NURBS and inverse kinematics. Video portfolio production output. May be repeated up to 12 credits; only 3 credits may be applied to degree requirements. New software options are available as course is repeated.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-2160 Computer Graphic: 3D Modeling and Rendering, or departmental approval: comparable skills.

ART-2180 Sculpture II
03 Semester Credits
Emphasis on independent concept development, meaningful connection to material choices, and contemporary concerns in sculpture, including social and environmental issues. Projects may vary with classroom facilities and resources at each campus. To advance skills, it may be repeated for up to 9 credits, 6 of which are applicable to Tri-C degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1100 Sculpture I, or departmental approval: comparable skills.

ART-2190 Ceramics II
03 Semester Credits
Focus on wheel throwing skills and advanced hand building techniques in the creation of three-dimensional forms. Formal and functional design. Introduction to kiln firing and ceramic materials in clay and glaze formulation. To advance skills, course may be repeated for up to 9 credits, 6 of which are applicable to Tri-C degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1700 Ceramics I, or departmental approval: comparable skills.

ART-2210 Printmaking I
03 Semester Credits
Introduction to various aspects of printmaking and graphic composition. Techniques include relief printing (wood/linocut, monotype); intaglio (etching, engraving, dry point, mezzotint, aquatint); calligraphy, monoprint and multi-color work.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1050 Drawing I, or departmental approval.
OAN Approved: OAH049

ART-2220 Printmaking II
03 Semester Credits
Continuation of advanced printmaking techniques such as intaglio, relief, lithography, serigraphy, calligraphy and/or monoprints. May be repeated for up to 9 credits; 3 of which are applicable to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-2210 Printmaking I, or departmental approval: comparable skills.

ART-2300 Art Therapy III: Approaches and Technique
03 Semester Credits
An examination of various techniques used by therapists. Studio Exposure work is used as a tool to understand and cultivate the discipline of self-awareness. Students must participate in site visits for observation and interviewing of a professional art therapist.
Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ART-1610 Art Therapy II: Methods and Media, and PSY-1010 General Psychology, and PSY-2050 Psychology of Personality.

ART-2310 Art Therapy Studio: Basic Therapeutic Skills
03 Semester Credits
Provides a directed self-study process and fosters development of professional helping skills through observation, participation and research. Attention given to creating a safe therapeutic environment involving the emotional, physical, spiritual and cultural aspects of clients. Cover theoretical and clinical dimensions of art therapy and interventions. Provides additional experience with various art therapy media.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ART-2300 Art Therapy III: Approaches and Technique, and PSY-1010 General Psychology, and PSY-2050 Psychology of Personality; and PSY-2080 Abnormal Psychology or concurrent enrollment; or departmental approval.
Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.

ART-2790 Portfolio Development
01 Semester Credit
Covers development and presentation of an art portfolio. Define intent and focus of portfolio. Emphasize basic visual language skills and individual creative strengths. Students edit and modify work where required. Add new pieces that meet expected portfolio standards for transfer and job market. The course will include: selection and development of best format for presentation of their work, resume formats and development of a self-promotional piece.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Sufficient quantity of successfully completed work for portfolio inclusion.

ART-279H Sophomore (Second-year) Honors Contract in Art
01 Semester Credit
Sophomore Honors Contract in Art complements and exceeds requirements and expected outcomes for an existing Art 2000-level course (not an honors course) through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract that upon completion will result in distinctive scholarship appropriate to honors 2000-level. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. A maximum of six Honors Contracts (six credits) may be taken at the College (includes 179H and 279H).
Lecture 00 hours. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 2000-level course (not an honors course) in Art, whose instructor agrees to mentor the student in the sophomore honors contract. Departmental approval required.

AUTOMOTIVE TECHNOLOGY - AUTO

AUTO-1001 Automotive Maintenance and Consumer Issues
02 Semester Credits
Designed to teach automotive maintenance and introduce vehicle systems and components to the automobile owner. Introduction to brake, electrical, suspension, fuel, and cooling systems and their terminology. Examine consumer issues concerning automotive maintenance and automotive repair facilities, and purchase of new and used vehicles. Minimal hands-on application.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

AUTO-1010 Shop Safety and Lab Procedures
01 Semester Credits
Safe working conditions in an automotive shop requires knowledge and awareness of potential vehicle, shop equipment, chemical, and environmental hazards. Personal aspect, protective equipment, tool and equipment use, proper lifting of vehicles, fires and hazards, and chemical containment and disposal are reviewed. Procedures for obtaining tools from the tool room, and pulling in and out vehicles at the Western campus Auto Tech Center are explained.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

AUTO-1050 Numerical Applications in Automotive Service
03 Semester Credits
Use of numerical concepts and principles in interpreting, assessing, and determining need for automotive repair. Whole numbers, decimals, fractions, integers, graphs, ratios and percentages used to evaluate engine, electrical, chassis and HVAC system operation. Customary and metric conversions, reading automotive measuring devices and auto service repair order computations reviewed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

AUTO-1100 Introduction to Automotive Service Procedures
02 Semester Credits
Designed to provide introduction to several basic service procedures required of person beginning work in automobile service center. Oil change, transmission service, tire service, thread repair, cooling system service, safety inspection, battery testing will be demonstrated and practiced after introduction to shop safety and safe operation of automobile equipment and hand tools. May require visits to automotive service centers.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

AUTO-1300 Automotive Engines
03 Semester Credits
Operation of internal combustion gasoline engine including engine fundamentals and removal, lubrication and cooling system operation, and cylinder head and engine block diagnosis. Engine disassembly, measurements for correctness, proper assembly techniques and gasket and sealing information included.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): None.

AUTO-1350 Manual Transmission and Drivetrain
02 Semester Credits
Theory and operation of manual transmissions, transaxles, clutches, drive shafts, drivetrain couplings, differentials, rear axles, axle shafts, and four-wheel drive componentry. Laboratory skills emphasize diagnosis, troubleshooting and repair.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): None.

AUTO-1400 Automotive Alignment, Steering and Suspension
03 Semester Credits
Theory and principles of automotive alignment geometry and automotive steering and suspension systems. Laboratory competencies integrate diagnosis and repair of these systems through the use of special tools and alignment equipment.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.

AUTO-1450 Automotive Braking Systems
03 Semester Credits
Designed to provide student with foundation in theory and operation of automotive braking systems. Includes hydraulic brake principles, machining operations, and troubleshooting and repair of disc and drum brake assemblies. Operation and diagnosis of anti-lock braking systems included.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.

AUTO-1501 Automotive Electrical Fundamentals
02 Semester Credits
Fundamentals of electricity for automotive technicians. Electrical theory applied through construction of series, parallel and series-parallel circuits. Digital Volt Ohm Meter (DVOM) use in electrical diagnosing and testing of circuits covered, along with wire repair techniques. Emphasis on interpreting and using automotive electrical wiring schematics. Horn and wiper systems examined.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): None.

AUTO-1940 Automotive Field Experience I
01 Semester Credit
Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 clock hours per week.
Prerequisite(s): Departmental approval: job site approval.

AUTO-1950 Automotive Field Experience II
01 Semester Credit
Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 clock hrs per week.
Prerequisite(s): Departmental approval: job site approval.

AUTO-1960 Automotive Field Experience III
01 Semester Credit
Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 clock hrs per week.
Prerequisite(s): Departmental approval: job site approval.

AUTO-2300 Automatic Transmissions
03 Semester Credits
Operation of automotive transmissions and transaxles. Emphasis on knowledge and skills needed to properly diagnose transmission faults related to hydraulic, mechanical, and electrical systems that effect transmission operation. Specifics covered in this course include transmission operation, diagnostic, and service procedures, hydraulic fundamentals, controls and planetary gear train theory. Maintenance, diagnosis, inspection, overhaul proper assembly techniques of transmissions are included.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals.

AUTO-2350 Automotive HVAC
02 Semester Credits
Theory, diagnosis and servicing procedures of automotive air conditioning systems. Includes heating systems and operation, diagnosis and repair of electric and vacuum components and controls, and service procedures for R-12 and R-134A refrigerants.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals; or departmental approval: Industry related experience.

AUTO-2400 Engine Performance
03 Semester Credits
Fundamentals of proper engine performance. Ignition, electrical, engine mechanical, and fuel and emission system principles of operation, related driveability symptoms, and proper testing to verify cause will be explored. DVOM, scan tool and special tools used throughout course. Emphasis on operational concepts and individual component testing.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): AUTO-1300 Automotive Engines and AUTO-1501 Automotive Electrical Fundamentals; or departmental approval: industry-related experience.

AUTO-2450 Automotive Electronic Engine Controls
03 Semester Credits
Operation and advanced diagnosis of modern automobile ignition, electrical, engine mechanical, and fuel and emission control systems which are computer controlled. Explore methods of analyzing and locating engine performance malfunctions using deductive methodology and diagnostic test equipment. Emphasis on OBD II software, in-depth scan tool usage, five-gas analysis, and digital scope signal analysis.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): AUTO-2400 Engine Performance; or departmental approval: industry related experience.

AUTO-2470 Automotive Electrical Systems
02 Semester Credits
Integrates operational principles and diagnostic skills needed to repair various vehicle electrical systems utilizing electrical concepts and schematics. Charging and starting systems, including interrelated security systems, primary ignition, supplemental restraint (SRS) and lighting systems, are explained and analyzed. Laboratory practice provides student applied knowledge for troubleshooting these systems.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals.

AUTO-2500 Automotive Electrical Diagnosis
02 Semester Credits
Problem-based learning to develop diagnostic skills needed to repair various automotive electrical systems and accessories. Laboratory practice focuses on techniques for diagnosing and troubleshooting any automotive electrical circuit.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): AUTO-2470 Automotive Field Electrical Systems, or departmental approval: industry-related experience.

AUTO-2600 Hybrids and Alternative Fuel Systems
03 Semester Credits
Focus examination on the fundamentals and operation of automotive hybrid vehicles. Current alternative fuel systems examined, including flexible fuel, electric, and fuel cell vehicles. Analysis of alternative fuels, including propane, natural gas, ethanol, methanol, biodiesel, and hydrogen, reviews benefits and limitations. Lecture only course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): AUTO-1501 Automotive Electrical fundamentals, or departmental approval.

AUTO-2650 Hybrid Vehicle Safety and Service
03 Semester Credits
Working safely with hybrid vehicles is reviewed and practiced. Advantages and disadvantages of various battery types, hybrid designs and electric motors are examined. Hands on course utilizes scan tools and diagnostic process to analyze and troubleshoot hybrid vehicles.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals, or departmental approval.

AUTO-2701 Automotive Service Operations
03 Semester Credits
Staffing and personnel selection, customer relations, consumer laws, expense control, repair facility site selection, hiring/firing legal issues, advertising and other business concerns dealing with an automotive repair facility are examined. Daily operations, business analysis and marketing for an automotive garage are explored with auto service computer software.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval.

AUTO-2940 Automotive Field Experience IV
01 Semester Credit
Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 clock hours per week.
Prerequisite(s): Departmental approval: job site approval.

AUTO-2950 Automotive Field Experience V
01 Semester Credit
Capstone course in automotive technology. Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 clock hours per week.
Prerequisite(s): Departmental approval: job site approval.

BIOLOGY - BIO

BIO-1040 The Cell and DNA
03 Semester Credits
Designed for non-science majors. Considers cell structure, function, and metabolism, cell division, DNA structure and function, Mendelian and molecular genetics. Scientific method and reasoning emphasized. To fulfill laboratory science requirements, students should enroll in the related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG 1010 College Composition I.

BIO-104L The Cell and DNA Laboratory
01 Semester Credit
Laboratory course examines scientific method, cell structure and function, cell division, DNA structure and function, and Mendelian and molecular genetics. Includes microscope work, models, role play and various experiments designed to illustrate concepts covered in the lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in BIO-1040 The Cell and DNA is strongly recommended.

BIO-1050 Human Biology
03 Semester Credits
Designed for non-science majors. Considers concept of homeostasis of the human body. Basic structure and function of body systems and diseases of these systems studied. To fulfill laboratory science requirements, students should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG 1010 College Composition I.

BIO-105L Human Biology Laboratory
01 Semester Credit
Laboratory course examines structure and function of human body systems. Includes microscope work, models, computer applications, and animal dissection.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in BIO-1050 Human Biology is strongly recommended.

BIO-1060 Environment, Ecology, and Evolution
03 Semester Credits
Designed for non-science majors. Questions about the natural world are explored through an introduction to the principles of evolution and ecology, including how populations change over time and how organisms interact with each other and the environment. Topics include scientific inquiry; nature of science; evolutionary processes; diversity of life; population, community, and ecosystem ecology; human impacts on the environment; environmental stewardship; and regional environmental concerns.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG 1010 College Composition I.

BIO-106L Environment, Ecology, and Evolution Laboratory
01 Semester Credit
Designed for non-science majors. Questions about the natural world are explored through hands-on laboratory and field activities focusing on evolution, ecology, and environmental science. Scientific inquiry is used to investigate how populations change over time; the diversity of life; community ecology; ecosystem ecology; and human impacts on the environment.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in BIO-1060 Environment, Ecology, and Evolution is strongly recommended.

BIO-1100 Introduction to Biological Chemistry
03 Semester Credits
Basic principles of inorganic chemistry, organic chemistry and biochemistry necessary for study of human physiology. Physiological applications of the chemical processes of cellular transport, communication and metabolism emphasized. Laboratory includes use of metric system, basic chemistry techniques and physiological applications.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Eligibility for MATH-1060 Survey of Mathematics or higher.

BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging
04 Semester Credits
Basic understanding of body systems, structures and organs based on functions and relationships to diagnostic medical imaging examinations.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MA-1020 Medical Terminology I or concurrent enrollment.

BIO-1230 Anatomy and Physiology of the Eye
04 Semester Credits
Detailed examination of the anatomy and physiology of the eye. Emphasis on eye terminology, structure, function, movement, disorders, diseases, lens physics, and visual testing/analysis. Study of eye model and preserved eye dissection.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: admission to Optical Technology program.

BIO-1300 Horticultural Botany
03 Semester Credits
[This course is cross-listed as PST-1300. Credit can only be earned once for either course.]
Plant terminology, taxonomy, histology, anatomy, morphology, and physiology are examined. Emphasis on horticultural practices, plant growth principles, and cultural requirements for plant growth.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): ENG-0990 Language Fundamentals II, or eligibility for ENG-1010 College Composition I.

BIO-1410 Anatomy and Physiology of Domestic Animals I
04 Semester Credits
Explores the comparative anatomy and physiology of the canine, feline, equine, bovine, ovine, and porcine species. Focuses on cellular biology, tissues and membranes, the integumentary, skeletal, muscular, nervous, endocrine, and circulatory systems and emphasizes species variations. Laboratory includes preserved and fresh specimens, models, microscopic observations, and audio/visual aids.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): BIO-1100 Introduction to Biological Chemistry or concurrent enrollment; or CHEM-1010 Introduction to Inorganic Chemistry, or concurrent enrollment; or departmental approval: comparable knowledge or skills.

BIO-1420 Anatomy and Physiology of Domestic Animals II
03 Semester Credits
Explores the comparative anatomy and physiology of the canine, feline, equine, bovine, ovine, and porcine species. Focuses on lymphatic, digestive, respiratory, urinary and reproductive systems. Immunology, pregnancy, lactation and genetics considered. Laboratory includes preserved and fresh specimens, models, microscopic observations, and audio/visual aids.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): BIO-1410 Anatomy and Physiology of Domestic Animals I.

BIO-1500 Principles of Biology I
04 Semester Credits
Designed for science majors. Considers molecular and cellular basis of life, energy transformation and metabolism, cellular reproduction, genetics, evolution and the origin of life, and introduction to biological organization.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OSC003

BIO-150H Honors Principles of Biology I
04 Semester Credits
Honors Course designed for science majors with exploration of the molecular and cellular basis of life through an introduction to cell biology, molecular biology, genetics and evolution with a strong focus on inquiry-based learning as the basis of scholarly research. Emphasis on evolution as the unifying theory in biology.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): ENG-1010 College Composition I with grade of "B' or higher; or ENG-101H Honors College Composition I; and eligibility for MATH 1000 level or higher.
OAN Approved: OSC003

BIO-1510 Principles of Biology II
04 Semester Credits
Designed for science majors. The diversity of life, animals, plants, and ecology are explored in both lecture and laboratory settings. Topics include the origin and evolution of life, systematics, classification, structural and functional variations in animals and plants, populations, communities, and ecosystems.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-1500 Principles of Biology I, or BIO-150H Honors Principles of Biology I, or departmental approval.
OAN Approved: OSC004

BIO-151H Honors Principles of Biology II
04 Semester Credits
Honors course designed for science majors. The diversity of life, animals, plants, and ecology are explored in both lecture and laboratory settings. Topics include the origin and evolution of life, systematics, classification, structural and functional variations in animals and plants, populations, communities, and ecosystems. Emphasis on evolution as the unifying theory in biology. Strong focus on inquiry-based learning.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-150H Honors Principles of Biology I or BIO-1500 Principles of Biology I.

BIO-1700 Introduction to Biotechnology
03 Semester Credits
Designed for science majors interested in a biotechnology career. History and fundamental principles of biotechnology, including molecular biological, genetic, and immunological foundations. Theory and practice of recombinant DNA methodologies highlighted. Past, present and promising future applications of biotechnology. Ethical, political, and economic impacts of biotechnology, including patents, presented.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-1500 Principles of Biology I and CHEM-1010 Introduction to Inorganic Chemistry.

BIO-1710 Basic Laboratory Skills for Biotechnology
03 Semester Credits
Basic concepts and techniques necessary to work effectively in a research or industrial biotechnology laboratory. Includes laboratory safety and regulatory guidelines, applications of radioisotopes, data recording and analysis, and applied mathematics for bio-technology. Students prepare and pH solutions, buffers and culture media, determine concentrations of DNA, RNA and protein using spectrophotometric techniques, and sterilize media. Use of common laboratory instruments including pH meters, centrifuges, and filtration and steam sterilization devices required.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): BIO-1700 Introduction to Biotechnology or concurrent enrollment, and eligibility for MATH-1270 Intermediate Algebra.

BIO-2010 Field Botany
03 Semester Credits
Study of the plant kingdom, emphasis on collection, identification, classification and ecology of local flora. Field trips required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Completion of any 1000-level science course.

BIO-2020 Tropical Biology
04 Semester Credits
Introduction to biology of the tropics. Topics include major tropical biomes, biodiversity, conservation, sustainability, and consequences of human impact on the tropics. Studies include identification of flora and fauna and adaptations of tropical organisms. In addition to on-campus lecture/lab during an academic term, students are required to participate and travel to a tropical location for a real-world learning experience. Field trip requires additional costs.
Lecture 03 hours. Laboratory 03 hours.
Other Required Hours: A portion of the laboratory hours will be completed during the mandatory field trip to a tropical ecosystem.
Prerequisite(s): Departmental approval and any 1000 level science course.

BIO-2050 Field Zoology
03 Semester Credits
Study of the animal kingdom, emphasis on location, identification, classification and ecology of local fauna. Field trips required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Completion of any 1000-level science course.

BIO-2060 Principles of Genetics
03 Semester Credits
Study of principles of genetics with emphasis on human inheritance. Classical Mendelian genetics, the molecular basis of inheritance, current applications of genetic techniques, and the human genome project emphasized. Genetic basis of immunology and cancer explored.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-1040 The Cell and DNA, or BIO-2341 Anatomy and Physiology II, or BIO-1420 Anatomy and Physiology of Domestic Animals II, or BIO-1500 Principles of Biology I.

BIO-2070 Techniques in Molecular Genetics
03 Semester Credits
Advanced study of structure and function of DNA with emphasis on laboratory techniques used in molecular biology. Laboratory practices and applications of sterile techniques, gel electrophoresis, DNA isolation, RFLP analysis, plasmids, and recombinant DNA. Protein structure and methods of protein purification explored.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): BIO-1040 The Cell and DNA, or BIO-2341 Anatomy and Physiology II, or BIO-1500 Principles of Biology I.

BIO-2100 Biology of Aging
03 Semester Credits
Multidisciplinary approach to biological theories of aging with emphasis on humans. Fundamental concepts of cell biology and physiology will be used to study extrinsic and intrinsic factors in aging, the effects of aging on body systems, senescence, genetics, life expectancy and life span, and improving survivorship.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-1040 The Cell and DNA, or BIO-1050 Human Biology, or BIO-1500 Principles of Biology I, or BIO-2331 Anatomy and Physiology I.

BIO-2140 Environmental Science for Educators: Promoting Watershed Stewardship
02 Semester Credits
This course will prepare educators to design and implement a project promoting stewardship in a local watershed. The Euclid Creek Watershed will be used as a model to explore the natural history of watersheds and the impacts of human activities. The multidisciplinary instruction offers lectures, group activities, and field work.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Instructor approval is required for this course.

BIO-2150 Environmental Science
03 Semester Credits
Fundamental ecological concepts and their application to environmental issues emphasizing the impact of human activity on the biosphere. Topics include natural resources, air, water and land pollution, energy, and populations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-1060 Environment, Ecology and Evolution; or BIO-1510 Principles of Biology II.

BIO-2200 Radiobiology
02 Semester Credits
Theories of the biological effects of ionizing radiation, quantities and units of measurement, proper protective measures for patient and personnel, effective dose equivalents radiation absorption processes and shielding, exposure monitoring devices.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging and departmental approval: admission to the Radiography program.

BIO-2331 Anatomy and Physiology I
04 Semester Credits
Study of structure and function of human body. Focus on fundamental concepts of cellular structure, tissues, organs, and systems. Considers structure, function, and terminology of skeletal, muscular, integumentary, nervous and endocrine systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): Sufficient score on Biology Placement Test or BIO-1100 Introduction to Biological Chemistry; or CHEM-1010 Introduction to Inorganic Chemistry and CHEM-1020 Introduction to Organic Chemistry and Biochemistry.

BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems
02 Semester Credits
Study of structure and function of human body. Focus on fundamental concepts of cellular structure, tissues, organs, and systems. Considers structure, function, and terminology of skeletal and muscular systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.
Lecture 1.5 hours. Laboratory 1.5 hours.
Prerequisite(s): Sufficient score on Biology Placement Test or BIO-1100 Introduction to Biological Chemistry; or CHEM-1010 Introduction to Inorganic Chemistry and CHEM-1020 Introduction to Organic Chemistry and Biochemistry.

BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems
02 Semester Credits
Study of structure and function of the human body. Focus on structure, functions, and terminology of the nervous, integumentary, and endocrine systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.
Lecture 1.5 hours. Laboratory 1.5 hours.
Prerequisite(s): BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems or BIO-2330 Anatomy and Physiology I.

BIO-2341 Anatomy and Physiology II
04 Semester Credits
Study of structure and function of the human body. Considers structure, function, and terminology of cardiovascular, lymphatic, respiratory, urinary systems, digestive and reproductive system. Immunology, cellular division, embryological and fetal development, classical genetics and genetic technology considered. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I ; or BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems and BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems.

BIO-234A Anatomy and Physiology II: Cardiovascular, Lymphatic, Respiratory, and Urinary Systems
02 Semester Credits
Study of structure and function of human body. Considers structure, function, and terminology of cardiovascular, lymphatic, respiratory, and urinary systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.
Lecture 1.5 hours. Laboratory 1.5 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I ; or BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems and BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems; or departmental approval: comparable knowledge/skills.

BIO-234B Anatomy and Physiology II: Digestive, Immune, Reproductive Systems
02 Semester Credits
Study of structure and function of the human body. Focus on structure, functions, and terminology of digestive and reproductive systems. Immunology, cellular division, embryological and fetal development, classical genetics and genetic technology considered. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.
Lecture 1.5 hours. Laboratory 1.5 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I ; or BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems and BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems.

BIO-2500 Microbiology
04 Semester Credits
Survey of microorganisms in terms of physiology, biochemistry, genetics, and diversity with emphasis placed on prokaryotes and eukaryotes causing human diseases. Methods of their control including physical, mechanical, chemical, chemotherapeutic, and role of the immune system discussed.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-1410 Anatomy and Physiology of Domestic Animals I; or BIO-2331 Anatomy and Physiology I; or BIO-1500 Principles of Biology I; or BIO-1050 Human Biology and BIO-105L Human Biology Laboratory and BIO-1100 Introduction to Biological Chemistry; or departmental approval: comparable knowledge or skills.

BIO-2520 Oral Microbiology and Immunology
03 Semester Credits
Intended for students in the field of dental hygiene. Provides an up-to-date survey of microbiology with emphasis placed on microbial and immunologic diseases of dental origin or diseases with secondary oral manifestations. Ecology of the oral flora, dental plaque and calculus, caries and cariology, peridontal disease, control and prevention of periodontal disease, periapical infections, and medical infections of concern to the dental professional. Sterilization and asepsis with currently accepted antimicrobials and antibiotics as well as diagnostic microbiology and immunology.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, and departmental approval.

BIO-2600 Pathophysiology
03 Semester Credits
General mechanisms of disease processes and health problems including inflammation, degeneration, immunity, congenital, hereditary, neoplasia as well as diseases caused by deficiencies or excesses. The most commonly occurring diseases of body systems are surveyed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II.
OAN Approved: OHL019

BIO-2700 Advanced Biotechnology
05 Semester Credits
Advanced concepts and techniques necessary to work effectively in a regulated research or industrial biotechnology laboratory. Covers advanced biotechnological and recombinant DNA techniques, including DNA microarray, construction of transgenic plants and animals, forensic applications, gene therapy, fermentation/bio-processing and biosensors. Laboratory experiences include tissue culture, gene disruption and genotypic/phenotypic analysis in the model eukaryote Saccharomyces cerevisiae, chromatographic bio-separation techniques, including HPLC, GC, and TLC, and searching genetic databases. Mass spectrometry introduced.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): BIO-1700 Introduction to Biotechnology, BIO-1710 Basic Laboratory Skills for Biotechnology, BIO-2060 Principles of Genetics, and BIO-2070 Techniques in Molecular Genetics.

BUSINESS ADMINISTRATION - BADM

BADM-1000 Business Language Skills
02 Semester Credits
Fundamentals of business language with emphasis on grammatical correctness, acceptable usage, spelling, vocabulary, punctuation, capitalization, correct number usage, and proofreading. Limited writing involves choice of correct word usage, effective sentence structure, and paragraph construction.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.

BADM-1020 Introduction to Business
03 Semester Credits
Comprehensive survey of the American business system with emphasis on basic business vocabulary. Examination of principles and careers related to economics, management, marketing, accounting, finance, and general business.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-1040 Principles & Practices of Customer Service
03 Semester Credits
How to create customer satisfaction and loyalty: developing and using questions, building rapport, using conflict resolution techniques, making basic business calculations and using business decision-making model to convey information and solve customer problems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-1050 Professional Success Strategy
03 Semester Credits
Apply knowledge of the corporate environment, diversity, ethics, teamwork and professionalism to manage interpersonal challenges and maximize relationships. Facilitate a meeting, set goals, use a time management system and effective verbal and written communications.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-1060 Leadership Seminar
01 Semester Credits
Application of leadership skills while building a community of learners. Share experiences, debate current events and examine case studies to enhance leadership skills. Use communication and facilitation skills while participating in online forums, field trips and learning from guest leaders who will provide leadership-in-action examples.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

BADM-1070 Introduction to Project Management
03 Semester Credits
Application of project management process, principles, and techniques that can be employed when implementing a project. Emphasis on project startup and definition, project planning and design, project management and project monitoring and evaluation methods.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-1121 Principles of Management and Organizational Behavior
04 Semester Credits
Introduction to management and organizational behavior principles, concepts, and skills employed in the operation of a business organization. Emphasis on planning, organizing, leading, controlling and decision making. Also includes organizational structures, organizational communication, and organizational performance.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business; or BADM-1060 Leadership Seminar, or concurrent enrollment; or departmental approval: previous coursework and/or experience.

BADM-1210 Labor-Management Relations
03 Semester Credits
Historical, legal, and structural environments which influence management-labor relations. Rights and responsibilities of unions and management; negotiation and administration of labor agreement; results of labor relations process and collective bargaining issues. Application of labor relations process to public sector and nontraditional labor relations, such as health care professionals and athletes.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-1300 Small Business Management
04 Semester Credits
Development of entrepreneurial and managerial skills needed by those who may choose to work in a small business as either founders or managers or both.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-2010 Business Communications
03 Semester Credits
Study of oral, written and electronic business communication theory. Includes business correspondence writing, job preparation, research techniques, and formal and informal report preparation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.
OAN Approved: OBU005

BADM-201H Honors Business Communications
03 Semester Credits
Critical analysis, application and study of oral, written and electronic business communication theory. Includes business correspondence writing, job preparation, research techniques, and formal and informal report preparation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-101H Honors College Composition I or concurrent enrollment; or ENG-1010 College Composition I with a grade of "B" or higher.

BADM-2020 Leadership Theory
03 Semester Credits
Analysis of leadership theories, approaches, decision-making methods. Impact of gender and generational differences, emotional intelligence, cultural sensitivity, and ethical behavior on leadership will be analyzed and discussed. Reflection on personal leadership style and characteristics and development of a professional development plan.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1121 Principles of Management and Organizational Behavior, and BADM-1060 Leadership Seminar.

BADM-2030 Management Development
03 Semester Credits
Experiential, skill-oriented and reflective course focused on managerial styles and competencies, including, but not limited to, communicating, conducting performance appraisal reviews, managing change and conflict, building and facilitating teams and applying management skills to day-to-day operations of an organization.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1121 Principles of Management and Organizational Behavior and BADM-1060 Leadership Seminar.

BADM-2040 Strategic Leadership
03 Semester Credits
Focuses on an examination of contemporary leadership theories, styles and strategies and how they affect organizations and society. Emphasis on ethics, communication, and decision-making. Examine cases of contemporary leadership issues and determine possible outcomes and alternatives. Create a personal development plan to determine personal leadership style.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1060 Leadership Seminar.

BADM-2110 Production/Operations Management
03 Semester Credits
Overview of manufacturing and service operations covering such topics as: flow, bottleneck, balance, quality, workplace contribution, planning, materials requirement planning, inventory management procurement, logistics, floor shop control, just-in-time (JIT), capacity changes, technology and design, vertical integration, and operation strategy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business, or BADM-2160 Introduction to Purchasing.

BADM-2120 Logistics Management
03 Semester Credits
Logistics Management is the study of planning, executing, and controlling the flow and storage of goods, services, and information from the point of origin to the point of consumption for the purpose of meeting the customer's needs. Topics covered will include warehousing, transportation, inventory, materials handling, operations, and supply management.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2160 Introduction to Purchasing, or concurrent enrollment, or departmental approval: comparable knowledge and skill.

BADM-2150 Business Law
04 Semester Credits
Study of legal process as it relates to society, government, business and the individual; the law as it relates to legal system, ethics and social responsibility, contracts, sales, agency, business organizations, debtor-creditor relations, and governmental regulation of business.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1121 Principles of Management and Organizational Behavior or BADM-1020 Introduction to Business.
OAN Approved: OBU004

BADM-2160 Introduction to Purchasing
03 Semester Credits
Analysis of purchasing role in an industrial organization. Description of quality, specifications and standardization, supplier selection, international sourcing, pricing principles, types of contracts, negotiation techniques, make or buy, computer based system; EDI, capital equipment, services and value analysis, and legal and ethical aspects of purchasing.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business or concurrent enrollment, or departmental approval: comparable knowledge or skills.

BADM-2180 Purchasing Management
03 Semester Credits
Capstone course in Purchasing Management program. Focuses on purchasing management process, including functions of planning, organizing, directing, motivating, and controlling the work and purchasing staff to help achieve organizational objectives. Purchasing systems and documentation discussed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2160 Introduction to Purchasing, or departmental approval: comparable knowledge or skills.

BADM-2210 Quality Management
03 Semester Credits
Explores quality management concepts and approaches used by organizations today. Nominally focused and comprehensive system programs introduced. Case studies, field trips, speakers.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-2240 Negotiations
03 Semester Credits
Principles, techniques, and skills needed in interpersonal, buyer-seller, transportation, and labor management negotiations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business, or BADM-2160 Introduction to Purchasing.

BADM-2290 Urban Agribusiness Management
03 Semester Credits
In depth focus on agriculturally based production businesses in urban and regional environments. This course is recommended for business owners, managers, farmers and anyone involved with agriculturally based businesses, from start-ups to mature organizations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1300 Small Business Management or departmental approval.

BADM-2330 Human Resource Management
03 Semester Credits
Management of personnel function. Recruitment, staffing, training, development, compensation and evaluation. Employment practices including legal and ethical issues.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

BADM-2340 Human Resource Law and Application
03 Semester Credits
Analyze basic employment law necessary to develop practical understanding of legal framework critical to human resource function and effectiveness. Employment law and application expanded in employment relationships and areas critical to human resource function such as staffing, Equal Employment Opportunity (EEO), Affirmative Action, ADA, FMLA, benefits, and safety. Explores impact of employment law, including current developments to human resource function and business.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2330 Human Resource Management.

BADM-2390 Advanced Human Resource Practices
03 Semester Credits
Capstone course in Human Resource Management program. Explores application of human resource (HR) concepts and practices in organization context. Cases and scenarios advance learning through systems and operational application of HR competencies. HR planning, staffing, benefits, EEO, safety, performance management, compensation, and change management will be explored in light of advancing organizational effectiveness. Contemporary human resource issues confronting business also analyzed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2330 Human Resource Management.

BADM-2400 Public Administration
03 Semester Credits
Students will gain an understanding of the complexities of Public Administration and will learn to apply managerial and technical skills to make government administration more efficient, less costly and increase tax payer's satisfaction. Course focus will be on County and Municipal Government.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business, or departmental approval.

BADM-2450 New Business Development
05 Semester Credits
Capstone course in Small Business Management program. Complete business plan. Reflects generally accepted practice. Designed for student who wants to start a business.
Lecture 03 hours. Laboratory 04 hours.
Prerequisite(s): BADM-1300 Small Business Management, or departmental approval: comparable knowledge or skills.

BADM-2470 Marketing Techniques for Small Business
03 Semester Credits
Marketing research and other marketing activities; market segmentation, product development, advertising, sales promotion, personal selling, and pricing.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1300 Small Business Management, or MARK-2010 Principles of Marketing, or departmental approval: comparable knowledge or skills.

BADM-2501 Business Strategies
03 Semester Credits
Capstone course for Accounting, Business Management (basic program) and Marketing degrees. Critical analysis and application of business, marketing, accounting and financial concepts to determine alternatives and best course of action to maximize organizational performance.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: 20 credit hours of any combination of business administration, accounting or marketing courses.

BADM-2510 Import/Export Documentation and Transportation
01 Semester Credit
Processing documentation for import and export of goods and services, and study of transportation modes used in international shipments. Includes intermediaries, international shipment documentation and processing, uses of freight forwarders, U.S. Customs regulations, and foreign import requirements. Selection of optimum transportation methods for international shipments discussed.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2520 Operational Issues in International Business
02 Semester Credits
Analysis of overall concept of global operations and development of global operations strategy. Methods of differentiating among market entry options—indirect exporting, direct exporting, licensing, franchising, contract manufacturing and assembly, and full-scale integrated manufacturing studied. Study of various ownership strategies: wholly owned subsidiaries, joint ventures, or strategic alliances. Global human resource issues and intellectual property laws discussed.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2530 International Sourcing and Logistics
02 Semester Credits
Demystifies the purchasing and logistical elements involved with importing. Areas of examination include terminology, sourcing process, addressing cultural and ethical issues, required documents, negotiations, logistics enablers, customs, duties and legal considerations. Special attention paid to identification and utilization of resources. Comparison of International Purchasing versus a Global Sourcing strategy will be offered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2600 Introduction to World Trade
03 Semester Credits
Overview of world trade with examination of foreign environments (economic, cultural, and legal) in which global companies operate. Study of documents and procedures required to import and export goods; international transportation modes; and payments and collection.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MARK-2010 Principles of Marketing or concurrent enrollment, or departmental approval: previous coursework and/or experience.

BADM-2610 Cross Cultural Communications
01 Semester Credit
Main components of communicative events across different cultures, main logistic approaches to analyzing them, and difficulties the differences can create in intercultural and cross-gender communication. Covers historical perspective, political and economic philosophy, social structure, religion, language and education, body language, titles, and respect, turn-taking and turn maintenance. Narrative structuring, intonation, requests, disagreements and criticism, information seeking, politeness, and business negotiation discussed.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2620 International Trade Finance and Insurance
02 Semester Credits
Comparison of international trade finance options. Techniques, terminology, philosophies, and approaches to international export-import financing. Methods of structuring letters of credit, sight drafts, time drafts and alternative financing options are detailed and applied to case studies. Includes how to obtain financing from domestic, foreign, private, government, and international organization sources.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval: previous coursework or experience.

BADM-2630 Legal Issues in International Business
01 Semester Credit
Examination of the legal underpinnings of global business environment. U.S., foreign, and international legal systems affecting U.S. companies conducting global business. Customs, taxation and global employment regulations are identified. Key U.S. regulations applied extraterritorially are analyzed as they impact the conduct of international business.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval: previous coursework and/or equivalent experience.

BADM-2640 International Payment, Credit and Collections
02 Semester Credits
Examination of international banking and financial transactions. Techniques, terminology and philosophies discussed. Methods of structuring, negotiating, and processing financial instruments are applied to case studies. Rights and obligations of the bank, the customer, and the beneficiary are examined.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval: previous coursework and/or experience.

BADM-2710 Global Marketing
02 Semester Credits
Overview of international marketing strategies and decisions, including choice of markets, mode of entry, appropriate organization for international expansion, and degree of adaptation/standardization/globalization of marketing mix elements. Researching international market opportunities, and examining available information sources. Strategic approach to international marketing management decision stressing economic, political, legal, and cultural characteristics of business abroad.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or department approval: previous coursework and/or experience.

BADM-2720 International Market Research
02 Semester Credits
Tools needed to decide what markets to enter, methods to enter them, and successful strategies to exploit opportunities they offer. In contrast to market research that focuses on domestic business opportunities, international research covers different environments and cultures. Understanding of various market research techniques that are effective within a particular culture's frame of reference. Review of traditional research techniques, parameters for country screening and risk analysis, examination of impact of culture on research alternatives, and review of many sources accessible for accurate secondary data on international markets, industries, and legal/regulatory precedents.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

BADM-2730 Channels of Distribution in International Markets
01 Semester Credit
Structure of the global distribution system. Development of global distribution system discussed along with factors influencing selection of channel members and methods of locating and selecting channel partners. Managing the global logistics system includes setting expectations, formulating entry strategy, recruiting distributors, motivating channel participants, and monitoring sales activities.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2740 Export Pricing, Quotations and Terms of Sale
01 Semester Credit
Examines costs and pricing strategies for sales to foreign markets. Pricing objectives, foreign market objectives, market demand, cost, and competitive issues are identified in relation to export pricing decisions. Incoterms and freight considerations are identified.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2790 International Business Strategy and Application
04 Semester Credits
Capstone course in International Business. Application of knowledge and skills obtained in international marketing, trade documentation, transportation, finance and cultural awareness to real world international business scenarios. Includes in-class, comprehensive analytical/decision-making case studies. Student concomitantly involved in an international internship experience that provides on-the-job exposure to international business activities.
Lecture 03 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 hours per week.
Prerequisite(s): BADM-2600 Introduction to World Trade, or concurrent enrollment, and departmental approval: 12 additional credit hours of technical courses.

BADM-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

CAPTIONING AND COURT REPORTING - C&CR

C&CR-1000 Introduction to Court Reporting
01 Semester Credit
Comprehensive survey of field of court reporting. Examination of history of reporting, diversity, equipment needs and technological trends, role of the working reporter within the legal system, corporate environment, and educational system.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

C&CR-1100 Introduction to Voice Captioning
01 Semester Credit
Introduction to voice captioning technology and the employment opportunities in this field.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

C&CR-1200 Voicewriting I
02 Semester Credits
Instruction in the use of voice-recognition software and technology. Application of such technology enables users to create and edit documents, send email, access the Internet and perform other functions all in a hands-free manner.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1100 Introduction to Voice Captioning or concurrent enrollment; or departmental approval.

C&CR-1210 Voicewriting II
02 Semester Credits
Study of speech-to-text technology and the use of voice-recognition software while developing increased dictation speed, learn to dictate while listening to dictation, and create various documents including Excel spreadsheets, and particular legal and medical documents.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1200 Voicewriting I.

C&CR-1220 Voicewriting III
04 Semester Credits
Realtime translation of legal proceedings, broadcasts, and other voice-to-text environments using voice writing captioning-specific software in addition to speech-recognition software.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1210 Voicewriting II.

C&CR-1300 Realtime Theory I
04 Semester Credits
Focus on principles of writing on stenotype machine. On-line instruction of machine shorthand keyboard, arbitraries, phrases, word beginnings and endings. Emphasis on reading, writing, and reporter English skills in preparation for speedbuilding and transcription.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1000 Introduction to Court Reporting or concurrent enrollment; and eligibility for ENG-1010 College Composition I; or departmental approval.

C&CR-1330 Realtime Theory II
02 Semester Credits
This course is a continuation of Realtime Theory. Students will complete study of theory principles.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1300 Realtime Theory I.

C&CR-1340 Realtime Theory III
02 Semester Credits
Introduces students to the varied styles of writing in the court reporting profession including question and answer, literary, and jury charge format. Instruction in advanced principles of brief forms and phrases in speedbuilding development.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1330 Realtime Theory II or concurrent enrollment.

C&CR-1350 Legal Terminology
03 Semester Credits
Provides students with broad legal vocabulary, useful in any law related field. Emphasis on spelling, definition, and usage of legal terms.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

C&CR-1400 Speedbuilding and Transcription at 100 WPM
02 Semester Credits
Speedbuilding at 80-100 wpm level. Utilization and expansion of machine-writing theory. Practical procedures on stenotype machine to develop beginning skill levels. Minimum exit speed is 100 wpm.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1340 Realtime Theory III.

C&CR-1410 Precision Writing I -- Using Brief Forms
01 Semester Credit
Designed to enhance writing skills on steno machine or with voicewriting technology. Emphasis on brief forms and specific phrases found in everyday vocabulary. Accuracy of outlines emphasized as well as use of specific brief forms. Course serves as a companion to speedbuilding curriculum.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): C&CR-1220 Voicewriting III or C&CR-1340 Realtime Theory III; and C&CR-1450 Speedbuilding and Transcription at 140 WPM, or C&CR-2400 Speedbuilding and Transcription at 180 WPM, or C&CR-2450 Speedbuilding and Transcription at 225 WPM.

C&CR-1420 Precision Writing II -- Arbitraries in Legal Vocabulary
01 Semester Credit
Enhancement of writing skills on steno machine or voicewriting software. Emphasis on brief forms or voice codes for specific phrases found within jury charge and other legal material. Accuracy of outlines or voice codes emphasized as well as use of specific brief forms. Course serves as companion to speedbuilding curriculum.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III; and C&CR-1450 Speedbuilding and Transcription at 140 WPM, or C&CR-2400 Speedbuilding and Transcription at 180 WPM, or C&CR-2450 Speedbuilding and Transcription at 225 WPM.

C&CR-1430 Precision Writing III -- Numeric and Alphabetic Accuracy
01 Semester Credit
Improve writing skills on steno machine or utilizing voicewriting software. Emphasis on numeric material and proper names. Accuracy of "letter spelling", phonetic steno or voicewriting of names with verification of name emphasized, as well as the ability to steno or voicewrite numbers fluently. Course serves as companion to speedbuilding courses.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III; and C&CR-1450 Speedbuilding and Transcription at 140 WPM, or C&CR-2400 Speedbuilding and Transcription at 180 WPM, or C&CR-2450 Speedbuilding and Transcription at 225 WPM.

C&CR-1450 Speedbuilding and Transcription at 140 WPM
02 Semester Credits
Speedbuilding at 120-140 wpm level. Utilization and expansion of machine-writing or voicewriting theory. Practical procedures on stenotype machine or utilizing voicewriting technology to develop skill levels on question and answer testimony, jury charge and literary materials. Minimum exit speed is 140 wpm.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III; and concurrent enrollment in C&CR-1610 Speed Development I, or concurrent enrollment in C&CR-1620 Speed Development II, or concurrent enrollment inC&CR-1630 Speed Development III.

C&CR-1460 Literary Writing
02 Semester Credits
Focuses on the skills of literary writing using court reporting technology. Emphasizes accuracy and writing development for the judicial, Communication Access Real-time Transcription (CART), and captioning environments.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM, or concurrent enrollment.

C&CR-1521 Realtime Theory Reinforcement
02 Semester Credits
Focus on principles of writing on stenotype machine. Review of machine shorthand theory principles introduced CCR 1300 and 1330. Emphasis on reducing hesitation while writing, reading steno outlines, and building speed on the steno machine.
Lecture 00 hours. Laboratory 04 hours.
Prerequisite(s): C&CR-1330 Realtime Theory II, or concurrent enrollment.

C&CR-1530 Steno Skill Development
01 Semester Credit
Intensive stenotype writing skills practice under the guidance of an instructor. Stenotype machine, steno paper, notebook and computer access to practice outside of class are required.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

C&CR-1600 Court Reporting Technology
05 Semester Credits
Basics of computer aided transcription. Emphasis on court reporting software, dictionary development, and transcript production. Development of scoping skills and research techniques.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1330 Realtime Theory II.

C&CR-1610 Speed Development I
01 Semester Credit
Focuses on speedbuilding development using evaluation software for the purpose of analysis and practice. Endurance building and emphasis on literary writing skills.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III; or departmental approval.

C&CR-1620 Speed Development II
01 Semester Credit
Focuses on speedbuilding development using evaluation software for the purposes of analysis and practice. Endurance building and emphasis on jury charge writing skills.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1220 Voicewriting III or C&CR-1340 Realtime Theory III or departmental approval.

C&CR-1630 Speed Development III
01 Semester Credit
Focuses on speedbuilding development using evaluation software for the purpose of analysis and practice. Endurance building and emphasis on question and answer writing skills including multi-voice dictation.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1220 Voicewriting III or C&CR-1340 Realtime Theory III or departmental approval.

C&CR-2200 Medical Terminology for Captioning and Court Reporting
03 Semester Credits
Study of basic medical terminology utilized in the captioning and court reporting profession. Emphasis on definition and usage of the medical terms, and research practices for transcript production.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1340 Realtime Theory III or concurrent enrollment; or C&CR-1220 Voicewriting III or concurrent enrollment.

C&CR-2300 Court Procedures
03 Semester Credits
Emphasizes role of official and freelance reporter including communications skills, professional image and business etiquette. Preparation of deposition/court transcripts, marking and handling of exhibits, indexing and storing notes, reporting techniques and ethics, including NCRA Code of Ethics.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): C&CR-1200 Voicewriting I or C&CR-1300 Realtime Theory.

C&CR-2350 Editing Legal Documents
02 Semester Credits
To develop understanding of parts of speech, sentence structure, proofreading, and management of other people's spoken words. Rules of punctuation and grammar go beyond the basics and are modified to accommodate ambiguous, clumsy, incongruous, and incorrect English frequently found in legal transcripts.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

C&CR-2360 Proofreading Skill Development
02 Semester Credits
Focuses on applying proofreading and editing skills to legal transcripts, jury charges, and literary materials. Accuracy of editing with regard to the placement of punctuation marks and spelling.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): C&CR-2350 Editing Legal Documents.

C&CR-2400 Speedbuilding and Transcription at 180 WPM
02 Semester Credits
Speedbuilding at 160-180 wpm level. Utilization and expansion of machine-writing or voicewriting theory. Practical procedures on stenotype machine or utilizing voicewriting technology to develop skill levels on question and answer testimony, jury charge and literary materials. Minimum exit speed is 180 wpm.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM; and concurrent enrollment in C&CR-1610 Speed Development I, or concurrent enrollment in C&CR-1620 Speed Development II, or concurrent enrollment in C&CR-1630 Speed Development III.

C&CR-2450 Speedbuilding and Transcription at 225 WPM
02 Semester Credits
Speedbuilding at speed levels of 225 wpm Question and Answer test material, 200 wpm Jury Charge material and 180 wpm Literary. Utilization and expansion of machine-writing or voice-writing theory. Practical procedures on stenotype machine or voicewriting software and technology to develop skill levels on question and answer testimony, jury charge and literary materials.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-2400 Speedbuilding and Transcription at 180 WPM; and concurrent enrollment in C&CR-1610 Speed Development I, or concurrent enrollment in C&CR-1620 Speed Development II, or concurrent enrollment in C&CR-1630 Speed Development III.

C&CR-2460 Speed Enhancement
02 Semester Credits
Course devoted to speed development and problem solving. Provides support for individualized steno or voicewriting progress utilizing the department's software programs, digital dictation, and other pertinent resources as available.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-1220 Voicewriting III or C&CR-1340 Realtime Theory III; and concurrent enrollment in C&CR-1610 Speed Development I, or concurrent enrollment in C&CR-1620 Speed Development II, or concurrent enrollment in C&CR-1630 Speed Development III.

C&CR-2470 Advanced Technology
03 Semester Credits
Capstone course in Court Reporting and Captioning. Students apply technology and format applications to produce transcripts in preparation for initial employment. Concentrated, production-oriented class with employment related projects, deposition projects, and realtime projects.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM, and C&CR-1600 Court Reporting Technology.

C&CR-2480 Using Captioning Technology
03 Semester Credits
Students apply steno or voice technology and format applications to produce captioning simulations in preparation for initial employment. A concentrated, production-oriented class with employment related projects from the captioning environment.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM, and C&CR-1600 Court Reporting Technology or departmental approval.

C&CR-2490 Speedbuilding and Transcription at 250 WPM
02 Semester Credits
Speedbuilding at speed levels of 250 wpm Question and Answer test material, 225 Jury Charge test material, and 200 wpm Literary test material. Utilization and expansion of steno writing and voicewriting theory and technology. Practical procedures on stenotype machine or voicewriting software and technology to develop skill levels on question and answer testimony, jury charge and literary materials.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-2450 Speedbuilding and Transcription at 225 WPM, or department approval.

C&CR-2510 CART Production
03 Semester Credits
Focus on realtime writing and dictionary management for use in the Communications Access Realtime Translation (CART) environment.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): C&CR-1600 Court Reporting Technology and C&CR-1450 Speedbuilding and Transcription at 140 WPM or departmental approval.

C&CR-2520 Captioning Production
03 Semester Credits
Focus on the production of captions using steno or voicewriting technology. Build endurance and accuracy in realtime writing.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): C&CR-2480 Using Captioning Technology or departmental approval.

C&CR-2550 Writing for Captioning and CART
02 Semester Credits
Focuses on building realtime writing endurance in the captioning and Communication Access Real-time Transcription (CART) environments. Centers on accurate realtime translation and display of English text.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): C&CR-2510 CART Production and C&CR-2520 Captioning Production or departmental approval.

C&CR-2601 Technical Terminology I
03 Semester Credits
Designed to expose students to much of the subject matter court reporters encounter. Emphasis on medical and technical testimony with material duplicated from real-life situations.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM, or concurrent enrollment.

C&CR-2651 Technical Terminology II
03 Semester Credits
Continued exposure to steno or voicewriting technical and medical vocabularies with emphasis on multi-voice dictation. Students will develop consistent steno or voicewriting patterns for terms and multi-voice designations in order to produce near-perfect, first-pass transcripts.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM, or concurrent enrollment.

C&CR-2660 Registered Professional Reporter Examination Preparation
01 Semester Credit
Provides preparation for national certification exam. Speedbuilding at 160-180 wpm level. Utilization and expansion of machine-writing theory. Practical procedures on stenotype machine to develop skill levels on questions and answer testimony, jury charge and literary materials. Minimum exit speed is 180 wpm. Stenotype machines and access to a computer with Internet is required.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): C&CR-1300 Realtime Theory, or departmental approval.

C&CR-2840 Internship
01 Semester Credit
Provides student with 75 hours of actual writing time during on-the-job training using voicewriting technology or machine shorthand technology.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 5 hours per week.
Prerequisite(s): Concurrent enrollment in C&CR-2450 Speedbuilding and Transcription at 225 WPM, and C&CR-2470 Advanced Technology.

C&CR-2910 Internship for Captioning and CART
01 Semester Credit
Provides student with 50 hours of actual writing time during on-the-job training using voicewriting technology or machine shorthand technology in the Captioning and Communication Access Real-time Transcription (CART) environment. Provides student with 30 hours of research and dictionary preparation during on-the-job training in Captioning and CART environments.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 80 hours of directed practice per semester (five hours a week of directed practice for 16 weeks).
Prerequisite(s): C&CR-2450 Speedbuilding and Transcription at 225 WPM or concurrent enrollment; and C&CR-2520 Captioning Production, and C&CR-2510 CART Production.

CHEMISTRY - CHEM

CHEM-1000 Everyday Chemistry
03 Semester Credits
[This course is cross-listed as PSCI-1020. Credit can only be earned once for either course.] Survey of chemistry as related to environment, health and nutrition, and application of chemical knowledge that affect quality of life. Basic concepts and applications of chemistry: consumer chemistry, periodicity, acids and bases, medicines and drugs, pollution and conservation. Intended for non-science majors. To fulfill laboratory science requirement, student should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II; or departmental approval.

CHEM-100L Everyday Chemistry Laboratory
01 Semester Credit
[This course is cross-listed as PSCI-102L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, separation and synthesis methods, reaction rates, water analysis, household chemistry, forensic and environmental issues, and other related chemistry topics. Laboratory activities complement and enrich related lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-1000 Everyday Chemistry or concurrent enrollment.

CHEM-1010 Introduction to Inorganic Chemistry
04 Semester Credits
Introduction to atomic structure and bonding as basis for understanding valence, formulas, compounds and chemical reactions. Measurement, stoichiometry, states of matter, solutions, ionization, equilibria, acids, bases and pH, and health careers, scientific studies, and applications in daily life.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II, or MATH-0980 Intensified Beginning Algebra; or eligibility for MATH-1141 Applied Algebra and Mathematical Reasoning or departmental approval: equivalent knowledge or skills.

CHEM-101H Honors Introduction to Inorganic Chemistry
04 Semester Credits
Introduction to the fundamental principles of chemistry including states of matter, atomic structure, bonding, chemical reactions, thermodynamics, ionization, equilibria, gas laws, solutions, acid-base chemistry, and nuclear chemistry. The principles of chemistry will be applied to medicine, nutrition, and the environment. Laboratory work will illustrate chemical theories.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II or MATH-0980 Intensified Beginning Algebra or eligibility for MATH-1141 Applied Algebra and Mathematical Reasoning and ENG-101H Honors College Composition I; or departmental approval.

CHEM-1020 Introduction to Organic Chemistry and Biochemistry
04 Semester Credits
Structure and properties of representative carbon compounds and applications to everyday life. Nature and metabolism of biochemical compounds and relationship of nucleic acids to protein synthesis.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry or CHEM-101H Honors Introduction to Inorganic Chemistry or sufficient score on Chemistry Assessment test.

CHEM-102H Honors Introduction to Organic Chemistry and Biochemistry
04 Semester Credits
Study of the structure, properties, and function of carbon-based compounds. Introduction to biochemistry including structure, properties, and metabolism of proteins, carbohydrates, and lipids. Roles and structures of enzymes, vitamins, chemical messengers, deoxyribonucleic acid (DNA), and ribonucleic acid (RNA) in cellular function. Principles of structure and function will apply to medicine and nutrition.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-101H Honors Introduction to Inorganic Chemistry, or departmental approval.

CHEM-1300 General Chemistry I
04 Semester Credits
Study of fundamental principles of chemistry emphasizing atomic theory and structure, chemical bonding, thermochemistry, solutions, stoichiometry, and state of matter. To fulfill laboratory science requirement, students should enroll in related laboratory course.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-1141 Applied Algebra and Mathematical Reasoning, or MATH-1280 Advanced Intermediate Algebra, or sufficient score on Math assessment test; or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC008 (1 of 2, both must be taken)

CHEM-130H Honors General Chemistry I
05 Semester Credits
Study of fundamental principles of chemistry emphasizing atomic theory, periodic trends, structure and bonding, chemical reaction and stoichiometry, energy, and the states of matter. Perform laboratory experiments designed to demonstrate chemical concepts and support theoretical phenomena. Honors General Chemistry I combines lecture and laboratory into one course.
Lecture 04 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry or CHEM-101H Honors Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-1510 Trigonometry and MATH-1521 College Algebra, or MATH-1580 Precalculus, or sufficient score on Math assessment test; or department approval: equivalent knowledge or skills. OAN Approved: OSC008

CHEM-130L General Chemistry Laboratory I
01 Semester Credit
Basic laboratory experiments which correlate with chemical concepts, principles and processes of General Chemistry II. Emphasis on techniques and procedures.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-1300 General Chemistry I or concurrent enrollment; or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC008 (2 of 2, both must be taken)

CHEM-1310 General Chemistry II
04 Semester Credits
Emphasis on kinetics, equilibrium concepts, electrochemistry, nuclear chemistry, thermodynamics, coordination chemistry and organic chemistry. To fulfill laboratory science requirement, students should enroll in related laboratory course.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CHEM-1300 General Chemistry I or CHEM-130H Honors General Chemistry I, or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC009 (1 of 2 courses, both must be taken)

CHEM-131L General Chemistry Laboratory II
01 Semester Credit
Basic laboratory experiments which correlate with chemical concepts, principles and processes of General Chemistry. Emphasis on technique and procedures.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-130L General Chemistry Laboratory I, and CHEM-1310 General Chemistry II or concurrent enrollment; or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC009 (2 of 2 courses, both must be taken)

CHEM-131H Honors General Chemistry II
05 Semester Credits
Study of the fundamental principles of chemistry emphasizing chemical and nuclear kinetics, thermodynamics, and equilibrium. Introduction and study into the specific branches of chemistry: electrochemistry, coordination, organic, nuclear, and environmental chemistry. Perform laboratory experiments designed to demonstrate chemical principles and support theoretical phenomena. Honors General Chemistry I combines lecture and laboratory into one course.
Lecture 04 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-130H Honors General Chemistry I, or department approval: equivalent knowledge or skills.
OAN Approved: OSC009

CHEM-2000 Analytical Chemistry
05 Semester Credits
An introduction to the theoretical principles of quantitative and instrumental analysis. Emphasis on experimental methods, sampling techniques, statistics, error theory, chemical equilibrium, stoichiometry, and volumetric and gravimetric procedures as applied to quantitative determinations. Provides an introduction to spectroscopic, electroanalytical, and chromatographic methods of analyses. Provides hands-on experience to students by completion of laboratory experiments related to these principles. Emphasis on development of laboratory technique.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): CHEM-1310 General Chemistry II and CHEM-131L General Chemistry Laboratory II.

CHEM-2300 Organic Chemistry I
05 Semester Credits
Functional group chemistry of aliphatic compounds covering nomenclature, structural-reactivity, and synthetic reactions. Theoretical concepts, structural bonding, stereochemistry and reaction mechanisms emphasized. Use of various spectrometric techniques for identification of compounds introduced.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): CHEM-1310 General Chemistry II, and CHEM-131L General Chemistry Laboratory II or CHEM-131H Honors General Chemistry II; or departmental approval: equivalent knowledge or skills.
OAN Approved: OSC010 (1 of 2 courses, both must be taken)

CHEM-2310 Organic Chemistry II
05 Semester Credits
Continuation of Organic Chemistry I. Common functional groups with emphasis on aromatic and carbonyl containing molecules, and selected topics such as heterocyclic compounds, macromolecules, and biomolecules introduced.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): CHEM-2300 Organic Chemistry.
OAN Approved: OSC010 (2 of 2 courses, both must be taken)

CHEM-2400 Quantitative Analysis
04 Semester Credits
Study of chemical stoichiometry, homogeneous and heterogeneous equilibria, and the theory and techniques of gravimetric, volumetric, spectrometric, and electrochemical methods of quantitative analytical chemistry.
Lecture 02 hours. Laboratory 06 hours.
Prerequisite(s): CHEM-1310 General Chemistry II, and CHEM-131L General Chemistry Laboratory II.

CHINESE - CHIN

CHIN-1011 Beginning Chinese Language and Culture I
04 Semester Credits
Introduction to standard spoken Chinese (Mandarin) through listening, speaking and using Chinese software on computer. Emphasis on becoming familiar with four tones of Chinese language.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

CHIN-1021 Beginning Chinese Language and Culture II
04 Semester Credits
Continued study of standard Chinese with expansion of vocabulary. Practice in conversation on given subjects and transition from speaking to reading.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): CHIN-1011 Beginning Chinese Language and Culture I, or departmental approval.

CONSTRUCTION ENGINEERING TECHNOLOGY - CNST

CNST-1281 Construction Engineering Orientation
03 Semester Credits
Introduction to construction objectives and opportunities. Recognition of professional practices, current issues and developments in construction, including Green Building. Overview of construction project operations, trade journals, and associations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

CNST-1410 Architectural CAD I
03 Semester Credits
Working drawing techniques of domestic structures using computer-aided drafting software. Floor plans, foundation plans, wall-sections, elevations, site plans and dimensioning techniques will be the core concepts.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): CNST-1730 Construction Print Reading, or departmental approval.

CNST-1420 Architectural CAD II
03 Semester Credits
Working drawing techniques for commercial buildings, including steel and concrete structural systems, electrical plans and building section details. Advanced concepts of CAD will be used.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): CNST-1410 Architectural CAD I.

CNST-1510 Green Building & Sustainability I
03 Semester Credits
Introduction to Green Building and sustainability issues. Study of current practices, systems, and materials used in the construction of Green buildings. Recognition of planning and design features that enhance the energy efficiency of a building and its environment. Overview of Green Building Rating Systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

CNST-1730 Construction Print Reading
02 Semester Credits
Overview of construction drawings for the major construction disciplines to understand presentation methods, interpretation, sequence of preparation, bid submittal processes, revision control, and code requirements. Commercial building, structural, and civil drawings utilized.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

CNST-2110 Basic Survey Practices
03 Semester Credits
Study of construction site engineering using survey instruments for elevation contours, drainage, and grading for construction. Laser-levels, transits, and total stations will be utilized. Emphasis on instrument applications and field data recording.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1510 Trigonometry; and CNST-1730 Construction Print Reading; or departmental approval.
OAN Approved: OET015

CNST-2130 Construction Methods, Materials and Equipment
03 Semester Credits
Study of common construction approaches including pre-fabrication practices, modularization, and traditional site erection means. Construction materials and properties; testing methods; equipment usage, attributes, cost, and availability discussed. Includes 10-hour OSHA training program.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): CNST-1730 Construction Print Reading, or departmental approval.
OAN Approved: OET008

CNST-2150 Building Enclosures
03 Semester Credits
Analysis of wall, roof, and floor assemblies for residential and light commercial construction with a concentration in thermal, air, and moisture control. Includes laboratory activities for constructing a building enclosure with non-traditional techniques and materials, including structural insulated panels, engineered lumber, fiber cement siding, composite decking, and insulated concrete forms.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment, or departmental approval.

CNST-2200 Architectural Building Information Modeling
03 semester Credits
Introduction into building information modeling (BIM) for architectural building envelope design. Autodesk Revit software will be used to generate a commercial building, and produce related drawings used in a set of contract documents.
Lecture 01 hours. Laboratory 04 hours.
Prerequisite(s): CNST-1730 Construction Print Reading.

CNST-2210 Mechanical & Electrical Systems
03 Semester Credits
Study of mechanical and electrical systems for building construction, water supply, waste and sanitation. Heat loss, heat gain and hydronic heating systems; forced air and solar heating systems used in buildings; electrical systems of power distribution and lighting for commercial buildings among the topics covered.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment or concurrent enrollment; or departmental approval.

CNST-2250 Advanced Construction Print Reading
03 Semester Credits
Advanced print reading for commercial construction drawings. Interpreting drawing details in accordance to project manual, and material quantity take-off. Constructability review processes will be used to determine effective design and sustainability.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): CNST-1730 Construction Print Reading, or departmental approval.

CNST-2330 Construction Scheduling
03 Semester Credits
Time management of construction activities by implementing Gantt charts, activity on arrow diagrams, PERT techniques, and critical path method. Computer scheduling software will be used throughout the course.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment, or departmental approval.

CNST-2360 Energy Auditing & Weatherization
03 Semester Credits
Overview of standards for energy auditing and energy efficiency analysis using the house-as-a-system approach. This course will provide individuals with the knowledge necessary to verify energy consumption and options to save money by conserving energy, with respect to the building envelope. Students will participate in classroom learning and laboratory activity.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment, or concurrent enrollment.

CNST-2410 Principles of Structural Design
03 Semester Credits
Study of building design structural systems. Topics include steel beams, columns, base plates, fasteners and weldments. Emphasis on tension and compression for engineered building products and concrete structures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MET-1600 Technical Statics, or departmental approval.

CNST-2420 Sustainable Design & Supervision
03 Semester Credits
Instruction for construction supervisors on sustainable construction techniques as they relate to the construction-phase of a LEED project. Content includes coverage of project sustainability goals, green building materials and technologies, and how to apply the principles of a green building rating system.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment or concurrent enrollment; or departmental approval.

CNST-2631 Construction Management Systems
03 Semester Credits
Study of construction management practices including general contracting, subcontracting, project delivery, cost control, change processes and procurement. Introduction into lien implications, safety, quality and jobsite labor relations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment.

CNST-2990 Construction Estimating & Cost Analysis
03 Semester Credits
Capstone course in Construction Engineering Technology program. Includes construction cost estimates, cost forecasting, and cost reports for a construction project using computer software.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Concurrent enrollment in CNST-2130 Construction Methods, Materials and Equipment.

CRIMINAL JUSTICE - CJ (formerly Law Enforcement)

CJ-1000 Introduction to Criminal Justice
03 Semester Credits
History and philosophy of criminal justice in America; review system, identification of the subsystems, role expectations, and relationships. Theory of crime, punishment, and rehabilitation. Ethics, education, and training required in law enforcement, nature of formal and informal decision making in criminal justice, sociology, politics, economics, and law of criminal justice.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.
OAN Approved: OSS031

CJ-1010 Computers in Criminal Justice
02 Semester Credits
Introduction to uses and applications of computer technology in criminal justice field. Includes discussions of basic terminology; common applications in database, word processing, and spreadsheet uses; and an introduction to the World Wide Web. Comprehensive examination of computer crimes and procedures, techniques, and legal constraints which apply.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

CJ-1020 Introduction to Homeland Security
02 Semester Credits
As part of the Basic Police Academy certified by the Ohio Peace Officer Training Commission, this course will provide a basic overview into the topic of Homeland Security. Topics will include Hazmat and WMD Awareness for the First Responder and Bombs, Explosives and Incendiary Devices.
Lecture 02 hours. Laboratory 00 hours.
Departmental Approval: Admitted to OPOTA Basic Police Academy.

CJ-1050 Introduction to Security
02 Semester Credits
Historical perspective on development of security with definition of current role and function. Studies in fundamental principles of risk assessment, physical plant security, defense systems, internal security, fire prevention and disaster preparedness in security field.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

CJ-1070 Introduction to Corrections
03 Semester Credits
Introduction to processes, procedures and issues in contemporary corrections. History and evolution of various elements of juvenile and adult correction systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS033

CJ-1111 Constitutional Law for Police
03 Semester Credits
Development of the Federal Constitution and history of Bill of Rights. In-depth analysis of First, Fourth, Fifth, Sixth, Eighth and Fourteenth Amendments. Impact of recent court decisions on these amendments and their implications for criminal justice officials.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

CJ-1120 Criminal Court Procedure
02 Semester Credits
Exploration of U.S. adversary system of criminal justice. Examines components including legislature, police, prosecution, courts and corrections. Comprehensive review of procedures, beginning with arrest through post-trial motions and sentencing.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

CJ-1130 Criminal Evidence
02 Semester Credits
Overview of trial procedures: classification of evidence, proof, presumptions, relevance, eyewitness identification, testimonial privileges, character, hearsay, impeachment, scientific evidence, collection and preservation of evidence.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

CJ-1200 Economic Crime Investigation
03 Semester Credits
Examines conduct of individuals, corporations, institutions and government agencies as it relates to economic crime. Ethical dilemmas will be analyzed using critical thinking to build and manage criminal cases for successful prosecution.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-1300 Patrol Operations
04 Semester Credits
Examination of techniques required in performing patrol operations. Covers preparation, vehicle patrol, foot patrol, crimes in progress, prowler calls, building searches, performance of stops and approaches, vehicle identification, and prisoner booking and handling. Incorporates report writing required of police officers. Discussion of various types of forms and reports necessary and methods for accurate completion. Use and structure of field notes, investigative report form and content, and use of proper grammar in narrative reports.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice or departmental approval: comparable knowledge or skills.

CJ-1310 Traffic Enforcement and Investigation
03 Semester Credits
Examination of traffic accident investigation, motor vehicle law enforcement, crimes, and other control procedures utilized in highway transportation system. Comprehensive study of enforcement principles, problems, and procedures and how accident investigation relates to overall community safety.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice or departmental approval: comparable knowledge or skills.

CJ-1320 Ethics in Criminal Justice
02 Semester Credits
Police conduct is examined relative to ethical and legal principles. Application of federal and state civil, criminal and administrative law. Sources of potential ethical lapses for law enforcement are analyzed and strategies are formulated to address them both proactively and administratively.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

CJ-1330 Criminal Law
03 Semester Credits
Nature of the criminal act, essential elements for prosecution and defense, legal theories of responsibility, overview of common law offenses, and identification of emerging trends in law.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

CJ-1400 Assets Protection
04 Semester Credits
In-depth study of principles of loss prevention with emphasis on risk management. Examination of concepts of physical security with management systems; physical security requirements; alarm systems; planning and vulnerability assessments and interaction with law enforcement.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.

CJ-1500 Community Intervention Resources
04 Semester Credits
Analysis of community-based resources designed for intervention, prevention and control or rehabilitation of juvenile or adult offender.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2200 Interviews & Interrogations
03 Semester Credits
Development of the skills necessary to elicit information from potential witnesses and/or offenders. Topics include deception detection, the art of interviewing, and the use of proven interrogation techniques.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2210 Organized Crime
03 Semester Credits
History and legal analysis of criminal enterprises in America, including their pragmatic operation and the criminal justice response using investigative techniques, and court sentencing to disrupt illegal operations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2230 Undercover Operations
03 Semester Credits
History and techniques of undercover operations, both long and short term infiltration. Includes theoretical aspects of undercover work as well as the practical aspects via role-playing and actual field exercises.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2300 Juvenile Delinquency
02 Semester Credits
Juvenile delinquency as it negatively affects a family, community and how the police and court structure and reintegrate youthful offenders into society.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval: comparable skills.

CJ-2350 Special Issues in Criminal Justice
02 Semester Credits
Review of special and contemporary issues in the field of criminal justice. Discussion of varying viewpoints and aspects of problems faced in these fields. Critical and analytical approach used to understand role and relationship of the criminal justice system in today`s society.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval.

CJ-2360 Community Oriented Policing
03 Semester Credits
Analysis and effectiveness of neighborhood style policing efforts to reduce crime and disorder.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval.

CJ-2370 Fire Arms Techniques
03 Semester Credits
Units of study include safety techniques, handgun and related equipment, basic fundamentals of pistol craft, one-hand techniques, multiple targets, low light level conditions, use of protective cover, and shotgun training.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: successful completion of Basic Police Academy at Cuyahoga Community College.

CJ-2380 Defensive Driving
02 Semester Credits
Emergency vehicle operation under strenuous conditions for law enforcement.
Lecture 01 hours. Laboratory 03 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice, and departmental approval.

CJ-2390 The Investigative Process
04 Semester Credits
Overview of investigative methods including databases and background checks. In-depth look at the criminal investigation process with focus on crime scene, reports and evidence identification. Specific investigative methods for particular crime types are analyzed.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval.

CJ-2400 Security Management
04 Semester Credits
Comprehensive examination of the organization, staffing, supervision and administration of the security function. Focuses on general security management, supervision and operational management along with public relations.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1050 Introduction to Security, or departmental approval: prior knowledge or experience.

CJ-2410 Security Investigation
03 Semester Credits
Intensive examination of investigative function as it relates to private security. Criminal and non-criminal investigations. Study of databanks, surveillance methods, interviews, backgrounds, and report preparation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1050 Introduction to Security, or departmental approval: prior knowledge or experience.

CJ-2420 Legal Aspects of Private Security
03 Semester Credits
Study of various Federal and State laws and impact on security management process. In-depth examination of state criminal code as applied to private security.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1050 Introduction to Security, or departmental approval: prior knowledge or experience.

CJ-2440 Protection Services
02 Semester Credits
Examine the role of those tasked with protecting assets, including critical infrastructure identified by the Department of Homeland Security and other public and private property.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1000 Introduction to Criminal Justice or departmental approval: prior equivalent experience.

CJ-2510 Community Supervision and Aftercare
04 Semester Credits
Examine various aspects of contemporary community-based corrections practices and aftercare programs to reintegrate criminal offenders into society in a constructive way.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1070 Introduction to Corrections or departmental approval: comparable knowledge and skills.

CJ-2530 Correctional Case Management
03 Semester Credits
Application of counseling techniques applicable to the correctional offender involving field and clinical situations simulation for students to gain experience in interviewing, chronological recording, report writing, and oral presentation of cases.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): CJ-1070 Introduction to Corrections departmental approval: comparable knowledge or skills.

CJ-2830 Cooperative Field Experience
01 - 03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

CJ-2840 Corrections: Principles and Practices
03 Semester Credits
Students placed in appropriate criminal justice agency facility under guidance of experienced practitioner with a focus on application of corrections principles.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Practicum: 8 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): CJ-2510 Community Supervision and Aftercare.

CJ-2990 Issues in Supervision
04 Semester Credits
Capstone course in Law Enforcement. Comprehensive review of law enforcement processes, accomplished by looking at role of supervisor and his/her responsibility to the department and community. Further application of law enforcement principles by use of current readings in criminal justice.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: completed 20 credits in Criminal Justice.

DANCE - DANC

DANC-1100 Dance Appreciation
03 Semester Credits
Introduction to elements and styles of the art of dance. Increase student's ability to identify and understand stage, movie and video dance styles through visual and movement concepts. Various performing artists and choreography studied in cultural and historical context.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

DANC-1220 Theatre Dance/Stage Movement
03 Semester Credits
Basic stage geography, and theatre dance: jazz, latin, waltz, polka, and musical staging for singers and actors. Non-theatre majors learn techniques to analyze and control non-verbal communication (body language). Control and organization of space, energy and time, including basic stage combat, applied to group activities.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

DANC-1400 African Dance I
03 Semester Credits
Introduction to the fundamentals and basic movement of West Africa. Culture, history and philosophy of West African dance are explored through song, music, costumes and language. Minimum of two hours per week preparing dance presentations, viewing selected video performances and attending live dance performances are required. (Course may only transfer as elective credits.)
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

DANC-1410 African Dance II
03 Semester Credits
Secondary theories and practices of African Dance techniques. Advanced exploration of culture, history and philosophy of West African dance through song, music, costumes and language. Minimum of two hours per week preparing dance presentation, viewing selected video performances and attending live dance performances are required. (Course may only transfer as elective credits.)
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): DANC-1400 African Dance I.

DANC-1500 Dance I
03 Semester Credits
For student with limited or no dance experience. Movement vocabulary of modern dance, ballet and jazz will train student to recognize and perform basic dance combinations, to understand importance of proper alignment and muscular awareness, and to analyze basic elements of movement: time, space and energy.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

DANC-1510 Dance II
03 Semester Credits
Further study of secondary techniques of modern dance. Stresses dance as artistic form of self expression. Students identify variety of rhythms and perform secondary and intermediate dance combinations.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): DANC-1500 Dance I, or departmental approval: comparable knowledge or skills.
OAN Approved: OAH013

DANC-1600 Choreography and Production
02 Semester Credits
Student learns to make solo and group dances by exploring choreography process: content, form, technique and projection. Through formal and informal dance performances, student learns elements of lighting, costuming, public relations and promotion.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): DANC-1500 Dance I, or departmental approval: comparable knowledge or skills.

DANC-2300 Dance III: Technique
02 Semester Credits
Intermediate dance techniques, concepts and theories. Studio work challenges and nurtures student's creative and interpretive ability and performance techniques.
Lecture 00 hours. Laboratory 04 hours.
Prerequisite(s): DANC-1510 Dance II, or departmental approval: comparable knowledge or skills.

DANC-2310 Dance IV: Technique
02 Semester Credits
Advanced dance techniques emphasizing dynamic variety and challenging physical limitations and movement memory. Exploration of different modern techniques and dance accompaniment applied to studio work.
Lecture 00 hours. Laboratory 04 hours.
Prerequisite(s): DANC-2300 Dance III: Technique, or departmental approval: comparable knowledge or skills.

DEAF INTERPRETIVE SERVICES - DIS

DIS-1300 Interpreting Fundamentals
03 Semester Credits
History of interpreting and survey of the profession. Introduction to Registry of Interpreters of the Deaf's (RID) Code of Ethics, and certification process. Orientation to Deaf community, language and culture. Introduction to basic interpreting settings. Research into variety of topics about the profession. Present the cognitive model of interpreting.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

DIS-1310 Interpreting I
02 Semester Credits
First in two-course sequence. Theoretical and practical approach to sign language interpreting, including platform and interview-style interpreting. Practical application in rendering spoken messages into American Sign Language. Role-playing in various basic interpreting situations. Exposure to other communication systems.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): ASL-1020 Beginning American Sign Language II, and DIS-1300 Interpreting Fundamentals.

DIS-1402 American Sign Language Linguistics
03 Semester Credits
Study of linguistic principles of American Sign Language (ASL) by comparing lexicon and syntax of ASL to other sign systems and English. Analysis of current research in the areas of phonology, morphology, semantics, syntax and sociolinguistic structure of ASL. Comparison of two major systems for describing signs and how they are used in the language, the Stokoe System and the Liddell/ Johnson Model. Study sociolinguistic aspects of ASL as it is used among Deaf individuals. Analysis of linguistic structures within ASL.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ASL-1010 Beginning American Sign Language I.

DIS-1850 Practicum I
02 Semester Credits
First in two-course sequence. Experience a variety of situations and concepts by observing interpreters in actual work settings; educational and community-based. Supervision by college-approved interpreter.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Prerequisite(s): ASL-2010 Intermediate American Sign Language I, and DIS-1310 Interpreting I, and DIS-2320 Educational Interpreting, and concurrent enrollment in DIS-1970 Practicum Seminar I.

DIS-1970 Practicum Seminar I
01 Semester Credit
Companion seminar to DIS 1850. Provides opportunities for sharing educational and community-based practicum experiences through log entries, videotapes, and group discussions. Includes preparation for national certification examination. Current issues in the interpreting field are discussed.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): ASL-2010 Intermediate American Sign Language I, and DIS-1310 Interpreting I, and DIS-2320 Educational Interpreting, and concurrent enrollment in DIS-1850 Practicum I.

DIS-2300 Transliterating
02 Semester Credits
Theoretical and practical approach to process of sign language transliterating. Students render spoken English messages into signed English, as well as signed English syntax into spoken English through role-play. Role-playing and vocabulary-building in English structures, including idiomatic phrasing.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ASL-2010 Intermediate American Sign Language I, and DIS-1310 Interpreting I.

DIS-2310 Interpreting II
02 Semester Credits
Development of techniques learned in Interpreting I. Various types and situations in interpreting and public speaking also discussed and performed. Application of the RID Code of Ethics and the Educational Interpreter's Code of Conduct.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): DIS-1310 Interpreting I, and ASL-2010 Intermediate American Sign Language I, and DIS-2320 Educational Interpreting.

DIS-2320 Educational Interpreting
03 Semester Credits
Analysis and monitoring of students' understanding of interpreting/transliterating in educational setting. Application of Educational Code of Ethics, Ohio Guidelines for Educational Interpreters, manual code systems, and technical vocabulary. Study of history of Deaf Education, educational laws and support services, child development, and best practices in educational setting.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): DIS-1300 Interpreting Fundamentals, and EDUC-1011 Introduction to Education.

DIS-2410 Voicing
02 Semester Credits
Development of voicing skills needed in voice-to-sign interpreting for people who are deaf, with emphasis on public speaking, signing and performance techniques. Emphasis on vocabulary selection, vocal inflection, and register in multiple settings, as well as various sign systems.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): ASL-2020 Intermediate American Sign Language II, and DIS-2300 Transliterating, and DIS-2310 Interpreting II.

DIS-2850 Practicum II
02 Semester Credits
Second in two-course sequence. Practical interpreting experience in variety of actual work settings while being supervised by an approved interpreter.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Prerequisite(s): ASL-2020 Intermediate American Sign Language II, and DIS-1850 Practicum I, and DIS-1970 Practicum Seminar I, and DIS-2300 Transliterating, and DIS-2310 Interpreting II, and concurrent enrollment in DIS-2970 Practicum Seminar II.

DIS-2970 Practicum Seminar II
01 Semester Credit
Capstone course in Deaf Interpretive Services, and companion seminar to Practicum II. Supplements practicum experience by providing opportunities for sharing experiences through log entries, videotapes, and group discussions. Continued preparation for national certification examination. Resume writing and professional development opportunities. Stress management and health issues.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 1 hour a week.
Prerequisite(s): ASL-2020 Intermediate American Sign Language II, and DIS-1850 Practicum I, and DIS-1970 Practicum Seminar I, and DIS-2300 Transliterating, and DIS-2310 Interpreting II, and concurrent enrollment in DIS-2850 Practicum II.

DENTAL ASSISTING - DAST

DAST-1200 Oral Structure and Development
03 Semester Credits
Introduction to dental terminology, form and function of teeth and related structures. Development, histology, morphology and pathology of permanent and deciduous dentitions and soft tissue structures. Helps students identify normal structures and common abnormalities within the oral cavity, and to communicate effectively with other members of dental team.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Dental Assisting program.

DAST-1300 Dental Assisting Methods I
05 Semester Credits
Integrated study of dental equipment, instruments, materials, assistant and operator role, and clinical procedures associated with the delivery of basic dental treatment. Physical and biological properties of restorative materials, bases, gypsum products, and impression materials are discussed with focus on the examination, diagnostic, amalgam, and composite procedures. Introduction to the principles of microbial activity and application of current practices of infection control in dental office.
Lecture 04 hours. Laboratory 03 hours.
Prerequisite(s): DAST-1200 Oral Structure and Development or concurrent enrollment; and ENG-1010 College Composition I.

DAST-1310 Dental Assisting Radiography I
03 Semester Credits
Study of physical properties of x-radiation, generation of x-rays for dental applications, uses of x-rays in dentistry, and understanding of and adherence to strict safe operating procedures and infection control practices. Theory and practice in fundamentals of oral radiographic technique as relevant to dental assistant. Emphasis on producing diagnostically acceptable full mouth and bite-wing radiographs on adult patient.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): DAST-1200 Oral Structure and Development or concurrent enrollment; and ENG-1010 College Composition I.

DAST-1320 Dental Office Management
03 Semester Credits
Development of sound dental office business procedures and identification of the role of the dental auxiliary in management of dental practice. Emphasis on appointment scheduling guidelines, bookkeeping, telephone etiquette, collections, banking and insurance procedures. Review of basic math, grammar and spelling. Typing and computer keyboard skills are introduced and/or reinforced.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): DAST-1200 Oral Structure and Development or concurrent enrollment, or departmental approval.

DAST-1330 Reimbursement for Dental Services
02 Semester Credits
Basic overview of dental terminology as it relates to conditions and services provided in dental care. Introduction to insurance coverage, claims forms, standardized coding, claims processing and payment collection to maximize profits in a dental business. Introduction to the most current dental office software. Review of job descriptions and areas of responsibility within a dental business and introduce methods to maximize business opportunities.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DAST-1320 Dental Office Management, or concurrent enrollment; or departmental approval.

DAST-1400 Dental Assisting Methods II
03 Semester Credits
Integrated study of dental equipment, instruments, materials, assistant and operator roles, and clinical procedures associated with delivery of specialty dental treatment. Physical and biological properties of materials discussed as foundation for application of these materials during endodontic, removable and fixed prosthodontics, orthodontic, surgical, and periodontic clinical procedures. Skills developed in preparation and manipulation of materials, instruments and equipment, in principles and practices of four-handed dentistry, in anticipating needs of operator, and in monitoring patient reaction. Observation in specialty practice required.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): DAST-1300 Dental Assisting Methods I, and DAST-1860 Dental Assisting Practicum or concurrent enrollment.

DAST-1410 Dental Assisting Radiography II
02 Semester Credits
Theory and practice in the fundamentals of oral radiographic technique for special applications including occlusal, panoramic, edentulous and pediatric radiographs. Emphasis on mastery of the paralleling exposure technique, using the extension cone paralleling device, in producing diagnostically acceptable full mouth and bite-wing radiographs on the adult patient. Patients will be regularly appointed to the dental assisting radiography course clinic where students will develop clinical competence under instructor supervision. Skills in maintenance of processing equipment, duplication of radiographs, monitoring quality assurance of the equipment, charting existing restoration from radiographs, and recognition of pathologic condition commonly seen on radiographs.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): DAST-1310 Dental Assisting Radiography I.

DAST-1420 Current Concepts for the Dental Assistant
01 Semester Credit
Basic overview of clinical concepts and knowledge needed by the Certified Dental Assistant. Emphasis on chairside assisting, infection control and radiology.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: industry-related experience.

DAST-1850 Dental Assisting Practice
02 Semester Credits
Practical application of dental assisting skills and principles via field experience in a dental practice. Emphasis on chairside assisting, infection control, radiology, personal and professional growth. Seminar allows students to share learning experience.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): DAST-1300 Dental Assisting Methods I or concurrent enrollment, or departmental approval.

DAST-1860 Dental Assisting Practicum
04 Semester Credits
Practical application of dental assisting skill and principles via a field experience in a dental practice setting under supervision of a program-recognized practitioner or supervisor. Students rotate through various dental facilities. Emphasis is placed on techniques, efficiency, patient contact and personal and professional growth. Participation in a campus-based weekly seminar allows students to share learning experiences. Guest speakers.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 21 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): DAST-1400 Dental Assisting Methods II or concurrent enrollment.

DENTAL HYGIENE - DENT

DENT-1300 Preventive Oral Health Services I
04 Semester Credits
Introduction to dental hygiene practice including professionalism, infection control, medical history, vital signs, oral inspection, preventive oral health, oral accretions, technique for the oral prophylaxis and medical emergencies.
Lecture 02 hours. Laboratory 06 hours.
Prerequisite(s): Departmental approval: admission to program.

DENT-1311 Dental Anatomy, Histology & Embryology
02 Semester Credits
Study of the form, function and comparative anatomy of primary and permanent teeth, tooth numbering, and dentition periods. Embryologic development of the face, neck, orofacial structures and teeth. Histologic study of the gingiva, oral mucosa and attachment apparatus.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Concurrrent enrollment in DENT-1300 Preventive Oral Health Services I.

DENT-1320 Dental Hygiene Fundamentals
01 Semester Credits
Reinforcement of first term clinical skills with an emphasis on radiographic technique, principles of instrumentation and patient assessment.
Lecture 00 hour. Laboratory 02 hours.
Prerequisite(s): Concurrent enrollment in DENT-1300 Preventive Oral Health Services I; and concurrent enrollment in DENT-1330 Radiology; and concurrent enrollment in DENT-1311 Dental Anatomy, Histology & Embryology, and departmental approval.

DENT-1330 Radiology
03 Semester Credits
History and development of the x-ray, its nature and properties. Safety precautions and uses of x-rays in dentistry. Theory and practice in the fundamentals of oral radiographic technique. Image receptor placement, tube angulation, processing, scanning, mounting and interpretation of images. Film, digital sensor, phosphor plate and panoramic exposures. Students will expose image receptors on a manikin. Consists of lecture modules of instruction correlated with weekly laboratory modules.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in DENT-1300 Preventive Oral Health Services I.

DENT-1340 Dental Hygiene Care Ethics
01 Semester Credit
Study of ethical, moral and professional topics in Dental Hygiene. Introduction to ethical theories and principles related to patient care and decision-making models. Exploration of ethical dilemmas through applied case scenarios.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval, or acceptance to the Dental Hygiene program.

DENT-1400 Preventive Oral Health Services II
05 Semester Credits
Implementation of preventative oral health. Students provide oral health treatments to clients in the dental hygiene clinic. Topics include the special needs of patients with oral rehabilitation, pain management, geriatric concerns, oral cancer, handicaps, mental disorders, cardiovascular disease and diabetes.
Lecture 01 hour. Laboratory 12 hours.
Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1410 Current Concepts in Dental Materials
02 Semester Credits
Physical properties of dental materials and basic principles of their preparation. Application of principles of dental materials by manipulating gypsum, cements, bases, liners, resin, amalgam, impression materials, and pit and fissure sealant materials in the laboratory and/or clinical setting.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): DENT-1300 Preventative Oral Health. Services I.

DENT-1420 Periodontics I
02 Semester Credits
Study of the anatomy and histology of the periodontium in health and disease. Focus on the pathogenesis of the various classifications of gingival and periodontal diseases: microbiological, host response, local and systemic risk factors. Contemporary periodontal adjuncts considered. Major research paper required.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1431 Head and Neck Anatomy
02 Semester Credits
Study of structure and function of head and neck. General anatomy of the skull, related muscles, vascular and nerve supply and lymphatics of the region considered. Focus on muscles of mastication and their relationship to the temporomandibular joint; facial and trigeminal nerves and their relationship with dental injections. Discussion on spread of infection and its clinical manifestations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1440 General and Oral Pathology
02 Semester Credits
General principles of pathology including, inflammation, neoplasia, metabolic and endocrine disturbances, and other systemic diseases affecting the general and oral health of the patient.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DENT-1311 Dental Anatomy, Histology & Embryology and DENT-1300 Preventive Oral Health Services I.

DENT-2100 Dental Hygiene Clinical Skills Reinforcement
01-02 Semester Credits
Designed for students desiring to improve dental hygiene clinical skills. Emphasis on the reinforcement of assessment, instrumentation, calculus detection and removal, radiographic techniques and medical emergency situations. Possible offsite clinical outreach experience included. Also appropriate for licensed hygienists returning to the workforce or students requiring remediation of skills prior to sitting for a clinical board examination.
Lecture 00 hours. Laboratory 03-06 hours.
Prerequisite(s): DENT-1300 Preventive Oral Health Services I, or departmental approval.

DENT-2200 Local Anesthesia and Pain Management
02 Semester Credits
Study of the anatomy, pharmacological and psychological aspects, systemic complications and medical emergencies related to pain management in the dental environment. Laboratory experience in the administration of local anesthesia.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): DENT-1431 Head and Neck Anatomy, or departmental approval.

DENT-2300 Preventive Oral Health Services III
05 Semester Credits
Continuation of the study and clinical application of the principles involved in the provision of oral prophylaxis and periodontal treatment, exposure of radiographs, application of preventive therapeutics and the development of individualized self-care education plans. Case Presentation in verbal and written form.
Lecture 01 hour. Laboratory 12 hours.
Prerequisite(s): DENT-1400 Preventive Oral Health Services II.

DENT-2320 Periodontics II
02 Semester Credits
Study of advanced non-surgical and surgical treatment modalities for periodontal diseases. Discussion of soft tissue management, dental implants and periodontal emergencies. Presentation on human immunodeficiency virus and its clinical manifestations. Laboratory provides practicum experience with non-surgical treatment of periodontally involved clients.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): DENT-1420 Periodontics I , and BIO-2500 Microbiology, or BIO-2520 Oral Microbiology and Immunology, or departmental approval.

DENT-2332 Pharmacology and Therapeutics
02 Semester Credits
Discussion of pharmacological effects of drugs and anesthetics, adverse reactions, and their usual indications and contraindications for preoperative and postoperative client care. Overview of agents used specifically for pain management and medical emergencies presented, referencing the health history and dental hygiene assessment for treatment protocols.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DENT-1400 Preventive Oral Health Services II, and BIO-2500 Microbiology, or BIO-2520 Oral Microbiology and Immunology.

DENT-2340 Community Oral Health I
01 Semester Credits
Study of principles of public health dentistry. Research design as it relates to scientific journal articles. Concepts of biostatistics, public health promotion, prevention of oral disease, and dental health education. Review of special needs programs and public health dental care approach to preventive dentistry. Eight hours of community service.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DENT-1400 Preventive Oral Health Services II.

DENT-2400 Preventive Oral Health Services IV
05 Semester Credits
Continuation of clinical experience integrating social and basic sciences within the scope of dental hygiene practice. Emphasis on professionalism, time management, and advanced dental hygiene techniques. Incorporation of nutritional counseling procedures.
Lecture 01 hour. Laboratory 12 hours.
Prerequisite(s): DENT-2300 Preventive Oral Health Services III and DIET-1220 Nutrition for Dental Hygiene.

DENT-2440 Community Oral Health II
01 Semester Credits
Review of concepts introduced in Community Oral Health I. Revision of principles of public health dentistry. Concepts of program planning, epidemiology, and organization of dental care delivery system. Research design as it relates to the planning, implementing, and evaluating a community outreach project. Eight hours of community service.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DENT-2340 Community Oral Health I.

DENT-2990 Dental Hygiene Practice
01 Semester Credit
Capstone course in Dental Hygiene. Application of the ADHA Code of Ethics, healthcare laws, and standards of professional responsibility to evaluate current dental hygiene issues using evidence-based methods within scope of practice; usage of software that supports the delivery of oral health protocol; development of a plan to acquire and maintain a dental hygiene license; preparation for employment.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DENT-2300 Preventive Oral Health Services III.

DIAGNOSTIC MEDICAL SONOGRAPHY - DMS

DMS-1071 Concepts of Physics in Diagnostic Sonography
02 Semester Credits
Introduction to general physical concepts and related mathematics. Motion, major laws of physics, properties of matter, thermodynamics, basic electricity and electromagnetism, light properties, sound properties, and nuclear physics and their relation to diagnostic ultrasound discussed.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I and MATH-1141 Applied Algebra and Mathematical Reasoning, or MATH-1270 Intermediate Algebra or MATH-1280 Advanced Intermediate Algebra or MATH-1521 College Algebra, or MATH-1580 Precalculus, or MATH-1610 Calculus I, or concurrent enrollment in any of the above courses.

DMS-1260 Pediatric Cardiovascular Anatomy, Physiology and Assessment
02 Semester Credits
Discussion of the cardiovascular system of the pediatric patient as it relates to embryological development of the heart, fetal circulation, abnormal heart formation, cardiac function and hemodynamics with an introduction to congenital cardiovascular defects. Emphasis will be placed on indications for sonographic examination based on symptoms, or preexisting conditions as it relates to the patient's history and physical examination.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II, or departmental approval.

DMS-1303 Introduction to Sonography
02 Semester Credits
Introduction to the profession of Diagnostic Medical Sonography. Topics focus on professionalism, sonographic terminology, anatomical scanning planes, standard presentation and annotation of ultrasound images, body mechanics, and ergonomics with an overview of diagnostic related imaging specialties.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, or concurrent enrollment; and eligibility for ENG-1010 College Composition I.

DMS-1311 Initial Sonographic Scanning
02 Semester Credits
Application of transducer manipulations, instrumentation controls, body mechanics, sonographic scanning techniques, interpersonal communication, recognition of anatomic structures, and practice of patient care skills in laboratory setting under personal supervision of Registered Diagnostic Medical Sonographer. Requires a minimum of an additional 15 hours of outside class work during open lab hours.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): MA-1020 Medical Terminology I or concurrent enrollment; and concurrent enrollment in DMS-1401 Abdominal Sonography I, or DMS-1500 Gynecologic and Obstetrical Sonography; or DMS-1602 Echocardiography I, or DMS-1701 Vascular Sonography I, or departmental approval: admission to Diagnostic Medical Sonography program.

DMS-1351 Patient Care Skills
01 Semester Credit
Discussion, demonstration and practice of patient care skills and practical application of basic medical techniques in a lab setting. Introducing principles of patient care including professional communication with diverse populations, safe transferring skills, assessing and attending to patient needs and infection control.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.

DMS-1381 Cardiac Diagnostic Procedures
03 Semester Credits
Theory and laboratory practice of entry-level cardiovascular procedures of electrocardiography (ECG). Interpretation practice from 12 lead ECG tracings. Fundamentals of Holter monitoring, and pacemakers. Emphasis on technical accuracy in operational, problem solving and quality control skills.
Lecture 2.5 hours. Laboratory 1.5 hours.
Prerequisite(s): None.

DMS-1401 Abdominal Sonography I
04 Semester Credits
Study of adult and pediatric normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of the upper abdominal, peritoneal cavity and potential spaces, non-cardiac chest, gastrointestinal system, musculoskeletal system and associated vasculature as visualized by ultrasound. Doppler and color Doppler applications for the liver, portal vein, and great vessels. Normal anatomy and anatomic variants, physiology, pathology and pathophysiology of the pediatric gastrointestinal system, hip, spine and head as visualized by ultrasound.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1500 Gynecologic and Obstetrical Sonography
04 Semester Credits
Study of normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of female pelvis (non-pregnant, post-partum and postmenopausal) and female reproductive system as related to sonography. Includes monitoring infertile patient. Anatomy, physiology, anomalies, and pathology of maternal, embryo, and fetal anatomic structures during the first trimester studied. Delineates purpose and appropriateness of transabdominal versus transvaginal scanning approaches with associated patient and ethical issues. Doppler and color Doppler applications and biometrics of non-gravid uterus and ovaries discussed.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1602 Echocardiography I
04 Semester Credits
Theory of echocardiography. Study of normal anatomy, anatomic variants, physiology, pathology, and pathophysiology of the heart with ultrasound. Visual pathology recognition and identification on transthoracic examination with an understanding of etiologies of cardiovascular diseases and their affects. Basic understanding of physical concepts and how ultrasound is created and used in an echocardiogram.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1701 Vascular Sonography I
04 Semester Credits
Specialized study of cerebrovascular and peripheral arterial vascular system as related to ultrasound imaging. Focus on anatomy, hemodynamics, pathology and sonographic appearance of normal and diseased arteries. Discussion of direct/indirect testing methods and the sonographic findings. Explanation of medical and surgical interventions used in the treatment of vascular disease.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1940 Field Experience I
01 Semester Credits
Supervised practical application of sonography scanning techniques in clinical setting under personal supervision of registered diagnostic medical sonographer or qualified physician. Emphasis on simple-level scanning skills. Student develops skills related to departmental processes, procedures, protocols, and patient care. Clinical experience in an ultrasound lab.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 192 hours per semester offering.
Prerequisite(s): DMS-1311 Initial Sonographic Scanning.

DMS-1950 Field Experience II
02 Semester Credits
Supervised practical application of sonography scanning techniques in clinical setting under personal and direct supervision of registered diagnostic medical sonographer or qualified physician. Emphasis on intermediate-level scanning skills. Continued performance of basic-level procedures. Student continues skill development related to departmental processes, procedures, protocols, and patient care. Clinical experience in an ultrasound lab.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 360 hours per semester offering.
Prerequisite(s): DMS-1940 Field Experience I.

DMS-2000 Sonographic Case Studies
01 Semester Credits
Integrates concepts and knowledge from clinical experiences and didactic content. Discussion and presentation of case study purpose and approach. Case studies reviewed with emphasis on analyzing, interpreting, and theorizing about the phenomenon.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DMS-2401 Abdominal Sonography II, or DMS-2500 Obstetrical Sonography, or DMS-2602 Echocardiography II, or DMS-2702 Vascular Sonography II and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning; and concurrent enrollment in DMS-1950 Field Experience II.

DMS-2301 Intermediate Sonographic Scanning
02 Semester Credits
Advanced application of transducer manipulations, body mechanics, sonographic scanning techniques, interpersonal communication, recognition of anatomic structures, and practice of patient care skills in laboratory setting under personal supervision of Registered Diagnostic Medical Sonographer. Continued competency in scanning basic exams. Developing scanning skills of intermediate level sonographic procedures.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): DMS-1311 Initial Sonographic Scanning; and concurrent enrollment in DMS-2401 Abdominal Sonography II and concurrent enrollment in DMS-2500 Obstetrical Sonography; or concurrent enrollment in DMS-2602 Echocardiography II; or concurrent enrollment in DMS-2702 Vascular Sonography II.

DMS-2330 Sonographic Pathology
03 Semester Credits
Specialized study of common disease processes relevant to sonographic imaging. Discussion of differences between inflammatory and infectious diseases, congenital, acquired, and hereditary diseases, and benign, malignant, and metastatic neoplasia in the cardiovascular, digestive, endocrine, lymphatic, respiratory, reproductive, and urinary systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II; and DMS-1303 Introduction to Sonography; and MA-1020 Medical Terminology I; and eligibility for ENG-1010 College Composition I.

DMS-2350 Sonographic Instruments and Physics
03 Semester Credits
Physics and related mathematics as applied to ultrasound including the study of acoustical principles, sound transmission, signal processing, transducer construction, ultrasound instrumentation, quality assurance, and bioeffects of diagnostic ultrasound on soft tissue. Study of resolution, display modes, hemodynamics, Doppler principles and related instrumentation as it relates to ultrasound. Modular courses DMS-235A and DMS-235B will also meet the requirements for this course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography and eligibility for ENG-1010 College Composition I.

DMS-235A Sonographic Principles, Performance, and Safety
02 Semester Credits
Physics and related mathematics as applied to ultrasound including the study of acoustical principles, sound transmission, signal processing, transducer construction, ultrasound instrumentation, quality assurance, and bioeffects of diagnostic ultrasound on soft tissue.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography and eligibility for ENG-1010 College Composition I.

DMS-235B Doppler Principles and Instrumentation
01 Semester Credits
Study of resolution, display modes, hemodynamics, Doppler principles and related instrumentation as it relates to ultrasound.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography and eligibility for ENG-1010 College Composition I.

DMS-2401 Abdominal Sonography II
04 Semester Credits
Continuation of normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of the abdominal cavity and the retroperitoneum to include renal, adrenal, splenic, and lymphatic, as it pertains to diagnostic ultrasound. Normal anatomy and anatomic variants, physiology, pathology and pathophysiology of superficial structures to include the breast, neck, thyroid, and male reproductive system. Study of Doppler and Color Flow vascular applications of above mentioned organs and systems. Introduction to scanning of the carotid artery and lower extremity venous vasculature.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1401 Abdominal Sonography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2450 Breast Sonography
02 Semester Credits
In-depth study of breast sonography. Study of breast anatomy and physiology as it pertains to medical ultrasound. Detailed discussion of breast pathologies, anatomic variants, benign and malignant lesions, and their sonographic appearances. Sonographic physics pertinent to the breast ultrasound exam will be incorporated. Overview of related breast imaging modalities, breast surgical procedures, and breast pathology treatments.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1950 Field Experience II.

DMS-2500 Obstetrical Sonography
04 Semester Credits
Study of normal anatomy and anatomic variants, physiology, pathology and pathophysiology of the gravid pelvis and fetus during second and third trimesters as related to sonography. Focus on fetal biometry, fetal size and age assessment, fetal maturity of second and third trimester, conditions involving multiple gestations, fetal abnormalities, and effects of maternal disease on the pregnancy. Also includes sonographic procedures for amniocentesis, chorionic villus sampling, Doppler and color Doppler applications of uterine artery, umbilical cord and fetal aorta. Ethical issues in obstetric sonography and support of parental-fetal bonding discussed.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1500 Gynecologic and Obstetrical Sonography; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2602 Echocardiography II
04 Semester Credits
Introduction to physical signs symptoms, and indications for an echocardiogram reviewed for each major pathology. History and physical examination, laboratory tests, invasive and non-invasive hemodynamic evaluations used to assess various cardiovascular pathologies. Theory and manipulation of Doppler echocardiography with an introduction to interrogation of technical findings. Determination of blood flow within the normal and diseased heart using Doppler echocardiography and applying principles of hemodynamic effects learned. Color and spectral Doppler techniques discussed as applied to clinical transthoracic and transesophageal echocardiographic examinations as well as stress echocardiography.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1602 Echocardiography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2650 Pediatric Cardiac Sonography
03 Semester Credits
Study of normal and abnormal cardiac anatomy, fetal heart development and perinatal circulation specific to congenital cardiovascular defects. Focus on pediatric echo protocol, exam considerations for the patient population with congenital heart abnormalities (pediatric and adults). Discussion and case study review of simple to complex congenital heart abnormalities. Sonographers role in the operating room and catheterization lab.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1950 Field Experience II or departmental approval.

DMS-2702 Vascular Sonography II
04 Semester Credits
Specialized study of peripheral venous system and abdominal vessels as related to ultrasound imaging. Focus on anatomy, venous hemodynamics, pathology, sonographic appearance of normal and diseased vessels, testing methods and sonographic impressions. Discussion of penile sonography, test validation/statistics and the correlation of related diagnostic imaging modalities.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): DMS-1701 Vascular Sonography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2750 Principles of Vascular Imaging for Abdomen and Cardiac Sonographers
03 Semester Credits
Course designed for sonographers experienced in scanning abdomen and cardiac ultrasound exams. Specialized advanced study of selected vascular examinations in the cerebrovascular, peripheral arterial and peripheral venous systems. Examinations include: carotid, arterial physiologic lower extremity, venous duplex upper and lower extremity. Focus on anatomy, hemodynamics, pathology, sonographic appearance of normal and diseased vessels, specific testing methods and sonographic impressions. This course is not intended to fulfill the requirements necessary to take the credentialing examination for vascular technology.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): DMS-1950 Field Experience II or departmental approval.

DMS-2940 Field Experience III
03 Semester Credits
Supervised practical application of sonography scanning techniques in clinical setting under direct supervision of registered diagnostic medical sonographer or qualified physician. Independent scanning of all levels of procedures with emphasis on accuracy and exam duration. Student focuses skill development of professional and technical accuracy and speed. Clinical experience in an ultrasound lab.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 576 hours per semester offering.
Prerequisite(s): DMS-1950 Field Experience II.

DMS-2950 Field Experience IV
01 Semester Credits
Supervised practical application of sonography scanning techniques in clinical setting under direct supervision of registered diagnostic medical sonographer or qualified physician. Independent scanning of all levels of procedures with emphasis on accuracy and exam duration. Student focuses skill development of professional and technical accuracy and speed. Clinical experience in an ultrasound lab.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 192 hours per semester
Prerequisite(s): DMS-2940 Field Experience III.

DMS-2960 Supplemental Field Experience
02 Semester Credits
Supervised practical application of sonography scanning techniques in clinical setting under personal supervision of registered diagnostic medical sonographer or qualified physician. Emphasis on intermediate scanning skills in the supplemental sonographic specialty. Student develops skills specific to the specialty as related to departmental processes, procedures, protocols, and patient care. Experience in a clinical sonography lab setting.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 360 hours per semester offering.
Prerequisite(s): DMS-2950 Field Experience IV.

DMS-2981 Specialty Registry Review
01 Semester Credit
Global review of anatomy, physiology, and pathology in relation to sonography. Test taking skills, image identification, and procedural scenarios covered. Special focus on exam content outline topics to assist student preparing to take national credentialing examinations for sonography.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DMS-2401 Abdominal Sonography II or DMS-2500 Obstetrical Sonography or DMS-2602 Echocardiography II or DMS-2702 Vascular Sonography II or departmental approval.

DMS-2983 Supplemental Specialty Registry Review
01 Semester Credit
Global review of anatomy, physiology, and pathology in relation to the specific sonographic specialty. Test taking skills, image identification, and procedural scenarios covered. Special focus on the specialty exam content outline topics to assist student preparing to take supplemental national credentialing examinations for sonography.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

DMS-2985 Physics Review
01 Semester Credit
Global review of physics in relation to sonography. Test taking skills, image identification, and physical concept scenarios covered. Special focus on exam content outline topics to assist student preparing to take national credentialing examinations for sonography.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DMS-2350 Sonographic Instruments and Physics or departmental approval.

DMS-2991 Sonography Capstone
01 Semester Credits
Capstone course in Diagnostic Medical Sonography. Assessment of one's integration of the coursework, knowledge, experience and skills as Diagnostic Medical Sonography student. Preparation for employment interview and presentation of qualifications through a portfolio. Importance of credentialing, profession involvement and continuing education stressed.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DMS-1950 Field Experience II.

DIETETIC TECHNOLOGY - DIET

DIET-1000 Consumer Nutrition
02 Semester Credits
Study of physical, psychological and social importance of food to the body during life cycle as affected by environmental factors. Consumer skills concerned with labeling, shopping, menu planning and food preparation. Nutrition concerns are assessed for changing behavior and developing future goals.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0990 Language Fundamentals II.

DIET-1020 Treat Yourself Right: Weight Management
02 Semester Credits
Explores components of determining and maintaining healthy body weight. Includes evaluation of personal diet, appropriate food selections, identification of behaviors that enhance or hinder ability to maintain body weight, and development of goals and strategies to improve eating behaviors.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1030 Treat Yourself Right: Diabetes Education
01 Semester Credit
Introduction to diabetes mellitus and practical suggestions for successful management of the disease. Includes managing glucose levels through medication and diet, recipe modifications and eating out strategies. Children with diabetes discussed. Personal diet analysis and menu planning included.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1040 Treat Yourself Right: Heart Healthy
01 Semester Credit
This course will provide accurate information regarding cardiovascular disease and practical suggestions for prevention and treatment. Personal diet analysis and meal planning will be included.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1050 Sports Nutrition
03 Semester Credits
Nutrition implications for human physical and athletic performance including energy and specific nutrients. Emphasis on food selection to enhance performance and nutrition recommendations with regard to varying athletic activities. Calculation of individual energy needs based on weight and activity level. Assessment of body composition and appropriate use of ergogenic aids. Designed for the casual exerciser, elite athlete, coaches, trainers, and persons recognizing the importance of nutrition to fitness.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1060 Exercise Nutrition
01 Semester Credit
Nutrition practices that enable athlete to peak more effectively and to achieve optimum health in the process. Learn how athlete can keep energy levels high on a consistent basis. Special athletic nutrition topics such as weight loss, weight gain, and nutrient modulation to achieve maximum output discussed.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1070 Weight Management Techniques for Fitness Trainers
01 Semester Credit
Fitness trainers will learn appropriate weight management techniques used to teach clients weight management strategies. Determining healthy weight, energy balance, role of exercise and popular weight loss diets discussed. Topics such as eating disorders and the female athlete included.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1160 Child & Adolescent Obesity
02 Semester Credits
Study of nutrient and energy requirements, assessment of growth, prevention and treatment for obesity, and medical complications related to weight problems in childhood and adolescents. Designed for medical personnel, care givers and educators.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1200 Basic Nutrition
03 Semester Credits
A scientific study of nutrition designed for nursing, other health care providers and educators. Students will investigate the roles of the nutrients in the functioning of the human body. Overview of nutrient recommendations, food sources and functions of the nutrients, energy requirements, weight control, vegetarianism, and supplement use. Dietary recommendations and food patterns applied to culture, and prevention of nutrition related diseases in a changing society.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OHL016

DIET-1220 Nutrition for Dental Hygiene
02 Semester Credits
Nutrition principles related to personal and client care. Dental hygiene students will learn how to apply sound nutrition principles to assessing, diagnosing, planning, implementing and evaluating total care of clients, and how to contribute to nutrition well-being of client.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1310 Introduction to Dietetics
02 Semester Credits
Students explore information literacy, professionalism, ethics, educational requirements and governance of the dietetics profession. Includes application of communication, research and self-assessment practices.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1320 Nutrition Applications
01 Semester Credit
Apply nutrition information to variety of activities to demonstrate competency at dietetic technology student level. The Food Guide Pyramid and Exchange System used to write a variety of menus: low fat, high fiber, low calorie, high protein and vegetarian. Medical terminology and abbreviations used in patient charting included.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I, and DIET-1200 Basic Nutrition or concurrent enrollment.

DIET-1331 Fundamentals of Food Production
04 Semester Credits
Application of scientific principles, techniques, and methods of food production for normal and therapeutic meals. Use of food production equipment appropriate for different food service systems. Application of nutrition criteria and quality assurance standards.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1060 Survey of Mathematics or higher, and DIET-1200 Basic Nutrition, and DIET-1320 Nutrition Applications.

DIET-1410 Managing Food Service Operations
04 Semester Credits
Concepts and principles used to manage the food service operations of a health care facility. Includes food production principles, purchasing and cost control concepts. Human resource management principles also discussed. Recommended for healthcare food and nutrition personnel.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1420 Medical Nutrition Therapy for Dietary Managers
03 Semester Credits
Basic nutrition principles and medical nutrition therapy concepts. Includes protein, lipids, carbohydrates, vitamins, minerals, nutrition assessment, documentation and developing nutrition care plans. Recommended for healthcare food and nutrition personnel.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1430 Sanitation and Safety for Certified Dietary Managers
01 Semester Credit
Sanitation and safety principles and procedures for Dietary Managers in food service establishments. Includes food quality, food protection, chemicals, hazard analysis critical control points, crisis management and safety. Recommended for healthcare food and nutrition personnel.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

DIET-1580 Cost Control Procedures
01 Semester Credit
Study of basic food cost control procedures, financial statements and budget preparation as they relate to nutrition services.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-1141 Applied Algebra and Mathematical Reasoning, or higher.

DIET-1590 Purchasing Procedures
01 Semester Credit
Application of dietetic quantity purchasing skills required in the supervision of institutional nutritional care delivery systems. Food specifications, procurement systems, receiving, storage and inventory control.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-1141 Applied Algebra and Mathematical Reasoning, or higher.

DIET-1600 Introduction to Supervision
03 Semester Credits
Analysis of food service supervision through use of theories, principles and terminology. Emphasis on management theories, supervision practices, performance/quality improvement, customer satisfactions and outcomes.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and departmental approval: admission to Dietetic Technology Program.

DIET-1850 Food and Nutrition Systems Practicum
04 Semester Credits
Application of techniques in food production; equipment use and care; employee management; information flow; documentation; sanitation regulations; food service personnel recruitment, training and retention; and quality assurance in a health care facility. Activities provide students opportunity to demonstrate application of knowledge acquired in previous and concurrent nutrition and diet therapy courses.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 2 hours per week.
Prerequisite(s): DIET-1200 Basic Nutrition, and DIET-1320 Nutrition Applications.

DIET-1940 Dietary Managers Field Experience
01 Semester Credit
Supervised work experience. Twelve clock hours per week gaining practical hands-on-work experience supervising a food service department and conducting initial nutritional assessments on patients. Program manager and/or dietetic technology instructor must approve the student work experience sites. The student spends a minimum of 50 hours under the direct supervision of a registered dietitian. Recommended for healthcare food and nutrition personnel.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 12 clock hours per week.
Prerequisite(s): Departmental approval.

DIET-2301 Medical Nutrition Therapy I
03 Semester Credits
Basic nutrition knowledge applied to medical nutrition therapy and the nutrition care process. Apply medical nutrition therapy using evidence based practice with practice cases.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): DIET-1200 Basic Nutrition, and DIET-1320 Nutrition Applications.

DIET-2311 Medical Nutrition Therapy II
03 Semester Credits
Application of nutrition knowledge to specialized medical nutrition therapy. Moderate to high nutrition risk factors examined. Internal medical and renal disease examined.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): DIET-2301 Medical Nutrition Therapy I.

DIET-2320 Medical Nutrition Therapy III
02 Semester Credits
Application of evidence based practice of medical nutrition therapy in cardiovascular disease and diabetes.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DIET-2311 Medical Nutrition Therapy II, or concurrent enrollment or departmental approval.

DIET-2410 Life Cycle Nutrition - Pregnancy and Lactation
01 Semester Credit
Nutritional requirements and concerns for pregnant women, lactating women and infants. Topics include strategies to ensure adequate nutrition through dietary selection and promotion of health, and nutrition intervention to reduce risk of nutrition-related concerns for each group.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DIET-1200 Basic Nutrition.

DIET-2420 Life Cycle Nutrition - Nutrition for Children
01 Semester Credit
Explore nutritional requirements and concerns for children. Includes strategies to ensure adequate nutrition through dietary selection and promotion of health and nutrition interventions to reduce risk of nutrition-related diseases.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DIET-1200 Basic Nutrition.

DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood
01 Semester Credits
Explore the adulthood nutrition life cycle. Includes assessments, health concerns, including cardiovascular disease and diabetes, alternative and complementary care, community nutrition programs and support for low income persons. Introduction to geriatric nutrition and nutritional requirements for the elderly.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DIET-1200 Basic Nutrition.

DIET-2501 Nutrition Applications in Long Term Care
02 Semester Credits
Concepts and application of nutrition care management processes in the long term care setting. Assessment and documentation of nutritional status according to current regulatory standards. Discussion of quality of life issues specific to nutritional care of long term care resident. Other topics include food/drug interactions, special feeding, alternative feeding, and the interdisciplinary team approach to care.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DIET-2311 Medical Nutrition Therapy II, and concurrent enrollment in DIET-2862 Geriatric Nutrition Practicum.

DIET-2850 Medical Nutrition Care Practicum
02 Semester Credits
Application of dietetic technician skills required in medical nutrition care of patients or residents in acute or long-term care facilities under supervision of registered dietitian. Application and documentation of care plans and patient education. Course provides forum for discussion of practicum experience.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): DIET-1850 Food and Nutrition Systems Practicum; and concurrent enrollment in DIET-2311 Medical Nutrition Therapy II.

DIET-2862 Geriatric Nutrition Practicum
02 Semester Credits
Practicum experience under the supervision of a registered dietitian. Delivery of nutrition care services in a long term care setting. Nutrition assessment, intervention and health promotion.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): Concurrent enrollment in DIET-2501 Nutrition Applications in Long Term Care, and DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood or concurrent enrollment.

DIET-2863 Community Nutrition Practicum
02 Semester Credits
Practicum experience under the supervision of a registered dietitian. Delivery of nutrition care services to community based agencies, ambulatory health settings, or social service agencies. Nutrition intervention, assessment and health promotion.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): DIET-2410 Life Cycle Nutrition - Pregnancy and Lactation, or concurrent enrollment, DIET-2420 Life Cycle Nutrition - Nutrition for Children, and DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood.

DIET-2990 Dietetic Technology Professional Development Skills
02 Semester Credits
Capstone course in Dietetic Technology. Integration of knowledge acquired in basic, technical and non-technical areas in preparation for professional roles and life-long professional growth and development.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): DIET-2501 Nutrition Applications in Long Term Care, or concurrent enrollment.

EARLY CHILDHOOD EDUCATION - ECED

ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs
04 Semester Credits
Introduction to child development and philosophy of early childhood education, including developmentally appropriate practices in a variety of child care settings. Identification of effective multicultural and inclusive early childhood learning environments. Recognition of the importance of integrated curriculum as teaching strategy for young children. Introduction to role of the early childhood teacher as facilitator, and the development of effective family/center relationships. Observations in early childhood education settings. Modular courses ECED-101A, ECED-101B, ECED-101C and ECED-101D together will also meet degree requirements for this course.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.
OAN Approved: OED005

ECED-101A Children's Development and Types of Programs in Early Childhood
01 Semester Credit
Introduction to child development and philosophy of early childhood education. Overview of role of teacher as facilitator. Types of programs serving young children and families. Licensing and accreditation standards for child care settings.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

ECED-101B Theoretical Foundations of Early Childhood
01 Semester Credit
Overview of developmental theories and their contributions to early childhood. Emphasis on developmental characteristics of young children and philosophy of developmentally appropriate practices. Observation in early childhood education setting.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

ECED-101C Curriculum and Inclusion in Early Childhood
01 Semester Credit
Exploration of effective multicultural and inclusive early childhood learning environments. Recognition of importance of integrated curriculum as teaching strategy for young children. Introduction to best practices in curriculum. Development of effective family/center relationships.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

ECED-101D Early Childhood Curriculum in the Classroom
01 Semester Credit
Designing effective learning environments for young children. Planning for development of the whole child. Guidance and discipline in classroom setting. Overview of curriculum models and curriculum planning. Observation in early childhood education setting.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

ECED-1301 Language and Literacy in an Integrated Curriculum
03 Semester Credits
Overview of spoken and written language development of young children. Theories and research related to language and literacy development and the role of the teacher in facilitating this development. Extensive practice in learning how to listen and talk with young children. Planning, implementing and evaluating developmentally appropriate multicultural, and anti-bias experiences, environments and materials for language discovery and learning. Selection and integration of appropriate inclusive literature in early childhood settings. Five hours of service learning required.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs; or ECED-101A Children's Development and Types of Programs in Early Childhood, and ECED-101B Theoretical Foundations of Early Childhood, and ECED-101C Curriculum and Inclusion in Early Childhood, and ECED-101D Early Childhood Curriculum in the Classroom.

ECED-1311 Art and Creative Expression in an Integrated Curriculum
03 Semester Credits
Exploration of planning, organizing, implementing, and evaluating a developmentally appropriate curriculum that fosters the creative and aesthetic development of young children. Preparation, organization, and maintenance of early childhood environment emphasized. Students in lecture/lab setting experience extensive variety of art media suitable for young children. Five hours of service learning required.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs; or ECED-101A Children's Development and Types of Programs in Early Childhood and ECED-101B Theoretical Foundations of Early Childhood and ECED-101C Curriculum and Inclusion in Early Childhood and ECED-101D Early Childhood Curriculum in the Classroom.

ECED-1321 Math and Science Inquiry in an Integrated Curriculum
03 Semester Credits
Introduction to extensive variety of curricular experiences which enhance young children's intellectual curiosity and critical thinking skills. Role of teacher in facilitating science, math, problem solving experiences, scientific methods/learning process and constructivist theory explored. Students participate in lecture/lab setting with variety of hands on problem solving activities. Five hours of Service Learning required.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs; or ECED-101A Children's Development and Types of Programs in Early Childhood and ECED-101B Theoretical Foundations of Early Childhood and ECED-101C Curriculum and Inclusion in Early Childhood and ECED-101D Early Childhood Curriculum in the Classroom.

ECED-1331 Music & Movement in an Integrated Curriculum
03 Semester Credits
Exploration of appropriate methods and materials for implementation of music in early childhood curriculum. Impact of music experience on cognitive, socio-emotional and physical/motor development examined. Connections between emergent literacy, music and brain development and constructivism explored. Includes creative self expression using movement, sounds, songs, musical instruments, selection of recordings, multicultural experiences in music and use of community resources. Five hours of service learning required.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs; or ECED-101A Children's Development and Types of Programs in Early Childhood and ECED-101B Theoretical Foundations of Early Childhood and ECED-101C Curriculum and Inclusion in Early Childhood and ECED-101D Early Childhood Curriculum in the Classroom.

ECED-1400 Administration and Leadership in Early Childhood
04 Semester Credits
Overview of major administrative principles, types of child care centers, legislative mandates, center policies and procedures, insurance ramifications, design of physical facilities, purchasing, budgeting, recordkeeping, and professional public relations. Programmatic formats as related to philosophical assumptions, educational theories and environmental design with respect to infants, toddlers, preschool and school age settings.
Modes of staff support and management including problem solving and conflict resolution surveyed.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs or concurrent enrollment; or ECED-101A and ECED-101B and ECED-101C and ECED-101D.

ECED-1540 Programming and Adjustments in Infant/Toddler Care
03 Semester Credits
Focus on consolidation and integration of understandings, skills and dispositions associated with becoming effective, knowledgeable caregivers of infants and toddlers. Includes designing responsive learning environments, early experiences, family interactions and assessment process in work with young children and families. Emphasis on professional development, family advocacy and ethical considerations for caregivers. Application of brain development and learning principles discussed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ECED-2500 Infant/Toddler Development, Relationships, and Programs or concurrent enrollment; and departmental approval.

ECED-1550 Experiences with Infants
01 Semester Credit
Introduction to developmentally appropriate practices in support of infant development and growth. Developmental knowledge, temperament, establishing relationships, communication strategies, preparing and maintaining a healthy and safe environment and presenting supportive and appropriate experiences with infants.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ECED-1540 Programming and Adjustments in Infant/Toddler Care or concurrent enrollment; and ECED-2500 Infant/Toddler Development, Relationships, and Programs or concurrent enrollment; concurrent enrollment in ECED-1850 Infants in Early Childhood Setting Practicum; and departmental approval.

ECED-1570 Experience with Toddlers
01 Semester Credit
Introduction to developmentally appropriate practices in support of toddler development. Developmental knowledge, temperament, establishing relationships, communication strategies, positive guidance, appropriate supportive experience planning and preparing and maintaining a healthy and safe environment for toddlers.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ECED-1540 Programming and Adjustments in Infant/Toddler Care; and ECED-2500 Infant/Toddler Development, Relationships, and Programs or concurrent enrollment; concurrent enrollment in ECED-1870 Toddlers in Early Childhood Setting Practicum; and departmental approval.

ECED-1850 Infants in Early Childhood Setting Practicum
02 Semester Credits
Participation in assigned early childhood settings under college supervision to develop effective skills with infants, families and staff. Discussion of practicum experiences with integration of knowledge, skills and dispositions essential for infant caregivers emphasized.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): ECED-1540 Programming and Adjustments in Infant/Toddler Care or concurrent enrollment; and ECED-2500 Infant/Toddler Development, Relationships, and Programs or concurrent enrollment; and concurrent enrollment in ECED-1550 Experiences with Infants; and departmental approval.

ECED-1860 Experience with Young Children in Early Childhood Settings
03 Semester Credits
Practice within diverse early childhood settings. Students introduced to developmentally appropriate care and education of young children within assigned setting. Preparation, organization and maintenance of an educational environment, responsive interaction and communication strategies, planning and presentation of experiences/activities for young children emphasized. Experience provided in relating to wide array of individuality among children. Cultural and familial diversity, adjustment of children to group setting and development of positive work relationships emphasized.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs; or ECED-101A and ECED-101B and ECED-101C and ECED-101D; and ECED-1300 Early Language and Literacy Development: Integrated Curriculum and departmental approval.

ECED-1870 Toddlers in Early Childhood Setting Practicum
02 Semester Credits
Participation in assigned early childhood education settings under college supervision to develop effective skills with toddlers, families, and staff. Discussion of practicum experiences and integration of knowledge skills and dispositions critical for toddler caregivers emphasized.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): ECED-1540 Programming and Adjustments in Infant/Toddler Care; and ECED-2500 Infant/Toddler Development, Relationships, and Programs or concurrent enrollment; and concurrent enrollment in ECED-1570 Experience with Toddlers; and departmental approval.

ECED-2300 Child Behavior and Guidance
03 Semester Credits
Discussion and development of a variety of guidance and classroom management strategies for young children based upon child development and anti-bias principles. Emphasis on preparing, organizing, and maintaining physically and psychologically safe environment. Establishment and maintenance of positive, collaborative family relations and supportive, professional, ethical behavior emphasized. Consequences of stress and trauma on child development and behavior explored. Skills strengthened in observing and assessing child behavior to enhance planning for the growth of young children.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs; or ECED-101A and ECED-101B and ECED-101C and ECED-101D; and ENG-1010 College Composition I.

ECED-2401 Families, Communities & Schools
03 Semester Credits
Develop skills to work with families in fostering optimal development and growth of their children. Emphasis on interpersonal techniques that will promote positive relationships with families, schools, and community. Explore various models for family involvement. Focus on working with socially, culturally, and linguistically diverse families.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I; and ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs; or ECED-101A Children's Development and Types of Programs in Early Childhood, and ECED-101B Theoretical Foundations of Early Childhood, and ECED-101C Curriculum and Inclusion in Early Childhood, and ECED-101D Early Childhood Curriculum in the Classroom.
OAN Approved: OED006

ECED-2500 Infant/Toddler Development, Relationships, and Programs
03 Semester Credits
Comprehensive coverage of broad areas of infant and toddler development and care with special emphasis on developmentally appropriate practices for adults who work with children ages birth to three. Major developmental milestones in infant and toddler growth; creation of safe, healthy, and supportive learning environments for children under three. Selection of materials and equipment for center or home-based care; analysis of professional standards for high quality interactions between adults and very young children.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs; or ECED-101A, and ECED-101B and ECED-101C and ECED-101D.

ECED-2700 Including Children with Special Needs
03 Semester Credits
Survey course focusing on children with special needs and their families. Emphasis on observation, identification, referral and adaptations of the environment for inclusion of children with disabilities. Family centered interventions, community resources, legal mandates and communication skills necessary to work with families, children, and specialists in a variety of settings included.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs; or ECED-101 and, ECED-101B and ECED-101C and ECED-101D.

ECED-2870 Early Childhood Education Student Teaching Practicum
02 Semester Credits
Capstone course in early childhood education. Participation in assigned early childhood education settings under college supervision to develop effective skills with young children, families, and staff. Integration of principles of child development in designing and implementing developmentally appropriate curriculum, assessment and professionalism. Creation of inclusive environments through physical design and respectful, sensitive interactions. Each student will spend 240 hours per semester in field experience.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 16 hours per week.
Prerequisite(s): ECED-1311 Art and Creative Expression in an Integrated Curriculum, ECED-1321 Math and Science Inquiry in an Integrated Curriculum, ECED-1331 Music & Movement in an Integrated Curriculum, ECED-1860 Experience with Young Children in Early Childhood Settings; concurrent enrollment in ECED-2990 Early Childhood Education Student Teaching Seminar, and departmental approval: students must meet with a faculty coordinator prior to registration.

ECED-2990 Early Childhood Education Student Teaching Seminar
03 Semester Credits
Capstone course in early childhood education. Student will focus on consolidation and integration of the knowledge, skills and dispositions associated with becoming an effective, knowledgeable lead/group teacher of young children. Focus includes planning, implementing and assessing curriculum, creating appropriate learning environments, developing professional conduct, and recognizing ethical issues. Preparation of materials to support a wide variety of curriculum and assessment processes addressed. Focus on teaching to individual styles and incorporating appropriate guidance techniques for managing groups of children in early childhood settings. Recognizing and maintaining collaborative relationships with families of different structures, social and cultural backgrounds. Recognizing opportunities for professional development.
Lecture 02 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): ECED-2300 Child Behavior and Guidance, or concurrent enrollment; ECED-2400 Center-Family Relationships, or concurrent enrollment; HLTH-1400 Childhood Health, Safety and Nutrition, or concurrent enrollment; and ECED-2500 Infant/Toddler Development, Relationships, and Programs, ECED-2700 Including Children with Special Needs, and concurrent enrollment in ECED-2870 Early Childhood Education Student Teaching Practicum, and department approval: students must meet with a faculty coordinator prior to registration.

EARTH SCIENCE - ESCI

ESCI-1030 Survey of Earth Science
03 Semester Credits
[This course is cross-listed as PSCI-1030. Credit can only be earned once for either course.] Survey of geology of Earth and its impact on the environment. Earth's structure and composition, earthquakes, plate tectonics, hydrologic cycle, weather, resources and energy alternatives, and current related issues. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

ESCI-103L Survey of Earth Science Laboratory
01 Semester Credits
[This course is cross-listed as PSCI-103L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on rocks and minerals, soils, weather, plate tectonics, energy and may include other related earth science activities. Laboratory activities complement and enrich related lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): ESCI-1030 Survey of Earth Science or concurrent enrollment.

ESCI-1310 Physical Geography
03 Semester Credits
Introductory study of physical elements of geography. Includes Earth-Sun relationships, maps, atmospheric components and interactions, elements and controls of weather and climate, water resources and their distribution, vegetation associations, animal associations, ecological relationships, soil types, landforms, and plate tectonics. World distribution, causal relationships and significance to man stressed. To fulfill laboratory science requirements, students should also enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.
OAN Approved: OSS006

ESCI-131L Laboratory in Physical Geography
01 Semester Credit
Laboratory studies include the scientific method, map interpretation and construction, remote sensing, energy transfers, weather components, climate classification, hydrology, pedology, ecology, plant and animal geography, and plate tectonics.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): ESCI-1310 Physical Geography or concurrent enrollment.

ESCI-1410 Physical Geology
03 Semester Credits
Topics include materials and structures of the Earth; processes and agencies which change Earth's crust. Mineral composition of rocks; work of gravity, water, winds, and glaciers as agents of erosion; volcanoes and earthquakes as forces which change Earth's surface. To fulfill laboratory science requirements, students should also enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.
OAN Approved: OSC011 (1 of 2 courses, both must be taken)

ESCI-141L Laboratory in Physical Geology
01 Semester Credit
Laboratory studies include minerals, rocks, volcanoes, geologic dating, topographic maps and determination of depositional and erosional features, earthquake epicenter locations, folds and faults, interpretation of geologic maps, plate tectonic processes and boundaries, and field work to become familiar with local geology. Regularly scheduled field trips are integral part of this course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): ESCI-1410 Physical Geology or concurrent enrollment.
OAN Approved: OSC011 (2 of 2 courses, both must be taken)

ESCI-141H Honors Physical Geology
03 Semester Credits
Honors course in Physical Geology. Materials and structures of the Earth; processes and agencies by which the Earth's crust has been and is being changed; rocks and their mineral composition. Work of gravity, water, winds, and glaciers as agents of erosion; volcanoes and earthquakes as forces which change the surface of the Earth. Emphasis on the effects geological events and resources have had on human civilization. To fulfill laboratory science requirements, students should also enroll in Laboratory in Physical Geology.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I.

ESCI-1510 Historical Geology
03 Semester Credits
Geologic history of the earth and biota. Special emphasis on North America. Topics include plate tectonics, relative and absolute dating, rocks and their significance as indicators of environment, interpretation of geologic maps, evolution, fossilization, and major groups of fossils. To fulfill laboratory science requirement, students should also enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.
OAN Approved: OSC012 (1 of 2 courses, both must be taken)

ESCI-151L Laboratory in Historical Geology
01 Semester Credit
Laboratory studies include mineral and rock identification, significance of rock type, relative and absolute dating, stratigraphy, fossilization, fossil identification and significance, evolutionary patterns, cladistics, geology and paleontology of the major geologic time divisions, and field work. Required field work is integral part of this course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): ESCI-1510 Historical Geology or concurrent enrollment.
OAN Approved: OSC012 (2 of 2 courses, both must be taken)

ESCI-1610 Geology of the National Parks
03 Semester Credits
Studies of each park will include reasons why each area was set apart as a park, its geologic history, its present lithology and topography, and influences of lithology and topography on climatic and biotic factors (and vice versa). Ecological and geologic problems that have arisen because of presence of humans in parks or in adjacent areas also considered. To fulfill laboratory science requirement, students should also enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

ESCI-161L Laboratory in Geology of the National Parks
01 Semester Credit
Laboratory studies include use of topographic maps, aerial photos, remote sensing images, and geologic maps; volcanism and earthquakes, physiographic provinces; identification of igneous, sedimentary and metamorphic rocks and structures; studies of depositional and erosional features of streams, winds, glaciers, and waves; fossil identification; analyses of climatic and biological data; plate tectonics; investigations into ecological problems of many of national parks. Field work is required.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): ESCI-1610 Geology of the National Parks or concurrent enrollment.

ESCI-2300 Introduction to the Science of Ecosystems
03 Semester Credits
Studies of the lithosphere, atmosphere, hydrosphere, and biosphere are incorporated into a comprehensive study of ecosystems. Emphasis placed on effects of humans on these ecosystems and how altered ecosystems, in turn, affect humans. Effects of humans to be studied are primarily those that are inflicted on ecosystems because of their numbers, their concentrations, their standards of living, and their everyday economic activities.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

ECONOMICS - ECON

ECON-1210 Survey of Economics
03 Semester Credits
Overview of economic principles and problems designed to provide general understanding of structure, organization and operation of our economy. Relationship of economy to our social and political welfare and its determination of the fundamental standard of living, on both macro and micro levels.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ECON-1220 Economic Development of the American Economy
03 Semester Credits
Evolutionary development of American economic system. Review of changes in economic and organizational structure, emphasizing application of fundamental economic explanation of change.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ECON-2610 Principles of Macroeconomics
04 Semester Credits
Non-sequential course which introduces language, tools, methods and topics of economic analysis. Study of broad economy including measurement and analysis of economic activity, government and its roles in a market system, the banking system, monetary policy, economic growth and international economics.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I or eligibility for MATH-1060 Survey of Mathematics.
OAN Approved: OSS005

ECON-2620 Principles of Microeconomics
04 Semester Credits
Non-sequential course which introduces language, tools, methods and topics of economic analysis. Study of detailed economy at the firm and industry level with emphasis on market theory (supply/demand), production, and price and output determination as they vary by market structure, and includes current problems and policy concerns.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I or eligibility for MATH-1060 Survey of Mathematics.
OAN Approved: OSS004

ECON-2700 The Economics of Money, Banking, and Financial Markets
03 Semester Credits
Examines the economic roles played by financial markets, financial institutions, and money in the determination of business and consumer behavior, personal wealth, and the performance of the economy. Studies key markets, including the bond and stock markets; key institutions, including banks and the Federal Reserve. Monetary theory and policy discussed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ECON-2610 Principles of Macroeconomics, and ECON-2620 Principles of Microeconomics.

EDUCATION - EDUC

EDUC-1011 Introduction to Education
03 Semester Credits
Designed to introduce the student to the broad and complex field of public education. Emphasis on personal and professional characteristics required for successful teaching. This course also requires 18 hours of field observation in primary and/or secondary school classrooms within the term.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OED001

EDUC-1020 Educational Technology
03 Semester Credits
Identify, select, evaluate, use, and troubleshoot instructional technology, electronic media, operating and utility software to meet curricular goals. Use instructional design and integration strategies to design and produce developmentally and culturally appropriate materials that align with PRAXIS II and INTASC/Ohio standards.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OED002

EDUC-1411 Individuals with Exceptionalities
03 Semester Credits
Focus on variety of disabilities, giftedness, and talent among students in educational settings. Multidisciplinary team process, special needs and services, attitudes toward exceptional students, minorities, parenting exceptional children, and public laws and policies will be defined and discussed. One field observation is required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): EDUC-1011 Introduction to Education.
OAN Approved: OED004

EDUC-2010 Approaches to Teaching
03 Semester Credits
General strategies and skills of instruction with emphasis on curriculum design, instructional planning, learner diversity, decision making, interpersonal communication, questioning, and classroom management.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): EDUC-1011 Introduction to Education.

EDUC-2050 Human Diversity in Education
03 Semester Credits
Relationships between a variety of socio-cultural patterns of students and communities and abilities to instruct. Development of strategies for increasing the educational potential of all students.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): EDUC-1011 Introduction to Education, or ECED-1010 Introduction to Early Childhood Education: Children`s Development and Programs.

EDUC-2850 Sophomore Practicum
02 Semester Credits
Participation of students in field experience at assigned sites under college supervision to develop, implement, and evaluate practical skills in teaching.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): EDUC-1011 Introduction to Education; PSY-2110 Educational Psychology, or concurrent enrollment; and concurrent enrollment in EDUC-2050 Human Diversity in Education, or departmental approval.

ELECTRICAL/ELECTRONIC ENGINEERING TECHNOLOGY - EET

EET-1015 Introduction to Computer Maintenance and Repair
03 Semester Credits
Introduction to careers in the field of personal computer maintenance and repair. Overview of hardware and software concepts associated with personal computer systems. Survey of techniques and methods used by technicians to maintain, repair, troubleshoot and upgrade personal computers. Overview of techniques and skills necessary for career opportunities in computer user support fields. Coverage of both interpersonal as well as technical abilities necessary for success in this industry.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications or concurrent enrollment.

EET-1035 Operating Systems and Software for PC Technicians
04 Semester Credits
Hands-on course provides both theoretical and practical training with computer operating system setup, maintenance, upgrading, troubleshooting and support. Lab activities provide direct experience with techniques and tools used to install, configure, operate, secure and troubleshoot operating system software in desktop and mobile devices. Fundamental career training for computer service technicians.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): EET-1015 Introduction to Computer Maintenance and Repair, or concurrent enrollment.

EET-1055 Computer Hardware Support
04 Semester Credits
Assemble computer components, install, configure and maintain devices and PCs, properly and safely diagnose, resolve and document common hardware issues while applying troubleshooting skills. Focuses on providing appropriate customer support. Designed in conjunction with industry standard training and certification guidelines.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): EET-1015 Introduction to Computer Maintenance and Repair.

EET-1081 Computer User Support
01 Semester Credit
Overview of techniques and skills necessary for career opportunities in computer user support fields, with particular emphasis on process of microcomputer service and repair. Coverage of both interpersonal and technical abilities necessary for success in this industry. Problem-solving strategies for common user support issues, customer service skills, help desk operation, documentation requirements and information resources for user support.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Recommend IT-1010 Introduction to Microcomputer or proficiency in Windows and MSOffice.

EET-1100 Introduction to Robotics
02 Semester Credits
Introduction to direct current circuits, binary and hexadecimal numbering systems, signed numbers and elementary programming language statements (confined to programming a robot in laboratory component).
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

EET-1130 Basic Audio Electronics
03 Semester Credits
Basic DC and AC circuits, amplifier theory, audio distortion, electronic test equipment operation and soldering techniques. Designed for non-EET majors.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MATH-1060 Survey of Mathematics or higher level math, or departmental approval.

EET-1140 Productivity Tools for Engineering
02 Semester Credits
Productivity Tools for Engineering exposes the students to word processing, spread sheets and CAD (Computer Aided Design) programs directed at the electronic engineering technology environment.
Lecture 00 hour. Laboratory 04 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment; and eligibility for MATH-1280 Advanced Intermediate Algebra; or departmental approval.

EET-1150 Basic Robotics with Math
02 Semester Credits
Course provides an introduction to robotic principles using C programming with an emphasis on math.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

EET-1160 Direct Current Circuits I
02 Semester Credits
Basic introduction to Direct Current circuits that includes Ohms law, Kirchoff's Voltage Law (KVL), Kirchoff's Current Law (KCL), wire sizes, engineering notation, electric units, series circuits, parallel circuits, series/parallel circuits and surface mount component troubleshooting.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra, or concurrent enrollment; or departmental approval.

EET-1170 Direct Current Circuits II
02 Semester Credits
Direct-current (DC) circuits is the second class in Direct Current courses. Focus on Ohms Law, Kirchhoff's Laws, Mesh and Nodal circuit analysis, Thevenin's and Norton's Theorems as applied to series, parallel, and series-parallel circuit networks. Computer simulation and practical laboratory experience using electrical measuring instrumentation to observe and verify theories and concepts presented during lectures.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): EET-1160 Direct Current Circuits I, or concurrent enrollment or departmental approval.

EET-1180 Surface Mount Soldering
01 Semester Credit
Develop skills using surface mount soldering equipment and techniques to facilitate design, construction and rework of circuit boards.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

EET-1210 AC Electric Circuits
03 Semester Credits
Fundamentals of alternating current (AC) circuits involving resistance, capacitance, and inductance. Sinusoidal voltage, current power, phase, resonance, and frequency response of basic circuit elements in series, parallel, and series-parallel connections as analyzed using Kirchhoff's laws, Mesh, Nodal, and Bridge Network analysis, Delta-Wye conversions, Superposition, Thevenin's, Norton's and Maximum Power Transfer theorems. Decibels, filters, Bode plots, Fourier series, polyphase transformers, and system analysis are studied. Computer simulation and practical laboratory experience using AC instrumentation for measuring series-parallel networks to observe and verify theory and concepts presented during lectures.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1170 Direct Current Circuits II, and MATH-1510 Trigonometry, or concurrent enrollment; or departmental approval.
OAN Approved: OET003/OET006 (course 2 of 2, both must be taken)

EET-1220 Circuits and Electronics
03 Semester Credits
Direct-current (DC) and alternating-current (AC) circuit fundamentals involving resistance, capacitance, and inductance. Electrical quantities and units of measurements: Ohm's law, Kirchoff's laws, network analysis and network theorems presented as applied to series, parallel, and series/parallel DC and AC circuits. Topics include RC and RL time constants, phasors, operators, impedance, admittance, and power triangles, power factor correction, polyphase systems, and transformers. Computer simulation, and practical laboratory experience using electrical measuring instrumentation to observe and verify theories and concepts presented during lectures.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MATH-1510 Trigonometry, or concurrent enrollment; or departmental approval.

EET-1230 Telecommunications I
03 Semester Credits
Introductory course in analog communications systems and circuits. Introduces concept of complex waveforms and analysis of complex waveforms for frequency content. Presents fundamentals of transmission and reception of amplitude, single sideband, frequency and phase modulated signals. Systems and circuits for television broadcast and reception. Overview of broadcast antennas and antenna feed systems.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1210 AC Electric Circuits or concurrent enrollment, and MET-1120 Computer Applications and Programming; or departmental approval.

EET-1240 Digital Circuits/Microprocessors I
03 Semester Credits
Introduction to binary number system and to all logic gates used in digital circuits. Boolean algebra, logic gate equivalents and Karnaugh maps are used to simplify Boolean logic equations and various logic circuits. Decoders, multiplexers, latches, flip-flops, counters, and shift registers studied in detail. Laboratory experiments to reinforce lecture material used throughout course.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1160 Direct Current Circuits I or concurrent enrollment, or departmental approval.

EET-1301 Cisco I: Networking Technologies
03 Semester Credits
Introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. Uses the Open Systems Interconnection (OSI) and Transport Control Protocol (TCP) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of Internet Protocol (IP) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1020 Information Technology Concepts or concurrent enrollment, or IT-1025 Information Technology Concepts for Programmers or concurrent enrollment; or departmental approval: equivalent knowledge or skills.

EET-1311 Cisco II: Basic Router Technologies
03 Semester Credits
Describes the architecture, components, and operation of routers, and explains the principles of routing and routing protocols. Analyze, configure, verify, and troubleshoot the primary routing protocols, Routing Information Protocol version 1 (RIPv1), Routing Information Protocol version 2 (RIPv2), Enhanced Interior Gateway routing Protocol (EIGRP), and Open Shortest Path First (OSPF). Analyze, recognize, and correct common routing issues and problems.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1301 Cisco I: Networking Technologies.

EET-1910 Directed Practice Electric Utility Technology I
04 Semester Credits
Supervised field practice of electrical overhead lineman job duties in a setting under direct supervision of electric company personnel. Focuses on the installation of services, street lighting, and secondary circuits. Includes various pole framing techniques and guying methods as well as an overview of transmission and distribution of electrical systems, rigging safety awareness, Occupational Safety and Health Administration (OSHA) training and first-aid certification. Safety requirements emphasized throughout the course.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).
Prerequisite(s): Concurrent enrollment in ISET-1410 Applied Electricity I, and departmental approval: admission to Electric Utility Technology program.

EET-1915 Directed Practice Substation Utility Technology I
04 Semester Credits
Supervised practical applications of electrical substation worker job duties in a setting under direct supervision of electric company personnel. Emphasis on safety practices and regulations, using substation vehicles and equipment, and procedures and tasks related to use and maintenance of an electrical substation.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).
Prerequisite(s): Concurrent enrollment in ISET-1410 Applied Electricity I, and departmental approval: admission to Electrical Utility Technology Program.

EET-1920 Directed Practice Electric Utility Technology II
04 Semester Credits
Supervised practical applications of electrical overhead line worker job duties in a setting under personal supervision of electric company personnel. Emphasis on skills required to perform work on secondary voltage circuits. Emphasis on the installation of services, street lighting, and secondary circuits, bucket truck familiarization and bucket rescue. Overview of distribution electrical systems, and Occupational Safety and Health Administration (OSHA) rules. Safety topics include: Work Zone Traffic Control; Minimum Approach Distances; Rubber Protective Equipment; and Knowledge of UD Excavation/Trenching/Shoring.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week at site (300 hours per semester).
Prerequisite(s): EET-1910 Directed Practice Electric Utility Technology I, and concurrent enrollment in ISET-1420 Applied Electricity II.

EET-1925 Directed Practice Substation Utility Technology II
04 Semester Credits
Second in a four part series providing the student with a broader skill set as well as enhanced knowledge and skill level necessary to safely assist in the performance of routine repairs on distribution and power transformers, bushings, circuit breakers, disconnect switches, control equipment and other de-energized electrical equipment used in the distribution of electrical energy.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 20 hours per week at site (300 hours per semester).
Prerequisite(s): EET-1915 Directed Practice Substation Utility Technology I, and concurrent enrollment in ISET-1420 Applied Electricity II.

EET-2111 Industrial Electronics I
03 Semester Credits
Construction, theory of operation, performance characteristics and application of DC motors, DC auxiliary devices, AC single phase transformers, AC three phase transformers, AC three phase motors. Specification and characteristics of power switching devices like triacs, Metal Oxide Semiconductor Field Effect Transistors (MOSFETs), Insulated Gate Bipolar Transistors (IGBTs), opto-isolators, switching power supplies and applicable safety standards.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1210 AC Electric Circuits, or departmental approval.

EET-2120 Electronics I
03 Semester Credits
Course includes the most common solid-state devices used in electronic circuits: diode, bipolar transistor, field effect transistor, and uni-junction transistor. Graphical and analytical DC and AC analysis of various electronic circuits used. Computer circuit analysis program Pspice used to predict DC voltages and currents and frequency response of different circuits. Laboratory experiments reinforce topics studies in lecture.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1210 AC Electric Circuits and MATH-1510 Trigonometry; or ATTC-1340 AC Circuits/Telephony; or departmental approval .

EET-2130 Telecommunications II
04 Semester Credits
Continuation of telecommunications course sequence; introductory course in data communications and network theory. Topics include systems and techniques for digital and data communications, data communications protocol, digital transmission, time and frequency division multiplexing, as well as introductory material on communications networks.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): EET-2170 Signal Analysis.

EET-2140 Digital Circuits/Microprocessors II
03 Semester Credits
Introduction to microprocessor theory and function. Topics include programming concepts and program development, bus configuration, memory, timing relationships, data input and output techniques, interrupt handling and introduction to support chips.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1240 Digital Circuits/Microprocessors I.

EET-2150 Printed Circuit Layout
01 Semester Credits
Examines use of contemporary program(s) to lay out printed circuit board in single and multiple layers. Design rules, current return paths, crosstalk and other anomalous conditions are explored.
Lecture 00 hour. Laboratory 03 hours.
Prerequisite(s): EET-2120 Electronics I, or concurrent enrollment or departmental approval.

EET-2170 Signal Analysis
03 Semester Credits
Introduces bandwidth, frequency response, noise, modulation, spectrum analysis and distortion and how they apply to design, troubleshooting and circuit operation.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1210 AC Electric Circuits, or departmental approval.

EET-2180 EET Applied Calculus
03 Semester Credits
An introductory course to calculus with an emphasis on electrical/electronic applications. Topics include: limits; differentiation and graphical applications of the derivative; and indefinite and definite integration and applications. Emphasis on technology as a tool through use of graphing calculator/computer.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): EET-2120 Electronics I, and MATH-1510 Trigonometry, or MATH-151H Honors Trigonometry.

EET-2220 Electronics II
03 Semester Credits
Continuation of electronic circuits. Includes study of difference amplifier used in operational amplifiers. Additional topics include various uses of operational amplifier, voltage comparator, digital-to-analog converter (DAC), analog-to-digital converter (ADC), active filter circuits, oscillators and sample hold circuits.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2120 Electronics I.

EET-2230 Telecommunications III
03 Semester Credits
Final course in electronic telecommunication series. Overview of fiber optic, microwave and broadband cable telecommunications media systems.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): EET-2130 Telecommunications II.

EET-2241 Microprocessor and Hardware Interfacing with C Programming
03 Semester Credits
Concluding course in the Digital/Microprocessors series. Focuses on application of microprocessor and related support chips, software and hardware interfacing with various input/output devices, and related software topics. Stresses control and measurement applications using the C programming language.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2140 Digital Circuits/Microprocessors II; or departmental approval.

EET-2290 Electrical Design Project
02 Semester Credits
Capstone course for Electrical-Electronic Engineering basic program. Designed to allow students opportunity to demonstrate and apply capabilities and skills acquired during previous engineering technology coursework. Students choose approved electronic project compatible with their interest and background. Project includes research, documentation, construction and testing, and concludes with a report and presentation of results.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): EET-2241 Microprocessor and Hardware Interfacing with C Programming; or departmental approval.

EET-2301 Cisco III: LAN Switching and Wireless
03 Semester Credits
Provides a comprehensive, theoretical, and practical approach to learning the technologies and protocols needed to design and implement a converged switched network. Students learn about the hierarchical network design model and how to select devices for each layer. The course explains how to configure a switch for basic functionality and how to implement Virtual Local Area Networks (VLANs), VLAN Trunk Protocol (VTP), and Inter-VLAN routing in a converged network. The different implementations of Spanning Tree Protocol (STP) in a converged network are presented, and students develop the knowledge and skills necessary to implement a Wireless LAN (WLAN) in a small to medium network.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1311 Cisco II: Basic Router Technologies.

EET-2311 Cisco IV: WAN Technologies
03 Semester Credits
Discuss the Wide Area Network (WAN) technologies and network services required by converged applications in large enterprise networks. The course introduces integrated network services and explains how to select the appropriate WAN devices and technologies to meet requirements. Students learn how to implement and configure common data link protocols and how to apply WAN security concepts, principles of traffic and access control, and addressing services. Finally, students learn how to detect, troubleshoot, and correct common enterprise WAN network implementation issues.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2301 Cisco III: LAN Switching and Wireless.

EET-2400 Biomedical Instrumentation I
03 Semester Credits
Introduction to biomedical program and to organization of hospital and/or health facilities. Study of anatomy and physiology as pertaining to safety checking, servicing and maintaining biomedical electronic equipment (such as ECG, EEG, electro-surgery units, defibrillators, infusion pumps, patient monitors, and other monitoring and diagnostic equipment). Hospital electrical safety and interaction with nursing staff and physicians continuously emphasized. Laboratory experiments on centrifuges, infusion pumps and electrosurgery units.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2120 Electronics I or concurrent enrollment.

EET-2410 Biomedical Instrumentation II
03 Semester Credits
Continuation of biomedical program. Study of general hospital equipment such as EKG machines, defibrillators, automated medtesters, patient monitors and ventilator. Emphasis on using various technical service manuals to repair these and other biomedical equipment. Safety checks performed on all biomedical equipment used in the laboratory.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2400 Biomedical Instrumentation I, and EET-2220 Electronics II or concurrent enrollment.

EET-2490 Biomedical Design Project
02 Semester Credits
Capstone course for Biomedical Engineering program. Designed to allow students to demonstrate and apply capabilities and skills acquired during their previous engineering technology coursework. Students choose approved biomedical project compatible with their interest and background. Project includes research, documentation, construction and testing, and concludes with a report and a presentation of the results.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): EET-2220 Electronics II or concurrent enrollment, and EET-2410 Biomedical Instrumentation II or concurrent enrollment.

EET-2500 Instrumentation and Control
03 Semester Credits
Concepts and practice in measurement and control of mechanical process variables in industry. Introduction to methods of instrumentation, characteristics of instruments, sensors, data acquisition and presentation, measurement and analysis of basic dimensions, force, motion, pressure, temperature, fluid flow and fluid viscosity.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): EET-1220 Circuits and Electronics, or EET-2120 Electronics I; or departmental approval.

EET-2520 Programmable Logic Controllers
03 Semester Credits
Introduction to programmable logic controller terminology, architecture, input/output modules and memory. Relay schematics and ladder logic diagrams and programming of programmable logic controllers are covered and reinforced in practical laboratory experiments. Sensing devices as limit switches, on/off electrical devices, temperature switches, timing and counting devices as well as event-driven and time-driven sequences are also included.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1220 Circuits and Electronics; or EET-1210 AC Electric Circuits and EET-1240 Digital Circuits/Microprocessors I; or departmental approval.

EET-2590 Telecommunications Design Project
02 Semester Credits
Capstone course for Telecommunications Engineering program. Designed to allow students to demonstrate and apply capabilities and skills acquired during previous engineering technology coursework. Students choose approved telecommunications project compatible with their interest and background. Project includes research, documentation, construction and testing, and concludes with a report and a presentation of results.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): EET-2220 Electronics II or concurrent enrollment; and EET-2230 Telecommunications III or concurrent enrollment.

EET-2600 Op Amps and Feedback
03 Semester Credits
Continuation of electronic circuits. Study of difference amplifier used in operational amplifiers. Includes various uses of operational amplifier: gain blocks, inverting and non-inverting configurations summers, differentiators, and integrators.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2120 Electronics I, or departmental approval.

EET-2700 Introduction to Hydrogen Fuel Cells and Alternative Energy
03 Semester Credits
An introduction to fuel cells with discussions and labs emphasizing Hydrogen Fuel Cell Technology. Topics include fuel cell terminology, hydrogen safety, fuel cell history, types of fuel cells, voltage and current measurements, power calculation, efficiency, and fuel cell applications. Lab exercises provide the student with access to National Instruments Labview software to perform data acquisition during laboratory exercises.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1210 AC Electric Circuits.

EET-2710 Solar Power, Energy Storage and Conversion
03 Semester Credits
Presents photovoltaic power (PEV) generation, sun farm steam turbine generation and related issues in a contemporary environment. Energy storage using various battery chemistries, Electrochemical (super) capacitors and feed-the-grid using rotary and solid state converters covered in detail. Pro and cons, as it effects the environment, of the total cost from manufacture to disposal discussed. Most lecture topics supported by laboratory experiments.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-2111 Industrial Electronics I and concurrent enrollment in EET-2120 Electronics I.

EET-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

EET-2901 Clinical Internship
03 Semester Credits
Internship where student is expected to perform 360 hours of service at a local hospital or other biomedical facility. Student is expected to perform activities related to their biomedical technology field including but not limited to repair of biomedical equipment, safety inspections, and calibration.
Lecture 00 hours. Laboratory 00 hours.
Other Required hours: 360. Practicum 360 hours per semester/36 hours per week for 10 weeks.
Prerequisite(s): EET-2410 Biomedical Instrumentation II, and EET-2220 Electronics II.

EET-2910 Directed Practice Electrical Utility Technology III
04 Semester Credits
Supervised practical applications of electrical overhead line worker job duties in a setting under personal supervision of electric company personnel. Emphasis on skills required to identify, install, and maintain primary underground residential distribution (URD) equipment, including various methods of troubleshooting URD primary and secondary circuits. Grounding distribution circuits will also be learned. Students will develop the knowledge and skill to safely perform rubber gloving assignments utilizing the insulate and isolate techniques, will perform various tasks while working on an energized three-phase circuit under controlled conditions. Safety topics include: fire extinguisher safety, temporary protective grounds, stored energy devices, and utilities protective service.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).
Prerequisite(s): EET-1920 Directed Practice Electric Utility Technology II, and concurrent enrollment in ISET-2240 Applied National Electric Code.

EET-2915 Directed Practice Substation Utility Technology III
04 Semester Credits
Third in a four part series providing the student with the advanced knowledge and skills necessary to safely work in a supervised capacity on energized equipment and in an unsupervised capacity on de-energized equipment employed in the production and distribution of electrical energy. This course also introduces the student to power transformer testing, troubleshooting, alarm systems, circuit breaker troubleshooting, reclosers and sectionalizers, OCB maintenance and voltage regulators.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).
Prerequisite(s): EET-1925 Directed Practice Substation Utility Technology II, and concurrent enrollment in ISET-2240 Applied National Electric Code.

EET-2920 Directed Practice Electrical Utility Technology IV
04 Semester Credits
Supervised practical applications of skills required to safely climb transmission support towers and H structures to achieve qualified status. Emphasis on intermediate tasks while aloft pertinent structures. Also develops students understanding of substation equipment and one-line drawings; recognizing energized equipment, minimum approach distances, and substation safety; lock-out-tagout procedures; and powered industrial vehicle certifications.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).
Prerequisite(s): EET-2910 Directed Practice Electrical Utility Technology III; and concurrent enrollment in ISET- 2200 Industrial Motor Controls.

EET-2925 Directed Practice Substation Utility Technology IV
04 Semester Credits
Fourth in a four part series providing the student with the knowledge and skills to work safely and competently in a supervised or unsupervised capacity. The fourth series is the culmination of prior courses with the introduction of advanced knowledge and skills related to Motor Operates Air Brake Switch, electronic recloser controls, SF6 gas breakers, ACB maintenance, OCB timing and travel tests, calibration of various substation equipment, PT testing, phasing, switching procedures and the performance of energized primary work.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).
Prerequisite(s): EET-2910 Directed Practice Electrical Utility Technology III.

ELECTRONEURODIAGNOSTIC TECHNOLOGY- END

END-1300 Introduction to Electroneurodiagnostic Technology
02 Semester Credits
Introduction and orientation to health careers in field of electroneurodiagnostic including specific duties, certifications and licensure requirements, work setting and conditions, and career ladder opportunities. Overview of standards of practice of clinical neurophysiology with emphasis on neuroscience technique, instrumentation, terminology of electroneurodiagnostic practices and recording/monitoring techniques utilized in determination of treatment plans for neurological disorders.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

END-1310 Cardiopulmonary Physiology of Sleep
03 Semester Credits
Physiology of cardiovascular and pulmonary systems with emphasis on electrophysiology of the heart, electrocardiography interpretation, blood flow characteristics and hemodynamics. Pulmonary system emphasis on lung volumes, dynamics of ventilation, pulmonary function tests, diffusion, gas transport, oxygenation studies and control of ventilation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I; and admission to the program.

END-1350 Introduction to Electroencephalography (EEG)
03 Semester Credits
Provides basic knowledge of electroencephalography, understanding EEG concepts utilized for diagnosis of various cerebral disorders. Includes history, development, basic neurophysiology concepts of EEG, normal and abnormal brain wave patterns in adults and children, with emphasis on instrumentation and recording techniques.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I or concurrent enrollment; or BIO-233A or concurrent enrollment, and BIO-233B or concurrent enrollment; and concurrent enrollment in END-1300 Introduction to Electroneurodiagnostic Technology, and departmental approval: admission to program.

END-1410 Beginning Polysomnography
02 Semester Credits
Overview of the field of Polysomnography including job responsibilities, credentialing, medical ethics and patient confidentiality. Normal and abnormal sleep disorders, integrating the physiologic functions of the nervous, respiratory and cardiovascular systems. Emphasis on basic sleep sciences, physiology, monitoring, electrical safety, diagnosis and treatment of sleep disorders.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, and admission to the program.

END-1421 Intermediate Polysomnography I
02 Semester Credits
Basic discussion of recording sleep apnea montage. Emphasis on equipment, principle of operation, associated activity related to normal and abnormal stages of sleep, and placement and calibration of the following: electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (Sp02), inductive plethysmography and airflow thermocouple. To fulfill program laboratory requirements, students should enroll in the related laboratory course.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): END-1410 Beginning Polysomnography, and END-1310 Cardiopulmonary Physiology of Sleep, and concurrent enrollment in END-142L Intermediate Polysomnography-I Lab.

END-142L Intermediate Polysomnography-I Lab
01 Semester Credit
Laboratory course examines the recording of sleep apnea montage. Includes equipment, and principle of operation. Placement and calibration of the following: electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (Sp02), inductive plethysmography and airflow thermocouple. Designed to illustrate concepts covered in END-1421.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): END-1410 Beginning Polysomnography, and concurrent enrollment in END-1421 Intermediate Polysomnography I.

END-1430 Intermediate Polysomnography-II
03 Semester Credits
Presentation and discussion of cognitive and psychomotor practices related to interpretation of the polysomnogram for adult and pediatric patients. Emphasis on continuous positive airway pressure (CPAP) and bilevel positive airway pressures (BiPAP) equipment, artifact and troubleshooting of sleep montage results. Includes digital data acquisition, parasomnias, scoring, MSLTs, MWTs and nocturnal penile tumescence.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): END-1421 Intermediate Polysomnography I, and END-142L Intermediate Polysomnography-I Lab, and END-1934 Polysomnography Directed Practice-I.

END-1440 Neurophysiology of Sleep
02 Semester Credits
Basic discussion of the neurophysiology of sleep and role of the autonomic nervous system. Emphasis on respiratory and cardiovascular effects, regulation of sleep, circadium rhythms, and maturation of the sleep stages addressing neonates to adults.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

END-1450 Intermediate Electroencephalography (EEG)
03 Semester Credits
Discussion of clinical significance of epileptiform patterns, pharmacological effects on EEG recordings; EEG correlation of infection; and vascular and structural disease. Presentation and discussion of criteria for specialized recording techniques used in prolonged EEG recordings, specialized areas of the hospital, such as intensive care and operating room. Discussion of EEG signal analysis.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): END-1350 Introduction to Electroencephalography (EEG), or departmental approval.

END-1500 Basic Evoked Potentials
03 Semester Credits
Basic discussion of evoked potential recording techniques. Emphasis on equipment, principles of operation, associated waves related to normal and abnormal waveforms, placement and calibration, obtaining clearly resolved and replicated obligated waveforms of brainstem auditory, visual, and somatosensory evoked potentials in adults and pediatric subjects.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): END-1450 Intermediate Electro-encephalography (EEG) or concurrent enrollment, or departmental approval.

END-1910 END Directed Practice I
04 Semester Credits
Clinical electroencephalography experience in a selected neurodiagnostic lab or an affiliated health care facility under the direct supervision of an EEG technologist or physician. Emphasis on EEG concepts. Performance of EEG testing on clinical patients, medical record keeping and clinical history taking.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed Practice: 15 hours per week.
Prerequisite(s): END-1350 Introduction to Electroencephalography (EEG), and concurrent enrollment in END-1450 Intermediate Electroencephalography (EEG); or departmental approval.

END-1934 Polysomnography Directed Practice-I
03 Semester Credits
Directed practice in the clinical setting in sleep laboratory or a sleep center. Departmental orientation, policies and procedures, individual body mechanics and patient transfer techniques. Emphasis in overseeing periodic cessation of respiratory activity based on placement and monitoring of the following: electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (Sp02), inductive plethysmography and airflow thermocouple.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 18 hours per week.
Prerequisite(s): END-1410 Beginning Polysomnography, END-1310 Cardiopulmonary Physiology of Sleep, concurrent enrollment in END-1421 Intermediate Polysomnography-I, and END-142L Intermediate Polysomnography Lab-I.

END-2300 Nerve Conduction Studies
03 Semester Credits
Basic discussion of nerve conduction studies and electromyography. Emphasis on equipment, knowledge of placement stimulation sites, sources of error in nerve conduction studies, electronics, pathology (abnormal nerve conduction studies, anatomy as it pertains to entrapment sites and nerve conduction studies), waveforms identification and case presentation.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG), and concurrent enrollment in END-2910 END Directed Practice II; or departmental approval.

END-2320 Intermediate Nerve Conduction Studies
03 Semester Credits
Advanced discussion of nerve conduction studies and electromyography. Emphasis on less routine nerve conduction studies (NCS), anomalous innervations, equipment, knowledge, placement stimulation sites, sources of error in nerve conduction studies, electronics, pathology, waveforms identification and case presentation
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): END-2300 Nerve Conduction Studies.

END-2350 Fundamentals of Polysomnography
04 Semester Credits
Overview of field of Polysomnography including job responsibilities and credentialing. Normal and abnormal sleep disorders, integrating the physiologic functions of nervous, respiratory, and cardiovascular systems. Discussion of recording sleep apnea montage, placement and calibration of diagnostic, electrodes, and associated equipment. Emphasis on monitoring, diagnosis, scoring, and treatment of sleep disorders. Continuous Positive Airway Pressure (CPAP) and Bilevel Positive Airway Pressures equipment, artifact and troubleshooting of sleep montage results.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): END-2411 Neurophysiology of Electroencephalography/Sleep Disorders, or departmental approval.

END-2400 Intraoperative Monitoring for Electroneurodiagnostic Technologists
02 Semester Credits
Discussion of intraoperative monitoring of CNS (brain, brainstem, spinal cord) function during surgical procedures. Types of recordings, technologist's role, recording parameters, reasons for surgical monitoring, variables affecting monitoring, and outcome of the surgery.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG); or END-2910 END Directed Practice II, or concurrent enrollment and END-1500 Basic Evoked Potentials, or departmental approval.

END-2411 Neurophysiology of Electroencephalography/Sleep Disorders
03 Semester Credits
Analysis of the central and peripheral nervous systems, electrophysiology, and nerve conducting velocities in health and disease. Includes discussion of neurophysiology of sleep and the role of the autonomic nervous system. Emphasis on respiratory and cardiovascular effects, regulation of sleep, circadium rhythms and maturation of the sleep stages addressing neonates to adults.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II, and END-1450 Intermediate Electroencephalography (EEG), or departmental approval.

END-2450 Neonatal/Pediatric Electroneurodiagnostic
03 Semester Credits
Discussion of recording neonatal and pediatric EEG and polysomnograms. Development of sleep-wake cycle, monitoring the EEG in neonatal and pediatric populations, and differential diagnosis based on polysomnographic variables.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG); or departmental approval.

END-2911 END Directed Practice II
02 Semester Credits
Continuation of directed practice in clinical setting at neurology laboratory or neurodiagnostics department. Departmental orientation, policies and procedures, assist patient setup, performance and discontinuance of neurodiagnostic activities performed at the assigned clinical site.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 8 hours per week for 10 weeks (80 hours total).
Prerequisite(s): END-1500 Basic Evoked Potentials; and END-1910 END Directed Practice I; or departmental approval.

END-2920 END Directed Practice III
04 Semester Credits
Directed practice in clinical setting at neurology laboratory or neurodiagnostics department. Departmental orientation, policies and procedures, assist patient setup and discontinuance in monitoring of electromyography (EMG) activities. Experience with nerve conduction studies, and continuation of performance of EEG testing.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed Practice: 15 hours per week.
Prerequisite(s): END-2300 Nerve Conduction Studies; or departmental approval.

END-2930 END Directed Practice IV
02 Semester Credits
Clinical electroencephalography experience in a selected neurodiagnostic lab in health care facility under direct supervision of an EEG technologist or physician office. Emphasis on EEG testing in neonates, infants and children, medical record keeping and clinical history taking.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed Practice: 75 hours per semester.
Prerequisite(s): END-2450 Neonatal/Pediatric Electroneurodiagnostic, or departmental approval.

END-2934 Polysomnography Directed Practice-II
03 Semester Credits
Directed practice in the clinical setting in sleep laboratory or a sleep center. Departmental orientation, policies and procedures. Assist adult and pediatric patient setup and discontinuance in monitoring electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (Sp02), inductive plethysmography and airflow thermocouple. Emphasis on scoring a sleep montage related to respiratory cessation.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 18 hours/week in a sleep center
Prerequisite(s): END-1421 Intermediate Polysomnography I, and END-142L-Intermediate Polysomnography-I Laboratory, and END-1934 Directed Practice-I, and concurrent enrollment in END-1430 Intermediate Polysomnography-II.

END-2990 Electroneurodiagnostic Capstone
01 Semester Credit
Capstone course in Electroneurodiagnostic Technology. Assessment of one's knowledge, experience and skills as electroneurodiagnostic technologist. Preparation and presentation of qualifications through written resume and portfolio. Guidelines and preparation for employment interview. Investigation into electroneurodiagnostic issues.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): END-2920 END Directed Practice III, or departmental approval.

EMERGENCY MEDICAL TECHNOLOGY - EMT

EMT-1302 Emergency Medical Technician - Basic
06 Semester Credits
Comprehensive study of basic life support skills of Emergency Medical Technician-Basic based on the U.S. Department of Transportation National Standard EMT-Basic Curriculum and the National EMS Education Standards, January 2009 or later; and the State of Ohio Emergency Medical Service EMT-Basic curriculum, most current version. Includes recognition of nature and seriousness of patient's condition or extent of injuries; and assessing requirements of emergency care, lifting, moving, handling and transporting patients as part of pre-hospital emergency care system. Successful completion of American Heart Association Basic Life Support for the Healthcare Provider Course component of course required to successfully complete EMT-1302. Successful completion of EMT-1302 and EMT-130L required for NREMT and State of Ohio EMT-Basic certification.
Lecture 05 hours. Laboratory 02 hours.
Prerequisite(s): Eligibility for ENG-0990 Language Fundamentals II and eligibility for MATH-0950 Beginning Algebra I; and departmental approval: admission to the program.

EMT-130L EMT Basic Practical Lab
01 Semester Credits
This course provides the simulation labs and directed practice to complete the requirements for National Registry of EMTs (NREMT) EMT-Basic certification. This is the primary requirement for State of Ohio EMT Basic Certification.
Lecture 00 hours. Laboratory 02 hours.
Other Required Hours: 37 hours of directed practice performed in program approved external sites.
Prerequisite(s): EMT-1302 Emergency Medical Technician - Basic, or concurrent enrollment.

EMT-1310 Cardiopulmonary Resuscitation
01 Semester Credit
[This course is cross-listed as HLTH-1310. Credit can only be earned once for either course.] The CPR for Healthcare Providers teaches the management of respiratory and circulatory emergencies in adults, children, and infants. The Heartsaver First Aid teaches the management of illness and injury in the first few minutes until professional help arrives. Instruction and treatment methods to meet American Heart Association (AHA) or American Red Cross (ARC) standards for CPR.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

EMT-1320 Heavy Rescue
02 Semester Credits
Techniques of heavy rescue, safe management of equipment used in heavy rescue, entrapment and patient extrication.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Departmental approval: certified EMT-B; emergency workers must be in good health or have physician's verification; must be able to lift 75 pounds.

EMT-1330 Defensive Driving - EMT
01 Semester Credit
Principles and practices of defensive driving related to emergency rescue vehicles including laws, conditions of accidents and methods of avoiding accidents.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval: admission to program, or certified EMT-B, or working with safety forces; must have valid Ohio driver's license.

EMT-1340 Emergency Medical Services Communications
01 Semester Credits
Theoretical and technical knowledge required to operationally perform functions of emergency medical dispatcher. Radio and telephone techniques, dispatching, triage and prioritization procedures and pre-arrival medical instructions. Radio equipment and FCC regulations governing use of VHF and UHF radio frequencies.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): EMT-1302 Emergency Medical Technician - Basic; or FIRE-1000 Introduction to Fire Science; or departmental approval.

EMT-1400 Paramedic Success
04 Semester Credits
Designed to prepare students to pursue paramedic certification. Provides foundation for medical terminology and human biology with a focus on relevant anatomical systems for the emergency medical technician (EMT). Emphasis on the basics of word building, defining, spelling, reading practice, and pronunciation. Basic structure and function of body systems and diseases of these systems studied.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): None.

EMT-2000 Instructional Techniques - EMT
02 Semester Credits
Instructional training methods necessary to impart clinical competencies to students. Develops skill in instructional design, delivery and evaluation.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): EMT-1302 Emergency Medical Technician - Basic, or departmental approval: a currently certified EMT-B to enroll in this course.

EMT-2010 Emergency Medical Technology Management
02 Semester Credits
Capstone course in Emergency Medical Technology. Diagnostic categories of emergencies, emergency service categorization, hospital care capabilities, patient transport protocol and transfer agreements. Area-wide planning in preparation for disaster and procedures for establishing a training system for emergency medical personnel. Exploration of emergency medical service planning and operation including new trends and managed care.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): EMT-1302 Emergency Medical Technician - Basic, and departmental approval: certified EMT-B, EMT-I or EMT-P; Emergency Service Administrators will be considered.

EMT-2300 EMT - Intermediate
04 Semester Credits
Principles and practices of emergency medical technicians at intermediate level, including patient assessment, airway management, shock, cardiac management, roles and responsibilities.
Lecture 02 hours. Laboratory 03 hours.
Other Required Hours: Off-campus field experience: 45 hours per semester.
Prerequisite(s): Current State of National registry, EMT-B certification required.

EMT-2330 Paramedic Theory I
06 Semester Credits
Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes roles and responsibilities, Emergency Medical Services systems, well-being of the paramedic, therapeutic communications, medical/legal considerations, stress management and life span development.
Lecture 04 hours. Laboratory 04 hours.
Prerequisite(s): EMT-1400 Paramedic Success; or BIO-2331 Anatomy and Physiology I, and BIO-2341 Anatomy and Physiology II, and State of Ohio EMT-Basic certification required.

EMT-2340 Paramedic Theory II
06 Semester Credits
Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes airway management, physical examination, trauma systems with mechanism of injury, hemorrhage and shock, trauma assessment and management related to: soft tissue, musculoskeletal, head, face, spinal, thoracic and abdominal injuries including burns.
Lecture 04 hours. Laboratory 03 hours.
Other Required Hours: Directed Practice: 112 hours per semester.
Prerequisite(s): EMT-2330 Paramedic Theory I, and current Ohio EMT-B certification.

EMT-2350 Paramedic Theory III
06 Semester Credits
Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes anatomy and physiology of the pulmonary system, assessment and treatment of pulmonary emergencies, anatomy and physiology of cardiovascular system, assessment of cardiac and stroke patient, EKG interpretation, cardiac and stroke treatment modalities, cardiac treatment pharmacology, defibrillation, and advanced cardiac life support.
Lecture 04 hours. Laboratory 03 hours.
Other Required Hours: Directed Practice: 112 hours per semester.
Prerequisite(s): EMT-2340 Paramedic Theory II, and Ohio EMT- B certification.

EMT-2360 Paramedic Theory IV
06 Semester Credits
Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes management of endocrine, GI, renal/urological, toxicology, hematology, infectious, environmental and behavioral emergencies. Management of special needs patients, including geriatric, pediatric, and neonatal medical emergencies age groups. Detailed assessment and treatment of the OB/GYN patient and emergency field delivery procedures. Basic orientation in the study of ambulance operations, hazardous materials, rescue awareness and crime scene awareness.
Lecture 04 hours. Laboratory 03 hours.
Other Required Hours: Directed Practice: 112 hours per semester.
Prerequisite(s): EMT-2350 Paramedic Theory III, and current Ohio EMT-Basic certification.

EMT-2370 Paramedic Theory V
05 Semester Credits
Final course in sequence necessary for NREMT Paramedic Certification and State of Ohio Paramedic certification. Students will integrate knowledge and skills learned in previous courses in order to demonstrate competence in American Heart Association Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS); and American College of Surgeons or American College of Emergency Physicians approved trauma life support and National Association of EMT (NAEMT) medical life support standards. In the directed practice and field experience environment, they will demonstrate team leadership and integration with medical professionals.
Lecture 03 hours. Laboratory 03 hours.
Other Required Hours: Directed practice and field experience: 112 hours per semester.
Prerequisite(s): EMT-2360 Paramedic Theory IV, and departmental approval: State of Ohio Certified EMT-Basic.

EMT-2400 Advanced Cardiac Life Support
01 Semester Credit
Advanced cardiac life support (ACLS) emphasizes the importance of basic life support cardiopulmonary resuscitation (CPR) to patient survival, the integration of effective basic life support with advanced cardiovascular life support interventions, and the importance of effective team interaction and communication during resuscitation. Students engage in simulated clinical scenarios that encourage active, hands-on participation through learning stations where students will practice essential skills individually, as part of a team, and as team leader.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: valid current American Heart Healthcare Provider CPR certification required.

EMT-2510 Paramedic Theory for RNs and Allied Health Professionals
06 Semester Credits
Principles and practices of emergency medical technicians at paramedic level including focus on prehospital environment, preparatory, trauma, burns, medical emergencies, OB/GYN - neonatal and behavioral emergencies for registered nurse or allied health professional with experience in care of ill or injured patients. Course follows objectives outlined by the U.S. National Standard Paramedic Training curriculum and consists of specific education in classroom, practical skills lab, and directed experience on an ALS squad. Course substitutes for EMT courses in Paramedic Theory I and II. Licensed RN's and specific allied health professionals are given credit for documented past health care education and experience. Successful completion will qualify student to sit for National Registry Paramedic written and practical exams.
Lecture 04 hours. Laboratory 02 hours.
Other Required Hours: Directed practice: 75 hours per semester.
Prerequisite(s): Departmental approval: RN licensure/MD/DO, PA licensure, certified Ohio EMT-B, current BLS-CPR card, current ACLS card, current PALS card.

EMT-2740 Advanced Paramedic Techniques
04 Semester Credits
Designed to train paramedics to become critical care transport specialists and to acquire advanced skills in treatment and care of the critically ill patient during transport. Pathophysiology of serious diseases, trauma and advanced techniques of management, legal issues, transport complications, physiologic alterations during air transport and infection control procedures.
Lecture 02 hours. Laboratory 03 hours.
Other Required Hours: Directed practice: 5 hours/week.
Prerequisite(s): Departmental approval: current Ohio National registry EMT-P certification, BCLS provider, ACLS provider, PALS provider and BTLS provider/PHTLS. Other health care professionals considered with medical director approval.

ENGLISH - ENG

ENG-0800 Developmental Special Topics in English
01-03 Semester Credits
Study of selected developmental topics or current issues in English. Provides student an opportunity to explore various topics in greater detail (see current semester Credit Schedule for offerings). Repeatable for different topics. May not be applied toward elective and/or program graduation degree requirements.
Lecture 01- 03 hours. Laboratory 00 hours.
Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

ENG-0900 Transition to College English
01 Semester Credits
Intensive practice in writing for the purpose of preparing students for college-level English. Successful completion permits a student to enroll in ENG 1010.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Appropriate placement test score or departmental approval.

ENG-0960 Reading Improvement
03 Semester Credits
Designed for those students who need to improve basic comprehension. Emphasis in literal, inferential, and critical comprehension and vocabulary development.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Appropriate placement test score; or departmental approval.

ENG-0980 Language Fundamentals I
06 Semester Credits
Emphasis on mastery of language fundamentals.
Lecture 06 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0960 Reading Improvement or appropriate placement test score; or departmental approval.

ENG-0990 Language Fundamentals II
06 Semester Credits
Emphasis on basic essay writing skills, reading, study and test-taking skills.
Lecture 06 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I, or placement by department.

ENG-1000 Using Grammar Effectively
03 Semester Credits
Development of clear, effective English sentences by studying form and function of words, phrases, and clauses. Note: Class is not intended for transfer.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0990 Language Fundamentals II, or departmental approval.

ENG-1010 College Composition I
03 Semester Credits
Study and practice in academic writing; reading and interpretation of selected texts. Course may be thematically organized.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Appropriate placement test score; or ENG-0900 Transition to College English; or ENG-0990 Language Fundamentals II; or ESL-1310 English as a Second Language: Grammar for Communication III, and ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1330 Speaking English as a Second Language III; or departmental approval.
OAN Approved: TMM001

ENG-101H Honors College Composition I
03 Semester Credits
Study and practice in academic writing; reading and interpretation of selected texts. Requires intensive critical/analytical thinking, writing and speaking. Course may be thematically organized. Note: Course meets ENG 1010 graduation requirements.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Appropriate placement test score, or departmental approval.

ENG-1020 College Composition II
03 Semester Credits
Study and practice of persuasive and argumentative writing with emphasis on analysis and research; reading and interpretation of selected texts. Course may be thematically organized.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I.
OAN Approved: TME002

ENG-102H Honors College Composition II
03 Semester Credits
Study and practice of persuasive and argumentative writing with emphasis on analysis and research; reading and interpretation of selected texts. Requires intensive critical/analytical thinking, writing and speaking. Course may be thematically organized. Note: Course meets ENG 1020 graduation requirements.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-101H Honors College Composition I; or ENG-1010 College Composition I and departmental placement.

ENG-1070 Advanced Reading Improvement
03 Semester Credits
Instruction in art and skills of efficient reading with emphasis on understanding and critical analysis of college-level material. Strategies to increase comprehension, promote vocabulary development, and improve ability to study and retain text-related information. Application to professional and business-related reading when adaptable.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I, or placement by department.

ENG-179H Honors Contract in English
01 Semester Credit
Honors Contract complements and exceeds requirements and objectives for an existing ENG 1000-level course through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level honors course in English, whose instructor approves the Honors Contract.

ENG-2010 Creative Writing
03 Semester Credits
Practice in imaginative writing, exploration of creative potential. Emphasis on sources of creativity and forms of expression in selected literary genres.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2020 Women Writers on the Experiences of Women
03 Semester Credits
An introduction to women's literature through the study of classic and contemporary readings. Involves analysis of theme, character, plot, setting, dramatic conflict, and writing style. Provides an opportunity to study literature by women authors that are not traditionally covered in most American and British literature survey courses.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

ENG-2040 Poetry Workshop
03 Semester Credits
Practice in imaginative writing, exploration of creative potential. Emphasis on sources of creativity and forms of expression in poetry and its subgenres.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

ENG-2050 Introduction to Personal and Reflective Writing
03 Semester Credits
[This course is cross-listed as WST-2050. Credit may be earned once for either course.] The examination of personal, narrative, and self reflective writing from journals, memoirs, letters, essays, poetry, blogs, autobiographies, biographies and other nonfiction works through discussion, and various formal and informal writing assignments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I or ENG-101H Honors College Composition I.

ENG-2151 Technical Writing
03 Semester Credits
The role of writer and audience in the technical communication process; emphasis on the actual writing and evaluation of technical, business, and online documents; includes layout, design principles, and ethical issues as well as writing for diverse audiences. Requires individual and group writing projects and presentations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, or departmental approval.

ENG-2310 American Literature I
03 Semester Credits
Survey of major works of American prose, poetry, and drama from the early period through 1860.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.
OAN Approved: OAH055

ENG-2320 American Literature II
03 Semester Credits
Survey of major works of American prose, poetry, and drama from 1861 to the present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.
OAN Approved: OAH056

ENG-2350 British Literature I
03 Semester Credits
Survey of major works of British prose, poetry, and drama from early period to 1785.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.
OAN Approved: OAH0353

ENG-2360 British Literature II
03 Semester Credits
Survey of major works of British prose, poetry, and drama from 1785 to the present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.
OAN Approved: OAH054

ENG-2410 Introduction to Literature: Poetry
03 Semester Credits
Critical analysis of selected works of poetry, designed to develop understanding and appreciation of poem and dramatic text as literary form.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2420 Introduction to Literature: Fiction
03 Semester Credits
Critical analysis of selected works of fiction, designed to develop understanding and appreciation of short story and novel as literary forms.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2430 Introduction to Literature: Drama
03 Semester Credits
Reading, discussion, interpretation, and critical analysis of a variety of dramatic works. Designed to develop understanding and appreciation of drama as a literary form.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2510 African-American Literature I
03 Semester Credits
Study of major works of African-Americans from the colonial period to 1950.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2520 African-American Literature II
03 Semester Credits
Study of major works of African-Americans from 1950 to the present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2601 Literature for Children and Adolescents
03 Semester Credits
Reading, discussion, interpretation, and written analysis of a wide variety of literary works written for children and adolescents.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2700 World Literature
03 Semester Credits
Study of World's major authors, themes, and literary movements from earliest literature to modern literature. Emphasis on writers from the non-Western world. Some works of Western authors are used for comparative purposes and to demonstrate interconnectedness of world's various cultures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.
OAN Approved: OAH034

ENG-2710 Shakespeare
03 Semester Credits
Critical analysis of selected works of Shakespeare.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2720 Survey of Biblical Literature
03 Semester Credits
Critical analysis of selected books of the Bible with emphasis on those works that have been particularly influential in Western literary tradition.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2730 Exploration of World Mythology
03 Semester Credits
Develops skills for the in-depth exploration of literature. Focuses on reading and interpreting myths from around the world and throughout history, practicing various analytical approaches essential to building interpretive arguments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG 102H Honors Composition II, or departmental approval.

ENG-2740 Literature and Film
03 Semester Credits
Introduces literary works and film adaptations. Literal, faithful, and loose adaptations of literary works discussed. Includes how a work of literature is adapted into a film and examples of adaptation of a novels, short stories, plays, and others.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.

ENG-2760 Detective Fiction: Mystery, Murder, and Malice
03 Semester Credits
Study of detective fiction as a genre from the nineteenth century to the present day.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1020 College Composition II or ENG-102H Honors College Composition II or departmental approval.

ENGLISH AS A SECOND LANGUAGE - ESL

ESL-1020 English as a Second Language: Basic Reading and Writing
06 Semester Credits
English for non-native speakers. Practice in reading beginning material. Practice in writing sentences, short answers, controlled compositions, and responses to picture stories.
Lecture 06 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in ESL-1030 English as a Second Language: Basic Grammar for Communication, or departmental approval; and placement by ESL assessment exam, or departmental approval.

ESL-1030 English as a Second Language: Basic Grammar for Communication
06 Semester Credits
English for non-native speakers. Understanding of basic grammatical forms and functions of American English and practice in producing them. Focus on form, meaning and use in oral communication.
Lecture 06 hours. Laboratory 00 hours.
Prerequisite(s): Placement by ESL Assessment exam or departmental approval.

ESL-1110 English as a Second Language: Grammar for Communication I
04 Semester Credits
English for non-native speakers. Understanding of basic grammar structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1030 English as a Second Language: Basic Grammar for Communication, and ESL-1020 English as a Second Language: Basic Reading and Writing; or placement by ESL assessment exam.

ESL-1120 English as a Second Language: Reading and Writing I
05 Semester Credits
English for non-native speakers. Practice in reading high beginning texts. Practice in writing narratives and personal expression paragraphs using basic sentence patterns and correct spelling and punctuation.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1030 English as a Second Language: Basic Grammar for Communication, and ESL-1020 English as a Second Language: Basic Reading and Writing, or placement by ESL assessment exam; and ESL-1110 English as a Second Language: Grammar for Communication I, or concurrent enrollment.

ESL-1130 Speaking English as a Second Language I
03 Semester Credits
High-beginning level communication for non-native speakers. Practice communicating by speaking and listening to American English. Develop competence and confidence in listening comprehension and conversational skills within supportive structured situations. Recognize and produce sounds, rhythm and intonation patterns at a high beginning level.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1020 English as a Second Language: Basic Reading and Writing, and ESL-1030 English as a Second Language: Basic Grammar for Communication; or placement by ESL assessment exam; and ESL-1110 English as a Second Language: Grammar for Communication I, or concurrent enrollment.

ESL-1210 English as a Second Language: Grammar for Communication II
04 Semester Credits
English for non-native speakers. Understanding of intermediate grammar, structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1120 English as a Second Language: Reading and Writing I, and ESL-1130 Speaking English as a Second Language I; or placement by ESL assessment exam.

ESL-1220 English as a Second Language: Reading and Writing II
05 Semester Credits
English for non-native speakers. Practice in reading intermediate texts. Practice in writing personal essays and responses to readings, using intermediate sentence patterns and correct spelling and punctuation.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1130 Speaking English as a Second Language I, and ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1120 English as a Second Language: Reading and Writing I; or placement by ESL assessment exam; and ESL-1210 English as a Second Language: Grammar for Communication II, or concurrent enrollment.

ESL-1230 Speaking English as a Second Language II
03 Semester Credits
Intermediate communication for non-native speakers. Practice communicating by speaking and listening to American English. Develop competence and confidence in listening comprehension and conversational skills within supportive, structured and non-structured situations. Recognize and produce sounds, rhythm and intonation patterns at an intermediate level.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1120 English as a Second Language: Reading and Writing I, and ESL-1130 Speaking English as a Second Language I; or placement by ESL assessment exam; and ESL-1210 English as a Second Language: Grammar for Communication II, or concurrent enrollment.

ESL-1240 Accent Reduction for Non-Native Speakers
03 Semester Credits
Intermediate and higher level pronunciation for non-native speakers of English. Improve intelligibility and comprehensibility through reducing or eliminating the features of the student's native language pronunciation which interfere with effective communication. Develop confidence and effectiveness in speaking and pronouncing American English. Emphasis placed on the most distinguishing features of American English, such as rhythm, stress, and intonation, in order to convey emphasis and coherence. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1120 English as a Second Language: Reading and Writing I, and ESL-1130 Speaking English as a Second Language I ESL-1110 English as a Second Language: Grammar for Communication I or placement test.

ESL-1250 Introduction to American Culture
03 Semester Credits
Designed for non-native speakers of English placed in level 2 or higher in the ESL program to develop understanding and increase awareness of the culture of the United States. Focuses on traditional mainstream values, how they developed, and how they influence American life today. Attendance to cultural events and other field trips required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1120 English as a Second Language: Reading and Writing I, and ESL-1130 Speaking English as a Second Language I, and ESL-1110 English as a Second Language: Grammar for Communication I.

ESL-1310 English as a Second Language: Grammar for Communication III
04 Semester Credits
English for non-native speakers. Understanding of advanced grammar structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1210 English as a Second Language: Grammar for Communication II, and ESL-1220 English as a Second Language: Reading and Writing II, and ESL-1230 Speaking English as a Second Language II; or placement by ESL assessment exam.

ESL-1320 English as a Second Language: Reading and Writing III
05 Semester Credits
English for non-native speakers. Practice in reading advanced texts and literary material. Practice in writing interpretive essays and personal responses to readings, using advanced sentence patterns and correct spelling and punctuation.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1210 English as a Second Language: Grammar for Communication II, and ESL-1220 English as a Second Language: Reading and Writing II, and ESL-1230 Speaking English as a Second Language II; or placement by ESL assessment exam; and ESL-1310 English as a Second Language: Grammar for Communication III, or concurrent enrollment.

ESL-1330 Speaking English as a Second Language III
03 Semester Credits
High-intermediate to advanced communication for non-native speakers. Develop critical listening and speaking skills and strategies, and improve pronunciation for academic, professional, and social settings. Develop notetaking skills and strategies for academic purposes.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1210 English as a Second Language: Grammar for Communication II, and ESL-1220 English as a Second Language: Reading and Writing II, and ESL-1230 Speaking English as a Second Language II; or placement by ESL assessment exam; and ESL-1310 English as a Second Language: Grammar for Communication III or concurrent enrollment.

ESL-1350 ESL/ESOL Spoken English through Idioms and Phrasal Verbs
03 Semester Credits
This course will familiarize the ESL/ESOL speaker with the informal spoken American English idioms and phrasal verbs.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1120 English as a Second Language: Reading and Writing I, and ESL-1130 Speaking English as a Second Language I; or departmental approval.

ESL-1410 English as a Second Language Grammar for Communication IV
04 Semester Credits
English for non-native speakers. Mastering of advanced grammar structures of American English and practice in producing them. Focus on form, meaning and use in oral and written communication.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III, and ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1330 Speaking English as a Second Language III, or placement by ESL assessment exam.

ESL-1420 Intensive English Program Writing IV
06 Semester Credits
English for non-native speakers. Designed for students about to begin a graduate or professional degree program or an undergraduate program at the upperclassman level. Practice in the skills needed for analytical writing as well as research writing, including formulating the research question, and finding, evaluating, incorporating, and citing sources. Research practices for a wide variety of academic disciplines covered.
Lecture 06 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III, ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1330 Speaking English as a Second Language III, or placement by ESL placement Exam.

ESL-1440 Intensive English Program Reading for Speakers of Other Languages
04 Semester Credits
This course for non-native speakers strengthens reading skills in preparation for academic coursework in upper division courses at a four year college or university or in a graduate program.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III, and ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1320 English as a Second Language: Reading and Writing III; and ESL-1410 English as a Second Language Grammar for Communication IV or concurrent enrollment; and ESL-1420 Intensive English Program Writing IV or concurrent enrollment; or departmental approval.

ESL-144L Intensive Reading Lab
03 Semester Credits
Intensive reading lab for non-native speakers. Emphasis on developing and practicing reading skills and strategies necessary for building confidence and academic success including increasing speed, vocabulary building, developing and practicing comprehension skills in reading academic texts and extensive reading (reading for pleasure).
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): ESL-1320 English as a Second Language: Reading and Writing III.

ESL-1460 ESL/ ESOL for Special Purposes - Medicine
02 Semester Credits
Course for English as a Second Language (ESL)/English for Speakers of Other Languages (ESOL) students entering medical fields to strengthen language skills and introduce students to American healthcare situations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ESL-1330 Speaking English as a Second Language III.

ESL-1480 TOEFL Preparation
03 Semester Credits
English for non-native speakers. Practice in reading advanced texts and literary material in preparation for the Test of English as a Foreign Language (TOEFL). Practice writing essays, using advanced sentence patterns and punctuation. Practice listening to conversations and to lectures and synthesizing information from oral and written passages into organized essays. Practice speaking and formulating extended oral responses to questions.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III or concurrent enrollment; and ESL-1320 English as a Second Language: Reading and Writing III or concurrent enrollment; and ESL-1330 Speaking English as a Second Language III or concurrent enrollment; or departmental approval.

ENVIRONMENTAL HEALTH AND SAFETY TECHNOLOGY - EHST

EHST-1301 Introduction to Environmental Technology
03 Semester Credits
Comprehensive overview of topics relating to the environmental technology field. Concentration on developing awareness of the many facets of science, technology and public policy that are involved in environmental management.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

EHST-1310 Introduction to Environmental Law
04 Semester Credits
Study of U.S. Environmental Protection Agency (EPA) laws and regulations which protect our environment and health. Students learn steps in managing hazardous wastes including production, treatment, transportation, and disposal of hazardous materials. Involves reading, interpreting, and summarizing sections from the Code of Federal Regulations and The United States Code. Coverage includes: National Environmental Policy Act; Occupational Safety and Health Act; Clean Air Act; Clean Water Act; Safe Drinking Water Act; Resource Conservation and Recovery Act; Comprehensive Environmental, Response, Compensation, and Liability Act; Emergency Planning and Community Right-to Know Act; and related toxic laws. Provides overview of roles of judicial and legislative agencies. Modular courses EHST-131A and EHST-131B together will also meet degree requirements for this course.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): None (ENG-1010 College Composition I recommended for students without prior knowledge of law).

EHST-131A Introduction to Environmental Law - Water and Air
02 Semester Credits
Study of U.S. Environmental Protection Agency (EPA) laws and regulations, which protect our environment and health. Involves reading, interpreting, and summarizing sections from the Code of Federal Regulations and The United States Code. Coverage includes National Environmental Policy Act, Occupational Safety and Health Act, Clean Air Act, Clean Water Act and Safe Drinking Water Act. Provides overview of the roles of judicial and legislative agencies.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None (ENG-1010 College Composition I recommended for students without prior knowledge of law).

EHST-131B Introduction to Environmental Law - Remediation
02 Semester Credits
Study of U.S. Environmental Protection Agency (EPA) laws and regulations, which protect our environment and health. Coverage includes the Resource Conservation and Recovery Act; Comprehensive Environmental, Response, Compensation, and Liability Act; Emergency Planning and Community Right-to Know Act and related toxic laws. Management of hazardous wastes including production, treatment, transportation, and disposal of hazardous materials.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None (ENG-1010 College Composition I recommended for students without prior knowledge of law).

EHST-1330 Hazardous Waste Operations and Emergency Response
02 Semester Credits
Comprehensive instruction in health and safety planning and procedures for: uncontrolled hazardous waste site work; hazardous waste treatment, storage or disposal facilities (TSDFs) work; and emergency responses to hazardous materials releases. Students must complete 40 contact hours of instruction to meet OSHA's certification requirements in training portion of 29 CFR 1910.120 (the "HAZWOPER" standard). Ten additional hours of lecture required to meet OSHA requirements.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

EHST-1340 Interdisciplinary Environmental Issues
03 Semester Credits
Study of selected interdisciplinary current issues in Environmental Health and Safety through different disciplines including literature and theatre. Examines historical and philosophical aspects of environmental topics. Covers scientific and economic factors in making environmental decisions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

EHST-1350 Health and Safety in the Workplace
03 Semester Credits
Introduction to occupational safety and health management in general industry. Includes in-depth exploration of Occupational Safety and Health Administration (OSHA) standards, Worker Compensation programs, and proactive safety promotion such as worker training and integration of safety into quality programs.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

EHST-2220 EH&S Management Systems
02 Semester Credits
Overview and history of Environmental Health & Safety management systems (MSs), focusing on the International Standards Organization 14000 series and the OHSAS 18000 series. Addresses MS auditing; setting an environmental/safety policy; specifying objectives and targets; risk assessments; waste minimization; the benefits of MS system certification; regulatory and certification requirements; implementing MS programs; monitoring and measuring program results; and reviewing programs to ensure continual improvement. Uses case study to illustrate development of an EH&S management system.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law, or EHST-131A Introduction to Environmental Law - Water and Air, and EHST-131B Introduction to Environmental Law - Remediation, or departmental approval.

EHST-2300 International Environmental Issues
02 Semester Credits
Overview of environmental issues in the U.S. and internationally. Analysis of global environmental issues including endangered species, overpopulation, ocean dumping, border problems, deforestation, Mexican environmental regulations and global warming. Emphasis on management options and use of international laws and treaties, especially the North American Free Trade Agreement.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2320 Environmental Negotiation, Mediation, and Conflict Resolution
02 Semester Credits
Overview to environmental dispute resolution in environmental policy and decision making. Examination of successful negotiation techniques and how and when to use mediation and other conflict resolution techniques. Includes negotiation, mediation and conflict resolution simulations and environmental case studies. Examines listening and interpersonal skills.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2330 Ecotourism
02 Semester Credits
Examination of ecotourism as an economic development and conservation activity. Discussion and analysis of human dimensions of ecotourism and impacts of ecotourism on cultural, political and social systems of host country or region. Organizations and groups, which provide ecotourism opportunities, are identified and the career opportunities in ecotourism are discussed.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2341 Hazardous Materials Transportation
02 Semester Credits
Detailed study of U.S. Department of Transportation (DOT) regulations as well as an introduction to international transportation organizations and their rules for air and vessel transportation. Students learn to interpret DOT regulations, recommend compliance strategies, and select packaging, labeling, documentation and placarding for selected hazardous materials.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2351 Emergency Planning and Response
02 Semester Credits
Develop emergency response contingency plan for a facility or community. Preparedness includes analyzing hazards, writing and implementing the contingency plans, training employees for an emergency, and evaluating the effectiveness of the contingency plan.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2361 Environmental Sampling and Analysis
04 Semester Credits
Covers the methodology of obtaining, managing and interpreting the analysis results of environmental media samples, including air, water, ground water and soil, and various waste samples. Quality control and quality assurance policies and procedures are emphasized. Competency gained in interpreting results that can be used in decision-making processes related to hazardous materials.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1060 Survey of Mathematics.

EHST-2371 Occupational Safety and Health Act/Department of Transportation Refresher
01 Semester Credit
Provides annual OSHA refresher training to the hazardous waste workers and supervisors covered under 29 CFR 1910.120 (HAZWOPER) and DOT refresher training to hazmat employees covered under 49 CFR 172. Covers regulations, medical surveillance, hazard recognition, toxicology, site control, safe work practices, monitoring, personal protective equipment, decontamination and site safety.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): EHST-1330 Hazardous Waste Operations and Emergency Response, or departmental approval.

EHST-2380 Risk Assessment
02 Semester Credits
Basic principles and methods of conducting a risk assessment. Examines both value and limitations of risk assessment. Focuses on environmental and health risks and includes an overview of toxicological principles. Reviews how risk management decisions are made in public and private sectors. Examines how to communicate environmental and health risk, public policy choices and trade-offs to public.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1301 Introduction to Environmental Technology, or departmental approval.

EHST-2390 Solid and Hazardous Waste Management
03 Semester Credits
Study of statutes, regulations and guidelines pertaining to hazardous waste management, with an emphasis on the requirements of the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended. Management of hazardous wastes including "cradle to grave" requirements and enforcement strategies. Involves reading, interpreting, and summarizing sections from the Code of Federal Regulations and the United States Code.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2940 Field Experience
01-02 Semester Credits
Supervised paid or unpaid field experience, which relates to individual student's occupational objectives. Students are assigned to a facility, governmental institution, site or project to study regulatory compliance of federal and state environmental, health and/or safety laws and regulations.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 hours per semester (1) credit/ 360 hours per semester (2) credits.
Prerequisite(s): EHST-1301 Introduction to Environmental Technology, EHST-1310 Introduction to Environmental Law and departmental approval.

EHST-2991 Professional Practice
03 Semester Credits
Capstone course for Environmental, Health and Safety Technology. Cultivates critical problem solving skills in an environmental, health and safety context utilizing simulated and/or actual scenarios. Draws upon the student's legal research skills and technical knowledge to compile legally and scientifically justifiable solutions for mock clients within the confines of budgetary and time constraints. Requires reflection on degree outcomes and preparedness for initial employment or promotion in the Environmental, Health and Safety Field.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: sophomore standing.

FINANCIAL MANAGEMENT - FIN

FIN-1061 Personal Finance
03 Semester Credits
Introductory course designed to prepare a student to make educated decisions regarding consumer choices and personal financial goals. These decisions impact consumer purchasing and credit, insurances, medical care, home ownership, income taxes, investment and savings, and retirement and estate planning.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

FIN-2100 Financial Management
03 Semester Credits
Analytical study of basic principles of financial management, financial analysis and planning, working capital management, capital budgeting, capital structure, dividend policy, financial markets, and financial instruments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ACCT-1340 Managerial Accounting, or departmental approval: equivalent courses or equivalent work experience.

FIN-2830 Cooperative Field Experience
01-03 Semester Credit
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

FIRE TECHNOLOGY - FIRE

FIRE-1100 Principles of Emergency Services
03 Semester Credits
Provides an overview to fire protection including history, organization of services, local and state laws in addition to nomenclature, chemistry and physics of fire protection systems, strategy and tactics.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Admission to or completion of accredited Fire Academy.

FIRE-1200 Principles of Fire and Emergency Services Safety and Survival
02 Semester Credits
Introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Admission to or completion of Fire Academy.

FIRE-1300 Fire Tactics and Strategy
03 Semester Credits
Pre-planning of fire fighting operation, size-up fire scene, employment of fire personnel and equipment. Overall command pattern at fire scene.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FIRE-1000 Introduction to Fire Science.

FIRE-1400 Chemistry of Hazardous Materials
02 Semester Credits
Analysis of chemical reactions as causative agent of fire. Includes redox reactions, reaction rates, toxic compounds and hazardous combinations of chemicals. Safety procedures in handling hazardous materials, transporting and defusing them.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): FIRE-1000 Introduction to Fire Science.

FIRE-1500 Fire Behavior and Combustion
02 Semester Credits
Explores the theories and fundamentals of how and why fires start, spread, and how they are controlled.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Admission to or completion of Fire Academy.

FIRE-1600 Fire Prevention
03 Semester Credits
Provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention; organization and operation of a fire prevention bureau; use and application of codes and standards; plans review; fire inspections; fire and life safety education; and fire investigation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Successful completion of Fire Academy.

FIRE-2321 Fire Protection Systems
02 Semester Credits
Provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Admission to or completion of Fire Academy.

FIRE-2351 Building Construction for Fire Protection
03 Semester Credits
Provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Completion of Fire Academy.

FIRE-2401 Fire Protection Hydraulics and Water Supply
03 Semester Credits
Provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and to solve water supply problems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Successful completion of Fire Academy.

FIRE-2600 Fire Investigation Methods
03 Semester Credits
Principles of fire investigation, arson laws, interrogation of witnesses. Use of photography in fire investigation. Preparation of reports. Collection and presentation of arson evidence in court.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FIRE-1000 Introduction to Fire Science.

FIRE-2720 Fire Service Training and Public Relations
02 Semester Credits
Methods and techniques of instruction for fire personnel. Organization of training programs and preparation of training materials. Study of public relations as related to fire service with emphasis on building good will and explanation of fire service activity in the community.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): FIRE-1000 Introduction to Fire Science.

FIRE-2730 Managing Fire Services
03 Semester Credits
Total management of effective fire and medical emergency services on immediate basis. Budget, personnel, labor relations, measurement and evaluation of productivity of service. Training and supervision of fire service personnel.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FIRE-1300 Fire Tactics and Strategy.

FIRE-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

FIRE-2990 Fire Technology Professional Study
01 Semester Credits
Capstone course in Fire Technology. Provides students with opportunities to apply technical, oral, and written skills; to prepare resumes and/or portfolios and develop interview skills; to study history and trends in fire technology. Students will choose an area compatible with their interest and background, and facilitated by the instructor, prepare a report, presentation, resume, or a study.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: Successful completion of minimum 20 credits in FIRE.

FRENCH - FREN

FREN-1010 Beginning French I
04 Semester Credits
Introduction to French through multiple approaches with emphasis on speaking and understanding. Practice in conversational French and aural comprehension of topics of daily interest. Some practice in writing basic sentences and small simple paragraphs on relevant topics, and reading short paragraphs.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

FREN-1020 Beginning French II
04 Semester Credits
Development of proficiency in speaking, understanding, reading, and writing. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): FREN-1010 Beginning French I, or one year of high school French; or departmental approval.

FREN-1040 Study Abroad in Quebec- Beginner Level
04 Semester Credits
Beginner course in functional French, with an emphasis on speaking, reading, writing and understanding oral and written French in various situations and texts. Designed to enhance knowledge and appreciation of French Canadian culture. This five-week program begins with four pre-trip orientation sessions followed by participation in a three-week French language immersion program in the province of Quebec.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): FREN-1010 Beginning French I, or departmental approval.

FREN-1100 French Intercultural Perspectives
03 Semester Credits
French contributions to world culture and various nation-shaping events throughout history, with particular emphasis on the shaping of the United States of America. Cultural presence of France in the United States.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

FREN-2010 Intermediate French I
03 Semester Credits
Discussion of topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Grammar review. Practice in writing compositions. Introduction to civilization and literature of France.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FREN-1020 Beginning French II, or two years of high school French; or departmental approval.

FREN-2020 Intermediate French II
03 Semester Credits
Intensive exercises in written and oral expression. Additional grammar review and vocabulary building. Further exploration of French literature.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FREN-2010 Intermediate French I, or three years of high school French; or departmental approval.

FREN-2040 Study Abroad in Quebec -Intermediate Level
04 Semester Credits
This intermediate course concentrates on the study of functional French, with an emphasis on speaking, reading, writing and understanding oral and written French in various situations and texts. It is also aimed at enhancing the student's knowledge and appreciation of French Canadian culture. This five-week program begins with four pre-trip orientation sessions, followed by participation in a three-week French language immersion program in the province of Quebec.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): FREN-1020 Beginning French II, or departmental approval.

FREN-2410 French Conversation and Composition
03 Semester Credits
Discussion of topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Practice in writing compositions. Discussion of French history and French culture.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FREN-2020 Intermediate French II, or three years of high school French; or departmental approval.

FREN-2420 French Civilization and Literature
03 Semester Credits
Introduction to French civilization and literature. Emphasis on the interrelationship between history and geography of France and its culture. Readings in French literature of the 19th and 20th centuries. Highlights of representative authors and their works. Emphasis on oral discussion.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): FREN-2020 Intermediate French II, or three years of high school French; or departmental approval.

GENERAL STUDIES - GEN

GEN-1000 Introduction to College
01 Semester Credit
Orients students to the College's programs, services, and policies. Topics may include student resources, college and student expectations, academic support services, financial aid, degree programs, and student rights and responsibilities.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

GEN-1010 Personal Development
02 Semester Credits
Experience-based course designed to explore individual resources, values, goals, time-management and decision making. Focus placed on structured activities which build self-esteem, motivation, self-confidence, empathy and communication skills in a group setting.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

GEN-1022 Strategies for Success
03 Semester Credits
Information and methods helpful for student success. Planning, time management, communication skills, relationships, memory, reading comprehension and retention, note taking and test taking techniques. Stress management and techniques for overcoming test anxiety will be practiced. Diversity, college resources, and learning styles will be explored.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG 0990-Language Fundamentals II, or departmental approval.

GEN-1032 Information Literacy and Library Research
02 Semester Credits
Hands-on experience using the World Wide Web, print and electronic library resources to locate information for course related and personal needs. Emphasis is on the use of search strategies, information retrieval and management, and the application of critical thinking to library research.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

GEN-1040 Career Exploration
02 Semester Credits
Survey of career development theory. Emphasis on nature and meaning of work, values, interests, functional skills, attitudes and needs as related to career development process. Sources of occupational information discussed. Series of self-assessment inventories utilized.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

GEN-1060 Creative Parenting Skills for Students
02 Semester Credits
Course applies a developmental framework in examining theoretical approaches to the process of parenting. Explores expectations, influences and strategies of parenting with focus on attitudes and behaviors. Topics include facilitating the parent-child relationship from birth through adolescence, parenting techniques, adaptations of the traditional family structure, contemporary discipline techniques, and community resources. These topics will be addressed within the context of cultural diversity.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

GEOGRAPHY - GEOG

GEOG-1000 Introduction to Geography
03 Semester Credits
Introduction and description of the four traditions of geography: earth science, cultural-environmental, location, and regional geography.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS007

GEOG-1010 World Regional Geography
03 Semester Credits
Study of present issues and future prospects of developed and developing countries. Emphasis on economic activities determined by physical environment, social and cultural characteristics, and political stability.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS008

GEOG-1030 Environmental Geography
03 Semester Credits
Study of issues created by a rapidly increasing world population causing depletion of world energy resources and agricultural crises. Other environmental problems including pollution, destruction of rain forests, overgrazing, and loss of habitat considered.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

GEOG-1050 Africans in the Americas
03 Semester Credits
Study of world regions touched by the African Diaspora, especially Africa, Caribbean, Brazil, and United States. Focus on characteristics of each region, demographic changes, and variations that shaped culture during and after slavery and to the present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

GEOG-1510 Regional Geography of the United States and Canada
03 Semester Credits
Regional geography of the United States and Canada noting significant characteristics of each region. Physical setting, economic activities, cultural diversity, social conditions, and political identity of each region studied.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

GERMAN - GER

GER-1010 Beginning German I
04 Semester Credits
Introduction to German through multiple approaches with emphasis on speaking and understanding. Practice in conversational German and aural comprehension of topics of daily interest. Some practice in writing basic sentences and small simple paragraphs on relevant topics and reading short paragraphs.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

GER-1020 Beginning German II
04 Semester Credits
Development of proficiency in speaking, understanding, reading, and writing. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): GER-1010 Beginning German I, or one year of high school German, or departmental approval.

GER-1150 Beginning Business German I
04 Semester Credits
Introduction to German business practices. Emphasis on business vocabulary and business terms through use of simple exercises. Conversational topics associated with daily business dealings. Awareness of cultural business differences.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

GER-1160 Beginning Business German II
04 Semester Credits
Continued study of German business dealings and further practice in speaking, understanding, reading and writing. Emphasis on strengthening conversational business skills through discussions of selected business terms and settings. Study of management style, labor relations and import-export dealings. Emphasis on cultural differences.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): GER-1150 Beginning Business German I, or departmental approval.

GER-2010 Intermediate German I
03 Semester Credits
Discussion of topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Grammar review. Practice in writing compositions. Introduction to German civilization and literature.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): GER-1020 Beginning German II, or two years of high school German, or departmental approval.

GER-2020 Intermediate German II
03 Semester Credits
Intensive exercises in written and oral expression. Additional grammar review and vocabulary building. Further exploration of German literature.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): GER-2010 Intermediate German I, or three years of high school German, or departmental approval.

GER-2410 German Conversation and Composition
03 Semester Credits
Practice in German conversation and composition skills. Vocabulary augmentation. Discussion of German history and culture.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): GER-2020 Intermediate German II, three years of high school German, or departmental approval.

GER-2420 German Civilization and Literature
03 Semester Credits
Introduction to German civilization and literature. Emphasis on interrelationship between German history, literature and culture. Readings of German modern literature. Emphasis on oral discussion.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): GER-2020 Intermediate German II, three yearss of high school German, or departmental approval.

HEALTH - HLTH

HLTH-1100 Personal Health Education
03 Semester Credits
Introduction to meaning and scope of health as related to individual, family, community and society. Focuses on introspective view of physical, emotional, intellectual, social, occupational, environmental, and spiritual dimensions of health with emphasis on mechanism for positive behavior change.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HLTH-1230 Standard First Aid and Personal Safety
01 Semester Credit
Basic level first aid and one-person CPR course intended to provide knowledge and skills necessary to help sustain life and minimize the consequences of injury or sudden illness until advanced medical help arrives. Special emphasis placed on identifying and eliminating potentially hazardous conditions, recognizing emergencies and making appropriate decisions for first aid care. Upon successful completion, student is eligible for certification in First Aid/CPR/AED by the American Heart Association or the American National Red Cross.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

HLTH-1300 Health and Medical Aspects of Chemical Dependency
03 Semester Credits
Focuses on health and medical considerations of alcohol and drug use. Provides overview of history of drug use, etiology of drug dependency, physiological and psychological effects of chemical abuse and effects of drug use on the individual, special populations and society.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HLTH-1310 Cardiopulmonary Resuscitation
01 Semester Credit
[This course is cross-listed as EMT-1310. Credit can only be earned once for either course.] The CPR for Healthcare Providers teaches the management of respiratory and circulatory emergencies in adults, children, and infants. The Heartsaver First Aid teaches the management of illness and injury in the first few minutes until professional help arrives. Instruction and treatment methods to meet American Heart Association (AHA) or American Red Cross (ARC) standards for CPR.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

HLTH-1400 Childhood Health, Safety and Nutrition
03 Semester Credits
Focuses on nutrition, health, and safety needs of infants and young children. Training provided in communicable disease recognition, prevention and management, first aid, infant/child CPR, and child abuse recognition and prevention, as required by the Ohio Day Care Licensing Rules. Nutritional requirements of infants and young children, meal planning and menu evaluation, principles of hygiene and safety in storage, preparation and serving of food are addressed. Positive health practices emphasized as integral elements in nurturing a child's total development.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HLTH-2500 Women's Health Issues
03 Semester Credits
Exploration of all dimensions of women's health, identification of health risks unique to women, evaluation of traditional and non-traditional approaches to health care problems and development of personal strategies for selection of health enhancing behaviors.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HEALTH INFORMATION MANAGEMENT TECHNOLOGY - HIM

HIM-1010 Basic Medical Transcription
01 Semester Credit
Introduction to the basic concepts of medical transcription with emphasis on transcription equipment, transcribing techniques, use of medical reference books, and practice in transcribing various reports.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval.

HIM-1050 Medical Transcription
02 Semester Credits
Further development of skills necessary to transcribe medical dictation with emphasis on speed and accuracy. Students will transcribe a wide variety of physician-dictated reports arranged by body system or medical specialty.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): Departmental approval.

HIM-1060 Health Unit Coordinator
03 Semester Credits
Specific application of health unit coordinating duties and responsibilities relating to entry level positions. Basic information with emphasis on clerical tasks: patient processing for admissions, transfers, discharges, charts, preoperative, postoperative, scheduling and processing orders. Accuracy and appropriate understanding with physician, nursing, and dietary treatment orders. Accuracy in transcribing medication orders, laboratory orders and other diagnostic orders. Emphasis on Allied Health professional principles.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MA-1020 Medical Terminology I.

HIM-1112 Physician Office Coding
04 Semester Credits
Introduction to basic concepts of coding using ICD-10-CM (International Classification of Diseases, 10 Revision, Clinical Modification) for diseases and CPT (Current Procedural Terminology) to meet requirements for physician office coding and billing.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MA-1020 Medical Terminology I and ENG-1010 College Composition I.

HIM-1121 Medical Billing Practices
02 Semester Credits
Introduction to basic terminology regarding medical insurance, third party payers, reimbursement methodologies, claims processing procedures for posting payments and claims follow-up in physician office setting.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MA-1020 Medical Terminology I and ENG-1010 College Composition I.

HIM-1301 Introduction to Health Information Management
03 Semester Credits
Introduction to field of health information management technology (HIMT) including overview of the profession; functions of the HIMT department; purposes, uses and flow of patient information through health care system. Introduction to the history of Western medicine, allied health professions, health care organizations and the operation of modern health care delivery.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I and MA-1020 Medical Terminology I and departmental approval: admission to the program.

HIM-1311 Legal Aspects of Health Care
03 Semester Credits
Introduction of legal and ethical issues applicable to health information including confidentiality; release of information; legislative process; the court system; legal vocabulary; retention guidelines; patient rights/advocacy; advance directives and ethics.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MA-1020 Medical Terminology I and ENG-1010 College Composition I.
OAN Approved: OHL021

HIM-1401 Systems in Healthcare Delivery
02 Semester Credits
Overview of various health record systems and the role of the Health Information Technician in non-acute care settings, such as private practices, extended care facilities and nursing homes.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to program.

HIM-1411 Healthcare Statistical Applications & Research
02 Semester Credits
Introduction to use, collection, presentation, and verification of health care data including fundamental concepts of descriptive statistics; data validity and reliability; data presentation techniques; vital statistics; and healthcare institutional research.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HIM-1301 Introduction to Health Information Management, and HIM-1311 Legal Aspects of Health Care, and completion of Mathematics 1000 level or higher.

HIM-1423 Health Data Documentation, Sources and Classification Systems
03 Semester Credits
Documentation requirements for complete and accurate health records as required by licensing, certifying and accrediting agencies; forms design; functions of data analysis and abstracting; healthcare data sets and standards; clinical vocabularies and classification standards; primary and secondary healthcare data sources.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): HIM-1301 Introduction to Health Information Management, and HIM-1311 Legal Aspects of Health Care.

HIM-1431 Healthcare Informatics and Information Management
03 Semester Credits
Introduction to using and understanding the Electronic Health Record (EHR), varieties of computerized health records, and other healthcare informatic software systems. Also includes introduction to project management software; strategic information systems planning; and software implementation in the healthcare setting.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, and HIM-1311 Legal Aspects of Health Care, and HIM-1301 Introduction to Health Information Management

HIM-2130 Coding with CPT (Current Procedural Terminology)
02 Semester Credits
Theories, concepts and applications of Current Procedural Terminology (CPT) coding and its relationship to the Centers for Medicare and Medicaid Service's Healthcare Common Procedure Coding System (CMS/HCPCS). Instruction will be based from textbook, computer applications and healthcare records.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): BIO-2600 Pathophysiology, and concurrent enrollment in HIM-1411 Healthcare Statistical Applications & Research, or departmental approval.

HIM-2160 Coding with ICD-10-CM
02 Semester Credits
Principles, theories, concepts and applications required to code diseases and procedures using the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Classification System.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HIM-1423 Health Data Documentation, Sources and Classification Systems, MA-1020 Medical Terminology I, and BIO-2600 Pathophysiology.

HIM-2200 Project Management For Health Information Professional
02 Semester Credits
Organizing and managing effective project teams, from planning and scheduling to cost management, including use of project management software. The latest business developments and challenges and issues such as project constraints, stakeholder issues, project charter, and how projects relate to an organization's strategic plan. Effective communication both within and outside of a team. Real world vignettes provide insights into applying project management in the workplace.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HIM-1431 Healthcare Informatics and Information Management, and HIM-1423 Health Data Documentation, Sources and Classification Systems; or departmental approval.

HIM-2260 Coding with ICD-10-PCS
02 Semester Credits
Coding with ICD-10-PCS will prepare and train Health Information Management Technology students to understand the format used and how to build an ICD-10-PCS procedure code. Key terms related to ICD-10-PCS, the system's use and the different sections contained within the PCS coding system: medical and surgical, obstetrics, placement, administration, measurement and monitoring; extracorporeal assistance, performance and therapies; osteopathic, chiropractic, and other procedure and treatment sections.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HIM-2160 Coding with ICD-10-CM, or departmental approval.

HIM-2312 Quality Assessment and Improvement
03 Semester Credits
Introduction to disease and health registries and to data quality assessment activities being performed in health care facilities.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HIM-1411 Healthcare Statistical Applications & Research, and HIM-1423 Health Data Documentation, Sources and Classification Systems, and HIM-1431 Healthcare Informatics and Information Management.

HIM-2401 Intermediate Coding
02 Semester Credits
Continuation in the study of coding and classification systems in a variety of healthcare settings. Upon completion students should be able to apply coding principles to correctly assign codes using the International Classification of Diseases, Tenth Revision, Clinical Modification and Procedural Coding System (ICD-10-CM and PCS) and Current Procedural Terminology (CPT) and apply systems to optimize reimbursement.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HIM-2160 Coding with ICD-10-CM; and HIM-2130 Coding with CPT (Current Procedural Terminology); or departmental approval.

HIM-2410 Management Practices in Health Information
02 Semester Credits
Management principles used in managing health information functions and personnel, with emphasis on the duties and responsibilities of supervisor in coordinating goals of a health information management department; training of personnel; and the concepts of continuous quality improvement.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): HIM-2312 Quality Assessment and Improvement, or concurrent enrollment; or departmental approval.

HIM-2430 Medical Reimbursement Methodologies
02 Semester Credits
Reimbursement issues and systems, including: compliance environment payors, reimbursement vocabulary and systems such as Diagnostic Related Groups (DRGs), Resource Based Relative Value Scale (RBRVS), Ambulatory Payment Classifications (APC), and the chargemaster.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): HIM-1411 Healthcare Statistical Applications & Research, and BIO-2600 Pathophysiology; or departmental approval.
OAN Approved: OHL022

HIM-2440 Fundamentals of Healthcare Workflow and Process Analysis
02 Semester Credits
Evaluation and analysis of workflow in a healthcare setting to facilitate redesign of that workflow. Intermediate capstone course for utilizing Microsoft Project Management Software for implementation of a project.
Lecture 01 hour. Laboratory 03 hours.
Other Required Hours: Project may be assigned in a clinical setting.
Prerequisite(s): HIM-1431 Healthcare Informatics and Information Management, and HIM-2200 Introduction to Project Management, or departmental approval.

HIM-2851 Practicum I
03 Semester Credits
Supervised practicum designed to allow student to apply technical knowledge and skills learned in classroom to procedures performed in health information management department. Assignments made to various types of health care facilities to gain exposure to health information practices.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: One hour per week.
Prerequisite(s): HIM-1301 Introduction to Health Information Management, and HIM-1411 Healthcare Statistical Applications & Research, and HIM-1423 Health Data Documentation, Sources and Classification Systems; and HIM-1431 Healthcare Informatics and Information Management, and departmental approval.

HIM-2861 Practicum II
03 Semester Credits
Capstone course in Health Information Management. Second of two supervised practicums designed to allow student to apply technical knowledge and skills learned in classroom to procedures performed in health information management department. Assignments made to various types of health care facilities to gain exposure to health information practices.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours a week.
Seminar: 1 hour per week.
Prerequisite(s): HIM-2130 Coding with CPT (Current Procedural Terminology), and HIM-2150 Coding with ICD-9-CM, and HIM-2312 Quality Assessment and Improvement, and HIM-2851 Practicum I, or departmental approval.

HEALTH TECHNOLOGY - HTEC

HTEC-1020 Integrated Basic Science
03 Semester Credits
Introduction to basic sciences and pathology. Concepts of physics, chemistry and life sciences emphasizing application to human structure and function. Integrated approach to study of human body in health and as altered by various disease states.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HTEC-1040 Health Career Exploration
01 Semester Credit
Introduction to variety of health career options with emphasis on qualifications, job responsibilities and employment opportunities. Includes identifying components from each health career that relate to lifestyle risk factors. Discusses how to become educated consumers with regards to seeking accurate health information.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

HTEC-1100 Allied Dental Pharmacology
02 Semester Credits
Survey course acquainting Dental Assisting students with basic principles and concepts of pharmacology. Provides a general review of therapeutic use of drugs in a dental/medical emergency. Emphasizes indications and contraindications of drugs relating to dental anesthetics.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to Dental Assisting Program.

HTEC-1110 Ethics for Health Care Professionals
01 Semester Credit
Survey course emphasizing basic definitions, concepts and issues of clinical law and ethics for health care professionals. Ethical decision-making models will be explained utilizing the professional-patient relationship and case studies.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HTEC-1120 Critical Thinking in Healthcare
01 Semester Credit
Overview of principles involved in critical and creative thinking with an emphasis on practical applications in the health care environment. A discussion of skillful analysis, assessment and communication in the problem-solving process.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HTEC-1200 Patient Management for Health Career Professionals
01 Semester Credit
Basic overview of managing patients in various situations. Emphasis on understanding patient's feelings. Development of motivational plans based on patient's needs.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to a health career program.

HTEC-1610 Introduction to Pharmacology
02 Semester Credits
General principles and concepts of pharmacology. Provides understanding of indications, uses, doses and contraindications associated with individual drugs as well as mechanisms of drug administration and therapeutic management of patients with specific disease processes. Review of basic mathematics related to correct calculation of drug dosages and preparation of solutions.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HISTORY - HIST

HIST-1010 History of Civilization I
03 Semester Credits
Introduction to study of world civilizations from ancient times to beginning of modern era.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OHS041

HIST-101H Honors History of Civilization I
03 Semester Credits
Introduction to world civilizations from ancient times to beginning of modern era. Study of different world cultures and civilizations and how they have interacted over time to create successive patterns of regional and global integration. Historical development of the world with emphasis on critical examination of primary source documents.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I or departmental approval.

HIST-1020 History of Civilization II
03 Semester Credits
Introduction to study of world civilizations from 17th century to present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OHS042

HIST-102H Honors History of Civilization II
03 Semester Credits
Introduction to world civilizations from beginning of modern era to the present. Examination of different world cultures and civilizations and how they have interacted over time to create successive patterns of regional and global integration. Historical development of the world with emphasis on critical examination of primary source documents.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I or departmental approval.

HIST-1510 United States History to 1877
03 Semester Credits
Introduction to study of United States history from Age of Exploration to end of Reconstruction.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OHS043

HIST-151H Honors United States History to 1877
03 Semester Credits
Introduction to study of United States history from Age of Exploration to end of Reconstruction. Analysis of historical problems and use of primary sources in study of history.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, or departmental approval.

HIST-1520 United States History Since 1877
03 Semester Credits
Introduction to study of United States history from post Civil War/Reconstruction to present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OHS044

HIST-152H Honors United States History Since 1877
03 Semester Credits
Introduction to study of United States history from post-Civil War/Reconstruction to present. Analysis of historical problems and use of primary sources in study of history.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, or departmental approval.

HIST-1610 American Studies
03 Semester Credits
Introduction to American Studies. Discussion of selected issues and institutions in American civilization; multidisciplinary approach to subject matter utilizing concepts from various social science and humanities disciplines.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HIST-1630 History of Immigration in America
03 Semester Credits
Study of immigration in America. Discussion of ethnic institutions; explanation of continuity and change between first, second and third generations of an immigrant group, and exploration of relationships between and among different groups; analysis of nativism and restrictionism, and explanation of immigrant contributions to America.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HIST-1700 History of Africa
03 Semester Credits
General survey of African history with special emphasis on pre-colonial (pre-1500) Africa plus political, economic and social challenges of nineteenth and twentieth centuries. Importance of Islam and emergence of South Africa from apartheid era.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HIST-179H Honors Contract in History
01 Semester Credit
Honors Contract complements and exceeds requirements and objectives for an existing HIST 1000-level honors course through the formulation of a contract with faculty mentor. In conjunction with faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level honors course in History, whose instructor approves the Honors Contract.

HIST-2020 Women, Science and Technology
03 Semester Credits
[This course is cross-listed as WST-2020. Credit can only be earned once for either course.] Study of gendered relationships in scientific theory, organization & dissemination of scientific expertise, technological development and the impact of these on health care, medicine, business, manufacturing, cultural norms and women's experience.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): WST-1510 Introduction to Women`s Studies or ENG-1010 College Composition I; or concurrent enrollment; or ENG-101H Honors College Composition I, or concurrent enrollment.

HIST-2030 Islamic History
03 Semester Credits
Introduction to the historical traditions and events of the Muslim world; examines geographic diversity, cultural variations and interpretations of Islam and the relationships between Islamic, Judaic and Christian historical traditions
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or departmental approval: permission of instructor.

HIST-2040 Native American History
03 Semester Credits
Historical study of indigenous populations in the Americas from pre-colonial times to the present; special focus on the social, political, economic and spiritual lives of Native American nations in North America.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.

HIST-2051 History of Russia to 1917
03 Semester Credits
Growth, development and decline of Kievan state; evolution of Muscovite tsardom and expansion of Russian Empire to 1917. Geopolitical, social, cultural, and intellectual development of Russian state; emphasis on theory of tsardom which led to emergence of distinct civilization in Russia.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Any 1000-level history or political science course; or departmental approval.

HIST-2060 Modern Russian History and Politics
03 Semester Credits
Development of U.S.S.R. since collapse of tsarist monarchy to dissolution of Soviet Union and Communist system; origins, development, establishment of power and rule by Communist government; analysis of development and implementation of domestic and foreign policies.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Any 1000-level history or political science course; or departmental approval.

HIST-2070 African-American Women in History
03 Semester Credits
Historical study of African-American women from their cultural roots in Africa, experiences during the Middle Passage, adaptation and influence in the Americas, and special focus on North America from colonial times to present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Any 1000-level history or political science course; and eligibility for ENG-1010 College Composition I; or departmental approval.

HIST-2080 Latin American History
03 Semester Credits
Study of history of Latin America from indigenous civilizations to present time. Analysis of social, cultural, political, and economic development of the region and relations between Latin American nations and the United States.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HIST-2090 Ohio History
03 Semester Credits
Study of history of Ohio from Native American societies and origins of statehood to present time. Analysis of environmental, political, social, economic, and intellectual aspects of the state. Role of transportation, industrialization, and immigration as well as contributions of women and cultural groups in state's development. Analysis of role of Ohio in American development.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HIST-2150 African American History to 1877
03 Semester Credits
Analysis and study of African American experiences from African origins through Atlantic slave trade, adaptation to the Americas, and influence on American culture from slavery to emancipation and Reconstruction
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HIST-2160 African American History 1877-present
03 Semester Credits
Analysis and study of African American experience from the end of Reconstruction, development of institutionalized racial discrimination, growth of racial advancement organizations, migration to cities, development of racial consciousness, and struggle for civil rights and political power until present time
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I or departmental approval.

HIST-2520 Hitler and the Holocaust
03 Semester Credits
Study of Adolf Hitler, Nazi Germany and the Holocaust. Topics include National Socialist ideology; history of anti-Semitism; political history of Germany before, during, and after World War One; life of Hitler; Nazi seizure of power; Second World War; and the Holocaust.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and any 1000 level History or Political Science course.

HIST-2660 Women in American History
03 Semester Credits
Study of changing role of women in America from colonial times to present. Introduction to current research techniques used to reconstruct family, political and work roles; special emphasis on participation in social reforms leading to women`s rights, suffrage and feminist movements; impact of race, gender and region on gender perspectives and conflicts; and evaluation of contemporary trends.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Any 1000-level history or political science course; and eligibility for ENG 1010 College Composition I, or departmental approval.

HOSPITALITY MANAGEMENT - HOSP

HOSP-1010 Introduction to the Hospitality Industry
02 Semester Credits
Comprehensive tour through fascinating and challenging related fields and career opportunities in hospitality industry; travel and tourism, lodging, food service, meetings, conventions and expositions, leisure and recreation, and beverage operations. Mapping of specific positions including requirements of job duties, skills, knowledge, personality attributes, physical abilities, and working conditions. Basic keys to successful career in service-based industry. Provides basis for understanding lodging and food and beverage through overview of industry in the Greater Cleveland area, nationally, and globally, and through examination of current trends. Field trips may be required.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I, or departmental approval: industry experience.

HOSP-1020 Sanitation and Safety
02 Semester Credits
Examines sanitation and safety practices in food service and lodging establishments. Management oriented treatment for prevention of food borne illnesses using HACCP principles of safe food handling, sanitary design, care of facilities and equipment, pest control, self-inspection, and interpretation of food service laws. Causes and prevention of accidents and elementary first aid including the Heimlich Maneuver and CPR. Students plan and practice employee training. Students must pass a national exam, which will provide State Health Department Certification. Field trips may be required.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I, or departmental approval: industry experience.

HOSP-1031 Fundamentals of Culinary Arts
03 Semester Credits
Introduction to food preparation techniques, culinary theory, and equipment used in commercial food service. Basic concepts of kitchen organization and operation, heat transfer, basic terminology, use of standardized recipes, weights and measures, product evaluation, recipe conversion, food composition and introduction to commercial equipment and work methods. American Culinary Federation competency skills included. Field trips may be required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for MATH-1060 Survey of Mathematics, and eligibility for ENG-1010 College Composition I, and HOSP-1020 Sanitation and Safety or concurrent enrollment; or departmental approval: industry experience.

HOSP-1040 Customer Service
02 Semester Credits
Theories and principles of guest service in hospitality industry. Discussions and practice of basic skills and competencies needed in entry level food and beverage service positions to provide quality guest service as recommended by the National Restaurant Association. Introduction to selected basic competencies as recommended by Educational Institute of American Hotel and Lodging Association. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-0950 Beginning Algebra I, and eligibility for ENG-1010 College Composition I, and HOSP-1020 Sanitation and Safety or concurrent enrollment; or departmental approval: industry experience.

HOSP-1180 Event Planning Essentials
02 Semester Credits
Introduction to the tasks required to plan a successful event. Emphasis on key characteristics of successful event planners, core principles of event planning, vocabulary, and basic management skills. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

HOSP-1360 Fundamentals of Restaurant/Foodservice Management
03 Semester Credits
Introduction and overview of many aspects of restaurant/ foodservice operations and the knowledge and skills needed by various operational and management positions. Emphasis will be on front of the house operations including various types of restaurants concepts, customer service, marketing, menu development, human resources, current trends, historical overview, nutrition and ethics, technology, facilities and design, as well as a variety of day-to-day managerial and operational concerns. Focus will be on restaurant operations, but banquet, catering and managed services will also be covered.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition, and eligibility for MATH-1060 Survey of Mathematics, or higher; or departmental approval: industry related experience.

HOSP-1380 Dimensions of Tourism
03 Semester Credits
Cross-disciplinary approach to examine many facets of tourism. Social science perspective provides students with practical knowledge that can effectively be applied to hospitality industry. Terminology, concepts, and various specialized fields that comprise the industry reviewed. Advanced information that serves as bridge to further analysis or study provided. Field trips may be taken to Cleveland area attractions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry or concurrent enrollment; or departmental approval: industry experience.

HOSP-1451 Contemporary Cuisine
04 Semester Credits
Preparation of contemporary cuisine with a wide variety of plate production techniques including appetizers, breads, soups, salads, side dishes, entrees, and desserts. Apply food pairing, plating, and garnishing techniques to contemporary cuisine. Skill training based on American Culinary Federation Apprenticeship competencies. Field trips may be required.
Lecture 02 hours. Laboratory 06 hours.
Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1552 Introduction to Baking & Pastries

HOSP-1480 Housekeeping Operations
02 Semester Credits
Fundamentals of professional housekeeping services in lodging industry. Examines basic cleaning methods and equipment currently used; work production and quality control techniques peculiar to housekeeping management; factors determining frequency workload and staffing. Housekeeping procedures and management placed within context of overall operation of lodging facility. On-site observation and computer-based training at local hotels provide practical application of housekeeping functions. Field trips may be required.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1020 Sanitation and Safety, and HOSP-1040 Customer Service; or departmental approval: industry experience.

HOSP-1552 Introduction to Baking & Pastries
03 Semester Credits
Daily production of baked goods including yeast breads, pies, cakes, souffles, mousses, danish and croissants. Theoretical and practical foundation in baking production. Develop skills and knowledge that meet American Culinary Federation standards for quality handcrafted products. Emphasis on discipline, formulas, function of ingredients, proper production techniques and recognizing quality standards. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): Concurrent enrollment in HOSP-1031 Fundamentals of Culinary Arts; and HOSP-1020 Sanitation and Safety or concurrent enrollment, and eligibility for MATH-1060 Survey of Mathematics, and eligibility for ENG-1010 College Composition I.

HOSP-1580 Front Office Operations
02 Semester Credits
Elements of effective front office management, paying particular attention to planning and evaluation of front office operations and to human resources management. Front office procedures and management placed within context of overall operation of a hotel. Systematic approach to front office procedures presented by detailing flow of business through a hotel, from the reservations process to check-out and settlement. On-site observation and computer-based training of front office procedures at local hotels provide practical application of front office functions. Field trips may be required.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry and HOSP-1040 Customer Service.

HOSP-1650 Dining Room Operations
02 Semester Credits
Hands-on work experience in a program on-campus restaurant. Students study, demonstrate and evaluate various types of dining room service and operational responsibilities. Focus areas include: serving, setup, labor, point of sale technology and management functions. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): HOSP-1031 Fundamentals of Culinary Arts, HOSP-1040 Customer Service, and HOSP-1451 Contemporary Cuisine, or concurrent enrollment; or departmental approval: industry related experience.

HOSP-1680 Beverage Management
02 Semester Credits
Focuses on the beverage management side of foodservice operations with specific attention to: bar and beverage operations, production, purchasing, and marketing of wine, beer, and spirits including formulation of a wine list and pricing models, and the fundamentals of responsible alcohol service.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry.

HOSP-1710 Doing Business as a Personal Chef
03 Semester Credits
Introduction to the career of Personal Chef. Topics include: starting your own personal chef business; professional associations; preparing a personal chef business plan; forms of business organization; vision and mission statements; marketing and sales; legal issues; accounting criteria; client assessment; preparation and performing the service; safety and sanitation issues; packaging foods; and using a computer program to aid in your personal chef business. Approved by the American Personal Chef Association.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1010 College Composition I, and HOSP-1020 Sanitation and Safety, or concurrent enrollment, and HOSP-1031 Fundamentals of Culinary Arts, or concurrent enrollment; and eligible for MATH-0950 Beginning Algebra I; or departmental approval: personal or professional cooking skills and experience.

HOSP-1730 International Cuisine
03 Semester Credits
Examines cuisines in countries and regions around the world and focuses on the geographic, cultural, and historic influences that have shaped various world cuisines. Exposure to traditional cooking techniques and varied indigenous ingredients that meld together to produce the basis of world cuisines.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1451 Contemporary Cuisine, or departmental approval: industry related experience.

HOSP-1940 Culinary Arts/Professional Baking Field Experience
01-03 Semester Credits
Supervised on-site work experience in culinary arts/professional baking. Students required to function in variety of workstations to reinforce learned classroom/lab skills. May be repeated up to three times with departmental approval.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 14 hours per week for 15 weeks (total 210 hours) per credit.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1552 Introduction to Baking & Pastries, and departmental approval: work site approval.

HOSP-1950 Restaurant/Food Service Management Field Experience
01-03 Semester Credits
Hospitality Management Department supervised on-site work experience in restaurant/food service management. Students required to function in variety of workstations to reinforce learned classroom/lab skills. May be repeated up to three times with departmental approval.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 14 hours per week for 15 weeks (total 210 hours) per credit.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1040 Customer Service, and departmental approval: work site approval.

HOSP-1960 Lodging/Tourism Field Experience
01-03 Semester Credits
Hospitality Management Department supervised on-site work experience in Lodging/Tourism Management. Students required to function in variety of workstations to reinforce learned classroom/lab skills. May be repeated up to three times with departmental approval.
Lecture 00 hours. Laboratory 00 hours.
Field Experience: 12 hours per week for 15 weeks (180 total hours) per credit.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry , HOSP-1020 Sanitation and Safety , HOSP-1040 Customer Service, and departmental approval: work site approval.

HOSP-2180 Event Planning Workshop
02 Semester Credits
Students will apply knowledge and skills gained in previous courses to plan an event. Event plans will include themes, identification of target market, sponsorships, event promotion, vendor selection, site selection, pricing, budgets, and evaluation. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HOSP-1180 Event Planning Essentials.

HOSP-2300 Facilities Design and Maintenance
02 Semester Credits
Introduction to knowledge that is needed for clear communication with those in charge of maintenance and engineering departments, lodging and foodservice facilities. Survey of blueprint reading; basic elements of electrical systems and appliance; plumbing and waste systems; heating principles; refrigeration; ventilation and air conditioning; building transportation systems; swimming pools; sound and pollution controls; and energy conservation. Planning and evaluation of facilities and selection of appropriate equipment. Field trips may be required.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, HOSP-1020 Sanitation and Safety, HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1040 Customer Service.

HOSP-2340 Menu Planning for Healthy Living
03 Semester Credits
Study of the central role of the menu in food and beverage operations. Comprehension and application of principles of nutritional guidelines in the menu planning process with an emphasis on locally grown and sustainable agriculture. Practice in researching, writing, presenting, and evaluating menus for food operations to provide for healthier living and profitability. Computer generated menus and menu labeling. Field trips may be required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): HOSP-1451 Contemporary Cuisine; HOSP-2500 Hospitality Cost Control; or concurrent enrollment, and HOSP-2700 Hospitality Purchasing.

HOSP-2350 Restaurant Operations
03 Semester Credits
Practical application of learned food preparation and presentation skills. Hands-on skill development within a simulated in-house restaurant kitchen with exposure to each kitchen position. Students prepare foods to order and for buffet presentation. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 00 hours. Laboratory 09 hours.
Prerequisite(s): HOSP-1451 Contemporary Cuisine.

HOSP-2360 Restaurant Marketing
02 Semester Credits
Course will focus on the role effective marketing and sales efforts play in the operation of a successful restaurant or foodservice outlet. Demographic and relevant market research will be conducted which will lead to the formulation of a marketing plan and budget. Additionally, ethics and marketing, the product life cycle, pricing strategies, feasibility studies, and the role of return on investment (ROI) will also be covered.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1360 Fundamentals of Restaurant/ Foodservice Management.

HOSP-2370 Restaurant/Foodservice Entrepreneurship
03 Semester Credits
Capstone course in restaurant/foodservice management. Through new material and utilizing the components and skills developed in previous courses, students will develop an understanding of the necessary requirements to open and operate a successful restaurant/foodservice operation. Students will present an original concept, create a professional menu, and prepare appropriate financial documents. Costing, controls, legal concerns and purchasing will also be covered. Intended not just for entrepreneurs, the course takes the philosophy that the best managers know how to think like owners.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1360 Fundamentals of Restaurant/Foodservice Management; and HOSP-1680 Beverage Management; and HOSP-2360 Restaurant Marketing, or concurrent enrollment.

HOSP-2380 Hospitality Marketing and Sales
03 Semester Credits
Provides hospitality management students with solid background in principles of hospitality sales, advertising, and marketing. Textbook's main focus on strategies and sales techniques for selling to targeted market with emphasis on planned profits. Field trips may be required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry.

HOSP-2400 Hospitality Management and Supervision
03 Semester Credits
Analysis of hospitality operations through use of terminology, theories, and principle. Special emphasis on evolution of management thought, commitment to quality and productivity in various environments that affect practice of management and supervision. Through experiences and practical application, concepts will focus on standards and procedures for selection, training and development of human resources in hospitality industry. Field trips may be required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, or departmental approval: admission to program, or related work experience.

HOSP-2480 Hospitality Law
03 Semester Credits
Provides awareness of rights and responsibilities that the law grants to or imposes upon hospitality operations, and illustrates possible consequences of failure to satisfy legal obligations. Discussion includes contracts, property-guest relationship, frauds, employment laws, anti-trust regulations, food and beverage sales, wage and hour standards, social security and income tax withholding requirements, tax/tip reporting, and immigration laws. Field trips may be required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry.

HOSP-2500 Hospitality Cost Control
03 Semester Credits
Addresses lodging, tourism, and food and beverage industries procedures to help control food, beverage, labor costs and sales income in food and beverage operations. Analysis of factors that serve as base for decision-making and improvement of operations that result in increased profits. Use of developing technology related to spreadsheets and other cost control aids. Field trips may be required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-2700 Hospitality Purchasing, or concurrent enrollment; or departmental approval: work experience or prior business courses in related subjects.

HOSP-2550 Baking Production and Sales II
03 Semester Credits
Building on theoretical and practical foundations of "Introduction to Baking and Pastries", students will develop advanced skills and knowledge in production and selection of quality handcrafted and purchased products. Scientific principles and experimental methods explored and additional emphasis placed on advanced decorating and finishing techniques, chocolate work, candies, sugar works, presentation methods, menu development and costing. Students required to do production for community events and contests. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1552 Introduction to Baking & Pastries, or departmental approval: industry related experience.

HOSP-2560 Garde Manger
03 Semester Credits
Presentation of Garde Manger station, including tools and equipment, preparation of pâtés, terrines and galantines, hors d'oevres and canapes. Demonstrate basic skills in charcuterie, carving of edible and non-edible showpieces, garnishes, and aspics. Includes buffet and plate presentation. Experience at a community event or field trips may be required.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): HOSP-1451 Contemporary Cuisine.

HOSP-2580 Convention Management and Meeting Planning
02 Semester Credits
Defines scope and segmentation of convention and group business market, describes marketing and sales strategies to attract markets with specific needs, and explains techniques to meet those needs as part of meeting and convention planning and service. Field trips may be required. Industry experience at a community event or function may be required.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry or departmental approval: work experience.

HOSP-2651 Banquet Management & Production
04 Semester Credits
Capstone course in Culinary Art. Practice of management and supervisory skills in an in-house restaurant. Students work in management teams to create, plan, design, market, sell, train, and execute a dining event for a minimum of 50 guests. Students rotate through production and service stations, as well as management positions, with responsibility for production, cost control/accounting procedures and customer relations within the restaurant. Industry experience participating at a community event or function may be required.
Lecture 00 hours. Laboratory 09 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): HOSP-1940 Culinary Arts/Professional Baking Field Experience; HOSP-1650 Dining Room Operations; HOSP-2350 Restaurant Operations; HOSP-2500 Hospitality Cost Control; and HOSP-2400 Hospitality Management and Supervision or concurrent enrollment.

HOSP-2700 Hospitality Purchasing
02 Semester Credits
Principles for purchasing supplies, equipment, food and beverages, and contract services for hospitality industry. Government regulations, industry standards, product availability, economic concerns, supplier relationships, and marketplace. Practice applications of purchase orders, bidding, specifications, computer assisted ordering and inventory controls. Field trips may be required.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts.

HOSP-2750 Culinary Competition
02 Semester Credits
Refine and demonstrate culinary and organizational skills, and explore creative cooking talents while competing in an American Culinary Federation (ACF) sanctioned event. Mandatory ACF membership required for Culinary Competitions. Participation in College Community Service representing the Hospitality Department and the college as Culinary Ambassadors.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1451 Contemporary Cuisine, or concurrent enrollment.

HOSP-2861 Lodging and Tourism Management Experience Practicum
04 Semester Credits
Capstone course in Lodging-Tourism Management. On-site observation and work experience in variety of job areas in Lodging or Tourism industry, with emphasis on practice of technical supervisory skills. Corresponding seminar presentation and discussion of current industry issues included. Student portfolios reviewed by industry professionals with emphasis on preparedness as career professional.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week Seminar: 2 hours per week
Prerequisite(s): HOSP-1960 Lodging/Tourism Field Experience, and HOSP-2400 Hospitality Management and Supervision or concurrent enrollment, and departmental approval: approved work site.

HOSP-2871 Food and Beverage Management Experience
02 Semester Credits
On-site observation and work experience in a variety of job areas in Food and Beverage areas of hospitality industry with emphasis on practice of supervisory skills. Special emphasis on evaluation of student accomplishments and preparedness to enter industry as career professional. Students will set goals for the field experience as well as attend required seminars, present their portfolio and create a professional personal resume.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Field Experience: 14 hours per week, Seminar: 1 hour a week.
Prerequisite(s): HOSP-1950 Restaurant/Food Service Management Field Experience, HOSP-2400 Hospitality Management and Supervision or concurrent enrollment, and departmental approval: approved work site.

HOSP-2992 Culinary Evaluation & American Regional Cuisine
02 Semester Credits
Capstone course in Culinary Art. Practice preparation of classical and contemporary cuisine, including American Regional cuisine. Collaborate with visiting professional chefs to prepare various appetizers, soups, salads, entrees and desserts. Final evaluation by American Culinary Federation (ACF) professional chefs of practical exam, including menu and recipe development, costing, purchasing, organization of station, and preparation, cooking, and presentation of student menu. Professional chef evaluations are based on American Culinary Federation and current industry standards. Industry experience at a community event or function may be required.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): HOSP-2350 Restaurant Operations, and HOSP-2560 Garde Manger, and HOSP-1940 Culinary Arts/Professional Baking Field Experience.

HUMAN SERVICES - HS

HS-1100 Foundations of Substance Abuse and Addiction
03 Semester Credits
Introduction to psychological and medical complications of alcohol, tobacco, and other drugs (ATOD), with emphasis on short term and long term effects. Provide overview of history of ATOD, etiology of dependency, physiological, neuropsychological, psychological and social effects of chemical abuse on the body and relationships.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HS-1110 Crisis Intervention and Child Abuse Issues
03 Semester Credits
Introduction to crisis theory and intervention strategies utilized with individuals, groups and the community. Focus on range of human service populations and service issues. Introduction to understanding and responding to child abuse. Define criteria to evaluate physical, emotional, psychological and sexual abuse. Define criteria for evaluating sexual interactions of children. Identify sexual perpetrator behavior of children and develop intervention strategies. Includes prevention, early intervention, crisis intervention and recovery strategies.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HS-1200 Treatment Modalities and Diversity Issues in Chemical Dependency
04 Semester Credits
Introduction to current concepts, theoretical models and research used by practitioners to understand total ecology of the chemically dependent individual. Examination and explorations of psychological, social and cultural lifestyle aspects and chemical dependency as applied to multicultural and special populations. Examination of various methods of intervention, assessment, case management, referrals and community resources for practitioner to help people maintain sobriety. Special emphasis on the 12 Core Functions/Global Criteria. Identification of national accreditation criteria, documentation, certification requirements and examination preparation.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): HS-1100 Foundations of Substance Abuse and Addiction.

HS-1210 Prevention and Chemical Dependency
02 Semester Credits
Examine the three levels of prevention. Models and theories used in prevention strategies. Methods, strategies, legal aspects, social and community resources available to prevent chemical dependency and relapse. Discuss prevention certification skills and requirements. Emphasis on process outcomes, including quality assurance, evaluation and tracking.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): HS-1100 Foundations of Substance Abuse and Addiction.

HS-1220 Diagnostic Tools and Legal Considerations
04 Semester Credits
Introduction to signs and symptoms of behaviors associated with mental illness, using DSM-IV. Identify and discuss psychotropic and related medications. Identification of criteria to qualify consumers for services. Discussion of networking strategies. Development of advocacy strategies based on integration of course material. Basic legal issues and policies affecting consumers of mental health and substance addiction services. Exploration of Ohio Revised Code statutes relating to probate, commitment, retention, release, due process, patient's rights, forensics, confidentiality and privacy act. Discussion of recent court decisions pertaining to mental health and substance addiction.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): None.

HS-1300 Introduction to Human Services
03 Semester Credits
Survey of historical and philosophical developments and their effects on Human Services. Introduction to contemporary Human Services delivery systems. Development of client-centered Human Services interventions. Emphasis on understanding Human Services within context of culturally/ethnically diverse urban environment.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HS-1400 Group Work in the Human Services
02 Semester Credits
Introduction to group work. Investigation of group work theories, different types of groups, group dynamics, stages of group process, group facilitation, participant role/influences, and group counseling techniques. Cooperative learning and role playing incorporated into learning experience.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in HS-1850 Introduction to Human Services Principles and Practices, or departmental approval: assessment by program coordinator.

HS-1850 Introduction to Human Services Principles and Practices
05 Semester Credits
Principles and practices of Solution Focuses/Brief Therapy Theory. Development of behavioral observation, assessment and assertiveness skills. Emphasis on developing cooperative relationships with clients and practicum supervisor. Introduction to community support process and managed care system. Demonstration of ethical and culturally sensitive interventions at practicum site. Supervised practicum of seven hours per week with emphasis on orientation, data collection, documentation, interpretation of behavior, and decision making relating to individuals and social systems.
Lecture 03 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): HS-1300 Introduction to Human Services, or departmental approval: equivalent coursework.

HS-2200 Ethics in Chemical Dependency
03 Semester Credits
Examination of ethical considerations in field of Chemical Dependency. Emphasis on ethical considerations surrounding the 12 Core Functions. Examine confidentiality compliance requirements for practitioner and organizations, including HIPPA. Identify scope of practice skills and limitations. Explore personal inventory of one's skills, knowledge and boundary issues. Identify strategies to prepare for state examination, including a mock test. Students will demonstrate assertiveness, advocacy and stress management techniques and skills.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): HS-1100 Foundations of Substance Abuse and Addiction.

HS-2210 Dual Diagnosis in Chemical Dependency
02 Semester Credits
Signs and symptoms of behavior associated with mental illness and substance abuse/addiction. Assessment, models of treatment and case management issues. Agency organization, funding, assessment, and treatment with special populations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): HS-1100 Foundations of Substance Abuse and Addiction, or departmental approval.

HS-2300 Family Theory and Services
04 Semester Credits
Principles of family dynamics. Emphasis on family preservation. Introduction to various family theories, approaches and intervention strategies. Explore concepts related to intergenerational patterns of behavior and family traits. Introduction to signs and symptoms of behaviors associated with abuse, domestic violence and neglect. Development of assessment skills with emphasis on relationships, parenting, abuse and/or neglect. Introduction to basic legal issues, ethics, and reporting policies and procedures. Introduction to system and services of the local Department of Children and Family Services. Development of human service skills to service families. Explore range of services and resources available to families.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HS-2530 Proposal Writing and Program Development
02 Semester Credits
Fundamentals of proposal writing and program development. Students will develop a grant proposal that meets funding criteria. Note: It is strongly recommended that only second year students enroll in this course.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HS-2600 Systems Approach to Case Management
04 Semester Credits
Development of a systems approach to human service delivery, with emphasis on macro and micro systems. Explore formal and informal systems. Develop skills to evaluate existing human services in community. Identify role of an advocate. Development of assessment skills for individuals and families through use of Genogram and Ecological Mapping tools. Practice in development of skills in assessment, planning, coordination, intervention, maintenance, and referral as integral part of case management. Emphasis on oral and written communication pertaining to case management.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): HS-1850 Introduction to Human Services Principles and Practices.

HS-2850 Human Services Principles and Practices I
05 Semester Credits
Develop basic skills of time management. Application of time management skills to student's personal schedule. Investigation of therapeutic theories of laughter and playfulness. Research and practice in development of preventive measures in human services. Participation in practicum experience.
Lecture 02 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): HS-1850 Introduction to Human Services Principles and Practices; or departmental approval: equivalent coursework or experience.

HS-2860 Human Services Principles and Practices II
03 Semester Credits
Continuation of practicum experience. Focus on client within the existing service delivery system.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): HS-2850 Human Services Principles and Practices I.

HS-2990 Human Services Capstone Course
02 Semester Credits
Capstone course in Human Services. Assessment of one's knowledge, experience and skills as human service worker. Preparation and presentation of qualifications through written resume and portfolio. Guidelines and preparation for employment interview. Investigation into Human Services issues.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): HS-2850 Human Services Principles and Practices I.

HUMANITIES - HUM

HUM-1010 Introduction to Humanities
03 Semester Credits
Examines creative enterprise in human cultures through the study of great works of art and literature. Lectures, performances, exhibits, and multi-media presentations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HUM-1020 The Individual in Society
03 Semester Credits
Introduction to works of art, philosophies, and scientific views that portray, explain, and evaluate positions and interactions of individuals in society. Lectures, performances, exhibits, and multi-media presentations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HUM-1030 The Individual in the Cosmos
03 Semester Credits
Introduction to works of art, philosophies, religions, and scientific views that portray, explain, and evaluate individual's search for meaning in cosmos. Lectures, performances, exhibits, and multi-media presentations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

HUM-1100 Leadership Development Studies
03 Semester Credits
Introduction to theories and ethics of group dynamics in leadership styles through study of classic and contemporary writings. Internationally recognized course, designed by Phi Theta Kappa. Lectures, discussions, and experiential learning exercises.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HUM-175H Honors Forum: Critical Issues
03 Semester Credits
Analysis of contemporary critical issues through their roots in past and present social, philosophical, and political attitudes and literature. Topics may vary with each offering, lecture, discussion, guest presentation, and multi-media presentation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, or department approval.

HUM-179H Honors Contract in Humanities
01 Semester Credit
Honors Contract complements and exceeds requirements and objectives for an existing HUM 1000-level honors course through formulation of a contract with a faculty mentor. In conjunction with faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level honors course in Humanities whose instructor approves the Honors Contract.

INFORMATION TECHNOLOGY - IT

IT-1000 Keyboarding
02 Semester Credits
Mastery of alphabetic and numeric keyboard using touch system. Formatting, speed and skill development, and keying basic business documents emphasized. Minimum goal of 30 words a minute with not more than five errors on a three-minute timed writing. Instruction on microcomputer.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

IT-1005 Computer Fundamentals
02 Semester Credits
Introduces students to general concepts of computer information systems. Presents terminology and effects of computers in our personal and business lives. Discusses available hardware and software as well as their applications. Includes repetitive hands-on applications in windows, keyboarding, electronic messaging, and word processing using a Windows environment. Introduces research techniques on the Internet and the World Wide Web. Exposes students to applications that promote critical thinking skills which are required to analyze and process information in future information technology courses.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

IT-1010 Introduction to Microcomputer Applications
03 Semester Credits
Overview and introduction to techniques and skills used on the microcomputer in a Windows environment. Introductory level instruction and hands-on training in file management, word processing, computerized spreadsheets, database management software, presentation graphics, electronic mail and Internet. Practical applications in creating, editing, saving, and printing computer generated materials.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Recommend IT-1000 for students who have not previously taken a keyboarding/typing course.
OAN Approved: OBU003

IT-101H Honors Introduction to Microcomputer Applications
03 Semester Credits
Introduction to Microcomputer concepts and applications from a business problem perspective. Emphasis on business applications spanning multiple platforms and, including file management, communications, word processing, spreadsheets, database management, presentation software and the Internet. Course objectives will be met utilizing a variety of online resources in lieu of or in addition to a traditional text book.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, and eligibility for MATH-1270 Intermediate Algebra or higher.

IT-1020 Information Technology Concepts
02 Semester Credits
Broad overview of concepts necessary for success in field of Information Technology. Includes computer architecture, software classifications, data representations, communication systems, networking, programming concepts, systems analysis and design, and security issues. Provides historical perspective of IT developments, knowledge of career opportunities in information systems, and overview of future of information technologies.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications or concurrent enrollment.

IT-1025 Information Technology Concepts for Programmers
03 Semester Credits
Designed for students pursuing careers in programming, networking and general Information Technology fields. Introduces computer, networking, and programming concepts.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Eligibility for MATH-1000 level or higher.

IT-1030 Internet Fundamentals
02 Semester Credits
Instruction in use of the Internet and World Wide Web. Technical concepts and terminology including: effective browser use, hypermedia, addressing, effective search operations, file transfer, e-mail, chat, newsgroups copyright issues, library resources, citation styles, multimedia resources, security, basic networking concepts, basic HTML, e-commerce; web research, web page evaluation, privacy and ethical issues. Hands-on use of current software tools and techniques is emphasized.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications or concurrent enrollment.

IT-1040 Microcomputer Operating Systems
03 Semester Credits
Overview of microcomputer operating systems and their role in hardware, software and data management. Hands-on skill development in use of current microcomputer operating system.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1020 Information Technology Concepts or concurrent enrollment; or IT-1025 Information Technology Concepts for Programmers; or departmental approval: equivalent knowledge or skills.

IT-1050 Programming Logic
03 Semester Credits
Language-independent course introducing computer program design and development. Identification and solution of business problems emphasized. Structured flow charts, hierarchy charts and pseudocode used in program description and design.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, or concurrent enrollment; or IT-1020 Information Technology Concepts.

IT-1060 Introduction to Windows
02 Semester Credits
Basic study of graphical user interface using Windows operating system. Emphasis on windowing concepts and commands, running application programs, managing files and transferring data. Includes use of Windows help system, utilities, accessories and web browsers.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

IT-1070 Advanced Internet Concepts
03 Semester Credits
Networking technologies that make up the Internet. Management of processes using the Internet, building Web sites utilizing HTML editor, and management of client personal computers connected to the Internet.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1030 Internet Fundamentals.

IT-1100 Fundamentals of iOS Application Development
03 Semester Credits
Introduction to the approach and technologies required for iOS (iPhone / iPad / iPod) application development. Technologies introduced will include: download and installation of software, Xcode, iPhone Simulator, Objective-C, Cocoa Touch, MVC and application marketing and distribution. Mac computer required with ability to download/install software.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

IT-2100 iOS Application Programming
04 Semester Credits
Focuses of skills required to successfully create dynamic and efficient iOS applications. Covers the fundamentals of objects, classes and behaviors as well as object communication and, user interface design considerations. Mac computer required with ability to download/install software.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic; and IT-1100 Fundamentals of iOS Application Development.

IT-2110 Android Mobile App Development
03 Semester Credits
Introduction to mobile development using the Android Software Development Kit (SDK). Focuses on the skills required to design, develop and publish applications for the Android platform. Covers the fundamentals of Android application development including designing an application, implementing specific framework components such as a splash screen and main menu, how to handle user interaction and make an application available in the Android market.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ITMP-2650 Java Programming, or concurrent enrollment.

IT-2250 Excel: VBA Programming
03 Semester Credits
Object-oriented programming course in Visual Basic for Applications (VBA). Investigation of the Excel object model as it relates to the creation of functions and procedures within VBA programming constructs. Strong emphasis on business applications.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic.

IT-2300 Database Use and Design
03 Semester Credits
Study in electronic database concepts and software as used in a business environment. Database theory, design and implementation techniques. Problem solving strategies using database software for accurate and timely storage, retrieval and interpretation of data.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: equivalent experience.

IT-2351 Enterprise Database Systems
04 Semester Credits
Apply knowledge of: relational algebra, data migration, data warehousing, data mining, distributed databases and security to design, develop and normalize a Structured Query Language (SQL) database to 3rd normal form using appropriate diagrams and database objects. Retrieve, insert, update, delete, troubleshoot and report data from complex SQL databases.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, or IT-1020 Information Technology Concepts; and eligibility for MATH-1270 Intermediate Algebra.

IT-2400 Unity Game Programming
03 Semester Credits
An introduction to scripting with Unity focusing on the programming skills needed to translate game design principles into a fully-functional game.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VCIM-1400 Game Design II: Game Engines, or departmental approval.

IT-2600 E-Business Programming Technologies
03 Semester Credits
Use of web programming technologies to create Internet client/server applications. Students learn to design, create, code and debug applications using Web objects. Topics include, but are not limited to, SQL, XML, C# .Net, Visual Basic .Net, CGI/Perl, Java, JavaServer Pages, PHP and ColdFusion.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic and ITWM-1010 Creating Web Pages with HTML and JavaScript.

IT-2700 Systems Analysis and Design
03 Semester Credits
Overview of systems development life cycle. Utilize structured tools and object-oriented techniques to analyze and document process flow, data flows, data structures, file designs, input and output designs and program specifications in the systems development life cycle. Examine information gathering and reporting activities. Analyze strategies and techniques for producing logical methodologies which deal with complexity in development of information systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): IT-1050 Programming Logic.

IT-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

INFORMATION TECHNOLOGY - Networking Software - ITNT

ITNT-2300 Networking Fundamentals
03 Semester Credits
Survey course into the fundamental topics and concepts of networks and network technologies. Topics include introductory content on networking standards, models and protocols, networking hardware, transmission methods and media, LANs, WANs, Wireless, VOIP, security, and network management issues. Serves as a preparation basis for the CompTIA Network+ exam.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): EET-1240 Digital Circuits/Microprocessors I, or concurrent enrollment; or IT-1020 Information Technology Concepts or IT-1025 Information Technology Concepts for Programmers; or departmental approval.

ITNT-2310 TCP/IP
03 Semester Credits
Provides knowledge and skills required to setup, configure, use, and support Transmission Control Protocol/Internet Protocol (TCP/IP). Emphasis on Microsoft Windows operating system. Discussions of TCP/IP in Novel and CISCO environments also included.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ITNT-2300 Network Fundamentals or concurrent enrollment, or departmental approval: equivalent knowledge or skills.

ITNT-2320 Network Administration I
03 Semester Credits
Provides knowledge and skills necessary to perform post-installation and day-to-day administration tasks in single-domain or multiple-domain Microsoft Windows-based network. Includes creating and administering system policies, user and group accounts, setup and administering files, folders and printers, managing and monitoring network resources and troubleshooting. How to install and configure Windows, network transport protocols, network services, and client software also covered.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ITNT-2300 Network Fundamentals or concurrent enrollment or departmental approval: equivalent knowledge or skills.

ITNT-2370 Network Security Fundamentals
03 Semester Credits
A survey examination of network security fundamentals involved in creating and managing secure computer network environments. Both hardware and software topics are considered, including authentication methods, remote access, network security architectures and devices, cryptography, forensics and disaster recovery plans. Serves as preparation basis for CompTIA Security+ exam.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ITNT-2310 TCP/IP, or EET-1301 Cisco I: Networking Technologies, and EET-1311 Cisco II: Basic Router Technologies.

ITNT-2380 Linux Administration
03 Semester Credits
Linux is used as a platform for many server applications including the dominant Web server. Cost and licensing advantages have made it a network operating system that is in widespread use. The essentials of installing, configuring, maintaining, administering, and troubleshooting the Linux Operating System will be covered.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ITNT-2300 Network Fundamentals or concurrent enrollment; or departmental approval: equivalent skills.

ITNT-2420 Network Administration II
03 Semester Credits
Focuses on designing, implementing, and supporting Windows server network operating system in multiple-domain enterprise environment. Implementing directory services, analysis and optimization, and troubleshooting discussed.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ITNT-2320 Network Administration I, or departmental approval: equivalent knowledge or skills.

ITNT-2990 Networking Capstone
03 Semester Credits
Capstone course for Networking (Hardware and Software degree programs). Primary focus on developing and responding to request for proposals, and determining and presenting solutions to various networking environments. Uses case studies and teamwork.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): To be taken within the last 15 credits of the IT (Networking Software) or the EET (Networking Hardware) degree programs, or departmental approval.

INFORMATION TECHNOLOGY - Programming and Development – ITMP/ITWM

ITWM-1010 Creating Web Pages with HTML and JavaScript
03 Semester Credits
Introduction to Internet-based networking technologies. Overview of protocols, web servers and browser programs utilized in the display of the World Wide Web pages. Students build pages in XHTML (extensible hyper text markup language) and external style sheets in CSS (cascading style sheets) using an HTML editor, develop foundations in website design best practices, build introductory skills in JavaScript, and understand accessibility as it relates to website design.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): IT-1020 Information Technology Concepts; or IT-1025 Information Technology Concepts for Programmers or concurrent enrollment.

ITWM-2030 Active Server Pages
04 Semester Credits
Instruction in Active Server Page (ASP) technology for developing interactive, data-driven Web applications. Covers converting databases from Access to SQL Server and working with arrays, collections, and control structures.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ITWM-1010 Creating Web Pages with HTML and JavaScript, and ITWM-2320 Interactive Internet Programming; or ITMP-2620 Visual Basic Programming, and IT-2300 Database Use and Design; or departmental approval.

ITWM-2320 Interactive Internet Programming
04 Semester Credits
Introduction to interactive object-oriented programming in an Internet environment from a conceptual approach. Emphasis is on understanding the basic Internet technologies (mostly from the client side), how and when to use them and how to integrate them into a system.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic, and ITWM-1010 Creating Web Pages with HTML and JavaScript.

ITMP-2620 Visual Basic Programming
04 Semester Credits
Introduction to object-oriented programming in windows environment using Visual Basic programming language. Emphasis on program development and design, application of logic in both user-defined and event-driven procedures, debugging techniques, and basics of Visual Basic syntax.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic, or departmental approval: equivalent knowledge or skills.

ITMP-2650 Java Programming
04 Semester Credits
Introduction to object-oriented programming in windows environment using the Java programming language. Students will learn how to design, code and debug Java applications and applets. Other topics will include GUI components, event handling, and exception handling.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic, or departmental approval: equivalent experience or skills.

ITMP-2660 Data Structures & Algorithms
04 Semester Credits
Programming and problem-solving skills are further developed by using language features to implement various data structures such as stacks, queues, linked lists, trees and graphs. Additional topics include recursion, sorting, searching, and hashing algorithms.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ITMP-2650 Java Programming, or departmental approval: equivalent knowledge or skills.

ITMP-2670 C/C++ Programming Language
04 Semester Credits
Introduction to programming using the C and C++ programming languages, emphasizing program development and design, debugging techniques, and common basics of the C/C++ languages. Topics include data types, control statements, functions, argument passing, arrays, strings, structures, data files, and classes.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): IT-1050 Programming Logic, or departmental approval: equivalent knowledge or skills.

INTEGRATED SYSTEMS ENGINEERING TECHNOLOGY - ISET

ISET-1100 Welding Blue Print Reading
02 Semester Credits
Explore the techniques of blueprint reading and welding symbols relating to the welding field, including the proper way to read and apply measurements and dimensioning pertaining to industrial blueprints and metal specifications. Includes how to understand and interpret views and translate measurements and dimensions.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra or higher or concurrent enrollment.

ISET-1300 Mechanical/Electrical Print Reading
02 Semester Credits
Introduction to fundamental theory and application of blueprint reading skills. Included material will cover electrical, mechanical, structural drawings with symbols and wiring diagrams, safety codes, and basic troubleshooting techniques. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

ISET-1310 Mechanical Power Transmission
02 Semester Credits
Introduction to basic concepts of industrial maintenance and installation of mechanical drive systems including bearing, shafts, gears, and couplings. With an emphasis on OSHA safety standards, installation, maintenance, troubleshooting, and lubrication of mechanical components.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

ISET-1320 Fundamentals of Fluid Power
02 Semester Credits
Principles of power transmission are presented and contrasted with other means of transmission. Includes laws and principles of fluid power transmission, units of pressure and flow, plumbing materials and sizing, pressure losses through piping, and the uses of vacuum and vacuum applications. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ISET-1300 Mechanical/Electrical Print Reading.

ISET-1340 Industrial Piping and Tubing
02 Semester Credits
Concepts and principles specific to piping, pipefitting, and tubing techniques, materials, routing and layout including types of material, cutting, threading, measurements, fittings, bending and offsets. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ISET-1300 Mechanical/Electrical Print Reading.

ISET-1410 Applied Electricity I
03 Semester Credits
Fundamentals of electricity with emphasis on resistance, direct current voltage and current, electrical quantities and units of measurements. Ohm's Law, Kirchhoff's voltage and current laws will also be covered.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-1300 Mechanical/Electrical Print Reading or concurrent enrollment; or departmental approval.

ISET-1420 Applied Electricity II
03 Semester Credits
Principles and applications of electricity with emphasis on alternating current, inductors, capacitors, and phase relationships. Electrical quantities and units of measurements, Ohm's Law, Kirchhoff's voltage and current laws, single and three phase transformers will also be included. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-1410 Applied Electricity I, or departmental approval. Highly recommend students complete MATH-1280 Advanced Intermediate Algebra prior to enrolling in this course.

ISET-1450 Heating Ventilation Air Conditioning/Refrigeration I
02 Semester Credits
Fundamental concepts and principles of heating, ventilating, and air conditioning and refrigeration (HVAC/R) systems. Topics include types and components of HVAC/R systems, fuels and refrigerants, controls devices, thermostats and sensing devices. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

ISET-1460 Fundamental Boiler Technology
03 Semester Credits
Concepts and fundamental skills associated with the operation and maintenance of steam boilers. Topics include an overview of steam boilers and boiler operation, basic boiler processes, boiler construction and material properties, boiler operating and maintenance procedures, combustion theory and fuels, efficiency, and codes and standards. Safety codes and procedures, preventive maintenance and basic troubleshooting techniques will also be covered. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

ISET-2100 Gas Metal Arc Welding (MIG)
04 Semester Credits
Develop skills in Gas Metal Arc Welding (MIG). Extensive guided instruction provided and prepares a student for the certified MIG certification test.
Lecture 02 hours. Laboratory 04 hours.
Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

ISET-2110 Gas Tungsten Arc Welding (TIG)
04 Semester Credits
Develop skills in Gas Tungsten Arc Welding (GTAW-TIG). Extensive guided instruction provided and prepares a student for the certified TIG certification test.
Lecture 02 hours. Laboratory 04 hours.
Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

ISET-2120 Shielded Metal Arc Welding (STIG)
04 Semester Credits
Develop skills in Shielded Metal Welding (STIG). Extensive guided instruction provided and prepares a student for the certified STIG certification test.
Lecture 02 hours. Laboratory 04 hours.
Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

ISET-2130 OxyFuel Gas Welding
04 Semester Credits
Develop skills in OxyFuel Gas Welding. Extensive guided instruction provided and prepares a student for the certified OxyFuel Gas Welding certification test.
Lecture 02 hours. Laboratory 04 hours.
Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

ISET-2200 Industrial Motor Controls
03 Semester Credits
Instruction in theory, application, and use of industrial type motors focusing on topics of safety, direct current (DC) motors, alternating current (AC) motors, single-phase motors, three-phase motors, motor troubleshooting methods, and motor starting. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-1420 Applied Electricity II, or EET-1210 AC Electric Circuits, or departmental approval.

ISET-2210 Commercial Wiring
03 Semester Credits
Principles of commercial electrical installations to prepare for work in the electrical field in a commercial, environmental setting. Based on the National Electric Code, study includes job specifications, sizing and selection of materials, and installation techniques. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-2240 Applied National Electric Code or concurrent enrollment; or departmental approval.

ISET-2220 Fundamentals of Electronics and Instrumentation
03 Semester Credits
Concepts of electronics circuitry and instruments including purpose, function, and operation of diodes, transistors, Silicon Controlled Rectifier's (SCR's), DIAC's, TRIAC's, Field Effect Transmitter's (FET's), and other solid state devices used in live dynamic electronic circuits. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-1420 Applied Electricity II, ISET-2200 Industrial Motor Controls; and departmental approval.

ISET-2240 Applied National Electric Code
03 Semester Credits
Introduction to the National Electric Code including industry safety hazards, standards, and precautions. Code book structure, terminology, and electrical installations will be presented. Extensive guided instruction and practice provided.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ISET-1420 Applied Electricity II.

ISET-2450 Heating Ventilation Air Conditioning/Refrigeration II
02 Semester Credits
Topics include refrigeration, heat transfer and thermodynamics HVAC/R. Course covers modern HVAC/R systems including their major components, controls, different duct work designs, combustion, and HVAC/R blueprint reading. Install heating and air conditioning, start up and troubleshoot equipment, live demonstrations on heating and air conditioning systems, and preparation for the HVAC test. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ISET-1450 Heating Ventilation Air Conditioning/Refrigeration I, or departmental approval.

ISET-2460 Applied Boiler Technology
02 Semester Credits
The focus of this course will be applications of steam and hot water boilers, water chillers, steam and hydronic heating and cooling systems. This course is the prerequisite for the State of Ohio Low Pressure Operators License Exam Preparatory. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ISET-1460 Fundamental Boiler Technology, or departmental approval.

ISET-2500 Programmable Logic Controllers Maintenance I
03 Semester Credits
Fundamental concepts of Programmable Logic Controllers (PLCs) Maintenance including applications of industrial type PLCs requiring motion control, automated manufacturing and the functions PLCs serve in that environment. Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-2200 Industrial Motor Controls, and departmental approval.

ISET-2510 Programmable Logic Controllers Maintenance II
02 Semester Credits
Programming and application of Programmable Logic Controllers (PLCs) including timers, counters, program control, data manipulation, and math instructions. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ISET-2500 Programmable Logic Controllers Maintenance I, or departmental approval.

ISET-2520 Programmable Logic Controllers Maintenance III
02 Semester Credits
Programming and application of programmable logic controllers (PLCs) including sequencers, shift registers, PLC installation, editing, troubleshooting, process control, data acquisition, and computer-controlled machines and processes. Extensive guided instruction and practice provided.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): ISET-2510 Programmable Logic Controllers Maintenance II or concurrent enrollment; or departmental approval.

ISET-2990 Reliability Centered Maintenance
03 Semester Credits
Advanced concepts and principles of troubleshooting, preventive and predictive maintenance, reliability centered maintenance (RCM), elements of root cause failure analysis (RCFA), and Total Productive Maintenance (TPM). Extensive guided instruction and practice provided.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ISET-1450 Heating Ventilation Air Conditioning/Refrigeration I, and ISET-2500 Programmable Logic Controllers Maintenance I, and ISET-2210 Commercial Wiring, or departmental approval.

INTERIOR DESIGN - INTD

INTD-1111 Introduction to Interior Design
03 Semester Credits
Introduction to interior design studies with emphasis on identifying and developing basic skills and competencies required for residential and nonresidential design. Provides the foundation for understanding terminology, principles and practices utilized in subsequent interior design coursework.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

INTD-1120 Architectural Drafting for Interiors I
03 Semester Credits
Introduction to computer-aided design (CAD). Apply basic and intermediate CAD commands to draw and edit drawings of architectural exteriors, interiors, elevations and details, for the purpose of design, documentation and presentation. Special terms and definitions used in computer-assisted drafting in 2D with an introduction to 3D rendering. Basic overview of necessary computer knowledge needed to operate PC compatible computers.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or concurrent enrollment.

INTD-1130 Architectural Drafting for Interiors II
03 Semester Credits
Hand drawing and BIM (Building Information Modeling) 3-D computer-aided design techniques for residential and light commercial structures. Includes non-structural and structural elements. Development of plans, sections, partitions, interior elevations, millwork details, universal design, accessibility, interior codes, interior egress codes, and interior fire codes for permit application and presentation.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): INTD-1120 Architectural Drafting for Interiors I, or concurrent enrollment; or departmental approval: professional in the architectural or interior design field.

INTD-2300 Interior Design Studio I
03 Semester Credits
Introduction of functional space planning through design of residential projects. Emphasis on problem solving and exploring multiple design solutions.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): INTD-1111 Introduction to Interior Design, INTD-1120 Architectural Drafting for Interiors I, INTD-1130 Architectural Drafting for Interiors II, ART-1050 Drawing I, and ART-1091 Color Theory and Application; or departmental approval.

INTD-2320 History of Interiors
03 Semester Credits
History of development of furnishings, ornaments, interiors and architectural details from Egyptian through prominent 20th century movements to present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ART-2020 Art History Survey: Prehistoric to Renaissance.

INTD-2330 Interior Design Materials and Sources
03 Semester Credits
Review various interior furnishings, finishes, and materials through lectures, field trips, and research assignments. Information presented on furniture sources, showroom functions, and criteria for specifying elements of interior spaces.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): INTD-1111 Introduction to Interior Design.

INTD-2350 Textiles
03 Semester Credits
Study of natural and manufactured fibers; aesthetics, application, function, and technical aspects. Lectures and field trips cover fabric construction, physical properties and technology in textile industry.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): INTD-1111 Introduction to Interior Design, or departmental approval: comparable knowledge or skills.

INTD-2380 Fundamentals of Lighting
03 Semester Credits
Principles and techniques of lighting design and application in interior space. Light measurement, sources, specifications, color and light, and terminology along with calculations of light in interior environment.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): INTD-1111 Introduction to Interior Design, and INTD-2300 Interior Design Studio I or concurrent enrollment.

INTD-2400 Interior Design Studio II
03 Semester Credits
Considers advanced problems in commercial interiors with concepts in advancement and application of planning techniques. Emphasis on research and analysis of existing structures, building constraints, accessibility, and furnishing and materials specifications.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): INTD-2300 Interior Design Studio I.

INTD-2430 Architectural Materials and Methods
03 Semester Credits
Materials and methods presented on building construction, emphasizing wood, concrete unit masonry and light steel construction. Projects include working drawings and interpretations, field trips to construction sites, and fabricating plans.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): INTD-1120 Architectural Drafting for Interiors I, and INTD-1130 Architectural Drafting for Interiors II; or departmental approval.

INTD-2460 Interior Design Presentation
03 Semester Credits
Rendering techniques stressed to communicate design concepts. Focuses on perspective rendering skills, performance of three dimensional space, and mixed media. Quick sketch techniques and computer use for residential and commercial interiors.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): ART-1050 Drawing I, and ART-1091 Color Theory and Application, and INTD-1130 Architectural Drafting for Interiors II, and concurrent enrollment in INTD-2400 Interior Design Studio II.

INTD-2470 Professional Practice of Interior Design
03 Semester Credits
Business practices for production of residential and commercial interior design projects to completion. Operation, communications, and legal responsibilities along with resumes, interviews, and business conduct presented.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): INTD-1111 Introduction to Interior Design, or departmental approval: comparable knowledge or skills.

INTD-2850 Interior Design Practicum
03 Semester Credits
Capstone course in Interior Design. Students placed in practical work environment under College supervision. Interaction with professionals in the field and application of skills and knowledge gained in the classroom required.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 210 hours per semester at assigned site. Seminar: 15 hours per semester.
Prerequisite(s): INTD-1111 Introduction to Interior Design, and concurrent enrollment in INTD-2470 Professional Practice of Interior Design; or departmental approval.

ITALIAN - ITAL

ITAL-1010 Beginning Italian I
04 Semester Credits
Introduction to Italian through multiple approaches with emphasizing speaking and understanding. Practice in conversational Italian and aural comprehension on topics of daily interest. Practice in writing basic sentences and small simple paragraphs on relevant topics and reading short paragraphs.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

ITAL-1020 Beginning Italian II
04 Semester Credits
Development of proficiency in speaking, understanding, reading, and writing in Italian. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): ITAL-1010 Beginning Italian I, or one year of high school Italian; or departmental approval.

ITAL-1100 Italian Intercultural Perspectives
03 Semester Credits
Study of Italian image and contribution to world culture and various nation-shaping events throughout the history from the Roman times to the present, with particular emphasis on the shaping of the United States of America. Cultural presence of Italy in the United States.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

ITAL-2010 Intermediate Italian I
03 Semester Credits
Increased vocabulary development and structural review through readings of cultural texts. Emphasis on oral expression and group discussions. Intensive exercises in written and oral expression. Grammar review and vocabulary building.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ITAL-1020 Beginning Italian II, or two years of high school Italian; or departmental approval.

ITAL-2020 Intermediate Italian II
03 Semester Credits
Intensive exercises in written and oral expression in Italian with emphasis on conversation. Further improvement of written skills. Reading of selected texts in order to deepen the understanding and appreciation of Italian culture. Additional grammar review and vocabulary building. Further exploration of Italian literature.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ITAL-2010 Intermediate Italian I, or two years of high school Italian; or departmental approval.

ITAL-2410 Italian Conversation and Composition
03 Semester Credits
Development of proficiency in speaking, understanding, reading, and writing. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics and more conversational opportunities. Discussion of topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Practice in writing compositions. Emphasis on group discussion.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ITAL-2020 Intermediate Italian II, or concurrent enrollment with departmental approval: three years of high school Italian.

ITAL-2420 Italian Civilization, Culture and Literature
03 Semester Credits
Introduction to the civilization and literature of Italy. Emphasis on the interrelationship between history and geography of Italy and its culture.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ITAL-2410 Italian Conversation and Composition, or concurrent enrollment with departmental approval: three years of high school Italian.

JAPANESE - JAPN

JAPN-1011 Beginning Japanese Language and Culture I
04 Semester Credits
Introduction to modern Japanese. Listening, speaking, reading, writing, and basic grammatical structures, with emphasis on appropriate social use of the language within Japanese culture. Hiragana, katakana, and 75-100 kanji. Basics of kanji dictionaries. Presented through class interaction, audio, video, and computer lab instruction.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

JAPN-1021 Beginning Japanese Language and Culture II
04 Semester Credits
Continued study of modern Japanese in social and cultural context. Emphasis on listening comprehension and speaking regarding practical daily transactions. Reading basic, graded texts and writing simple compositions, integrating basic grammatical structures, hiragana, katakana, and 100-150 new kanji. Acquiring speed in referring to kanji dictionaries. Class interaction, audio, video and computer lab.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): JAPN-1011 Beginning Japanese Language and Culture I; or departmental approval.

JAPN-2011 Intermediate Japanese Language and Culture I
04 Semester Credits
Continued study of modern Japanese in social and cultural context. Listening and speaking skills necessary for basic function and communication in Japanese society. Reading functional, intermediate, graded texts and writing brief compositions and personal correspondence, integrating intermediate grammatical structures and 150-200 new kanji. Class interaction, audio, video, and computer lab.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): JAPN-1021 Beginning Japanese Language and Culture II, or departmental approval.

JAPN-2021 Intermediate Japanese Language and Culture II
04 Semester Credits
Continued study of modern Japanese in social and cultural context. Emphasis on communicative listening and speaking skills. Discussion of topics on Japanese culture and society. Reading and writing longer texts and compositions expressing more complex ideas, integrating 150-200 new kanji. Completion of Japanese grammar foundation. Class interaction, audio, video, and computer lab.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): JAPN-2011 Intermediate Japanese Language and Culture I, or departmental approval.

JAPN-2411 Advanced Japanese Language and Culture I
03 Semester Credits
Modern Japanese in social and cultural context. Development of focused listening comprehension and conversation skills. Discussion of cultural and business topics in Japanese. Reading selected literary texts. Introduction to formal writing style and its structural differences. Writing formal letters and brief essays. Introduction of 200-250 new kanji. Class interaction, audio, video, and computer lab.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): JAPN-2021 Intermediate Japanese Language and Culture II, or departmental approval.

JAPN-2421 Advanced Japanese Language and Culture II
03 Semester Credits
Modern Japanese in social and cultural context. Further development of focused listening and conversation skills. Discussion of aspects of Japanese politics and economy. Reading authentic texts such as periodicals, short stories, and novel excerpts. Writing journal entries and compositions of 200-400 characters. Introduction of 200-250 new kanji. Class interaction, audio, video, and computer lab.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): JAPN-2411 Advanced Japanese Language and Culture I, or departmental approval.

JOURNALISM AND MASS COMMUNICATION - JMC

JMC-1011 Introduction to Mass Communication
04 Semester Credits
Nature and function of mass media: print, television, radio and film. Impact and influence on individuals in a democratic society.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-0990 Language Fundamentals II.
OAN Approved: OCM006

JMC-1210 Introduction to Radio and Television
03 Semester Credits
Survey of radio and television industry and its impact on contemporary society with critical study of broadcast programming including production, direction and writing.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): JMC-1011 Introduction to Mass Communication.

JMC-1310 Film Appreciation
03 Semester Credits
Introduction to aspects of film including script, directing and elements of cinematography. Includes survey of film history and criticism. Class views masterpieces from a number of countries.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

JMC-1410 Staff Practice
01 Semester Credit
Class laboratory experience in assembling, making-up and publishing College newspaper. Detailed weekly analysis of effectiveness of news stories written and published and overall presentation of the College newspaper. Students assigned to College newspaper staff.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): Concurrent enrollment in JMC-2010 News Writing, or departmental approval: comparable knowledge or skills.

JMC-1610 Survey of the Black Press
03 Semester Credits
Nature and function of the Black press including broadcast, with emphasis on history and function of the Black press and impact of the Black press on minorities in general. Special attention on career opportunities for minorities and problems of the black journalist working with the general press.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

JMC-2000 Media Writing
03 Semester Credits
Introduction to writing skills necessary for professional media such as news, print, broadcast, public relations and advertising. Emphasis also on the writing process, grammatical style sheets, audience concerns and an in-class, professional presentation of written materials.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

JMC-2010 News Writing
04 Semester Credits
News information gathering and writing for print media. An advanced look at structure of news stories and emphasis on writing against deadlines. Ethical, policy and legal questions confronting reporters, their newspapers and publishers. Completion of a professional portfolio of in-class clips. Survey of career opportunities in print, broadcast and internet journalism.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): JMC-2000 Media Writing, and ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

JMC-2020 News Reporting
04 Semester Credits
Emphasis on problems of news gathering using community as laboratory. Interpretive reporting. Attention to needs of wide variety of types of newspapers and to journalistic specialties.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): JMC-2010 News Writing.
OAN Approved: OCM010

JMC-2030 News Editing
04 Semester Credits
Copy desk methods. Copy and proofreading, headline writing, newspaper makeup and style. Introduction to newspaper law, including libel, right to privacy and press privileges. Editorial writing, problems and policy. Examination of major contemporary American newspapers.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): JMC-2010 News Writing.

JMC-2040 American Cinema
03 Semester Credits
American film history from its beginnings to the present day. American film as an expression of American society and popular culture. Topics include: classical Hollywood cinema; the studio system; the star; genre studies of the western, comedy, musical, combat films, and film noir; Hollywood in the age of television; the film school generation; and into the 21st century.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.

JMC-2220 Broadcast Journalism
03 Semester Credits
News reading, news preparation, news reporting on audiotape, videotape and live camera for television and radio. Covers Federal Communications Commission rules and regulations on news. Fundamentals of what makes a story and how to get it. Art of interviewing. Field work, study of radio and television history.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): JMC-1011 Introduction to Mass Communication.

JMC-2310 Screenwriting I
03 Semester Credits
Provides an introduction to screenwriting for feature films.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): ENG-1010 College Composition I; and JMC-1011 Introduction to Mass Communication, or JMC-1310 Film Appreciation, or departmental approval.

JMC-2410 Television Production
03 Semester Credits
Introduction to basic concepts of video production. Emphasis on operation of video cameras, microphone placement, lighting, editing and post-production equipment. Teamwork and group production emphasized.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): JMC-1011 Introduction to Mass Communication, or departmental approval: comparable knowledge or skills.
OAN Approved: OCM008

JMC-2420 Advanced Television Production
03 Semester Credits
Advanced television production and operations, to include hands-on training with studio and field equipment. Theories and processes of producing and directing video programs, including script writing, visualization, personnel management and budgeting. Includes multi-camera and single-camera production, video editing techniques. Teamwork and group production emphasized.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): JMC-2410 Television Production.
OAN Approved: OCM010

JMC-2470 Motion Picture Production
03 Semester Credits
Introduction to motion picture production techniques. Students design, shoot and edit their own projects.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): JMC-1011 Introduction to Mass Communication, or departmental approval: comparable knowledge or skills.

JMC-2480 Radio Broadcast Production
03 Semester Credits
Basic principles of production and programming including training and development in basic performance areas. Study of contemporary radio station programming theories and techniques.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): JMC-1011 Introduction to Mass Communication, or departmental approval: comparable knowledge or skills.

JMC-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

LATIN - LAT

LAT-1010 Beginning Latin I
04 Semester Credits
Introduction to Latin through multiple approaches with emphasis on comprehension of basic and some complex grammar. Use of language lab and analysis of English vocabulary.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

LAT-1020 Beginning Latin II
04 Semester Credits
Continued study of the Latin language. Development of proficiency in reading, writing, and speaking. Emphasis on reading the classical works.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): LAT-1010 Beginning Latin I, or departmental approval.

LAW ENFORCEMENT - LAWE

See Criminal Justice, page 284.

MARKETING - MARK

MARK-2010 Principles of Marketing
03 Semester Credits
Introduction to basic principles of marketing involved in selling of goods and services. Focus on the marketing mix which includes the creation of a product, pricing, channels of distribution, and promotion.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-1020 Introduction to Business, and ECON-2620 Principles of Microeconomics.
OAN Approved: OBU006

MARK-2020 Principles of Salesmanship
03 Semester Credits
Skill development in techniques used by successful professional sales persons. Sales management also addressed in context of self management and organizational management.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MARK-2010 Principles of Marketing, or concurrent enrollment in INTD-2300 Interior Design Studio I or departmental approval: comparable knowledge or skills.

MARK-2120 Import/Export Procedures and Documentation
03 Semester Credits
Procedures and documentation required for import and export activities. Includes shipment of goods and payment for foreign sales, rules for importing cargo into the U.S., and Customs regulations and processes.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MARK-2010 Principles of Marketing, or departmental approval: previous coursework and/or experience.

MARK-2260 Sales Promotion and Public Relations
03 Semester Credits
Study of promotion methods and techniques which are supplementary to advertising and personal selling. Focus on both consumer and trade promotions. Includes publicity and public relations, trade shows and exhibits, point-of-purchase displays, couponing, contests, sweepstakes, rebates and premiums.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MARK-2010 Principles of Marketing.

MARK-2270 Principles of Advertising
03 Semester Credits
Introduction to advertising as an element of the promotion mix in marketing. Focuses on strategic, quantitative, and creative processes by which the advertising message is planned and produced.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MARK-2010 Principles of Marketing.
OAN Approved: OCM012

MARK-2500 Business-to-Business/Organizational Marketing
03 Semester Credits
Principles and practices involved in marketing of materials, equipment, supplies, and services to organizational markets, such as manufacturers, resellers, service providers, institutions, and the government. Focus on unique characteristics of organizational market and how to profitably sell in this market by developing proper marketing mix. Includes product management, pricing policies, channels of distribution, and promotional practices.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MARK-2010 Principles of Marketing.

MARK-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 01-03 hour. Laboratory 00 hours.
Prerequisite(s): Formal application into the Cooperative Education Program.

MASSAGE THERAPY - MT

MT-1100 Introduction to Massotherapy
03 Semester Credits
Survey of massotherapy. Review of history of massage with emphasis on modern massage methodologies. Basic definitions of massage, movements, and modalities. Theories and principles of massage; basic physiological effects; indications and indications for massage. Scope of practice; code of ethics; boundary issues; credentialing and licensing; massage law and legislation are introduced. Basic chair massage techniques for the upper torso are introduced.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MT-1242 Somatic Studies I
03 Semester Credits
Study of human anatomy and physiology for students of massotherapy. Specific emphasis on fundamental concepts of human body, chemical level, cellular level, tissue, integumentary system, skeletal system and articulations.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I, or eligibility for MATH-1060 Survey of Mathematics; and ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals I; or departmental approval.

MT-1272 Somatic Studies II
03 Semester Credits
Study of human anatomy and physiology for students of massotherapy. Specific emphasis on fundamental concepts of muscular system, nervous system, spinal cord, nerve plexus, brain, sensory and motor pathways, special senses, autonomic nervous system, endocrine, and cardiovascular system.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MT-1242 Somatic Studies I, or departmental approval.

MT-1280 Somatic Studies III
02 Semester Credits
Study of human anatomy and physiology for students of massotherapy and sport and exercise studies. Specific emphasis on fundamental concepts of circulatory system, lymphatic system, respiratory system, digestive system, metabolism, urinary system, acid-base balance and reproductive system.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): MT-1272 Somatic Studies II, or departmental approval.

MT-1302 Massage Therapy I
02 Semester Credits
History of massage with emphasis on modern massage methodologies. Examines theories and principles of massage, basic physiological effects, and indications and contraindications for massage. Scope of practice, code of ethics, boundary issues, credentialing and licensing, massage law and legislation discussed. Study and practice of both Kellogg and Beck's techniques for manipulations of massage. Basic full-body massage, proper hygiene and sanitation practices, position and draping client, and proper body mechanics. Introduction to SOAP documentation.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals II; and MATH-0950 Beginning Algebra I, or eligibility for MATH-1060 Survey of Mathematics.

MT-1312 Applied Musculo-Skeletal Anatomy
03 Semester Credits
Extensive practice in learning to palpate all bony landmarks of trunk and extremities; muscle, ligament, and tendon palpation. Introduction to postural analysis with practice in taking and interpreting postural measurements.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals I; and MATH-0950 Beginning Algebra I, or eligibility for MATH-1060 Survey of Mathematics; or departmental approval.

MT-1321 Functional Assessment in Massage Therapy
02 Semester Credits
Recognizing and assessing common structural and postural deviations and common soft tissue injury to muscle, tendon, joint capsule, ligament, bursa, fascia and nerve in order to determine appropriateness of massage therapy.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, or departmental approval.

MT-1331 Massage Therapy II
03 Semester Credits
Documentation for massage therapy sessions through SOAP charting; interviewing and observational skills; in depth study of the physiological effects and therapeutic applications for each of the massage procedures and its respective subdivisions. Demonstrate massage procedures with patient in seated, side lying, prone and supine positions. Study of dysfunction resulting from poor body mechanics. Assessment and therapeutic treatment using Kellogg and Beck techniques and positional release. Introduction to theory and practice of trigger point and myofascial release therapy.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1272 Somatic Studies II or concurrent enrollment; or departmental approval.

MT-1400 Overview and Assessment in Geriatric Massage Therapy
03 Semester Credits
Overview of major concepts that comprise the study of geriatric massage therapy. Includes demographic information and economic issues. Provides framework for understanding older adults and effects of massage. Application of geriatric assessment, cautions and contraindications and geriatric practice.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MT-1301 Massotherapy I, and MT-1320 Functional Assessment in Massage Therapy or concurrent enrollment; or departmental approval.

MT-2200 Medical Massage
02 Semester Credits
Introductory study and overview of theoretical and clinical massage in a medical setting. Demonstrate holistic team approach skills. Demonstrate holistic assessment, plan of care and delivery of massage and touch therapy to the frail and hospitalized patient.
Lecture 1.5 hours. Laboratory 1.5 hours.
Prerequisite(s): MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I, and MT-2360 Massage Therapy Clinic II or concurrent enrollment, and concurrent enrollment in MT-1280 Somatic Studies III.

MT-2301 Pathology for Massage Therapists
03 Semester Credits
Introduction to disease and basic mechanisms of disease for massage therapists. Diseases of skin, musculoskeletal system, nervous and endocrine systems. Other diseases to include cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive, and immune systems. Role of stress in disease, mental, emotional and genetic.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MT-1242 Fundamentals of Somatic Studies I, or concurrent enrollment; or departmental approval.

MT-2311 Advanced Massage Therapy
03 Semester Credits
Assessment and treatment of musculoskeletal dysfunction based on trigger point therapy, myofascial release, and muscle energy approaches. Documentation of patient session and patient education.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MT-1280 Somatic Studies III , and MT-1321 Functional Assessment in Massage Therapy, and MT-2360 Massage Therapy Clinic II , and MT-2200 Medical Massage, and MT-2701 Comprehensive Somatic Studies for Massage Therapists , and MT-2991 Comprehensive Massage Therapy, or departmental approval.

MT-2350 Massage Therapy Clinic I
03 Semester Credits
Student clinical experience. Massage of patients, under supervision, integrating interviewing, observational and massage therapy skills. Completion of SOAP notes on each patient. Discussion and study of clinical ethics, boundaries, and chemical dependency issues that arise in massage therapy. Pharmacology for massage therapists. Hygiene and sanitation. Patient education.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1242 Somatic Studies I, and MT-1272 Somatic Studies II, or concurrent enrollment; or departmental approval.

MT-235A Massage Therapy Clinic I - A
02 Semester Credits
Student clinical experience. Massage of patients, under supervision, integrating interviewing, observational and massage therapy skills. Completion of SOAP notes on each patient. Discussion and study of clinical ethics, boundaries, and chemical dependency issues that arise in massage therapy. Pharmacology for massage therapists. Hygiene and sanitation. Patient education. Important: MT-235A and MT-235B together meet the requirement for completion of MT-2350 Massage Therapy Clinic I.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1242 Somatic Studies I, and MT-1272 Somatic Studies II, or concurrent enrollment; or departmental approval.

MT-235B Massage Therapy Clinic I - B
01 Semester Credits
Continuation of clinical experience begun in MT-235A. Students will continue the massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Completion of SOAP notes on each patient. Discussion and study of clinical ethics, boundaries, and chemical dependency issues that arise in massage therapy. Pharmacology for massage therapists. Hygiene and sanitation. Patient education. Important: MT-235A and 235B together meet the requirement for completion of MT-2350 Massage Therapy Clinic I.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1242 Somatic Studies I, and MT-1272 Somatic Studies II, or concurrent enrollment; and MT-235A Massage Therapy Clinic I - A, or departmental approval.

MT-2360 Massage Therapy Clinic II
03 Semester Credits
Continuation of student clinical experience. Massage of patients, under supervision, integrating interviewing, observational and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and/or palpation skills. Demonstrate knowledge of pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I, and MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III or concurrent enrollment, or departmental approval.

MT-236A Massage Therapy Clinic II -A
02 Semester Credits
Continuation of student clinical experience. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and palpation skills. Pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice. Important: MT-236A and MT-236B together meet the requirement for completion of MT-2360 Massage Therapy Clinic II.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III or concurrent enrollment; and MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I; or MT-235A Massage Therapy Clinic I - A and MT-235B Massage Therapy Clinic I - B; or departmental approval.

MT-236B Massage Therapy Clinic II-B
01 Semester Credits
Continuation of student clinical experience begun in MT-236A. Students will continue the massage of patients, under supervision, integrating interviewing, observational and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and/or palpation skills. Pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice. Important: MT-236A and MT-236B together meet the requirement for completion of MT-2360 Massage Therapy Clinic II.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III or concurrent enrollment; and MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I; or MT-235A Massage Therapy Clinic I - A and MT-235B Massage Therapy Clinic I - B; and MT-236A Massage Therapy Clinic II - A; or departmental approval.

MT-2370 Supplemental Massage Therapy Clinic
01 Semester Credits
Supplemental clinical experience begun in MT-2350, MT-2360, MT-235A, MT-235B, MT-236A, and MT-236B. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and palpation skills. Demonstrate knowledge of pharmacology for massage therapists. Study of hydrotherapy. In-depth study of massage business and law, including scope of practice.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I, and MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III, or departmental approval.

MT-2400 Geriatric Massage Techniques
03 Semester Credits
Study and practice of geriatric massage techniques including effleurage, petrissage, friction, tapotement vibration, rocking and shaking, skin rolling and ROM. Supplementary study and practice of geriatric massage to include effects of massage, anatomy and massage, muscles on the back, arm, gluteal muscles, muscles of the thigh and leg, and critical are as in the lower limb. Chronic conditions in the elderly. Includes basic geriatric massage techniques, evaluation process, preparing the treatment, and position problems.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MT-2301 Pathology for Massage Therapists or concurrent enrollment, and MT-2410 Health and Aging or concurrent enrollment.

MT-2410 Health and Aging
02 Semester Credits
Examination of the normal and expected age-related physiological changes. Emphasis on understanding normal structure and function of body systems, changes as part of aging, and typical abnormal pathological conditions commonly observed in older individuals. Focus on disease prevention and wellness. Survey of the theories and principles of geriatric massage in normal and abnormal aging.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MT-1400 Overview and Assessment in Geriatric Massage Therapy, and MT-2400 Geriatric Massage Techniques or concurrent enrollment.

MT-2701Comprehensive Somatic Studies for Massage Therapists
01 Semester Credit
Quizzes and mock exam are given to prepare for State Medical Board of Ohio licensure exam. Comprehensive exam given at end of course must be passed to be recommended for State Medical Board of Ohio licensure exam. Comprehensive study to summarize human anatomy and physiology for students of massotherapy. Special emphasis on review of key concepts of human body - its introduction, six levels of organization and eleven systems of the body. Students develop in-depth knowledge of anatomy and physiology of human body.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: completion of all course work necessary to sit for the State Medical Board of Ohio licensure exam with a grade of "C" or higher, and recommendation of Massage Therapy Program Manager.

MT-2861 Geriatric Massage Practicum
03 Semester Credits
Massage of geriatric patients under supervision integrating interviewing, observational and massotherapy skills. Completion of SOAP notes on every patient seen. Seminar to include group discussion of lab work.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): MT-2400 Geriatric Massage Techniques, and MT-2410 Health and Aging.

MT-2870 Advanced Massage Practicum
02 Semester Credits
Review and demonstrate competency in SOAP charting. Assessment and treatment of patients in the clinic. Treatment modalities include trigger point therapy, myofascial release, and muscle energy approaches. Basic introduction to complementary modalities including hot stone massage, meridian massage, and ayurvedic massage.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum 8 hours/week.
Seminar 1 hour/week.
Prerequisite(s): MT-2311 Advanced Massage Therapy, or concurrent enrollment; or departmental approval.

MT-2991 Comprehensive Massage Therapy
01 Semester Credit
Capstone course in Massage Therapy. Comprehensive review of massage techniques and theory with major focus on writings of Kellogg. Includes series of intensive training sessions to prepare students for the Ohio State Medical Board exam for licensure. Review of topics necessary to ensure success as professional L.M.T.'s. Student must pass comprehensive exam given at end of course in order to be recommended to sit for Ohio Medical Board exam for licensure and demonstrate minimally accepted competency in performance of a therapeutic massage on a licensed massage therapist.
Lecture 01 hour. Laboratory 00 hours.
Departmental approval: completion of all course work necessary to sit for State Medical Board Licensure Exam, and recommendation of Massage Therapy Program Manager.

MATHEMATICS - MATH

MATH-0800 Developmental Special Topics in Mathematics
02 Semester Credits
Study of selected developmental topics or current issues in mathematics. Provides student opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. May not be applied toward elective and/or program graduation degree requirements.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

MATH-0830 Mastering Math 0910
02 Semester Credits
Discipline specific student success course includes: math study skills, overcoming math anxiety, critical thinking skills, personal self-management, calculator usage and other topics which assist students in identifying and overcoming barriers to success in mathematics. Includes additional instruction and practice in Math 0910 concepts and skills.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in MATH-0910 Basic Arithmetic and Pre-Algebra.

MATH-0850 Mastering Math 0950
02 Semester Credits
Information and methods for student success in developmental mathematics including: learning style preferences, role of memory process in learning mathematics, study skills for mathematics, overcoming math anxiety, goals in mathematics, self-motivation in mathematics, self-management in mathematics, self-esteem in mathematics, and self-evaluation of personal role in learning mathematics.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in MATH-0950 Beginning Algebra I.

MATH-0910 Basic Arithmetic and Pre-Algebra
03 Semester Credits
Review of basic arithmetic and introduction to algebraic concepts. Includes basic review of whole numbers and decimals, addition, subtraction, multiplication and division of fractions, order of operations, ratio and proportion, percents, the United States and metric systems of measurement and estimation. Introduction to integers and simple linear equations and some definitions in geometry. Includes applications and activities to build skills in estimation and problem solving.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Sufficient score on assessment test, or departmental approval.

MATH-0950 Beginning Algebra I
04 Semester Credits
First of two semester sequence. Includes order of operations, properties of real numbers, basic algebraic operations, linear equations, rectangular coordinate system, graphs of linear equations and linear systems. Includes applications and activities to build skills in problem solving.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-0960 Beginning Algebra II
04 Semester Credits
Second of two semester sequence. Includes simplification and operations on polynomials and exponents, extensive factoring and rational expressions in depth. Includes applications and activities to build skills in problem solving.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I or departmental approval: equivalent coursework.

MATH-0980 Intensified Beginning Algebra
05 Semester Credits
Intensive review of basic algebra. Topics include real numbers, algebraic operations and simplification of polynomials, factoring, linear equations, rectangular coordinate system, solution of linear equations, rational expressions, and exponents. Includes applications and activities to build skills in problem solving.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): Sufficient score on placement test; or departmental approval.

MATH-0990 Math Literacy for College Students
04 Semester Credits
Course integrates numeracy, proportional reasoning, algebraic reasoning, and functions. Students will develop conceptual and procedural tools that support the use of key mathematical concepts in a variety of ways. Contexts include personal finance, medical literacy, and citizenship.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra or sufficient score on placement exam, or departmental approval.

MATH-1060 Survey of Mathematics
03 Semester Credits
Mathematics in problem solving. Problem solving using the scientific method, algebra, geometry, descriptive statistics, probability and calculator/computer applications.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I; or MATH-0980 Intensified Beginning Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1141 Applied Algebra and Mathematical Reasoning
03 Semester Credits
Applications and activities to build problem solving and mathematical modeling skills. Includes metric system, formula manipulation, graphs and their interpretation, solving algebraic equations and systems, functions, algebraic expressions (rational, radical and exponential), introduction to geometry, descriptive statistics and probability distributions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II, or MATH-0980 Intensified Beginning Algebra, or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1190 Algebraic and Quantitative Reasoning
03 Semester Credits
Applications and appreciation of quantitative literacy. Interpreting information from real-world sources to solve problems using numerical, algebraic, and graphical knowledge. Various uses of mathematical models are explored, and statistical thinking is developed. Contexts include financial, environmental, social, and public and personal health.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0990 Math Literacy for College Students; or departmental approval or sufficient score on placement test; or MATH-0950 Beginning Algebra I, or MATH-0980 Intensified Beginning Algebra.

MATH-1250 Contemporary Mathematics
04 Semester Credits
Contemporary mathematics as it applies to today's world. Includes modeling and solving real life problems from behavioral, managerial, and social sciences. Topics include linear programming and management science, probability and statistics, biological and financial growth, and mathematics of social choice.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II; or MATH-0980 Intensified Beginning Algebra, or sufficient score on assessment test; or departmental approval; equivalent coursework.

MATH-1270 Intermediate Algebra
04 Semester Credits
Builds on basic algebra concepts. Topics include linear and quadratic equations, radicals and rational exponents, rational equations, polynomial, rational, compound, and exponential and logarithmic functions and an introduction to functions and elementary transformations. This course is the prerequisite for Math 1370, 1410, and 1470 only.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II; or MATH-0980 Intensified Beginning Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1280 Advanced Intermediate Algebra
05 Semester Credits
Builds on basic algebra concepts. Expanded topics include linear and quadratic equations, systems of linear and non-linear equations, radicals and rational exponents, and rational equations. Other topics included are polynomial, rational, compound, and absolute value inequalities, exponential and logarithmic functions. Introduction to complex numbers, functions, elementary transformations, and conic sections. Appropriate for students pursuing Science, Engineering, or Math majors.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II or MATH-0980 Intensified Beginning Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1370 Mathematics for Elementary and MiddleSchool Teachers I
04 Semester Credits
First of two semester sequence designed for elementary and middle school education majors. Emphasis on understanding ideas and concepts. Includes sets and numeration, whole numbers, number theory, fractions, decimals, integers, rational and real numbers, problem solving strategies, and historical topics. Highlights applications to classroom, projects, and use of current technology, including scientific/graphing calculators and computers.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1270 Intermediate Algebra, or MATH-1280 Advanced Intermediate Algebra sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1380 Mathematics for Elementary and Middle School Teachers II
04 Semester Credits
Second of two-semester sequence designed for elementary and middle school education majors. Emphasis on understanding ideas and concepts. Includes statistics, probability, measurement, geometric shapes, Euclidean geometry, coordinate geometry, transformational geometry, problem-solving strategies, and historical topics. Highlights applications to classroom, projects, and use of current technology, including scientific/graphing calculators and computers.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1370 Mathematics for Elementary and Middle School Teachers I, or departmental approval: equivalent coursework.

MATH-1410 Elementary Probability and Statistics I
03 Semester Credits
First of a two semester introductory sequence in probability and statistics. Intended for students majoring in liberal arts, sciences, engineering, and education. Includes study of descriptive statistics, relationships in bivariate data using scatter plots, two-way tables, correlation coefficients, and simple linear regression, elementary probability, probability distributions, normal distribution, binomial distribution, sampling concepts, sampling distribution of sample mean, estimation, and hypothesis testing.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1250 Contemporary Mathematics, or MATH-1270 Intermediate Algebra, or MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM010

MATH-1420 Elementary Probability and Statistics II
03 Semester Credits
Second of two-semester introductory sequence in probability and statistics. Intended for students majoring in liberal arts, sciences, engineering, and education. Includes study of Chi-square distribution and F distribution and their applications, inferences on variances and proportions, comparing two means, categorical data, correlation, simple and multiple regression, analysis of variance, nonparametric tests and the use of statistical software packages.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1410 Elementary Probability and Statistics I, or departmental approval: equivalent coursework.

MATH-1470 Modern Mathematics for Business and Social Sciences I
04 Semester Credits
First of two-semester sequence. Includes linear systems, functions, matrix algebra and linear programming techniques as applied to business problems and the simplex method. Math of finance and basic theory of probability and statistics.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1270 Intermediate Algebra, or MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1480 Modern Mathematics for Business and Social Sciences II
04 Semester Credits
Second of two-semester sequence. Includes fundamentals of differential and integral calculus and the application of these topics to business and economics.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1470 Modern Mathematics for Business and Social Sciences I, or departmental approval: equivalent coursework.
OAN Approved: TMM013

MATH-1490 Business Probability and Statistics I
03 Semester Credits
First of two-semester introductory sequence in business probability and statistics. Intended for students majoring business. Application of statistical methods to business and economic problems. Topics include study of descriptive statistics, elementary probability, random variables and probability distributions, normal distribution, binomial distribution, sampling concepts, sampling distribution of sample mean, estimation, and hypothesis testing.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1470 Modern Mathematics for Business and Social Sciences I, or departmental approval: equivalent coursework.
OAN Approved: OBU009

MATH-1500 Business Probability and Statistics II
03 Semester Credits
Second of two-semester introductory sequence in probability and statistics, intended for students majoring in business. Includes study of inferences on means and proportions, analysis of variance, correlation, simple and multiple linear regression models, business applications and decision making, and the use of statistical software.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1490 Business Probability and Statistics I, or departmental approval: equivalent coursework.
OAN Approved: OBU009

MATH-1510 Trigonometry
03 Semester Credits
Topics include trigonometric functions and their values for all angles, vectors and oblique triangles, graphs of trigonometric functions, trigonometric identities and equations. Applications and activities to build skills in problem solving included.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM003

MATH-151H Honors Trigonometry
03 Semester Credits
Topics include trigonometric functions and their values for all angles, vectors and oblique triangles, graphs of trigonometric functions, trigonometric identities and equations. Applications and activities to build skills in problem solving included. Emphasis on more challenging trigonometric concepts in real-world settings are found in the form of projects and in-class presentations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1521 College Algebra
04 Semester Credits
Includes polynomial, rational, exponential and logarithmic functions and graphs, conic sections, inequalities, matrices and determinants, theory of equations, series, sequences, the binomial theorem and mathematical induction. Study of applications and activities to build skills in problem solving.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM001

MATH-152H Honors College Algebra
04 Semester Credits
Includes polynomial, rational, exponential and logarithmic functions and graphs, conic sections, inequalities, matrices and determinants, theory of equations, series, sequences, the binomial theorem and mathematical induction. Study of applications and activities to build skills in problem solving. Emphasis on more challenging algebraic concepts in real-world settings through projects and in-class presentations.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1580 Precalculus
05 Semester Credits
Intensified course designed to prepare students for calculus. Study of real numbers, equations and inequalities, functions and graphs, sequences and series, theory of equations, systems of equations and inequalities, mathematical induction, conic sections, exponential and logarithmic functions, trigonometric functions, and complex numbers. Applications and activities to build skills in problem solving are also included.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): Sufficient score on assessment test; or departmental approval: previous trigonometry or algebra/trigonometry course in high school or college.
OAN Approved: OMT002

MATH-1610 Calculus I
05 Semester Credits
First of three semester sequence designed for math, science, and engineering majors. Includes study of Cartesian coordinates, functions and graphs, limits and continuity, differentiation of algebraic and trigonometric functions, applications of the derivative, differentials and antiderivatives, the definite integral and its applications.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1580 Precalculus; or MATH-1510 Trigonometry and MATH-1521 College Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM005

MATH-161H Honors Calculus I
05 Semester Credits
First of a three-semester sequence designed for math, science, business, and engineering majors. Focuses on conceptual understanding of verbal, numerical, visual, and algebraic representations of functions, their graphs, and operations. Includes limits, continuity, rates of change, derivatives, implicit differentiation of algebraic and trigonometric functions, application of differentials, differentiation, integrals, and application of integration. Emphasizes challenging calculus exercises, problems, projects, cooperative group work, student's presentation of one of the course projects, and use of technology: graphing calculators and computers.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1580 Precalculus; or MATH-1510 Trigonometry, and MATH-1521 College Algebra; or high school Precalculus; or departmental approval: equivalent coursework.
OAN Approved: TMM005

MATH-1620 Calculus II
05 Semester Credits
Second of three-semester sequence. Includes study of techniques of integration and their applications; L' Hôpital rule and indeterminate forms; mathematical modeling in differential equations; sequences and series; parametric and polar coordinates and curves, conics; conics sections.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1610 Calculus I, or departmental approval: equivalent coursework.
OAN Approved: TMM006

MATH-162H Honors Calculus II
05 Semester Credits
Second of three-semester sequence designed for mathematics, science, business, and engineering majors. Focuses on conceptual understanding of logarithmic and exponential functions, trigonometric and inverse trigonometric functions, and hyperbolic and inverse hyperbolic functions; develops their properties, characteristics, derivatives, and graphs. Includes techniques of integration, polar coordinates, conic sections, limits of indeterminate forms of quotients of functions, improper integrals, and sequences and series. Emphasizes proofs of theorems and solving challenging examples, exercises, and application problems. Stresses development of research projects. Underscores cooperative work, student`s presentation of one of the course projects, and use of technology: graphics calculators and computers.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-161H Honors Calculus I, or departmental approval: equivalent coursework.

MATH-2010 Introduction to Discrete Mathematics
04 Semester Credits
Foundation course in discrete mathematics with applications. Topics include logic, methods of proof, elementary number theory, set theory, functions, efficiency of algorithms, and mathematical induction.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1521 College Algebra; or MATH-1580 Precalculus; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-2310 Calculus III
04 Semester Credits
Third of three-semester sequence. Topics include vectors, parametric equations, analytic geometry of space, partial differentiation, and multiple integrals, line and surface integrals.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1620 Calculus II; or departmental approval; equivalent coursework.
OAN Approved: TMM018 and OMT018

MATH-231H Honors Calculus III
04 Semester Credits
Third of three-semester sequence designed for mathematics, science, business, and engineering majors. Focuses on conceptual understanding of vectors, parametric equations, analytic geometry of space, partial differentiation, and multiple integrals, line and surface integrals. Emphasizes proofs of theorems and solving challenging examples, exercises, and application problems. Stresses development of research projects. Underscores cooperative work, student's presentation of one of the course projects; and use of technology: graphics calculators and computers.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-162H Honors Calculus II, or high school Honors Calculus II; or departmental approval: equivalent coursework.

MATH-2410 Introduction to Linear Algebra
03 Semester Credits
Includes the study of vector spaces, linear transformations and matrices, determinants, invariant subspaces, eigenvalues and eigenvectors and applications.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1620 Calculus II; or departmental approval: equivalent coursework.
OAN Approved: OMT008

MATH-2520 Differential Equations
03 Semester Credits
Includes study of differential equations of first and higher order, simultaneous, linear and homogenous differential equations, solution by power series, Laplace transformations and computer applications.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1620 Calculus II, or departmental approval: equivalent coursework.
OAN Approved: TMM020 and OMT020

MECHANICAL ENGINEERING TECHNOLOGY • MANUFACTURING INDUSTRIAL ENGINEERING TECHNOLOGY - MET

MET-1010 Industrial Design I
03 Semester Credits
Overview of the industrial design practice, its processes and methodologies. Provides exposure to various roles industrial designers may have in industry, research and education. Fundamentals of industrial design technician's role as part of a development team. Introduction to industrial design concepts and tools, including research, ergonomics, conceptualization, development and refinement and the role technology has in the process. Also includes visualization techniques in 2D and 3D, as well as written design communication.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I.

MET-1020 Industrial Design Studio Project I
03 Semester Credits
Work on several projects to develop design capabilities. Hones the skills and provides a hands-on approach to real life design problems. Emphasis on user requirements, product brand, and developing a family of products. Project quality, execution and presentation evaluated.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): MET-1010 Industrial Design I and MET-1030 Design Elements: Structure, Composition & Visualization.

MET-1030 Design Elements: Structure, Composition & Visualization
03 Semester Credits
Focuses on the building blocks or basic design elements; the structure and form and the resulting visual composition. Students create harmonious design compositions and communicate them through 2D and 3D techniques. Develop hand-drawing and drafting skills, 2D and 3D composition and layout skills, computer assisted visualization, and scale modeling through the practice of spatial composition and artistic exercises. Encompasses applications of the fundamental principles of design through examples in architecture, graphic design, packaging and industrial design.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): None.

MET-1100 Technology Orientation
02 Semester Credits
Orientation and exploration of technician's role as part of industrial team. Includes technical careers, opportunities and job hunting skills needed for making important career decisions and advancement. Introduction to the computer and its uses as creative and technical tool. Basic measurement and calculation skills used in the engineering field. Introduction to engineering drawing concepts as the language of the field. Introduction to oral, written and graphic methods of communication for technician. Provides practical approach to technical writing.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Eligibility for MATH-1280 Advanced Intermediate Algebra, or departmental approval.
OAN Approved: OES001

MET-1120 Computer Applications and Programming
02 Semester Credits
Design and debug windows-based application software in Microsoft Visual Basic and C Programming languages. Apply designed software and spreadsheets in technological problem solving. Applying programming concepts to customize spreadsheets and chosen engineering specific application software.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): Eligibility for MATH-1280 Advanced Intermediate Algebra; or departmental approval: work experience.

MET-1200 Engineering Drawing
02 Semester Credits
Utilize visualization skills in the application of principles and practices of orthographic projection and pictorial drawing. Applied geometry, use of scales, sections, and auxiliary views are studied. Dimensioning standards and conventions are applied to technical drawings as related to detail and assembly drawings. The relationships that technical drawings play to processes of production and manufacturing along with design process studied.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): Eligibility for MATH-1280 Advanced Intermediate Algebra, or departmental approval: work experience.

MET-1220 AutoCAD 2D
02 Semester Credits
Introduction to computer-assistant drafting (CAD). Operate CAD system as a tool of drafting. Develops drafting capabilities by combining drafting standards, skills and conventions with the intricacies of CAD software. Apply the basic and intermediate CAD commands to draw and edit engineering drawings. Includes a basic overview of computer terms and use of the Windows operating system. Students will become familiar with special terms and definitions used in computer-assisted drafting.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): MET-1200 Engineering Drawing, or concurrent enrollment, or CNST-1410 Architectural CAD I or concurrent enrollment; or departmental approval: work experience.

MET-1240 Machine Tools and Manufacturing Processes
03 Semester Credits
Application of traditional and contemporary machine tools processes to accomplish the production of mechanical parts. Laboratory experiences include measuring and inspection, layout and fundamentals of machine tool setup and techniques for drilling, turning, milling and grinding. Manufacturing processes including the production of metals and alloys, polymers and plastics, forming, machining, fabrication, conditioning and finishing of metallic, plastic and composite engineering parts.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for MATH-1280 Advanced Intermediate Algebra, or departmental approval: work experience.
OAN Approved: OET010

MET-1300 Engineering Materials and Metallurgy
03 Semester Credits
Analysis of the behavior and characteristics of metals and other materials used in manufacturing including polymers, ceramics and composites: their structure, physical and mechanical properties. Examining and interpreting phase diagrams and crystallized microstructures of metals and alloys; heat treatment of ferrous and nonferrous metals; hardness, tensile and Charpy impact tests.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.
OAN Approved: OET013

MET-1400 CNC Programming and Operation
03 Semester Credits
Emphasis on blueprint analysis, using math concepts to determine programming points; ascertaining implied part dimensions; calculation of speeds; feeds and tool offset; establishment of work zero and tools home positions. Manual programming of computer numerical control (CNC) machines using G-codes for FANUC controllers; tooling and set-up of CNC lathes and milling machines for machining operations; verification of tool paths by simulation; operating CNC machines to produce mechanical parts.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MET-1240 Machine Tools and Manufacturing Processes, or concurrent enrollment; or departmental approval: work experience.

MET-1601 Technical Statics
03 Semester Credits
Study of forces on structures and machines at rest. Topics include composition and resolution of forces, moments, freebody diagrams, trusses, frames, simple machines, friction, centers of gravity, centroids, and plane and polar moments of inertia.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra; and PHYS-1210 College Physics I, or PHYS-2310 General Physics I, or concurrent enrollment.

MET-1621 Technical Dynamics
03 Semester Credits
Study of motion and forces on rigid members. Includes plane and curvilinear motion, kinetics, work, energy, power, efficiency, impact and momentum. Introduction to balancing and vibrations.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MET-1601 Technical Statics, or concurrent enrollment.

MET-2000 CAD/CAM Processes
03 Semester Credits
Using Mastercam and other Computer-Aided Design/Computer-Aided Manufacturing (CAD/CAM) software to graphically model parts; graphic display manipulation; geometrical analysis; graphic and data files management; exchange and conversion of graphic files to formats readable by Mastercam or given CAD/CAM software; generating codes, post processing to G-codes interpretable by given computer numerical controller; verification and validation of tool-paths by graphical simulation; downloading path programs to machine; tooling and setting up parts on CNC lathe and milling machines; operating CNC machines to produce parts.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MET-1400 CNC Programming and Operation or concurrent enrollment.

MET-2041 CAD II & GD&T
03 Semester Credits
Advanced engineering drawing concepts used with computer-aided drafting software. Drawing applications include size tolerancing, geometric dimensioning, thread and fastener specifications, detail and assembly drawings, weldments, external references, bill of materials and standardized drawing formats. Introduction to solid modeling.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MET-1220 AutoCAD 2D, and MET-1120 Computer Applications and Programming, or departmental approval.

MET-2140 Manufacturing Automation and Control
03 Semester Credits
Automation and control of manufacturing machines and their auxiliary equipment to enable manufacturing systems integration applying fundamental concepts of Programmable Logic Controllers (PLCs); basic programming and interface of robots to facilitate materials transfer in an integrated manufacturing environment
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MET-1120 Computer Applications and Programming.

MET-2200 Strength of Materials
03 Semester Credits
Study of stress, strain and deformation of mechanical bodies due to static tensile, compressive, torsional, bending and combined loading. Deflection of beams and columns, design of beam for strength and structural connections.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MET-1600 Technical Statics.
OAN Approved: OET008

MET-2220 Advanced CAD/CAM Processes
03 Semester Credits
Applying Mastercam for advanced CAD/CAM operations; creating wireframe, surface and solid models; generating, editing, verifying, and postprocessing codes interpretable by given CNC controllers, with emphasis on FANUC controller; downloading path programs to CNC machines; tooling and setting up parts; operating CNC machines to produce parts.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MET-1240 Machine Tools and Manufacturing Processes, MET-1400 CNC Programming and Operations, and MET-2000 CAD/CAM Processes.

MET-2240 Mechanical Engineering Lab
01 Semester Credits
Introduction to fundamental laboratory measurement techniques, data acquisition and analysis, and technical report writing in the form of engineering reports and executive summaries. Troubleshoot and correct hydraulic/electromechanical equipment and digital data acquisition hardware. Experiments are drawn from thermal sciences, dynamics, solid mechanics and materials science.
Lecture 00 hour. Laboratory 02 hours.
Prerequisite(s): MET-1601 Technical Statics.

MET-2300 Fluid Power
03 Semester Credits
Concepts and practices related to modern hydraulic and pneumatic systems. Includes basics of fluid flow, fluid dynamics, properties of hydraulic fluid, components of hydraulic system, hydraulic circuit, design, operation and control of hydraulic/pneumatic system.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): PHYS-1210 College Physics I or PHYS-2310 General Physics I, or concurrent enrollment; or students in Integrated Systems Engineering Technology program may fulfill prerequisite requirements with ISET-1320 Fundamentals of Fluid Power; or departmental approval.
OAN Approved: OET009

MET-2320 Thermal Dynamics
03 Semester Credits
Heat, work, kinetic theory of gases, equation of state, thermodynamics system, control volume, first and second laws of thermodynamics, reversible and irreversible processes, and introduction to basic thermodynamic cycles.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra and MET-1601 Technical Statics.

MET-2400 Statistical Quality Control
03 Semester Credits
Statistical quality control is the collection, analysis, and interpretation of data for use in quality control activities. Introduction to quality; fundamentals of probability and statistics; process capability; control chart applications; sampling systems; lot-by-lot acceptance sampling by attributes; reliability; quality control methods and tools; applications of computers and software to quality control.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra; and MET-1240 Machine Tools and Manufacturing Processes, or departmental approval: work experience.

MET-2420 Fundamentals of Engineering Economics
02 Semester Credits
Analysis of cost elements in manufacturing operations; comparison of manufacturing options; options selection applying Benefit/Cost Analysis; practical application of cost concepts and the analysis applicable to design, development, implementation of phases of manufacturing operations.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-1280 Advanced Intermediate Algebra; or departmental approval: work experience.

MET-2500 Fundamentals of Products Development and Manufacture
03 Semester Credits
Examines the key elements of product development from the concept through design to production. Students will apply such technologies and as pneumatics, robotics, computer numerical control (CNC), computer aided design (CAD), computer aided engineering (CAE), computer aided manufacturing (CAM), computer integrated manufacturing (CIM), quality control, precision measurement, automation and controls (PLC Programming), and principles of engineering economics to complete group projects involving products development and production.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra.

MET-2510 Industrial Design II
03 Semester Credits
Expand understanding of the practice and role of industrial design and the development process. Skills development in defining users' needs, phases and activities, product specifications and concept generation and evaluation. Orientation to the creation of new concepts and emphasis on idea presentation. Focus on research, design language, 3D development mock-ups and mathematical/trigonometry/geometry concepts required for industrial design practice. Research and information gathering and techniques (primary and secondary information). Development of aesthetics concepts relative to the industrial design practice as well as manufacturing terminology.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MET-1010 Industrial Design I, and MET-1020 Industrial Design Studio Project I, and MET-1030 Design Elements: Structure, Composition & Visualization.

MET-2520 Industrial Design Studio Project II
03 Semester Credits
Develop design capabilities with specific assigned projects, including the development of a usability tool for concept testing and refinement. Builds a physical prototype to test ergonomic product requirements. Additional projects will consist of the development of a Digital User interface requiring students to participate in the design of the whole product experience.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): MET-2510 Industrial Design II and MATH-1141 Applied Algebra and Mathematical Reasoning.

MET-2530 Industrial Design III
03 Semester Credits
Broaden the students' contextual understanding of the design practice. Focuses on the technical aspects of product design and development, product architecture, and design for manufacturing. Concept development and testing, and feasibility analysis and prototyping discussed. Designers' role across various industries are explored to facilitate aligning students' interest to specific professional opportunities. Covers formal design methodology and processes providing support to the Industrial Design Studio courses. Includes the role and use of prototypes in product development as well as market testing of product concepts.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MET-2510 Industrial Design II.

MET-2540 Industrial Design Studio Project III
03 Semester Credits
Develop design abilities utilizing the skills developed in the Industrial Design classes. In-depth work performed on new product development or current product/ environment improvement project selected from multiple industries. Project quality, execution, and presentation of ideas are evaluated. Potential internship programs will consider.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): MET-2520 Industrial Design Studio Project II, and MET-2530 Industrial Design III.

MET-2601 3D Solid Modeling
03 Semester Credits
Introduction to computer-aided engineering, design of mechanical component and system using computer-aided design technique, AutoCAD solid and surface model for product development, optimization of design and design documentation. Complete set of production drawings created using 3D drawing environments. Principles of parametric design, and functional assemblies directly applied. Emphasis tailored to 3D modeling for enhanced part description. Students work on individual design projects to stimulate spatial abilities and problem-solving techniques.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MET-1200 Engineering Drawing, and MET-1220 AutoCAD 2D.

MET-2700 Machine Design
04 Semester Credits
Capstone course in Mechanical Engineering Technology. Study of mechanical motion and design of machine elements. Includes displacement, velocity and acceleration in linkages, cams and power transmission devices. Design of machine elements include checking of assembled machines, fasteners, weldments, springs, bearings, belts, chains, shafts, clutches and brakes. Laboratory consists of using CAD, computer programming and manufacturer`s catalogs to aid in design.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): MET-1620 Technical Dynamics, and MET-2040 Advanced AutoCAD, or concurrent enrollment; and MET-2200 Strength of Materials.

MET-2730 Lean Manufacturing
03 Semester Credits
Application of lean manufacturing concepts and lean tools in structuring industrial manufacturing processes in efforts to minimize manufacturing costs, enhance workplace safety, improve work flow, eliminate process variations, and to shorten products delivery time.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MET-1220 AutoCAD 2D, and MET-1120 Computer Applications and Programming, and MATH-1280 Advanced Intermediate Algebra or departmental approval.

MET-2740 Quality Manufacturing
03 Semester Credits
Practical application of quality principles to process improvement and reduction of variation. Application of statistical techniques and concepts used in quality control; acceptance sampling; quality cost; reliability; applications of computers, software to other quality control tools to quality improvement.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MET-2400 Statistical Quality Control, and MATH-1280 Advanced Intermediate Algebra.

MET-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education Program.

MEDIA ARTS AND STUDIES - MARS

MARS-1020 Story: Pre-production Methods and the Art of Story in Motion Media
03 Semester Credits
Focus on the power of story structure in communications. Explore the craft of storytelling, whether it be to entertain, teach, motivate, sell or provoke with examples from film, television, literature, commercials, music videos, even video games. Take real-life scenarios and respond to them with arguments constructed by the traditional aspects of drama. Discuss all facets of pre-production. Learn the organizational skills and techniques necessary to create a production notebook used for planning a motion media production.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

MARS-1120 Media Arts and Studies Colloquium
01 Semester Credit
Introduces students to the leading local producers, strategists and clients in the field of video and interactive communications. Industry professionals representing the broadcasting, commercial production, corporate, non-profit and entertainment industries present specific case histories.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

MARS-2110 Editing
03 Semester Credits
Basic motion media editing using industry standard, non-linear, editing software and hardware. Students will learn the basic concepts and techniques used to edit a project from the organizational phase through fine-tuning a completed project including delivery.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCDV-1180 Introduction to Digital Video and Digital Filmmaking or departmental approval.

MARS-2120 Advanced Editing
03 Semester Credits
Advanced motion media editing using industry standard, non-linear, editing software and hardware. Prepares students for industry recognized certification exam in professional editing software. Successful completion of the certification exams allows students to be listed as a certified editing professional on the official website of the software distributor. Builds upon concepts introduced in prerequisite coursework including the basics in motion media editing using industry standard, non-linear, editing software and hardware. Students will learn the concepts and techniques used to edit a project from the organizational phase through fine-tuning a completed project including delivery.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCDV-1180 Introduction to Digital Video and Digital Filmmaking and MARS-2110 Editing.

MARS-2220 Advanced Crew and Set Operations for Motion Media
03 Semester Credits
Learn to work as a skilled crew member for a film or video production on location and/or soundstage environment.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): VCDV-2180 Digital Cinematography, and MARS-1020 Story: Pre-production Methods and the Art of Story in Motion Media, or department approval.

MARS-2620 Applied Integrated Media (AIM) I: Real World Pre-production
03 Semester Credits
Practical experience in a real-world pre-production environment. Skills learned in introductory media arts courses and related technical classes are applied to an actual communications mission. Students take on roles as members of the pre-production team as they cover all facets of planning and pre-production for a major motion media project. Diverse media projects may include: advertising/public service campaigns, feature films, documentaries, media-centered performances, or media installations.
Lecture 00 hours. Laboratory 06 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): VCDV-1180 Introduction to Digital Video and Digital Filmmaking, and MARS-1020 Story: Pre-production Methods and the Art of Story in Motion Media and department approval: permission of Associate Dean of Media Arts.

MARS-2720 Applied Integrated Media (AIM) II: Real World Production and Post-Production for Motion Media
03 Semester Credits
Application of skills learned in introductory media arts courses and related technical classes to a motion media production. Collaborate on a project as a member of a student-lead production team. Project may include: advertising/public service campaigns, short or feature film, documentary, media-centered live performance, or media installation. Course may be repeated once for up to six credits.
Lecture 00 hours. Laboratory 06 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): MARS-2620 Applied Integrated Media (AIM) I: Real World Pre-production or departmental approval: permission of instructor.

MARS-2940 MARS Field Experience
01-02 Semester Credits
Planned activity within the professional community, which relates to students' occupational objectives. Experience should reinforce classroom/lab skills. May be repeated for a maximum of six credits with departmental approval.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 12 hours per week per credit hour.
Prerequisite(s): Departmental approval.

MARS-2990 Media Arts and Studies Professional Prep and Portfolio Review
02 Semester Credits
Capstone Course. Preparation to interview for jobs within the field of motion media, along with professional resume and portfolio development for completion. Focuses on individual attributes in presentation skills and creativity. Students refine their best work completed during the program, adding items that might enhance their transfer into the job market.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Concurrent enrollment in MARS-2720 Applied Integrated Media (AIM)II: Real World Production and Post-Production for Motion Media, or departmental approval.

MEDICAL ASSISTING - MA

MA-1010 Introduction to Medical Terminology
02 Semester Credits
Introduction to medical terminology used by health care professionals with emphasis on the basics of word building, defining, spelling, reading practice, and pronunciation. Designed to provide students with foundation for medical word building and to help students who intend to enroll in Medical Terminology I and/or Anatomy and Physiology in Biology.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

MA-1020 Medical Terminology I
03 Semester Credits
Terminology utilized by health care professionals. Emphasis on correct spelling, definition, and pronunciation. Usage of basic and complex medical terms related to the body as a whole, and to the musculoskeletal, digestive, respiratory, urinary, female reproductive, male reproductive and cardiovascular systems. Proficient use of medical dictionary is emphasized.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OHL005

MA-1110 Reimbursement for Physician Services
02 Semester Credits
Basic overview of insurance forms, terms, and coding methodologies used in the physician office. Introduction to reimbursement methodologies and claims processing procedures for the medical office. Review basics of CPT,ICD 9, and HCPCS. Includes electronically filing a CMS1500 form and completing "clean claims", and how to follow up on rejected claim forms. Also provides a brief introduction of ICD 10.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

MA-1321 Medical Office Laboratory Procedures
02 Semester Credits
Basic principles of laboratory knowledge in the operations of a physician's office laboratory. Safety regulations along with the regulatory agency guidelines and requirements. A heavy emphasis is placed on patient instruction in the collection of a specimen, the proper processing of specimen to ensure a reliable result, and the reporting of test results.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in MA-132L Medical Office Laboratory Procedures and departmental approval: admission to Medical Assisting program.

MA-132L Medical Office Laboratory Procedures
01 Semester Credit
Laboratory component to the Medical Office Laboratory Procedures course. Includes the importance of quality control and quality assurance in the physician's office laboratory. Technical procedures for venipuncture and capillary sticks, and collection and processing of specimens covered. Laboratory testing including basic urinalysis, microbiology testing, serological testing, hematology testing and point of care testing. Occupational Safety & Health Administration (OSHA) and Clinical Laboratory Improvement Amendment (CLIA) regulations will be taught as they apply to the Physician Office Laboratory (POL).
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in MA-1321 Medical Office Laboratory Procedures.

MA-1401 Basic Clinical Medical Assisting
01 Semester Credit
Apply theory required by medical assistant to perform fundamental clinical assisting procedures in physician's office, clinic, family practice center, urgent care or hospital. Includes basic anatomy and physiology of the body systems as related to diseases, disorders, nutrition, and specified medical tests. Provide patient education and appropriate interactions that are sensitive to the needs of diverse populations and special needs. Students will also learn how to triage office emergencies and to perform CPR/First Aid when necessary.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in MA-140L Basic Clinical Medical Assisting Lab.

MA-140L Basic Clinical Medical Assisting Lab.
01 Semester Credit
Laboratory component to Basic Clinical Medical Assisting course. Perform fundamental clinical assisting procedures in the physician's office, clinic, family practice centers, urgent cares, or hospital. Perform procedures used in patient examinations including medical asepsis, vital signs including anthropometric measurements, positioning and draping, visual and hearing acuity screenings, perform EKG's, Holter Monitors, Pulmonary Function Tests, Phlebotomy, Capillary sticks, and the administration of injections.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in MA-1401 Basic Clinical Medical Assisting, and departmental approval: admission to Medical Assisting program.

MA-1503 Administrative Procedures for the Medical Office
02 Semester Credits
Prepares students to handle the day-to-day front office operations in a medical facility. Office communications are simulated by typing various forms of correspondences seen in the physician's office. Receiving and sorting of incoming mail, scheduling appointments and surgeries, setting up new offices, phone techniques and etiquette, maintaining medical records, and Health Insurance Portability and Accountability Act (HIPAA) emphasized. Learn the skills necessary to become an office manager, including terminations, hirings, bookkeeping and finances. Emphasis is placed on electronic technology used in today's medical office practices.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in MA-150L Administrative Procedures Laboratory, and departmental approval: admission to Medical Assisting program.

MA-150L Administrative Procedures Laboratory
01 Semester Credit
Laboratory component of Administrative Procedures for the Medical Office course. Practice handling the day-to-day operations in the front office of a medical practice. Communicate both verbally and non-verbally, receiving and sorting mail, appointment scheduling (both manually and electronically), filing, handling prescription refills, telephone techniques, maintaining medical records, finances and banking of the practice, human resources, marketing and customer service techniques. Protection of patient information and records, including the Health Insurance Portability and Accountability Act (HIPAA). Strong emphasis in teaching and learning the Electronic Medical Health Record.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in MA-1503 Administrative Procedures for the Medical Office and departmental approval: admission to Medical Assisting programs.

MA-1610 Pharmacology for Medical Assistants
02 Semester Credits
Designed for students enrolled in the Medical Assisting Program. Includes drug dosage and administration for the physicians' office and will cover drug brand names and generics, storage, schedules, calculations, administration, and effects of medications on the human body, as well as vitamins, minerals and substance abuse.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-1060 Survey of Mathematics and departmental approval: admission to the Medical Assisting Program.

MA-2010 Medical Terminology II
02 Semester Credits
Terminology utilized by health care professionals. Emphasis on spelling, definition, pronunciation, and usage of basic and complex medical terms related to hematology, lymphatic, integumentary, special senses, nervous, psychiatric and endocrine systems. Emphasis on reading, translating and composing medical documents. Proficient use of medical dictionary emphasized.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MA-1020 Medical Terminology I, or departmental approval: related work experience.

MA-2412 Advanced Clinical Medical Assisting
02 Semester Credits
Theory required by the medical assistant to perform advanced procedures in the physician's office, clinic, or family practice center. Assisting the physician with specialized examinations and treatments; explanations of specialized diagnostic and laboratory procedures; the medical assistant's role in educating the patient in treatment and prevention of diseases, as they all pertain to the following systems: integumentary, musculoskeletal, senses, respiratory, digestive, nervous, urinary, and reproductive. Maintaining a supply inventory.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MA-1321 Medical Office Laboratory Procedures, and MA-132L Medical Office Laboratory Procedures, and MA-1401 Basic Clinical Medical Assisting, and MA-140L Basic Clinical Medical Assisting Lab., and MA-1503 Administrative Procedures for the Medical Office, and MA-150L Administrative Procedures Laboratory, and concurrent enrollment in MA-241L Advanced Clinical Assisting Lab.

MA-241L Advanced Clinical Assisting Lab
01 Semester Credits
Laboratory component to Advanced Clinical Assisting course. Practice psychomotor skills required by the medical assistant to perform advanced procedures in the physicians office, clinic, or family practice centers. Emphasis will be placed on mastering those skills related to Ophthalmology, Otology, Gastroenterology, Urinary, Male Reproduction, Obstetrics, Gynecology, Pediatrics, Orthopedics, Neurology, Mental Health, Endocrinology, Pulmonary, and Geriatric Medicine.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): MA-1321 Medical Office Laboratory Procedures, and MA-132L Medical Office Laboratory Procedures, and MA-1401 Basic Clinical Medical Assisting, and MA-140L Basic Clinical Medical Assisting Lab., and MA-1503 Administrative Procedures for the Medical Office, and MA-150L Administrative Procedures Laboratory, and concurrent enrollment in MA-2412 Advanced Clinical Medical Assisting.

MA-2860 Medical Assisting Practicum
02 Semester Credits
Capstone course in Medical Assisting. Supervised clinical experience in a physician's office, clinic or family practice center. Students perform duties of a medical assistant while rotating through administrative and clinical areas of a physician's office, clinic or family practice center.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 210 hours per semester.
Prerequisite(s): Concurrent enrollment in MA-2412 Advanced Clinical Medical Assisting and MA-2980 Medical Assisting Seminar.

MA-2980 Medical Assisting Seminar
01 Semester Credit
Principles, procedures, and practical application of administrative, clinical and special medical assisting procedures. Opportunity to compare and contrast practices in various clinical settings. Discussion of certification and preparation to function as a certified medical assistant. Discussion of future trends in medical assisting profession.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): Concurrent enrollment in MA-2860 Medical Assisting Practicum, or departmental approval.

MEDICAL LABORATORY TECHNOLOGY - MLT

MLT-1000 Introduction to Medical Laboratory Technology
03 Semester Credits
This introduction to Medical Laboratory Technology provides an overview of the profession, safety, blood collection and processing, code of ethics, basic clinical laboratory equipment and instrumentation, basic lab math, quality control and assurance.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for MATH-1141 Applied Algebra and Mathematical Reasoning or higher.
OAN Approved: OHL008

MLT-1300 Introduction to Blood Collection
03 Semester Credits
Introduction to theory and practice of phlebotomy. Principles of aseptic technique and familiarity with phlebotomy equipment. Performance of venipunctures and capillary punctures. Universal precautions and safety of phlebotomist and patient strictly enforced.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I, and departmental approval: admission to Health Career/Nursing program.

MLT-1351 Problem Solving Techniques for the Medical Laboratory
02 Semester Credits
Review of basic algebra and measurement systems. Study of formula evaluation, unit analysis and conversions, dilutions, concentrations, calculations specific to clinical analytes and Beer`s Law. Construction of standard curves, calculations and application of quality control parameters related to clinical laboratory medicine. Application and activities to build skills in problem solving.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1410 Elementary Probability and Statistics I, and departmental approval.

MLT-1491 Urinalysis and Body Fluids
03 Semester Credits
Theory and application of urine and body fluid analysis. Includes the anatomy and physiology of the kidney, physical, chemical and microscopic examination of the urine, cerebrospinal and other body fluids. Also includes diagnostic significance of test results and correlation with disease states, quality control, quality assurance and safety.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, or departmental approval: related work experience.
OAN Approved: OHL010

MLT-1850 Medical Laboratory Practicum I
03 Semester Credits
Supervised clinical experience. Students rotate through hematology, and/or urinalysis, and/or phlebotomy departments for fourteen (14) hours per week meeting performance objectives of medical laboratory or laboratory phlebotomy personnel at the MLT level. Seminar discussion of practicum experience.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, or MLT-1300 Introduction to Blood Collection, or concurrent enrollment, and departmental approval.

MLT-2461 Hematology
03 Semester Credits
An introduction to the theory, principles and procedures used in Hematology and Coagulation (Hemostasis). Hematopoiesis, enumeration, differentiation and evaluation of blood formed elements and the basic process of coagulation are discussed. Manual and automated techniques are explained, demonstrated and performed. Anemias, leukemias and other hematological disorders are studied, correlating test results with disease states. Problem solving skills are applied in related case studies and unknowns.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MA-1020 Medical Terminology I, and departmental approval.
OAN Approved: OHL009

MLT-2471 Immunohematology and Serology
05 Semester Credits
Study of immunohematologic (blood banking), immunologic and serologic principles and the application of testing procedures. Antigen-antibody reactions for ABO antigens, Rh (Rhesus)and other major blood group systems, compatibility testing, component therapy and production, acceptable donor criteria, transfusion transmitted diseases, diagnostic uses of serological tests. Performance of associated laboratory tests. Analysis of case studies, problem solving and clinical significance of results in diagnosis.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology.

MLT-2482 Clinical Microbiology
05 Semester Credits
Application of the principles and procedures utilized in clinical microbiology, mycology, parasitology and virology in the collection, identification and serological detection of organisms. Pathogenesis and prevention of disease. Media, methods of culture and isolation, biochemical and susceptibility testing, aseptic and staining techniques, sterilization and safety protocols are studied. Analysis of case studies, problem solving and clinical significance of results in diagnosis.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, and BIO-2500 Microbiology.

MLT-2501 Clinical Chemistry
05 Semester Credits
Principles, procedures and application of basic and advanced diagnostic tests in clinical chemistry for all body fluids. Emphasis on correlation of results with clinical significance, interpreting quality control data, and mastering basic lab skills.
Lecture 03 hours. Laboratory 06 hours.
Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, and MLT-1351 Problem Solving Techniques for the Medical Laboratory, and departmental approval.

MLT-2940 Medical Laboratory Field Experience
03 Semester Credits
Capstone course in Medical Laboratory Technology. Supervised clinical experience. Students rotate through chemistry, microbiology, serology, immunohematology, hematology/coagulation, body fluids laboratories, and phlebotomy departments for thirty-six (36) hours per week meeting performance objectives of medical laboratory personnel at the MLT level.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 36 hours per week.
Prerequisite(s): MLT-2990 Advanced MLT Applications

MLT-2970 Advanced Phlebotomy
01 Semester Credit
Review of theory and techniques for phlebotomy procedures. Presentation of basic procedures involved in point-of-care testing and unregulated laboratory test procedures. Emphasis on universal precautions, safety, communication, interpersonal skills, and ethical considerations relating to patients. Seminar discussion of practicum experience.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): MLT-1300 Introduction to Blood Collection, or departmental approval.

MLT-2980 Professional Development and Life Skills Seminar
01 Semester Credit
Integration of knowledge acquired in basic, technical and non-technical areas in preparation for professional roles and lifelong professional growth and development. Seminar discussion of clinical experience.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 1 hour per week.
Prerequisite(s): Departmental approval.

MLT-2990 Advanced MLT Applications
06 Semester Credits
Manual laboratory skills related to clinical chemistry, hematology, coagulation, body fluids, microbiology, parasitology, mycology, immunohematology/serology are refined. The operation and maintenance of laboratory equipment, function verification, analysis of quality control and application of corrective action is studied and performed. Emphasis on organization, increased speed, accuracy, confidence and independent performance. Case studies are analyzed, data interpreted and findings are correlated to clinical significance and differential diagnoses. Advanced concepts in parasitology, mycology, immunohematology/serology, principles of education, molecular diagnostics, point of care, information systems and troubleshooting are introduced.
Lecture 01 hour. Laboratory 15 hours.
Prerequisite(s): MLT-1491 Urinalysis and Body Fluids, and MLT-2461 Hematology, and MLT-2501 Clinical Chemistry, and BIO-2500 Microbiology.

MUSIC - MUS

MUS-1010 Survey of European Classical Music
03 Semester Credits
Introduction to elements and styles of European classical music. Composers, works, instrumentation and forms studies in their cultural and historical context. Focus on listening and understanding European classical music.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1020 Survey of Jazz
03 Semester Credits
Introduction to basic elements and techniques of jazz. Function of jazz instrumentation, forms, improvisation and other musical elements and conventions indigenous to jazz. Characteristic features of various styles and artists studied. Focus on listening to and understanding jazz.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1030 Survey of Rock and Roll
03 Semester Credits
Survey of the most influential and innovative works and artists of rock music from origins to present. Includes terminology, techniques, style, instrumentation and lyrics, with references to cultural and historical context. Course involves listening to, reading and discussing artists and recordings. Focus on listening to and understanding rock and roll music.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1040 Survey of African-American Music
03 Semester Credits
Chronological study of history of African-American music from eighteenth century through 1920s. Oral traditions and performance practices studied in cultural and historical context. Sacred, folk, popular, and classical music and precursors of jazz discussed. Focus on listening to and understanding African-American music.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1050 Survey of World Music
03 Semester Credits
Introduction to elements and styles of music of diverse ethnic cultures. Instruments, forms, and concepts of music explored through art and folk music to develop an understanding of how basic materials of music work together. Focus on listening to and understanding music of diverse cultures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1100 Music for Elementary Education
03 Semester Credits
Designed to orient elementary teachers to role of music in growth and development of children. Emphasis on creating musical environment in the elementary school classroom. Study of young voice, basic theory, piano keyboard, music symbols and terms, and use of elementary classroom instruments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1110 Music Business I
03 Semester Credits
Examination of multiple facets of music industry. Includes exploration of career options, recording industry, performance and promotion, music business contracts, marketing of songs, music publishing, copyrights, and retail.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1120 Music Business II
03 Semester Credits
Artist promotion, management, music agents, music in advertising, concert promotion, arts administration, and music entrepreneurship.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1110 Music Business I.

MUS-1130 MIDI Technology I
03 Semester Credits
Basic audio signal flow, MIDI (Music Instrument Digital Interface) principles and techniques, the virtual studio concept, computer-based sequencing and notation software and the operation of modern keyboard equipment.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

MUS-1140 MIDI Technology II
03 Semester Credits
Further development of concepts and skills introduced in MIDI Technology I. Advanced sequencing and editing techniques, synchronization, digital audio recording, music notation and MIDI studio organization.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MUS-1130 MIDI Technology I.

MUS-1170 Songwriting I
02 Semester Credits
Instruction in the art of contemporary songwriting. Includes consideration of form, rhythm, melody, lyric content, harmony, arranging, and development of individual style. Development of listening skills and criticism utilizing songs of class members and established artists.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1200 Music Reading Skills
03 Semester Credits
Introduction to concepts and skills of reading music and music theory for pre-music and non-music majors. Includes study of notation, rhythm, scales, key signatures, intervals and triads.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1210 Introduction to Music Theory
03 Semester Credits
Terminology, symbols, skills, and concepts of music theory for pre-music and non-music majors. Includes study of intervals, chords, voice leading and figured bass, compositional devices, transposition, analysis, and basic forms.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1200 Music Reading Skills, or departmental approval.

MUS-1220 Basic Ear Training
02 Semester Credits
Introduction to the development of aural skills for pre-music and non-music majors. Students develop discrimination skills including pitch and rhythm perception through sight singing and dictation.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1200 Music Reading Skills, or departmental approval.

MUS-1230 Critical Listening
01 Semester Credit
Use of critical and analytic listening methods to evaluate frequency, sound quality, musical mix structure and to analyze common sound problems.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

MUS-1250 Class Keyboard I
02 Semester Credits
Basic piano techniques and performance skills for pre-music and non-music majors. Emphasis on keyboard development in sight reading, improvising, transposing and harmonizing melodies in various styles. Includes solo and ensemble literature.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.
OAN Approved: OAH019 (1 of 2 required courses)

MUS-1260 Class Keyboard II
02 Semester Credits
Functional piano techniques and keyboard skills for pre-music and non-music majors. Keyboard development in second-level sight reading, transposing, improvising, and ensemble playing in various styles. Development of second level solo and ensemble repertoire.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1250 Class Keyboard I.
OAN Approved: OAH019 (2 of 2 required courses)

MUS-1270 Class Voice
02 Semester Credits
Basic techniques of voice production. Includes breath control, diction, projection, tone-color, and interpretation for pre-music and non-music majors. Progressive vocal exercises and studies. Application of principles to performance of simple songs.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

MUS-1280 Class Guitar
02 Semester Credits
Basic guitar techniques and performance skills for non-music majors, and music majors studying guitar as a second instrument. Special focus on skills for beginning guitarists and students pursuing music therapy careers. Emphasis on left hand development, plectrum technique, and chord and scale vocabulary and performance. Application of principles to solo and ensemble literature. Students will need their own guitar.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

MUS-1290 Basic Applied Music I
01 Semester Credit
Individual instruction for pre-music and non-music majors on any standard band, orchestral instrument or voice. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 7 hours of concentrated practice each week.
Prerequisite(s): Departmental approval.

MUS-1301 Applied Piano Minor I
01 Semester Credit
Private piano instruction for music majors with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for first semester. End of semester performance jury required.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 7 hours of concentrated practice each week.
Prerequisite(s): Departmental approval: audition.

MUS-1302 Applied Piano Minor II
01 Semester Credit
Second-level private piano instruction for music major with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for second semester. End of semester performance jury required.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 7 hours of concentrated practice each week.
Prerequisite(s): MUS-1301 Applied Piano Minor I.

MUS-1460 Applied Music I
02 Semester Credits
(See page 224 for enrollment instructions.) Applied instruction in musical instruments and voice for college students pursuing degrees in music. Development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature appropriate for first semester music majors. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 14 hours of concentrated practice each week. As a final exam, students will play a performance jury in front of music faculty at the end of the term of study to demonstrate proficiency.
Prerequisite(s): Departmental approval.
OAN Approved: OAH020

MUS-1470 Applied Music II
02 Semester Credits
(See page 224 for enrollment instructions.) Second-level private instruction for music majors. Continued development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Standard repertoire including selected solo and method literature appropriate for second semester music majors. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: One private lesson and 14 hours of concentrated practice each week. As a final exam, students will play a performance jury in front of music faculty at the end of the term of study to demonstrate proficiency.
Prerequisite(s): MUS-1460 Applied Music I, or departmental approval.
OAN Approved: OAH020

MUS-1500 Choir
01 Semester Credit
Performance class with concentration on standard repertoire, both sacred and secular, accompanied and a cappella for mixed voices. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: audition.
OAN Approved: OAH022

MUS-1510 Choral Ensemble
01 Semester Credit
Performance of choral literature from Renaissance through 20th century for small select ensemble. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: audition.
OAN Approved: OAH022

MUS-1520 Jazz Ensemble
01 Semester Credit
Study and experimentation in performance of jazz ensemble literature and styles. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: audition.

MUS-1530 Concert Band
01 Semester Credit
Performance of band and wind ensemble literature by woodwinds, brass, and percussion players. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: audition.
OAN Approved: OAH022

MUS-1540 Orchestra
01 Semester Credit
Performance of selected orchestral literature by string, woodwind, brass and percussion players. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: audition.

MUS-1550 Instrumental Ensemble
01 Semester Credit
Performance of traditional and contemporary ensemble literature. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: audition.
OAN Approved: OAH022

MUS-1570 Technology Tools I
02 Semester Credits
Designed to give music students practical knowledge and skills in the use of current computer, MIDI (Musical Instrument Digital Interface), and electronic instrument technologies for application in music theory, arranging, composition and performance. Includes basic computer, MIDI principles and techniques, computer-based notation and sequencing software, and operation of modern electronic keyboard instruments.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1210 Introduction to Music Theory, or departmental approval.

MUS-1580 Technology Tools II
02 Semester Credits
Designed to give music students practical knowledge and skills in use of current computer, MIDI (Musical Instrument Digital Interface), and electronic instrument technologies for application in music theory, arranging, composition and performance. Includes advanced notation and sequencing editing techniques, digital audio recording and MIDI studio organization.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1570 Technology Tools I, or departmental approval.

MUS-1600 Traditional Theory I
03 Semester Credits
Manipulation of musical materials including harmonic, melodic, rhythmic, and basic formal procedures with correlated creative works and analysis. Harmonization of figured bass and chorale writing including diatonic harmony and voice leading, melodic procedures and all non-harmonic tones. Analysis of common practice literature. Integrates harmonic and contrapuntal approaches to analysis and composition.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1210 Introduction to Music Theory.
OAN Approved: OAH052 (1 of 6 courses, all must be taken)

MUS-1610 Ear Training I
02 Semester Credits
Identification of diatonic and chromatic intervals, triad qualities, scales and phrases. Melodic and rhythmic dictation, sight singing, and analytic listening. Introduction to harmonic function and holistic listening.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1220 Basic Ear Training.
OAN Approved: OAH052 (3 of 6 courses, all must be taken)

MUS-1620 Traditional Theory II
03 Semester Credits
Introduction of modulation, chromatic materials and 20th century techniques. Integrates harmonic and contrapuntal approaches to analysis and composition.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1600 Traditional Theory I, and MUS-1610 Ear Training I.
OAN Approved: OAH052 (2 of 6 courses, all must be taken)

MUS-1630 Ear Training II
02 Semester Credits
Second level identification of intervals, chord qualities, scales, phrases and harmonic function. Melodic and rhythmic dictation, sight singing, analytic and holistic listening.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1610 Ear Training I.
OAN Approved: OAH052 (4 of 6 courses, all must be taken)

MUS-1650 Jazz Theory I
02 Semester Credits
Introduction to theoretical foundations of jazz including a systematic examination of scales, hybrid modes and their practical applications, chord construction and notation, chord/scale relationships and applications, melodic construction and development, and analysis of transcribed solos and compositions from the jazz repertoire including the American standard song.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1600 Traditional Theory I.

MUS-1670 Jazz Performance and Improvisation I
02 Semester Credits
Improvisation within the jazz style and presentation as performance. Investigates essential relationship of the blues, American standard song and swing rhythm as central to the character of jazz. Memorization of standard repertoire.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1210 Introduction to Music Theory, and audition.

MUS-1680 Jazz Performance and Improvisation II
02 Semester Credits
Improvisation within the jazz style and presentation as performance. Includes modal combinations and chord change sequences, scale-tone 7th, harmonic movement within blues and standard song, phrasing, paraphrasing, playing in various keys and memorization of standard repertoire.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1670 Jazz Performance and Improvisation I.

MUS-1720 Arranging I
02 Semester Credits
Writing and arranging for the modern rhythm section including piano (keyboards), guitar, bass, drums and auxiliary percussion; writing and arranging techniques address the rhythm section as a unit and as part of a small or large ensemble.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1600 Traditional Theory I, or departmental approval.

MUS-179H Honors Contract in Music
01 Semester Credit
Honors Contract complements and exceeds requirements and objectives for an existing MUS 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Music, whose instructor approves the Honors Contract.

MUS-1970 Music Seminar
01 Semester Credit
Discussion of current topics related to music careers including presentations, performances, recitals and clinics, music academic and career exploration. May be repeated for an accrued maximum of six credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 1 seminar hour per week.
Prerequisite(s): Departmental approval.

MUS-2030 British Invasion
02 Semester Credits
Survey of influential and representative works and artists of British Invasion beginning in 1964 including the Beatles, The Who, Rolling Stones, Kinks, and their contemporaries. Aesthetics, terminology, technique, style, instrumentation, lyrics, and technology.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1030 Survey of Rock and Roll.

MUS-2130 Music Production for Video and Film
03 Semester Credits
Using tools of the modern MIDI studio to write and produce an appropriate musical score for video and film. Topics include music scoring techniques and sound design, role of music in advertising and film industries, and communicating with client to determine musical direction.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): MUS-1140 MIDI Technology II.

MUS-2140 Studio Maintenance
02 Semester Credits
Reviews basic electronics and sound principles, discusses set-up, calibration and operation of digital and analog recording and test equipment. Topics include studio layout, technical signal routing, equipment interface, grounding, maintenance and troubleshooting.
Lecture 00 hours. Laboratory 04 hours.
Prerequisite(s): RAT-1500 Recording Theory I, RAT-1511 Recording Lab I, and EET-1130 Basic Audio Electronics; or departmental approval.

MUS-2290 Basic Applied Music II
02 Semester Credits
Individual instruction for pre-music and non-music majors on any standard band, orchestral instrument or voice. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

MUS-2301 Applied Piano Minor III
01 Semester Credit
Third-level private piano instruction for music major with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for third semester. End of semester performance jury required.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 7 hours of concentrated practice each week.
Prerequisite(s): MUS-1302 Applied Piano Minor II.

MUS-2302 Applied Piano Minor IV
01 Semester Credit
Fourth-level private piano instruction for music major with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for fourth semester. End of semester performance jury required.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 7 hours of concentrated practice each week.
Prerequisite(s): MUS-2301 Applied Piano Minor III.

MUS-2460 Applied Music III
02 Semester Credits
Third-level applied instruction in musical instruments and voice for college students pursuing degrees in music. Continued development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature appropriate for third semester music majors. Analysis of the forms of music for the individual instrument and their historical perspective. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 14 hours of concentrated practice are required each week.
Prerequisite(s): MUS-1470 Applied Music II, or departmental approval.
OAN Approved: OAH020

MUS-2470 Applied Music IV
02 Semester Credits
Fourth-level applied instruction in musical instruments and voice for college students pursuing degrees in music. Continued development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature appropriate for fourth semester music majors. Introduction to beginning teaching issues and techniques for the individual instruments. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: A private lesson and 14 hours of concentrated practice are required each week.
Prerequisite(s): MUS-2460 Applied Music III, or departmental approval.
OAN Approved: OAH020

MUS-2500 Music History and Literature I
03 Semester Credits
Chronological study of the history and development of European classical music from origins through the 18th century. Detailed attention to selected pieces from Medieval, Renaissance, Baroque, and Classical periods.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1620 Traditional Theory II.

MUS-2510 Music History & Literature II
03 Semester Credits
Chronological study of history and development of European classical music from 19th century through present time. Detailed attention to selected pieces.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1620 Traditional Theory II.

MUS-2520 Jazz History I
02 Semester Credits
Chronological study of history and development of classic jazz from origins through the Swing period. Detailed attention to selected jazz masters and analysis of their most important works.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1650 Jazz Theory I.

MUS-2530 Jazz History II
02 Semester Credits
Chronological study of history and development of modern jazz from Bebop through present time. Detailed attention to selected jazz masters and analysis of their most important works.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1650 Jazz Theory I.

MUS-2540 Jazz History Listening I
01 Semester Credit
Through directed, analytical and comparative listening experiences, students gain detailed knowledge of and familiarity with selected works of jazz masters (circa 1850s -1940s) from pre-jazz roots music and early jazz through swing jazz. A listening laboratory and aural training course, this is a companion and supplement to MUS-2520 Jazz History I.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): MUS-1650 Jazz Theory I, and concurrent enrollment in MUS-2520 Jazz History I, or departmental approval.

MUS-2550 Jazz History Listening II
01 Semester Credit
Through directed, analytical and comparative listening experiences, students gain detailed knowledge of and familiarity with selected works of Modern Jazz masters from Bebop (1940s) to the present. A listening laboratory and aural training course, this is a companion and supplement to MUS-2530 Jazz History II.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): MUS-1650 Jazz Theory I, and concurrent enrollment in MUS-2530 Jazz History II, or departmental approval.

MUS-2600 Traditional Theory III
03 Semester Credits
Theory, analysis, and composition of European classical music from origins through 18th century. Detailed attention to selected pieces from Medieval, Renaissance, Baroque and Classical periods.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1620 Traditional Theory II, and MUS-1630 Ear Training II.
OAN Approved: OAH052 (5 of 6 courses, all must be taken)

MUS-2610 Ear Training III
02 Semester Credits
Third-level identification of intervals, seventh chords, scales, phrases and harmonic function. Melodic and rhythmic dictation, sight singing, analytic and holistic listening.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1630 Ear Training II.

MUS-2620 Traditional Theory IV
03 Semester Credits
Theory, analysis, and composition of European classical music from 19th century through present time. Detailed attention to selected pieces.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MUS-2600 Traditional Theory III, and MUS-2610 Ear Training III.
OAN Approved: OAH052 (6 of 6 courses, all must be taken)

MUS-2630 Ear Training IV
02 Semester Credits
Fourth level identification of intervals, seventh chords, scales, phrases and harmonic function. Melodic and rhythmic dictation, sight singing, analytic and holistic listening.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-2610 Ear Training III.

MUS-2650 Jazz Theory II
02 Semester Credits
Second level study of theoretical foundations of jazz. Includes diatonic and chromatic harmony, harmonic embellishment and substitution, voicings, rhythm, blues progressions and forms, phrase analysis, lyric import and analysis of transcribed solos and compositions from jazz repertoire.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1650 Jazz Theory I.

MUS-2660 Jazz Theory III
02 Semester Credits
Third-level of study of theoretical foundations of jazz. Includes modal structures, rhythm changes and substitutions; composition and improvisation; implications of lyrics on structure and articulation; and analysis of transcribed solos and compositions from jazz repertoire, including the American standard song.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-2650 Jazz Theory II.

MUS-2670 Jazz Performance and Improvisation III
02 Semester Credits
Third-level study of improvisation within jazz style and presentation as performance. Includes phrasing, minor ii-V-i, modal minor, chord structures and common progressions in all keys, and memorization of standard repertoire.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-1680 Jazz Performance and Improvisation II.

MUS-2680 Jazz Performance and Improvisation IV
02 Semester Credits
Fourth-level study of improvisation within jazz style and presentation as performance. Includes performance of accumulated repertoire, blues composition, refined group playing and performance of memorized standard repertoire in all keys.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MUS-2670 Jazz Performance and Improvisation III.

MUS-2710 Arranging II
02 Semester Credits
Building on the rhythm section, this study concentrates on writing for trumpet, trombone and saxophone individually, in combination and as instrumental families. Ranges, tonal color, combinations in the context of an arrangement are investigated. Further development of skills introduced in Arranging I.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-1720 Arranging I, or departmental approval.

MUS-2720 Arranging III
02 Semester Credits
Development of the linear approach to multiple horn scoring, focusing on backgrounds, supporting lines, and contrapuntal devices as well as melodic presentation; further development of the skills introduced in Arranging II. Elements of arranging for the large ensemble and studio orchestra will be introduced.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MUS-2710 Arranging II, or departmental approval.

MUS-2740 Internship
01-03 Semester Credits
Provides student with on-the-job application of skills learned in the liberal arts and specifically music. Each internship based on individualized learning contract. Requirement for one credit is 180 hours of approved work per semester.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Internship: 180 clock hours of approved work per credit hour.
Prerequisite(s): Department approval: completion of 30 semester credits; completion of 15 semester credits at Cuyahoga Community College; 2.75 GPA; completion of 20 semester credits in liberal arts; completion of 9 semester credits in Music; two letters of recommendation from liberal arts faculty, one of which must be from area of placement.

NUCLEAR MEDICINE - NMED

NMED-1301 Nuclear Medicine Procedures I
03 Semester Credits
Methods of performing patient organ visualization procedures in nuclear medicine. Review of anatomy, physiology and pathology of the various organs, radiopharmaceuticals, applicable instrumentation, methodologies, and techniques utilized. Therapeutic and in-vivo clinical procedures, including radiation safety techniques, patient care, patient preparation, and patient imaging for nuclear studies.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in NMED-130L Nuclear Medicine Laboratory I and departmental approval: admission to the program.

NMED-130L Nuclear Medicine Laboratory I
01 Semester Credit
Application of nuclear medicine principals, practice of nuclear medicine quality assurance and quality controls, instrumentation controls, body mechanics, interpersonal communication, recognition of anatomic structures, and practice of patient care skills and imaging in a laboratory setting.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): Concurrent enrollment in NMED-1301 Nuclear Medicine Procedures I and departmental approval: admission to the program.

NMED-1400 Patient Care for the Nuclear Medicine Technologist
03 Semester Credits
Discussion and practice of advanced patient care skills, essential to providing high-quality patient care. Covers patient care and safety, patient-technologist communication, age-specific needs, emergency care, venipuncture and the interaction with patients, coworkers, and community in accordance with ethical standards and laws of the health care professional. Respect for individuals from different cultures, beliefs, gender orientations, and socioeconomic backgrounds discussed. Legal and compliance issues, scopes of practice, and patients' rights are addressed. Includes certification in cardiopulmonary resuscitation.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Admission to Nuclear medicine program or departmental approval.

NMED-1500 Radiation Physics
03 Semester Credits
Covers the principles of radioactivity, effects of radiations on matter, emerging technologies, and counting statistics as they relate to nuclear medicine and additional molecular imaging instrumentation. Topics include applicable classical physics concepts, atomic structure, mass-energy relationships, types of radiation, modes, principles, and calculations of radioactive decay, production of radionuclides and x-rays, applicable terminology, photon and particulate interactions with matter, attenuation equation, analyzing counting statistics, principles and operation of SPECT, SPECT/CT, PET and CT imaging systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the Nuclear Medicine Program or the Magnetic Resonance Imaging Program.

NMED-1601 Nuclear Radiopharmacy and Pharmacology
03 Semester Credits
Theory and practice of radiopharmacy, including preparation and calculation of the dose to be administered, quality control, radiation safety, and applicable regulations. Non-radioactive interventional drugs and contrast media that are used as part of nuclear medicine procedures. Addresses the routes of administration, bio-distribution mechanisms, interfering agents, contraindications, and adverse effects for all administered materials. Prepares students to apply knowledge in clinical assignment in order to become proficient in this area.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the program.

NMED-1701 Nuclear Medicine Instrumentation
03 Semester Credits
Operation and quality control for non-imaging and imaging equipment. Demonstration of instrumentation use for both non- imaging and imaging such as: monitoring equipment (surveys), dose calibrators, well counters, uptake probes, laboratory equipment, gamma probe and gamma camera. Provide review regarding imaging components, use, and QC performance and requirements. Explain and demonstrate configuration, function and application of computers and networks used in the reconstruction of images. Includes practical considerations, concepts, data analysis, measurement concerns, and spectroscopy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I, or concurrent enrollment; and NMED-1601 Nuclear Radiopharmacy and Pharmacology, or concurrent enrollment; and NMED-1500 Radiation Physics, or concurrent enrollment.

NMED-1740 Magnetic Resonance Imaging (MRI) Safety
01 Semester Credit
Introduce basic MRI safety principles including patient management, clinical safety standards, magnet safety education of ancillary staff and patients, management of emergencies in the MRI suite, and contrast agents safety.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Eligibility for MATH-1141 Applied Algebra and Mathematical Reasoning and departmental approval: admission to MRI program.

NMED-1750 MRI Principles
03 Semester Credits
Introduction of key principles of MRI and magnetism including: history of MR, nuclear magnetism, magnetic properties, electromagnetic spectrum, basic types of magnets, differences in field strength and relationship to image quality, and hardware, specifically the RF system, gradient system, shim system, magnet and ancillary equipment. Shielding, coil designs and types.
Basic principles are expanded to instruction of MR Signal Production, resonance, MR Signal Induction/Sampling/Conversion, MR Image Contrast Characteristics (T1, T2, PD, etc), tissue characteristics.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1740 Magnetic Resonance Imaging (MRI) Safety or concurrent enrollment; and departmental approval: admission to MRI program.

NMED-1760 Sectional Anatomy & Pathology
03 Semester Credits
Study of normal anatomy and normal variations, as well as its appearance in multiple planes to better recognize abnormal conditions and make the associated imaging changes required to adequately demonstrate the patient's anatomy and pathology. Covers the common pathologies found in magnetic resonance imaging and the appearance of these pathologies in various imaging protocols. Includes all commonly-imaged body systems and areas.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1740 Magnetic Resonance Imaging (MRI) Safety, or NMED-1301 Nuclear Medicine Procedures I, or departmental approval.

NMED-1945 MRI Field Experience I
01 Semester Credit
This course provides clinical experience in a magnetic resonance imaging department under direct supervision of qualified personnel. Sessions emphasize the team approach on a day-to-day operation of a MR Department. Clinical experience will include patient care, procedures, MRI safety, quality control, equipment manipulation and patient positioning. Students will gain clinical experience in the clinical environment for 15 hours a week for a minimum of 12 weeks.(the last 12 weeks of the 16 week Fall semester).
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 hours of clinical experience must be completed to gain the experience necessary to complete clinical competencies
Prerequisite(s): NMED-1740 Magnetic Resonance Imaging (MRI) Safety, or concurrent enrollment; and NMED-1750 MRI Principles, or concurrent enrollment.

NMED-2010 MRI Pulse Sequences, Image Formation and Image Contrast
02 Semester Credits
Comprehensive overview of MR pulse sequences, image formation and image contrast. Pulse sequences include spin echo, fast spin echo, gradient echo, inversion recovery, echo planar, parallel imaging and spectroscopy. Also, covers tissue characteristics, contrast agents and postprocessing techniques.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1750 MRI Principles.

NMED-2020 MRI Parameters, Imaging Options and Quality Assurance
02 Semester Credits
Focuses on parameters and imaging options used to create MRI images. Optimal imaging parameter settings are crucial to obtaining quality. Quality assurance measures are also introduced. A knowledge base in parameter applications, imaging options and quality assurance allows technologists to obtain the highest quality images, thus ensuring accurate diagnosis of the patient's condition.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1750 MRI Principles and NMED-2010 MRI Pulse Sequences, Image Formation and Image Contrast.

NMED-2030 MRI Imaging Procedures
01 Semester Credit
Imaging techniques related to the central nervous system (CNS), neck, thorax, musculoskeletal system and abdominopelvic regions. Covers specific clinical application, coils, considerations in the scan sequences, specific choices in the protocols (e.g., slice thickness, phase direction and flow compensation), and positioning criteria. Anatomical structures, the plane that best demonstrates anatomy, and signal characteristics of normal and abnormal structure discussed. Examines the variations in imaging parameters for specific body regions and the resultant effect on signal characteristics and the anatomy represented. Evaluation criteria for determining the quality of images included.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): NMED-1750 MRI Principles, and NMED-1760 Sectional Anatomy & Pathology, and NMED-2010 MRI Pulse Sequences, Image Formation and Image Contrast, and concurrent enrollment in NMED-2020 MRI Parameters, Imaging Options and Quality Assurance.

NMED-2040 MRI Comprehensive Review
01 Semester Credit
Students will have the opportunity to prepare for the ARRT MRI certification examination. Content of this review will provide an understanding of MRI key concepts and theories. MRI principles, image formation, processes and safety concerns will be reviewed. Mock registry exam questions will allow the student to assess his/her knowledge of the material and review important concepts for MRI staff technologists.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

NMED-2301 Nuclear Medicine Procedures II
03 Semester Credits
Methods of performing patient organ visualization procedures in nuclear medicine. Review of anatomy, physiology and pathology of various organs, radiopharmaceuticals, applicable instrumentation, methodologies, and techniques utilized. Therapeutic and in-vivo clinical procedures, including radiation safety techniques, patient care, patient preparation, and patient imaging for nuclear medicine procedures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I and NMED-1601 Nuclear Radiopharmacy and Pharmacology, and NMED-1500 Radiation Physics and concurrent enrollment in NMED-230L Nuclear Medicine Laboratory II.

NMED-230L Nuclear Medicine Laboratory II
01 Semester Credit
Analysis of the application of nuclear medicine principals. Practice nuclear medicine quality assurance and quality controls, instrumentation controls, proper body mechanics, interpersonal communication, and recognition of anatomic structures in a laboratory setting.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I and NMED-130L Nuclear Medicine Laboratory I and NMED-1500 Radiation Physics and NMED-1601 Nuclear Radiopharmacy and Pharmacology, and concurrent enrollment in NMED-2301 Nuclear Medicine Procedures II.

NMED-2410 Nuclear Medicine Safety & Biology
04 Semester Credits
Potential effects of radiation, including fundamentals of radioactivity. Safe handling of radioactive materials and the disposal of radioactive waste. Radiation safety regulations and safety guidelines including personnel monitoring and accurate record keeping. The effects of ionizing radiation on biological systems, especially humans including known high dose effects and theories of low dose effects. Applicable radiation characteristics and physics fundamentals to biological effects. Determining and estimating absorbed doses from internally administered radioactive materials. Radiation risks, relative risks, and applicable quantities and units.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): NMED-1500 Radiation Physics, and NMED-1601 Radiopharmacy and Chemistry for Nuclear Medicine.

NMED-2940 Nuclear Medicine Field Experience I
03 Semester Credits
Clinical experience in the nuclear medicine department under the direct supervision of qualified personnel. Participation in variety of nuclear medicine procedures emphasizing application of theory related to nuclear imaging protocols, patient care, radiopharmaceutical preparation, quality control, survey and wipe techniques, instrumentation, radiation accident prevention and radiation safety to include clinical projects and case studies. Clinical rotations through variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Field Experience: 36 hours per week for 10 weeks (360 hours per semester).
Prerequisite(s): NMED-2301 Nuclear Medicine Procedures II, or departmental approval.

NMED-2950 Nuclear Medicine Field Experience II
04 Semester Credits
Supervised sessions in nuclear medicine department with specific assignments and case studies to include math problems and instrumentation. Clinical rotations through variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Field Experience: 36 hours per week for 16 weeks (576 hours per semester).
Prerequisite(s): NMED-2940 Nuclear Medicine Field Experience I or departmental approval.

NMED-2955 MRI Field Experience II
01 Semester Credit
Supervised sessions in the Magnetic Resonance Imaging Department with specific assignments and case studies. The design and scheduling of the student's clinical rotation(s) is dependent upon the student's program standing and competency level. Clinical rotations though clinical partners will provide a variety of clinical experiences and processes.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 12 hours of clinical field experience per week for 15 weeks (180 total hours).
Prerequisite(s): NMED-1945 MRI Field Experience I.

NMED-2960 Nuclear Medicine Field Experience III
04 Semester Credits
Capstone course in Nuclear Medicine. Supervised sessions emphasizing team approach to daily operation of a nuclear medicine department. Includes patient care, procedures, radiation safety, quality control, equipment manipulation and patient positioning. Clinical rotations through a variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies. Preparation for employment in nuclear medicine and for the American Registry of Radiologic Technologists' examination in Nuclear Medicine to include mock examinations.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Field Experience: 36 hours per week for 16 weeks (576 hours per semester).
Prerequisite(s): NMED-2950 Nuclear Medicine Field Experience II or departmental approval.

NMED-2965 MRI Field Experience III
01 Semester Credit
Supervised sessions emphasizing day-to-day operation of a MRI Department. Includes patient care, procedures, MRI safety, quality control, equipment manipulation processing and patient positioning.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 12 hours of field experience per week for a minimum of 15 weeks (180 hours per semester).
Prerequisite(s): NMED-2955 MRI Field Experience II.

NURSING - NURS

NURS-1300 Health Assessment
02 Semester Credits
Focuses on development of assessment skills including obtaining a health history, performing physical assessment of the adult, and evaluating physiologic changes related to aging. Major emphasis on developing interviewing skills, assessing cultural factors, and utilizing basic assessment techniques. Documentation and reporting of findings discussed. Laboratory screening procedures introduced.
Lecture 01 hour. Laboratory: On-campus: 02 hours.
Prerequisite(s): Departmental approval: admission to Associate Degree Nursing program or Practical Nursing program.

NURS-1450 Self-Care Needs: Adult Life Span
08 Semester Credits
Study of basic nursing care of adults through the adult life span, using Orem's self-care deficit theory. Specialized care of the elderly is included. Introduces major nursing curriculum themes: nursing process, communication, human development, cultural diversity, critical thinking and role of the associate degree nurse. Basic concepts of pharmacology and normal nutrition presented.
Lecture 04 hours.
Laboratory: On Campus & Clinical: 12 hours.
Prerequisite(s): BIO-1100 Introduction to Biological Chemistry, BIO-2331 Anatomy and Physiology I, ENG-1010 College Composition I, MATH-1270 Intermediate Algebra, NURS-1300 Health Assessment, PSY-1010 General Psychology; and PSY-2020 Life Span Development, or concurrent enrollment; and departmental approval: admission to Nursing Program.

NURS-1600 Health Deviations I
08 Semester Credits
Focuses on patients with acute and chronic health deviations. Critical thinking, Orem's self-care deficit theory, and the nursing process provide the framework for delivery of nursing care to adult patients. Emphasis on health deviations related to respiratory and musculo-skeletal function, fluid and electrolyte balance, reproductive, and urologic disorders, surgery, diabetes, pain, HIV and oncology.
Lecture 04 hours.
Laboratory: On-campus & Clinical: 12 hours.
Prerequisite(s): NURS-1450 Self-Care Needs: Adult Life Span; BIO-2341 Anatomy and Physiology II, or concurrent enrollment; and BIO-2500 Microbiology, or concurrent enrollment; and departmental approval.

NURS-160A Access to Registered Nursing
03 Semester Credits
Designed to facilitate transition of Licensed Practical Nurses into the Associate Degree Nursing program. Concepts related to role of associate degree nurse, therapeutic communication, nursing process and teaching/learning.
Lecture 02 hours. Laboratory: On-campus: 02 hours.
Prerequisite(s): Departmental approval.

NURS-160D Health Deviations I for LPNs
03 Semester Credits
Designed for Licensed Practical Nurses entering the Associate Degree Nursing program with advanced credit. Introduces nursing curriculum themes. Focuses on patients with acute and chronic health deviations related to fluid and electrolyte balance, urologic disorders, diabetes, and oncology.
Lecture 02 hours. Laboratory: Clinical: 03 hours.
Prerequisite(s): NURS-160A Access to Registered Nursing, or concurrent enrollment; BIO-2341 Anatomy and Physiology II, or concurrent enrollment; BIO-2500 Microbiology, or concurrent enrollment; PSY-2020 Life Span Development, or concurrent enrollment; and departmental approval: admission to the Associate Degree Nursing Program.

NURS-1701 Community/Home Nursing
01 Semester Credit
Critical thinking, Orem's self-care deficit theory, and the nursing process provide the framework for the delivery of nursing care to individuals and groups within the community. Emphasis is placed on health promotion, risk reduction, cultural sensitivity, and nursing management of vulnerable populations and patients with selected sexually transmitted, parasitic, and other infectious disease processes.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): NURS-1600 Health Deviations I, or concurrent enrollment, and departmental approval.

NURS-2300 Specialized Health Care Needs
09 Semester Credits
Critical thinking, Orem's self-care deficit theory and the nursing process provides the framework for the delivery of nursing care to specialized populations which includes childbearing families, children and their families, and individuals with psychiatric-behavioral health needs. Emphasis on therapeutic nurse-patient relationships and communication, and common psychiatric and behavioral health conditions; pediatric growth and development and common pediatric conditions; and care of childbearing women and their families.
Lecture 05 hours.
Laboratory: On-campus and Clinical: 12 hours.
Prerequisite(s): NURS-1600 Health Deviations I, or NURS-160D Health Deviations I for LPNs; and NURS-1701 Community/Home Nursing; and departmental approval.
OAN Approved: OHL012

NURS-2400 Health Management
01 Semester Credit
Capstone course in Nursing. Exploration of role of associate degree nurse and transition into practice emphasizing major health care issues, trends and patterns of care. Presentation and analysis of management concepts in health care organizations.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in NURS-2500 Health Deviations II, and departmental approval.

NURS-2501 Health Deviations II
08 Semester Credits
Focuses on chronic, acute and critically ill patients. Orem`s theory of self-care deficits, critical thinking, and the nursing process provide the framework for delivery of nursing care to groups of patients and their families. Concepts of communication, human development, and cultural diversity are integrated throughout course material. Emphasis is placed on care required to meet self-care deficits for patients with cardiac, hematological, gastrointestinal, respiratory, neurological, skin, autoimmune, and endocrine disorders. Principles of management and delegation are applied through a nursing leadership experience.
Lecture 04 hours. Laboratory: On Campus and Clinical: 12 required hours.
Prerequisite(s): NURS-2300 Specialized Health Care Needs, or concurrent enrollment in NURS-2400 Health Management; and departmental approval.

OCCUPATIONAL THERAPY ASSISTING TECHNOLOGY - OTAT

OTAT-1300 Occupational Therapy Principles
02 Semester Credits
Overview of history, development, philosophy, theory and practice of occupational therapy profession. Discussion of role and responsibilities of occupational therapy assistant. Study of models of health, illness, wellness, therapeutic and professional relationships; exploration of cultural, ethical and legal issues in health care. Roles and education of occupational therapy personnel and professional organizations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

OTAT-1310 Task Analysis
02 Semester Credits
Occupational therapy practice uses activities and tasks in achieving therapeutic goals in the treatment and rehabilitation of persons with occupational performance dysfunction resulting from disease or disability. Instruction in activities and tasks used in therapy to facilitate communication: develop relationships; increase self-esteem and assess and develop specific sensory, motor, psychological, social, and cognitive skills for learning, organizing work, and solving problems.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, or concurrent enrollment, and departmental approval.

OTAT-1320 Fundamentals of Developmental Disabilities
02 Semester Credits
Overview of developmental disabilities including physical and psychosocial conditions commonly referred to and treated by occupational therapists.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): OTAT-1300 Occupational Therapy Principles, and departmental approval.

OTAT-1330 Techniques in Developmental Disabilities
03 Semester Credits
Application of occupational therapy skills and techniques used in treatment programs planned for persons with developmental disabilities.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): OTAT-1310 Task Analysis, and departmental approval.

OTAT-1420 Fundamentals of Psychosocial Dysfunction
02 Semester Credits
Overview of psychosocial issues and psychiatric diagnoses in mental health and other clinical settings commonly referred to occupational therapy for treatment. Focuses on signs, symptoms and effects that mental illness and psychosocial issues have on an individual's life tasks and roles.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PSY-2020 Life Span Development or concurrent enrollment, and OTAT-1320 Fundamentals of Developmental Disabilities.

OTAT-1430 Techniques in Psychosocial Dysfunction
03 Semester Credits
Designed to familiarize student with a variety of therapeutic techniques, processes, and programming used by occupational therapists treating individuals with psychosocial dysfunction. Emphasis on self awareness and group dynamics relevant to clinical settings serving clients with psychological and psychiatric disorders.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): OTAT-1330 Techniques in Developmental Disabilities, and departmental approval.

OTAT-1850 Practicum I
02 Semester Credits
Under supervision of assigned agency personnel, students apply knowledge, skills and techniques learned in concurrent OTAT courses and weekly discussion seminar. Assignment to agencies includes traditional and non-traditional settings servicing clients with developmental disabilities.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 105 hrs./semester.
Seminar: 15 hrs./semester.
Prerequisite(s): OTAT-1310 Task Analysis, and departmental approval.

OTAT-1860 Practicum II
02 Semester Credits
Under supervision of assigned agency personnel, students apply knowledge, skills and techniques learned in concurrent OTAT courses and weekly discussion seminar. Assignment to agencies includes traditional and non-traditional settings serving clients with psychosocial dysfunctions.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 105 hours per semester.
Seminar: 15 hours per semester.
Prerequisite(s): PSY-2020 Life Span Development or concurrent enrollment, and departmental approval.

OTAT-1980 Therapeutic Use of Self
02 Semester Credits
The student will learn the art of relating to others through experiential activities, self-assessments and role playing activities to gain practical experience in initiating and responding to communications with a flexible, authentic and confident approach
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

OTAT-2320 Fundamentals of Physical Dysfunction
04 Semester Credits
Overview of physical disabilities including physical and psychosocial conditions commonly referred to and treated by occupational therapist. Presented within a developmental frame of reference covering adult through old age.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, OTAT-1420 Fundamentals of Psychosocial Dysfunction, and OTAT-1430 Techniques in Psychosocial Dysfunction.

OTAT-2330 Techniques in Physical Disabilities
04 Semester Credits
Overview of occupational therapy treatment strategies and techniques for physically disabled adults from late adolescence to the end of life. Emphasis on current, authentic and effective occupational therapy practice.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, and OTAT-1430 Techniques in Psychosocial Dysfunction.

OTAT-2340 Occupational Therapy Issues
03 Semester Credits
Capstone course in Occupational Therapy Assisting. Integrates knowledge and skills acquired in academic work and field practice placements to clarify role and function of Certified Occupational Therapy Assistant; evolving issues, concepts and responsibility to professional organizations; credentialing process; research; continuing education and public relations. Role of COTA as activities director.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): OTAT-2330 Techniques in Physical Disabilities, or concurrent enrollment.

OTAT-2860 Practicum III
02 Semester Credits
Under supervision of assigned agency personnel, students apply knowledge, skills and techniques learned in concurrent OTAT courses and weekly discussion seminar. Assignments to health care agencies include, but are not limited to hospitals, nursing homes, and rehabilitation centers serving adult and/or geriatric populations with physical conditions referred to occupational therapy.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 105 hrs./semester.
Seminar: 15 hrs./semester.
Prerequisite(s): OTAT-1860 Practicum II, and departmental approval.

OTAT-2940 Field Experience
03 Semester Credits
Students assigned to two consecutive 8-week full-time field placements under supervision of licensed occupational therapists. Provides student opportunities to apply principles and techniques learned in previous courses to actual treatment situations in preparation for entry level practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 576 hours per semester.
Prerequisite(s): OTAT-2320 Fundamentals of Physical Dysfunction, OTAT-2330 Techniques in Physical Disabilities, OTAT-2860 Practicum III, and departmental approval.

OPTICAL TECHNOLOGY - OPT

OPT-1310 Theoretical Optics I
02 Semester Credits
Study of the history of light, geometric optics, modern lens theory and construction as it relates to finishing, surfacing, and dispensing of eyewear.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to program.

OPT-1320 Theoretical Optics II
02 Semester Credits
Study of theories of light, geometric laws of refraction, modern lens theory, and construction as it relates to finishing, surfacing, and dispensing of complex and special lens types. Includes calculation of refractive errors, corrective methods and calculating American National Standards Institute (ANSI) standards for complex ophthalmic eyewear.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): OPT-1310 Theoretical Optics I.

OPT-1410 Mechanical Optics I
02 Semester Credits
Apply knowledge of the production flow, equipment use, and materials used in an optical finishing laboratory. Basic laboratory concepts and manipulative skills required to make a pair of single vision eyewear. Includes topics on laboratory safety, personal safety, application of machine and instrument maintenance.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): Departmental approval: admission to program.

OPT-1420 Mechanical Optics II
02 Semester Credits
Apply knowledge of the production flow, equipment use, and materials used in an optical finishing laboratory. Basic laboratory concepts and manipulative skills required to make a pair of multifocal vision eyewear. Includes topics on laboratory safety, personal safety, application of machine and instrument maintenance.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): OPT-1410 Mechanical Optics I.

OPT-1510 Optical Dispensing I
03 Semester Credits
Introduction, history, and development of modern opticianry, spectacles, fitting procedures. Principles of interpersonal relationships. Instruction in basic frame types and parts.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: admission to Optical Technology Program.

OPT-1520 Optical Dispensing II
03 Semester Credits
Verification of a prescription, ordering the correct absorptive or tinted lenses, basic frame markings and measurements, inserting into frame, and keeping accurate records for future use.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): OPT-1510 Optical Dispensing I.

OPT-1610 Contact Lens I
02 Semester Credits
Focuses on history of contact lenses, differences between hard and soft contact lenses, and physical and physiological properties of contact lenses.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to the program.

OPT-1620 Contact Lens II
03 Semester Credits
Principles of operation and design of instruments applicable to fitting of contact lenses. Optical principles and materials applicable to design processes and relationship to physical condition and structure of the eye in its abnormal state.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): OPT-1610 Contact Lens I.

OPT-1710 Introduction to Patient Care
03 Semester Credits
Introduction to basic ophthalmic patient care procedures, metric conversion, basic optics, lensometry, refraction, tonometry, ocular terminology and the fundamentals of microbial control.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval.

OPT-1720 Advanced Patient Care
03 Semester Credits
Study of skills that are important to an allied health professional in the field of Ophthalmology such as refraction, tonometry, depth perception, pupillary evaluation, and instrument maintenance. Designed to prepare the student to work within an Ophthalmological practice as well as pursue certification as an Ophthalmic Assistant.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): OPT-1710 Introduction to Patient Care.

OPT-1911 Ophthalmic Assisting Directed Practice
04 Semester Credits
Application of learned ophthalmic assisting techniques in a clinical setting. Emphasis on records keeping, preliminary examination of the eye, cleaning and disinfection of equipment, ophthalmic pharmacology, and professionalism.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed practice: 30 hours per week for the duration of 16 weeks.
Prerequisite(s): Concurrent enrollment in OPT-1720 Advanced Patient Care.

OPT-2500 Optical Business
02 Semester Credits
Apply knowledge of organizations, sales, inventory, hiring and supervision to write a business plan; interpret financial data; set sales goals; evaluate inventory control systems; use point of sale software; conduct and interview and respond to a subordinate.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

OPT-2650 License Review Spectacle
01 Semester Credit
Focus on key optical concepts as they relate to spectacles with in-depth look at theory, optical nomenclature, and test domains outlined by American Board of Opticianry Exam.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

OPT-2660 License Review Contact Lens
01 Semester Credit
Focus on key optical concepts as they relate to contact lenses with in-depth look at theory, optical nomenclature, and test domains outlined by the National Contact Lens Exam.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

OPT-2670 Optical Development
02 Semester Credits
Focus on key industry updates as they relate to opticianry and the health care profession. Noted guest speakers in industry will discuss present day realities of opticianry and health care profession.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

OPT-2701 Refractometry
03 Semester Credits
Entry-level knowledge of theory and performance of refraction as it relates to human eye. Study of ocular structures, ametropia neutralization, astigmatism, objective and subjective refraction, anomalies of vision, and clinical refraction and retinoscopy.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): OPT-1710 Introduction to Patient Care, or departmental approval.

OPT-2750 Ophthalmic Third Party Insurance
01 Semester Credit
Specialized study of third party insurance as it relates to Ophthalmology and Optical Dispensing. Discussion of the interpretation of ophthalmic benefits and proper submission of claims form to ophthalmic third party insurance providers.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.

OPT-2940 Optical Field Experience I
0 2 Semester Credits
Supervised field experience in an ophthalmic health care setting designed to emphasize role of dispensing optician. Students gain exposure to professional practice through direct supervision by a licensed optician. Expect students to demonstrate advancing assessment skills and assume more individual responsibility as member of an ophthalmic department.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 24 hours per week for 16 Weeks (384 hours per semester)
Prerequisite(s): Concurrent enrollment in OPT-2971 Optical Field Experience Seminar I.

OPT-2950 Optical Field Experience II
02 Semester Credits
Supervised field experience in a clinical ophthalmic setting designed to emphasize role of dispensing optician. Students assigned to clinical sites under direct supervision of licensed optician. Students take on advanced responsibilities and have more input into decision making process. Demonstrate advanced assessment skills in patient care and business management and assume more individual responsibility as member of optical team.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field Experience: 24 hours per week for 16 Weeks (384 hours per semester)
Prerequisite(s): OPT-2940 Optical Field Experience I, and concurrent enrollment in OPT-2971 Optical Field Experience Seminar I.

OPT-2971 Optical Field Experience Seminar I
03 Semester Credits
Integrates concepts and knowledge gained from field experience rotations into total learning process. Focuses on patient and professional communication and lifelong learning. Discusses current issues.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 3 hours per week.
Prerequisite(s): Concurrent enrollment in OPT-2940 Optical Field Experience I.

OPT-2981 Optical Field Experience Seminar II
03 Semester Credits
Capstone course in Optical Technology. Integrates advanced concepts and knowledge gained from field experience into total learning process. Focus on organization of health care delivery system. Use of more advanced skills and management techniques, payroll, hiring, termination skills, and labor relations. Discussions on current issues included.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 3 hours per week.
Prerequisite(s): Concurrent enrollment in OPT-2950 Optical Field Experience II.

PARALEGAL STUDIES - PL

PL-1000 Introduction to Paralegal Profession
02 Semester Credits
Discussion of practical realities of legal field; special emphasis on legal status of paralegals and ethical constraints placed upon those involved in legal profession. Introduces specific paralegal skills, various legal settings, overview of U.S. legal system, and organization of typical law case. Students expected to begin professional development, including exploring employment opportunities and paralegal organizations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

PL-1300 Civil Procedure
03 Semester Credits
Examine Rules of Courts which govern civil lawsuits, with emphasis on Ohio Rules of Civil Procedure. Analyze and apply rules pertaining to commencement of action, service, motion practice and discovery issues. Students begin portfolio of legal documents developed throughout program of study. Survey alternatives to litigation such as arbitration, negotiation, and mediation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I; and PL-1000 Introduction to Paralegal Profession or concurrent enrollment.

PL-1400 Basic Legal Research and Writing
03 Semester Credits
Introduction to skills essential to effective identification, analysis and research of legal issues. Students learn to formulate research plans that require efficient use of basic research tools to locate primary and secondary authority. Practice in accessing sources commonly used by state court system and drafting projects, such as in-house legal memorandum and opinion letter, consistent with professional standards of style and citation. Emphasis on validating research and quickly accessing statutory and case law.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): ENG-1010 College Composition I; and PL-1000 Introduction to Paralegal Profession or concurrent enrollment.

PL-1460 Workers' Compensation Law
03 Semester Credits
Study of Ohio Bureau of Workers' Compensation and Industrial Commission of Ohio, with emphasis on claims and procedures involving injured workers and benefits available. Preparation of forms to access compensation for injuries, employer defenses, and appeal procedures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): BADM-2340 Human Resource Law and Application, or concurrent enrollment, or departmental approval: admission to Paralegal Studies program.

PL-1501 Law Office Technology
02 Semester Credits
Introduction to specific computer software utilized in law offices including calendaring, billing, docketing and indexing programs. Involves using word processing, spreadsheet and data software to create and manage legal documents and files. Activities constructed to simulate law office experiences and tasks. Designed for student already conversant with basic functions of word processing, database management, and spreadsheet design. Focus on use of computers related to paralegal functions in timekeeping, docket control, litigation support, and case management.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: equivalent experience or skills.

PL-1600 Alternative Dispute Resolution
02 Semester Credits
Description and overview of a variety of dispute resolution mechanisms, including litigation, voluntary arbitration, court-annexed or mandatory arbitration, negotiation, and mediation, in order to demonstrate their interrelationships and their use in the American legal system. Paralegal involvement will be discussed in the context of each of these techniques.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

PL-1700 Employment Law
03 Semester Credits
Overview of laws governing the employment relationship. Specific attention is given to the laws that create the employment relationship, documentation of employment practices, and litigation of employment-related claims. The role of the paralegal in the employment litigation process is explored.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval and admission to the Paralegal Studies Program.

PL-1710 Immigration Law and Procedure
03 Semester Credits
Introduces students to immigration law as an integral part of the administrative process affecting a multitude of socio-economic and geo-political disciplines in the United States and abroad. Reviews substantive immigration law and procedure as it relates to non-immigrants and immigrants.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1000 Introduction to Paralegal Profession.

PL-2000 Law Office Administration
02 Semester Credits
Fundamentals of law office management and organization. Includes basic principles and structure of management, employment opportunities for paralegal, accounting systems, marketing issues, administrative and substantive systems in law office, and law practice technology.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Departmental approval or admission to program.

PL-2030 Legal Nurse Consulting
02 Semester Credits
Study of functions of Legal Nurse Consultant and exploration of career opportunities available. Focus on applicable principles of medical and legal ethics and how to apply them to professional situations.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

PL-2301 Torts and Evidence
04 Semester Credits
Fundamental principles of tort law (personal injury, malpractice, intentional tort, and products liability) to explore paralegal responsibilities in trial setting. Students collect and prepare evidence according to Ohio and Federal rules of evidence.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2330 Advanced Medicolegal Research
03 Semester Credits
Lexis, Medline, and Internet research. Emphasis on legal and medical resources using legal and medical databases on-line, including the internet. Focuses on medical research used in determining appropriate standards of care and medical research tools.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PL-2030 Legal Nurse Consulting, and PL-1400 Basic Legal Research and Writing, or concurrent enrollment.

PL-2400 Computer Assisted Legal Research
03 Semester Credits
Explore the differences in techniques between traditional and electronic legal research. Compare on-line factual and legal research with traditional methods. Formulate inquiries, and process, compile and evaluate material from Lexis, Westlaw and Internet sources. Discuss e-discovery and prepare an appellate brief, using Ohio Citation format.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PL-1000 Introduction to Paralegal Profession and PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing or departmental approval.

PL-2410 Intellectual Property
03 Semester Credits
Overview of intellectual property, including review of basics of personal property law, contract law and how and why each relates to ownership and transfer of intellectual property. Examination of trade secrets, patents, trademarks and service marks, and copyrights. Discussion of what is protected, duration of protection, fair use doctrine, and theft of service statutes.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2420 Probate Law
03 Semester Credits
Survey common forms of estate administration with focus on study of Ohio Probate Code relating to post-mortem estate administration. Define procedure for estate administration including discovery and determination of assets, appointment of fiduciary, taxation and transfer of property from decedent to beneficiaries. Define modes of property ownership.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2430 Medical Record Review and Analysis
04 Semester Credits
Study of production and preparation of medical record summaries. Focus on performance of investigative functions and witness preparation. Includes identifying standards of care; accessing, interpreting, and summarizing medical records; and interviewing clients, medical witnesses and experts. Lab component offers variety of computer and professional experience. Continued development of professional portfolio.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): PL-2301 Torts and Evidence or concurrent enrollment; and PL-2330 Advanced Medicolegal Research or concurrent enrollment.

PL-2440 Business Transactions
03 Semester Credits
Introduction to the laws that structure various business relationships such as agency, contracts, bailments, sales, secured transactions and commercial paper. Utilization of appropriate forms to structure such relationships.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2460 Business Organizations
03 Semester Credits
Introduction to various business entities including sole proprietorships, partnerships, corporations, and licensed professional associations. Drafting of partnership agreements and incorporation documents. Introduction to tax consideration and Securities and Exchange Commission ramifications.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure or concurrent enrollment, and PL-1400 Basic Legal Research and Writing or concurrent enrollment.

PL-2510 Juvenile Law
02 Semester Credits
Designed to train students to effectively assist the juvenile law practitioner. Topics covered include abuse-neglect-dependency; juvenile delinquency; custody, support, and visitation issues; and paternity. The student will learn the basics of Ohio juvenile law, and how to analyze juvenile issues. Students will survey and discuss current and ongoing juvenile law-related issues of importance and concern.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure.

PL-2520 Debtor/Creditor Law
03 Semester Credits
Study of basic legal principles governing rights and duties of debtors and creditors. Introduction to the Law of Bankruptcy, specifically Chapters 7, 11 and 13 of the United States Bankruptcy Code and applicable Ohio law. Preparation of bankruptcy petitions, related schedules and documents needed for initial filing of petitions. Debt counseling protection, compromise and collection techniques including garnishment, foreclosure and attachment of personal property explored.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2530 Marketing and Management for the Legal Nurse Consultant
01 Semester Credit
Development of skills necessary to be independent consultant. Focus on marketing techniques, client development, case management, billing, promotional tools, and tax implications for legal nurse consultant.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, PL-2430 Medical Record Review and Analysis or concurrent enrollment.

PL-2540 Family Law
03 Semester Credits
Basic principles and trends in Family Law including marriage, annulment, dissolution, divorce, child support, child custody, visitation, paternity, surrogacy and adoption. Emphasis on ethical issues, drafting of appropriate documents, preparing discovery, court proceedings, computer-assisted calculations, and conducting interviews to obtain sensitive client information.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure.

PL-2560 Advanced Litigation
03 Semester Credits
Preparation of case for litigation using creation of trial notebook and mock trial. Students gather, draft, organize and summarize trial documents and prepare for courtroom demonstration of litigation process.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PL-1300 Civil Procedure, PL-1400 Basic Legal Research and Writing, and PL-2301 Torts and Evidence.

PL-2851 Paralegal Practicum
01 Semester Credit
Provides supervised work experience in law firm or other legal setting. Student obtains actual work experience by performing paralegal duties under direct supervision of attorney and/or paralegal.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 10 hours per week.
Prerequisite(s): Concurrent enrollment in PL-2990 Paralegal Capstone, and departmental approval: completion of all required courses and completion of all program requirements.

PL-2990 Paralegal Capstone
02 Semester Credits
Capstone course in Paralegal Studies. Students will discuss experiences gained from practical experience. Review of major skills developed during paralegal program. Completion of portfolio, review of ethics of the profession.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: completion of all required courses and completion of all program requirements.

PHARMACY TECHNOLOGY - PHM

PHM-1300 Introduction to Pharmacy Practice
03 Semester Credits
Overview of fundamentals of pharmacy practice including technician's role in drug distribution in various settings; and pharmacy abbreviations and terminology, history, management, organizations, information resources, regulations, law and ethics, and basic job search skills.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

PHM-1350 Pharmacy Practice I
03 Semester Credits
Overview of fundamentals of pharmacy practice in various practice settings with respect to safe and accurate preparation and distribution of sterile and non-sterile topical and parenteral medications. Students learn the technician's role in drug preparation, drug packaging, and drug labeling.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: admission to program.

PHM-1360 Pharmacy Practice II
03 Semester Credits
Fundamentals of pharmacy practice including technician's role in drug distribution in community, home health care, nursing home, and alternative practice settings. Focuses on oral and topical dosage forms including handling, preparation, packaging, labeling, and distribution.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PHM-1350 Pharmacy Practice I, or departmental approval.

PHM-1450 Pharmacology and Therapeutic Principles I
03 Semester Credits
Overview of fundamentals of pharmacology including drug classification, brand and generic drug nomenclature, common drug therapy associated with various disease states, drug indications, side effects, and parameters for safe drug usage.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: admission to program.

PHM-1460 Pharmacology and Therapeutic Principles II
03 Semester Credits
Fundamentals of pharmacology including drug classification, brand and generic drug nomenclature, common drug therapy associated with various disease states, drug indications, side effects, and parameters for safe drug usage.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PHM-1450 Pharmacology and Therapeutic Principles I, or departmental approval.

PHM-1860 Pharmacy Technology Practicum I
03 Semester Credits
Supervised practical field experience designed to emphasize role of technician in various traditional practice settings. Students assigned to practicum training sites and work under direct supervision of registered pharmacists and certified pharmacy technicians to gain exposure to professional practices.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): PHM-1300 Introduction to Pharmacy Practice, PHM-1350 Pharmacy Practice I, PHM-1450 Pharmacology and Therapeutic Principles I, and departmental approval: site assignments.

PHM-2080 Pharmacy Technician Examination Review
01 Semester Credit
Global review of pharmacy practice, pharmacy law, pharmacology, compounding, and calculations. Test taking skills and registration procedure covered. Special focus on exam content outline topics to assist student preparing to take certification examinations for pharmacy technicians.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

PHM-2701 Current Topics in Pharmacy Practice
04 Semester Credits
Capstone course in Pharmacy Technology. Current topics and changes in practice of pharmacy detailed. Among topics discussed: current advances in medications; changing role of pharmacist and pharmacy technician; review of pharmaceutical calculations, substance abuse, biotechnology, AIDS and other communicable diseases; current health issues facing men, women, and children of diverse cultures; drug approval process; critical thinking and problem solving in pharmacy practice; consumer awareness of natural products including current information on herbal products, medication errors, and current status of automation in pharmacy.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PHM-1350 Pharmacy Practice I, PHM-1360 Pharmacy Practice II, PHM-1860 Pharmacy Technology Practicum I, and departmental approval.

PHM-2860 Pharmacy Technology Practicum II
03 Semester Credits
Supervised practical field experience. Emphasis on role of technician in various traditional and non-traditional practice settings. Students assigned to practicum training sites and work under direct supervision of registered pharmacists and certified pharmacy technicians to gain exposure to professional pharmacy practices. Students expected to assume more responsibility and work with less individualized attention.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): PHM-1860 Pharmacy Technology Practicum I, PHM-2701 Current Topics in Pharmacy Practice or concurrent enrollment, and departmental approval.

PHM-2870 Pharmacy Technology Practicum III
03 Semester Credits
Supervised practical field experience. For students who need additional experience in IV admixture, sterile technique, or other advanced pharmacy practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): PHM-2860 Pharmacy Technology Practicum II, and departmental approval.

PHILOSOPHY - PHIL

PHIL-1000 Critical Thinking
03 Semester Credits
Principles of critical and creative thinking with emphasis on practical applications using theories to improve the quality of mindfulness. Incorporation of skillful analysis, assessment and communication in the problem-solving process.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-1010 Introduction to Philosophy
03 Semester Credits
Basic concepts, reasoning skills, and attitudes employed in philosophical inquiry. Study and analysis of perennial philosophical problems through critical examination of writings of classical and contemporary philosophers. Preparation for further work in philosophy and any area of learning requiring reasoned views.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OAH045

PHIL-101H Honors Introduction to Philosophy
03 Semester Credits
Introduction to basic concepts, reasoning skills, and attitudes employed in philosophical inquiry. Study and analysis of perennial philosophical problems through critical examination of writings of classical and contemporary philosophers. Emphasis on an in-depth study of primary sources within philosophical tradition. Prepares students for further work in philosophy and any area of learning requiring reasoned views.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval or eligibility for Honors English.

PHIL-1020 Introduction to Logic
03 Semester Credits
Introduction to evaluation of arguments. Concentration on basic principles of formal logic and application to evaluation of arguments. Explores notions of implication and proof and use of modern techniques of analysis including logical symbolism.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-179H Honors Contract in Philosophy
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing PHIL 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level honors course in Philosophy, whose instructor approves the Honors Contract.

PHIL-2010 Comparative World Religions
03 Semester Credits
Study of origin, nature, and meaning of major world religions: Judaism, Christianity, Islam, Buddhism, Hinduism and Confucianism.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-2020 Ethics
03 Semester Credits
Study of systems and problems of human conduct with applications to moral problems and decisions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OAH046

PHIL-202H Honors Ethics
03 Semester Credits
Study of systems and problems of human conduct with applications to moral problems and decisions. Emphasis on an in-depth study of primary sources within philosophical tradition. Prepares students for further work in philosophy, applied ethics, and any area of learning requiring reasoned views.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG 1010 College Composition I.

PHIL-2031 Philosophy of Science
03 Semester Credits
Study of concept formation in science and examination of patterns of scientific investigation and method. Treatment of concepts such as observation, classification, causality, law of nature, explanation, and theory.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-2040 Philosophy of Art
03 Semester Credits
Examination of types of art theories, their implications for art interpretation, art criticism, creative activity of artist, and appreciation of art objects.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-2050 Bioethics
03 Semester Credits
Study and analysis of moral philosophy as applied to issues in healthcare with emphasis on developing students' abilities to correctly identify moral problems and defend their moral judgments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-205H Honors Bioethics
03 Semester Credits
An in-depth study and analysis of moral philosophy as applied to issues in health and life sciences with emphasis on developing students' abilities to correctly identify moral problems and defend their moral judgments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-101H Honors College Composition I ; or departmental approval.

PHIL-2060 Business Ethics
03 Semester Credits
Application of moral philosophy including ethical theories and moral principles to issues in business and other organizations with an emphasis on developing the student's ability to identify and analyze ethical issues.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-208H Honors Social Justice
03 Semester Credits
An advanced intensive study of systems and problems of human conduct with practical application and decision making components. Emphasis on an in-depth study of primary sources within philosophical tradition. Prepares students for further work in philosophy, applied ethics, and any area of learning requiring reasoned views. Participants will select a theme that addresses questions of social justice and civic responsibility. Mentor supported, student-directed study, seminars and excursions will serve as basis for examination of the chosen theme. Students will create theme-related project proposals for eventual presentation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-101H Honors College Composition I, or departmental approval: 3.5 GPA.

PHYSICAL EDUCATION - PE

PE-1000 Personal Fitness
02 Semester Credits
Introduction to techniques, principles and benefits of personal conditioning program including flexibility, cardiovascular fitness and muscle endurance training.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

PE-1010 Personal Strength Development
02 Semester Credits
Activities which incorporate the five components of fitness: body composition, cardiovascular fitness, muscle strength, muscle endurance and flexibility with emphasis on strength training.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

PE-1020 Weight Training
01 Semester Credit
Basic instruction in theory of using weights to improve muscular fitness and in fundamentals of correct lifting techniques using dumbbells, nautilus, universal and/or various other machines.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1031 Introduction to Lifetime Fitness I
02 Semester Credits
Participation in basic total wellness/fitness education program. Through instruction, supervision, and evaluation, student will exercise with increased knowledge on how to develop a safe fitness program for his/her goals and needs.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

PE-1041 Introduction to Lifetime Fitness II
01 Semester Credit
Designed for students who have completed PE-1031 Introduction to Lifetime Fitness I; PE-1000 Personal Fitness; or PE-1010 Personal Strength Development and desire a more individualized total wellness/fitness education program.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1031 Introduction to Lifetime Fitness I, or PE-1000 Personal Fitness, or PE-1010 Personal Strength Development.

PE-1051 Adapted Lifetime Fitness
01 Semester Credit
Designed for student who desires to participate in individualized circuit training program and has physical limitations which prevent participation in individualized current fitness courses. Students must be registered with the Access Office to enroll. Contact campus director for physical education.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval: must be registered with Access Office.

PE-1060 Cardio-Fitness
01 Semester Credit
Cardio/respiratory conditioning class, consisting of flexibility and aerobic conditioning exercises and use of variety of training machines.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1070 Walking/Jogging
01 Semester Credit
Introduces walking/jogging activities including warm-up, stretching, and cool down.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1080 Low Impact Aerobics
01 Semester Credit
Instruction and practice in aerobic dance movements which involve minimum stress of joints. Includes exercises to improve cardiovascular fitness, flexibility, and muscle tone.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1090 High-Low Aerobics
01 Semester Credit
Instruction and practice in high-low aerobic movements with emphasis on individual performance levels and ways to improve cardiovascular endurance, flexibility and muscle tone.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1100 Step Aerobics
01 Semester Credit
Instruction and practice in aerobic dance movements utilizing a step with emphasis on individual performance levels including techniques to improve cardiovascular fitness, flexibility, muscle tone and strength.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1110 Intermediate Step Aerobics
01 Semester Credit
Emphasizes aerobic dance movements utilizing a step with emphasis on individual performance levels. Students should have step aerobics experience and knowledge of basic step movements and terminology.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval: comparable skills.

PE-1120 Adapted Physical Education
01 Semester Credit
Individualized program for students with temporary or permanent physical limitations. Contact campus director of physical education for registration procedures.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): Must be registered with Access Office.

PE-1130 Archery
01 Semester Credit
Instruction and practice for skill development, safety procedures, equipment care and value as a lifetime activity.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1140 Bowling
01 Semester Credit
Instruction and participation in bowling fundamental skills course.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1150 Golf for Beginners
01 Semester Credit
Instruction in and development of skills, fundamentals of the swing and physical skills of the game.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1160 Golf for Players
01 Semester Credit
Advanced class in golf emphasizing playing game of golf and improving already learned skills. Most of class time scheduled off campus.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1150 Golf for Beginners, or departmental approval: comparable skill.

PE-1170 Racquetball for Beginners
01 Semester Credit
Introduction to fundamentals of racquetball. Opportunities to participate and specialize. Rules, safety, and skills stressed.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1180 Racquetball for Players
01 Semester Credit
Provides advanced instruction and opportunities for students to increase level of skill while playing racquetball in competitively structured class.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1170 Racquetball for Beginners, or departmental approval: comparable skill.

PE-1190 Self-Defense I
01 Semester Credit
Instruction, practice and skill development in basic self-defense. Students gain appreciation of fitness and self-discipline.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1200 Self-Defense II
01 Semester Credit
Advanced participation and practice in understanding of martial arts concept. Emphasis on practice and participation in Korean Tae-Kwon-Do.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1190 Self-Defense I, or departmental approval.

PE-1215 Snowboarding
01 Semester Credit
Development of basic skills of snowboarding, selection and use of equipment, terminology, and safety rules. Extra fee required for off-site snowboarding.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1220 Skiing
01 Semester Credit
Development of basic skiing techniques and safety practices and appreciation of skiing as lifetime activity. Extra fee required for off-site skiing.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1230 Tennis for Beginners
01 Semester Credit
Instruction, practice and skill development of tennis as lifetime activity. Scoring, rules and etiquette of tennis included.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1240 Tennis for Players
01 Semester Credit
Instruction, practice and skill development in tennis with emphasis on Singles and Doubles competition. Additional instruction and drills of beginners skills included.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1230 Tennis for Beginners, or departmental approval.

PE-1250 Track and Field
01 Semester Credit
Introduction to fundamentals of track and field events for men and women. Opportunities to participate and specialize in events.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1260 Basketball
01 Semester Credit
Introduction to fundamentals of basketball for men and women. Rules, safety, and basketball skills stressed.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1270 Softball
01 Semester Credit
Instruction and participation in softball for men and women. Basic softball skills, rules and game strategy stressed.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1280 Soccer
01 Semester Credit
Instruction and participation in soccer for men and women. Basic soccer skills, rules and game strategy stressed.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1290 Volleyball
01 Semester Credit
For men and women. Instruction and practice of volleyball skills including safety procedures, competitive experience, and appreciation of volleyball as lifetime activity.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1300 Aqua Fitness
01 Semester Credit
Non-swimming water fitness class. Includes various types of water workouts in both the shallow and deep ends, cardio and toning components. Swimming skills not required.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1310 Shallow Water Exercise
01 Semester Credit
Shallow water exercises to improve aerobic fitness, muscle tone and flexibility.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1320 Deep Water Exercise
01 Semester Credit
Cardiovascular exercises, muscle toning, strengthening, and flexibility in deep water. Requires students to be comfortable in deep water wearing a buoyancy device.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1330 Swimming I
01 Semester Credit
Fundamental swimming skills for non-swimmers and shallow water swimmers including water adjustment, floating, breathing techniques, basic swimming strokes, and water safety skills.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1340 Swimming II
01 Semester Credit
Swimming for the intermediate and advanced swimmer in the development and/or refinement of a wide variety of swimming strokes. Includes front and back crawl, backstroke, breaststroke, butterfly, sidestroke, elementary backstroke, underwater swimming, turns, and diving. Also includes water safety skills, deep water entry, and treading water.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1330 Swimming I, or departmental approval: equivalent skill.

PE-1350 Swim Conditioning
01 Semester Credit
Designed for students completing Swimming II, or who have equivalent skill and are able to swim length of pool continuously.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1340 Swimming II, or departmental approval: comparable skill.

PE-1370 Cardio Kickboxing
01 Semester Credit
Instruction and practice in a kickboxing/martial arts fitness based program. Emphasis on proper technique, safe kicks, punches, and combinations. Kickboxing movements performed to improve aerobic endurance, flexibility, balance, muscle strength and tone. Instruction and practice with kickboxing bags and gloves included.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1380 Aqua Kickboxing
01 Semester Credit
Traditional kickboxing moves, adapted for the water, conducted in both the shallow and deep ends. Swimming skill is NOT required.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1390 Horsemanship
01 Semester Credit
Instruction and practice for skill in the basics of horseback riding at the walk, trot, canter and trail riding. Basic knowledge of riding equipment, the tack (western), parts and health management of the horse.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1400 Whitewater Rafting
02 Semester Credits
Introduction to outdoor activities including instruction and participation in specific areas such as whitewater rafting, canoeing, or sailing. Includes lecture sessions in preparation for outdoor experience. Activity may include weekend and/or overnight participation. Additional laboratory fees vary according to activity. Check course schedule for specific information.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Departmental approval.

PE-1410 Backpacking
02 Semester Credits
Introduction to outdoor activities, including instruction and participation in specific areas such as backpacking, hiking and orienteering. Includes lecture sessions in preparation for the outdoor experience. Weekend and/or overnight participation required.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Departmental approval: physical fitness test.

PE-1421 Camping
02 Semester Credits
Fundamental class in camping designed to develop basic knowledge and skills pertinent to safe and enjoyable camping. Activity may include weekend and/or overnight participation. Additional laboratory fees vary according to activity. Check current credit schedule for specific information.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): None.

PE-1430 Physical Relaxation Techniques
01 Semester Credit
Introduces the student to basic physical techniques of relaxation including breathing, Jon Kabut-Zinn`s body scan method, active and passive meditation. Includes awareness of body tension and stressors.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1440 Yoga
01 Semester Credit
Emphasis on basic Hatha yoga practice consisting of pranayama (breath control), asanas (postures), vinyasa (flow of postures), mantra (chanting), mudra (hand positioning) and dhyana (meditation) to benefit and bring balance to the body, mind, and spirit. Introduction to basic yoga philosophies also included.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1450 Intermediate Yoga
01 Semester Credit
Emphasis on various Hatha yoga practices at the intermediate and advanced levels. The class will consist of intermediate and advanced pranayama (breath control), asanas (postures), vinyasa (flow of postures), mantra (chanting), and dhyana (meditation) to benefit and bring balance to the body, mind, and spirit.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1460 Pilates
01 Semester Credit
Emphasis on proper breathing, core strength, kinesthetic awareness, mind over muscle, strengthening of opposing muscle groups and disease prevention as it relates to stress.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

PE-1470 Core Strength
01 Semester Credit
Focuses on strengthening the core muscles of the trunk of the body and improving balance. Consists of a warm up, conditioning segment using body weight, stability balls, and other core conditioning equipment, and concludes with a stretching segment.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1480 Yoga and Pilates
01 Semester Credit
Provides instruction, information, and exploration about the mind-body systems of yoga and pilates, with emphasis on physical exercise, relaxation, mindfulness, and self-awareness.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1490 Tai Chi
01 Semester Credits
Explores the traditional Chinese exercise of Tai Chi. Provides for the development of basic skills and techniques that lead toward an integration of mind and body to enhance fitness, health, and well-being. Focus is on the Yang style of 24 forms.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1500 Lifestyle Strategies for Health Promotion
02 Semester Credits
Health risk appraisals and their application to lifestyle behavior promotion. Instruction in strategies to promote healthy lifestyle behavior including stress management, smoking cessation and weight management.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

PE-1510 Beginner Middle Eastern Belly Dance
01 Semester Credit
Emphasizes beginner and advanced beginner Middle Eastern belly dance movements and patterns. Provides an overall body workout to improve and enhance cardiovascular fitness, muscle tone, coordination, balance and self-esteem. No prior experience is required.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1520 Intermediate Middle Eastern Belly Dance
01 Semester Credit
This course will focus on Middle Eastern belly dance movements, patterns, and combinations at the intermediate and advanced levels. Emphasis will be on movements that enhance coordination, balance, flexibility, muscle tone, cardiorespiratory fitness, and self-confidence. Prior experience in Middle Eastern belly dance is required.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PE-1510 Beginner Middle Eastern Belly Dance or departmental approval.

PE-1530 Zumba
01 Semester Credit
Zumba is an aerobic exercise program with choreographed movement routines, featuring fast and slow Latin rhythms. Emphasizes cardiorespiratory fitness, muscular strength and toning, and proper, effective, and safe Zumba techniques at the beginner/advanced beginner level.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-1540 Body Toning
01 Semester Credits
Instruction, practice, and participation in group exercise class consisting of total-body muscular strength and endurance exercises using a variety of equipment and methods.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): None.

PE-2000 Lifeguard Training
02 Semester Credits
Minimum skills training to qualify individuals as nonsurf lifeguard with certification from the American Red Cross in Lifeguard, First Aid and CPR for the Professional Rescuer.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Departmental approval: swimming test defined by Red Cross.

PE-2010 Lifeguard Instructor
02 Semester Credits
Focuses on teaching skills contained in the American Red Cross Lifeguarding, First Aid, CPR for the Professional Rescuer and Community Water Safety courses with American Red Cross certification as a Lifeguard and CPR for Professional Rescuer Instructor.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Departmental approval: 17 years of age by end of class; demonstrate knowledge of lifeguarding and CPR skills.

PE-2020 Water Safety Instructor
02 Semester Credits
Instruction in teaching all skills and courses in the American Red Cross Learn-To-Swim program, Parent and Child Aquatics, Water Safety Courses, and Longfellow`s Whale Tales. Includes American Red Cross certification.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Must be 16 years of age by end of course. Demonstrate the ability to perform the following swimming skills consistent with Stroke Performance charts, level 4: front crawl, back crawl, breaststroke, elementary backstroke and side storke-25 yards each and butterfly 15 yards.

PE-2070 Exercise Prescription for Medical Conditions and Special Populations
02 Semester Credits
Special focus and advanced study of individual exercise prescription for common medical conditions/special populations. Emphasis on exercise testing, training and monitoring of those exercise clients, identification of medical conditions, client safety, and special adaptations for the exercise programming.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, and PE-1500 Lifestyle Strategies for Health Promotion; or departmental approval.

PE-2080 Correlations in Physical Fitness Technology
02 Semester Credits
Formal sessions and comprehensive review covering professional issues and strategies in personal training technology. Special focus on reviewing content of national certification exams, including the American College of Sports Medicine's Exercise Leader and the National Strength and Conditioning Association's Personal Trainer.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PE-2070 Exercise Prescription for Medical Conditions and Special Populations, or departmental approval.

PE-2100 Personal Training
02 Semester Credits
Preparation to pass typical national examination for certification as a personal trainer. Covers anatomy, physiology, biomechanics, strength and fitness theory, performance and weight management, exercise programming, and developing a client base.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): PE-1000 Personal Fitness, or departmental approval: based on comparable experience. (First Aid and CPR certifications are required by most personal training accrediting bodies.)

PHYSICAL SCIENCE - PSCI

PSCI-1010 Astronomy
03 Semester Credits
[This course is cross-listed as PHYS-1010. Credit can only be earned once for either course.] Survey of astronomy. History of astronomy, planets, asteroids and comets, the sun, stars, galaxies, and cosmology. Contemporary issues and developments in astronomy and space science. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

PSCI-101L Astronomy Laboratory
01 Semester Credit
[This course is cross-listed as PHYS-101L Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, optics, telescopes, the sun, constellations, and other related astronomy topics. Laboratory activities complement and enrich related lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): PSCI-1010 Astronomy or concurrent enrollment.

PSCI-1020 Chemistry
03 Semester Credits
[This course is cross-listed as CHEM-1000. Credit can only be earned once for either course.] Survey of chemistry as related to environment, health and nutrition, and application of chemical knowledge that affect quality of life. Basic concepts and applications of chemistry: consumer chemistry, periodicity, acids and bases, medicines and drugs, pollution and conservation. Intended for non-science majors. To fulfill laboratory science requirement, student should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990-Language Fundamentals II; or departmental approval.

PSCI-102L Chemistry Laboratory
01 Semester Credit
[This course is cross-listed as CHEM-100L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, separation and synthesis methods, reaction rates, water analysis, household chemistry, forensic and environmental issues, and other related chemistry topics. Laboratory activities complement and enrich related lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): PSCI-1020 Chemistry or concurrent enrollment.

PSCI-1030 Earth
03 Semester Credits
[This course is cross-listed as ESCI-1030. Credit can only be earned once for either course.] Survey of geology of Earth and its impact on the environment. Earth`s structure and composition, earthquakes, plate tectonics, hydrologic cycle, weather, resources and energy alternatives, and current related issues. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

PSCI-103L Earth Laboratory
01 Semester Credit
[This course is cross-listed as ESCI-103L Credit can only be earned once for either course.] Intended for non-science majors. Exercises on rocks and minerals, soils, weather, plate tectonics, energy and may include other related earth science activities. Laboratory activities complement and enrich related lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): PSCI-1030 Earth or concurrent enrollment.

PHYSICAL THERAPIST ASSISTING TECHNOLOGY - PTAT

PTAT-1100 Introduction to Physical Therapist Assisting
02 Semester Credits
History and principles of physical therapy. Role of physical therapist assistant in relation to physical therapist. Survey of physical therapy treatment procedures. Legal and ethical responsibilities relating to health care service. Discussion of stress, its symptoms and behaviors as related to physical therapy.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I; and MA-1020 Medical Terminology I; and departmental approval.

PTAT-1300 Functional Anatomy
04 Semester Credits
Study of anatomy and function of human body to include head, neck, shoulder girdle, trunk, and upper and lower extremities. Study of motion of human body as basic to application of exercise with emphasis on study of functional problems for analysis of body movement.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, and departmental approval: admission to Physical Therapist Assisting program or Occupational Therapy Assistant program.

PTAT-1310 Fundamentals of Physical Therapy
03 Semester Credits
Fundamental procedures and theory for practice of physical therapy. Posture, movement, body mechanics, lifting and moving patients. Normal gait, joint movement and vital signs. Wheelchair measurement, maintenance and mobility.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Concurrent enrollment in PTAT-1300 Functional Anatomy, BIO-2331 Anatomy and Physiology I, and departmental approval: admission to program.

PTAT-1400 Clinical Pathophysiology
03 Semester Credits
Introduction to medical conditions commonly encountered in practice of physical therapy that affect integumentary, cardiovascular, endocrine and musculoskeletal systems. Disease and injury and process of inflammation and repair of tissue.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, and PTAT-1310 Fundamentals of Physical Therapy.

PTAT-1410 Physical Therapy Procedures
05 Semester Credits
Physical therapy procedures, emphasizing treatment utilizing physical agents. Use and application of modalities that emanate from electromagnetic and acoustic spectra.
Lecture 03 hours. Laboratory 04 hours.
Prerequisite(s): PTAT-1310 Fundamentals of Physical Therapy, and PTAT-1100 Introduction to Physical Therapist Assisting.

PTAT-1420 Therapeutic Exercise
03 Semester Credits
Physical therapy techniques and principles utilized in therapeutic exercise.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, and PTAT-1310 Fundamentals of Physical Therapy.

PTAT-2301 Long Term Physical Therapy Rehabilitation Procedures
04 Semester Credits
Physical therapy techniques and procedures required for long term adult rehabilitation in selected disabilities.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II, and PTAT-1420 Therapeutic Exercise, and departmental approval.

PTAT-2310 Pediatric Physical Therapy
02 Semester Credits
Special considerations of the physical therapy approaches, role, and procedures regarding infants and children. Normal fetal and postnatal growth and development. Examination of wide range of disease and disabilities affecting infants and children, and physical therapy skills necessary for interaction and treatment of this patient population.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II, PTAT-1400 Clinical Pathophysiology, PTAT-1410 Physical Therapy Procedures, and PTAT-1420 Therapeutic Exercise.

PTAT-2330 Geriatric Physical Therapy
02 Semester Credits
Special considerations of physical therapy approaches, role, and procedures regarding the older adult population. Statistics, myths, and legislation regarding aging population. Normal aging and its effects and implications for treatment, wellness, and psychosocial implications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PTAT-1400 Clinical Pathophysiology, and PTAT-2301 Long Term Physical Therapy Rehabilitation Procedures.

PTAT-2340 Psychosocial Issues in Physical Therapy
01 Semester Credit
Psychosocial issues for physical therapy including diagnosis and treatment of common mental illnesses, abuse, and therapeutic use of self.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): PTAT-1100 Introduction to Physical Therapist Assisting.

PTAT-2840 Clinical Practicum I
02 Semester Credits
Capstone course in Physical Therapist Assisting Technology. Application of learned physical therapy techniques in a clinical setting.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 225 hours per semester (37.5 hours per week for 6 weeks).
Prerequisite(s): PTAT-2301 Long Term Physical Therapy Rehabilitation Procedures, and concurrent enrollment in PTAT-2970 Practicum Seminar, and departmental approval.

PTAT-2850 Clinical Practicum II
02 Semester Credits
Capstone course in Physical Therapist Assisting Technology. Application of learned physical therapy techniques in a clinical setting.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Clinical Practicum: 225 hours per semester (37.5 hours per week for 6 weeks).
Prerequisite(s): PTAT-2840 Clinical Practicum I, and concurrent enrollment in PTAT-2970 Practicum Seminar, and departmental approval.

PTAT-2940 Field Experience I
01 Semester Credit
Application of learned physical therapy techniques in a clinical setting.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours per semester.
Prerequisite(s): PTAT-1410 Physical Therapy Procedures, or concurrent enrollment, and PTAT-1420 Therapeutic Exercise, or concurrent enrollment, and departmental approval.

PTAT-2970 Practicum Seminar
01 Semester Credit
Integration of field experience with didactic material and preparation of entry into workforce.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 15 hours per semester.
Prerequisite(s): Concurrent enrollment in PTAT-2840 Clinical Practicum I, and concurrent enrollment in PTAT-2850 Clinical Practicum II.

PHYSICIAN ASSISTANT - PA

PA-1200 History and Physical Exam Techniques I
03 Semester Credits
Instruction and practice in fundamental skills required for effective patient-practitioner communication and development of therapeutic interpersonal relations. Introduction to obtaining and recording the complete medical history including chief complaint, history of present illness, past medical history, social history, family history. Introduction to lifelong learning skills and cultural diversity influences on all aspects of medical practice. Patient counseling and/or patient education theory and techniques discussed. Introduction to physical exam techniques.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Admission to Physician Assistant Program.

PA-1210 History and Physical Exam Techniques II
03 Semester Credits
Instruction, study, and practice of skills required for conduction of a complete physical examination using appropriate equipment, techniques and accurate medical terminology to document findings. Includes instruction to identify and discuss normal and abnormal anatomical structures, body system physiology, pathological conditions, common symptoms of disorders, clinical findings and provide appropriate patient education.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): PA-1200 History and Physical Exam Techniques I, and admission to Physician Assistant Program.

PA-1221 Technical and Surgical Skills I
02 Semester Credits
Presentation and discussion of fundamental technical clinical skills required of Physician Assistant in diagnostic and therapeutic management of primary care and surgical patients. Focus on basic bedside procedures.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Admission to Physician Assistant program.

PA-1231 Technical and Surgical Skills II
02 Semester Credits
Presentation, discussion, and practice of basic surgical skills to prepare patients for, and assist physicians in performing procedures in the surgical arena, ER, hospital, office and clinic.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): Admission to Physician Assistant program.

PA-1240 Clinical Anatomy
04 Semester Credits
In-depth study of clinical anatomy of the human body. Emphasis on important anatomical landmarks required in physical evaluation of patient, anatomical relationships of structures to each other, anatomical components of body systems, and blood and nerve supply to organs and body regions. Includes common pathological processes and topical landmarks related to common surgical procedures. Students analyze, synthesize and apply clinically relevant anatomical information for physical examination, proper diagnosis, appropriate therapy, accurate prognosis in patient care and other clinical procedures.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program.

PA-1250 Clinical Pharmacology
04 Semester Credits
Applying principles of pharmacodynamics in order to calculate drug doses, write and interpret legal and accurate prescriptions for medical conditions.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PA-1600 Clinical Medicine I.

PA-1350 Electrocardiography
01 Semester Credit
Designed to allow students to recognize and interpret electrocardiography (EKG) tracings and their clinical significance, apply ACLS treatment protocols; and educate and communicate with patients and other health care professionals utilizing appropriate medical terminology as it relates to the cardiac conduction system. Technique of 12-lead EKG recording and interpretation presented.
Lecture 00 hours. Laboratory 02 hours.
Prerequisite(s): PA-1610 Clinical Medicine II, and admission to the Physician Assistant program.

PA-1360 Adjuncts to Diagnosis
03 Semester Credits
Introduction to diagnostic and therapeutic procedures utilized to evaluate pulmonary, abdominal, cardiac, skeletal, genitourinary, neurological, and vascular systems. Includes laboratory, radiography, and respiratory methods and techniques, their indications and general principles of interpretation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program.

PA-1370 Behavioral Medicine
02 Semester Credits
Instruction focused on the detection and application of preventive measures and treatment of health risk behaviors including stress, abuse and violence, substance abuse and psychological symptoms and syndromes through basic counseling, patient education and/or appropriate referrals that are sensitive to culture and ethnicity. Introduction to strategies to identify and ease patient reaction to illness and end of life issues and application of those strategies to overcome resistance, encourage therapeutic cooperation, and assist in changing patient's risky behaviors.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PA-1600 Clinical Medicine I, and admission to the Physician Assistant program.

PA-1450 The Physician Assistant Profession and Health Care Issues
02 Semester Credits
Introduction to Physician Assistant profession, health care system, patient education, and issues encountered in primary-care and surgical practice settings. Includes discussion of health maintenance and disease prevention measures; psychiatric/social problems and their management; use of community resources; cultural diversity; home health, inner city, and rural health care; and current issues in health care.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval, or admission to the Physician Assistant program.

PA-1550 The Physician Assistant Profession
01 Semester Credit
Introduction to the PA profession, including information about the history of the profession, AAPA Code of Ethics, credentialing and recertification requirements of the PA profession, the PA professional's role in health care delivery and reimbursement systems, relationship with the supervising physician and other health care professional; information about legislation and governing bodies that affect the profession. Use of appropriate referral sources when patient management is outside scope of PA practice.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program.

PA-1590 Introduction to Clinical Medicine
02 Semester Credits
Presentation of medical problems and diseases encountered in primary care practice. Etiology, signs, symptoms, diagnostic data interpretation, clinical course, methods of management, and potential complications discussed. Differential diagnosis of related or similar disease processes included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician's Assistant program.

PA-1600 Clinical Medicine I
04 Semester Credits
Presentation of medical problems and diseases encountered in primary care practice. Etiology, signs, symptoms, diagnostic data interpretation, clinical course, methods of management, and potential complications discussed. Differential diagnosis of related or similar disease processes included.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program.

PA-1610 Clinical Medicine II
04 Semester Credits
Presentation of medical problems and diseases encountered in primary care practice, emphasizing musculoskeletal, neurological, dermatological, genitourinary and gastrointestinal systems. Etiology, signs, symptoms, diagnostic data interpretation, clinical course, methods of management and potential complications provide framework for lecture and discussion. Differential diagnosis of related and similar diseases included.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program.

PA-1620 Clinical Medicine III
04 Semester Credits
Based on age appropriate and culturally diverse patient clinical presentations, recognize, describe and research disease processes based on signs and symptoms; develop a differential diagnosis, identify and utilize appropriate diagnostic tools to formulate a diagnosis and therapeutic plan for disorders of the obstetrics, gynecology, and pediatrics systems.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program.

PA-2302 Patient Management
02 Semester Credits
This course will provide the student with instruction in patient management by providing the tools for selection and interpretation of diagnostic and therapeutic procedures, correlation of medical history and physical examination data, and integration of diagnostic skills through simulated case studies and problem-solving activities.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): PA-1610 Clinical Medicine II, and PA-1250 Clinical Pharmacology, and admission to the Physician Assistant program.

PA-2330 Advanced Surgical Skills
02 Semester Credits
Presentation, discussion, and demonstration of surgical skills required to perform first assistant tasks during an operative procedure in various surgical sub-specialties. Students problem-solve and research topics related to material covered in previous program courses and surgical sub-specialties through small group review and discussion of case studies.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): PA-1221 Basic Technical Skills, or departmental approval.

PA-2501 Emergency Medicine
04 Semester Credits
Provides an overview of potentially life-threatening illnesses and injuries encountered in emergency situations or in the critically ill patient. Provides the physician assistant student with the essentials of assessment and management for the initial evaluation, stabilization, assessment, management and treatment, patient education, disposition and follow-up of an acutely ill patient requiring expeditious medical, surgical, or psychiatric attention, including awareness of special considerations and cultural diversity of patient populations.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PA-1250 Clinical Pharmacology, and PA-1610 Clinical Medicine II, and admission to the Physician Assistant program.

PA-2510 Fundamentals of Clinical Surgery
03 Semester Credits
Study of pathophysiology, clinical manifestations, and therapeutic management of surgically related disorders of human body.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PA-2330 Advanced Surgical Skills, or departmental approval.

PA-2550 Clinical Decision Making
01 Semester Credit
To encourage and enhance critical thinking and problem solving skills. Apply problem solving skills by participating in case presentations and role playing. Pharmacology review of major drug classifications. Focus on proper selection and administration of drugs, with review of desirable and adverse side effects.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): PA-1610 Clinical Medicine II, or departmental approval.

PA-2600 Clinical Medicine Review
03 Semester Credits
In a problem based learning (PBL) format, review and overview of clinical manifestations and pathophysiology of common diseases affecting patients in primary care setting. When given diagnostic findings, students develop patient management plan and describe patient education relating to the disease or condition presented.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PA-1610 Clinical Medicine II, or departmental approval.

PA-2611 Preparation for Practice
02 Semester Credits
Self-assess knowledge and skills to determine gaps, develop a learning plan and prepare for the Physician Assistant National Certification Exam (PANCE). Plan, develop and present health education to the community and develop a plan for life-long learning.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Physician Assistant program; and PA-1600 Clinical Medicine I, and PA-1610 Clinical Medicine II, and PA-1620 Clinical Medicine III.

PA-2910 Directed Practice I: Primary Care
01 Semester Credit
Supervised practical application in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations and under direct supervision of medical personnel gain exposure to professional practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 160 hours per rotation.
Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2915 Directed Practice I: Surgery
01 Semester Credit
Supervised practical application in clinical surgical health care settings designed to emphasize the role of the physician assistant to the surgeon. Students assigned to clinical rotations, under direct supervision of medical personnel gain exposure to professional practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 160 hours.
Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2920 Directed Practice II: Primary Care
01 Semester Credit
Supervised practical application in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations and under direct supervision of medical personnel gain exposure to professional practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 160 hours per rotation.
Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2925 Directed Practice II: Surgery
01 Semester Credit
Supervised practical application in clinical surgical health care settings designed to emphasize the role of physician assistant to the surgeon. Students assigned to clinical rotations, under direct supervision of medical personnel gain exposure to professional practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 160 hours.
Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2942 Field Experience I
04 Semester Credits
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to primary care physicians. Students assigned to clinical rotations, under direct supervision of medical personnel, gain exposure to professional practice. Students at the beginning of clinical training should demonstrate beginning assessment skills. As clinical experience continues, the student should demonstrate intermediate to advanced skills, and assume increased individual responsibility as member of medical team. Modular courses PA-294A, PA-294B, PA-294C, and PA-294D together will also meet requirements for this course.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 640 hours (160 hours per rotation.)
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-294A Field Experience I: Family Practice
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations and under direct supervision of medical personnel gain exposure to professional practice.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-294B Field Experience I: Women's Health
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations, and under direct supervision of medical personnel gain exposure to professional practice in women's health.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or PA-2982 Field Experience Seminar II, or departmental approval.

PA-294C Field Experience I: General Surgery
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of physician assistant to the surgeon. Students assigned to clinical rotations, and under direct supervision of medical personnel gain exposure to professional practice covering pre/post surgical evaluations and assisting in surgery.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-294D Field Experience I: Internal Medicine
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations, and under direct supervision of medical personnel gain exposure to professional practice. Students at the beginning of clinical training should demonstrate beginning assessment skills. As clinical experience continues, student should demonstrate intermediate to advanced skills, and assume increased individual responsibility as member of medical team.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2952 Field Experience II
04 Semester Credits
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to primary care physicians. Students assigned to clinical rotations, under direct supervision of medical personnel, gain exposure to professional practice. Students at the beginning of clinical training should demonstrate beginning assessment skills. As clinical experience continues, the student should demonstrate intermediate to advanced skills, and assume increased individual responsibility as member of medical team. Modular courses PA-295A, PA-295B, PA-295C, and PA-295D together will also meet requirements for this course.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 640 hours (160 hours per rotation.)
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-295A Field Experience II: Emergency Medicine
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations, and under direct supervision of medical personnel gain exposure to professional practice. Students at the beginning of clinical training should demonstrate beginning assessment skills. As clinical experience continues, student should demonstrate intermediate to advanced skills, and assume increased individual responsibility as member of medical team.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-295B Field Experience II: Geriatrics
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations, and under direct supervision of medical personnel gain exposure to the evaluation and care of the elderly, including illness, aging, nutrition, mental status changes, as well as death and dying.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-295C Field Experience II: Psychiatric/Behavioral Medicine
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations, and under direct supervision of medical personnel, focusing on the interactions of the physical and social environment, cognition, behavior and biology in health and illness.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-295D Field Experience II: Pediatrics
01 Semester Credit
Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations, and under direct supervision of medical personnel, focusing on health and wellness of newborns through adolescents including evaluation treatment and prevention of childhood illness and disease.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 160 hours per rotation.
Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2972 Field Experience Seminar I
01 Semester Credit
Pre- and post-rotational on campus seminars. Integrates concepts and knowledge gained from field experience rotations into total learning process. Focus on patient and professional communication, various professional practice issues and topics, and lifelong learning. Other discussions on current issues included.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 15 hours per semester.
Prerequisite(s): Concurrent enrollment in PA-2942 Field Experience I, or PA-2952 Field Experience II.

PA-2982 Field Experience Seminar II
01 Semester Credit
Post-rotational on campus seminars. Integrates concepts and knowledge gained from field experience rotations into total learning process. Focus on patient and professional communication, various professional practice issues and topics, and lifelong learning.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Seminar: 15 hours per semester.
Prerequisite(s): Concurrent enrollment in PA-2942 Field Experience I, or PA-2952 Field Experience II.

PHYSICS - PHYS

PHYS-1010 Astronomy
03 Semester Credits
[This course is cross-listed as PSCI-1010. Credit can only be earned once for either course.] Survey of astronomy. History of astronomy, planets, asteroids and comets, the sun, stars, galaxies, and cosmology. Contemporary issues and developments in astronomy and space science. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

PHYS-101L Astronomy Laboratory
01 Semester Credits
[This course is cross-listed as PSCI-101L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, optics, telescopes, the sun, constellations, and other related astronomy topics. Laboratory activities complement and enrich related lecture course.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): PHYS-1010 Astronomy or concurrent enrollment.

PHYS-1050 Everyday Physics
02 Semester Credits
Explores application of various fields of physics to everyday living. Household applications, sports applications and other applications discussed. Some modern physics topics introduced.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I; and MATH-0960 Beginning Algebra II, or MATH-0980 Intensified Beginning Algebra.

PHYS-1210 College Physics I
04 Semester Credits
Kinematics, vectors, and Newtonian mechanics (forces and motion, gravitation, energy, momentum, rotational motion, simple harmonic motion), fluids, heat, and thermodynamics. Emphasis on problem-solving using algebra.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra or departmental approval.
OAN Approved: OSC014

PHYS-1220 College Physics II
04 Semester Credits
Electricity, magnetism, waves, sound, light, special relativity, atomic and nuclear physics.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): PHYS-1210 College Physics I.
OAN Approved: OSC015

PHYS-1300 Physics of Optical Materials
04 Semester Credits
Study of basic structure and properties of materials related to opticianry. Includes structure, density, conductivity, and effects of mechanical forces on materials. Special emphasis given to nature and theory of light and application to ophthalmic optics. Demonstrations by use of optical bench, blackboard optics, and other instruments used to facilitate understanding of how light functions.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1060 Survey of Mathematics.

PHYS-2250 Radiographic Physics and Quality Control
04 Semester Credits
Study of x-ray circuitry, x-ray generators, mobile radiographic equipment, radiographic quality control, and use of automatic exposure devices. Includes laboratory application of quality assurance testing tools.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): RADT-1350 Radiographic Technique, and departmental approval: admission to Radiography program.

PHYS-2310 General Physics I
05 Semester Credits
Physics for students majoring in science or engineering. Kinematics and dynamics in one, two, and three dimensions. Conservation laws (energy, momentum, angular momentum); gravitation; simple harmonic motion; heat and thermodynamics. Emphasis on problem-solving using algebra and calculus.
Lecture 04 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1610 Calculus I, or departmental approval.
OAN Approved: OSC016

PHYS-2320 General Physics II
05 Semester Credits
Second semester course for students majoring in science or engineering. Electricity and magnetism; light and optics; waves in elastic media; sound.
Lecture 04 hours. Laboratory 03 hours.
Prerequisite(s): PHYS-2310 General Physics I, and MATH-1620 Calculus II; or departmental approval.
OAN Approved: OSC017

PHYS-2400 Modern Physics
03 Semester Credits
Twentieth-century physics: special relativity, the quantum nature of light, matter waves, the uncertainty principle, hydrogen and hydrogen-like atoms, electron spin, and the nucleus.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PHYS-2320 General Physics II, or departmental approval.

PLANT SCIENCE AND LANDSCAPE TECHNOLOGY - PST

PST-1010 Career Opportunities in Horticulture
01 Semester Credit
Elective course providing an introduction to the diverse careers available in horticulture.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

PST-1300 Horticultural Botany
03 Semester Credits
[This course is cross-listed as BIO-1300. Credit can only be earned once for either course.]
Plant terminology, taxonomy, histology, anatomy, morphology, and physiology are examined. Emphasis on horticultural practices, plant growth principles, and cultural requirements for plant growth.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): ENG-0990 Language Fundamentals II, or eligibility for ENG-1010 College Composition I.

PST-1311 Deciduous Woody Landscape Plants
03 Semester Credits
Covers the correct identification, cultural requirements, potential and correct uses of deciduous trees and shrubs in the landscape.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PST-1300 Horticultural Botany or concurrent enrollment; or BIO-1300 Horticultural Botany, or concurrent enrollment.

PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants
03 Semester Credits
Covers the cultural requirements, growth habits, potential and correct landscape uses of herbaceous annuals, perennials, hardy bulbs, groundcovers, and evergreen trees and shrubs.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PST-1300 Horticultural Botany or BIO-1300 Horticultural Botany.

PST-1330 Plant Propagation
02 Semester Credits
Introduction to the techniques used to create new food and ornamental plant crops.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): None.

PST-1351 Plant Production
03 Semester Credits
Exploration of sexual and asexual propagation of ornamental and food plant materials. Emphasis on basic greenhouse, garden center, small farm, and nursery operations from off season planning, crop timing, pest management, marketing, production, harvesting, and selling.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): None.

PST-1411 Equipment Operations and Safety
02 Semester Credits
An overview of common horticultural hand tools, power tools, and large equipment. Emphasis on safe operation with hands on practice and basic preventative maintenance on each machine.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): None.

PST-1420 Landscape Practices
03 Semester Credits
Study of and practical experience in proper techniques of landscape installation and maintenance. Specifications of American Nursery Association standards emphasized. Diagnosis and resolution of plant problems considered.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.

PST-1431 Graphics for Landscape Design and Construction
02 Semester Credits
Foundation and preparatory course for graphic communication processes and methods used in landscape design and landscape construction. Production and applications of a variety of drawing types and the tools and techniques used to produce them. Types of drawings studied will include; plan, section, elevation, isometric, perspective and freehand sketching. Other graphic techniques studied will include color rendering and construction detailing.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): None.

PST-1441 Introduction to Landscape Design
03 Semester Credits
Foundation course for landscape design. Basic principles, elements and processes of design and their relationship to landscape design. Aesthetic, environmental and programmatic systems analysis and the development of basic site and landscape design projects. Preparation of various design drawing types and models provides exposure to design theories applicable to the use of landform, vegetation, water and structural landscape elements.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): PST-1431 Graphics for Landscape Design and Construction.

PST-1510 Landscape Contracting
03 Semester Credits
In depth study of the two major sides of landscape contracting. Study of landscape maintenance contracting business including turf-grass maintenance, fertilization services, mulching, pruning, bed maintenance, spring and fall clean up, bed edging, aerating, snow and ice removal, and other value added services. Study of landscape construction and installation contracting including the estimation process, construction documentation, permits and regulations, subcontracting, equipment and material logistics, job site management, project management, and basic landscape construction practices.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MATH-1xxx 1000-level MATH course or higher.

PST-1600 Irrigation and Drainage
02 Semester Credits
Provides an operational knowledge of the theory, design, installation, and maintenance of landscape irrigation and drainage systems.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): MATH-1xxx 1000-level MATH course or higher.

PST-2300 Interior Foliage Identification & Culture
02 Semester Credits
Identification, culture, and uses of tropical and other interior plants in the interior plantscape, workplace, and home.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants, or PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants.

PST-2310 Soil Technology
03 Semester Credits
Understanding the critical roles soil plays in horticulture, agriculture, and construction. Emphasis on soil testing, analysis, and building healthier soils.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): CHEM-1000 Everyday Chemistry or PSCI-1020 Chemistry.

PST-2320 Plant Pest Diagnostics
04 Semester Credits
In depth study of Integrated Pest Management tactics as used in the green industry to provide a sustainable approach to care of plants in the agricultural, nursery, and landscape environments.
Lecture 02 hours. Laboratory 06 hours.
Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants or PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants; or departmental approval.

PST-2360 Landscape Design
03 Semester Credits
Capstone course for the plant science landscape contracting option incorporating proficiencies demonstrated from prior courses. Emphasis on landscape design theories including site conditions and customer needs. Includes techniques to move from preliminary sketch to final design.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants, and PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants.

PST-2370 Introduction to Turfgrass
02 Semester Credits
Study of lawn maintenance and installation including fertilization, spraying, mowing, irrigation, selection and establishment, weed and pest identification, and diagnosis of disorders as pertains to commercial, residential, and municipal applications.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): PST-1300 Horticultural Botany, or BIO-1300 Horticultural Botany.

PST-2380 Arboriculture
02 Semester Credits
Study of the tree care industry including fertilization, spraying, pruning, bracing and cabling, equipment operation, climbing techniques, safe work practices, diagnosis of plant disorders. Arborists interaction with client are also studied.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants.

PST-2400 Garden Center and Nursery Management
03 Semester Credits
An in depth study of the management skills needed to successfully operate a garden center or a wholesale nursery growing establishment including management of employees, inventory, suppliers, clients, and legal and regulatory environment. Emphasis placed on ensuring management practices are environmentally sustainable and use the most current technologies available.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PST-1351 Plant Production.

PST-2431 Planting Design
03 Semester Credits
Emphasis on the design relationships of plants to their optimum and intended environments. Basic and advanced planting design principles and techniques that address the aesthetic, environmental and engineering uses of plant material. Preparation of various design project drawing types and a personal plant palette including woody and herbaceous materials for more complex landscape design solutions.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PST-1441 Introduction to Landscape Design.

PST-2440 Design IV - Advanced Landscape Design
03 Semester Credits
Capstone course for the landscape design/build curriculum. Synthesis of the proficiencies gained and demonstrated in prior courses. Design methodologies and solutions to complex design programs. The regulatory and technical requirements involved in complex design issues. Advanced methods of client interview, governmental codes and environmental regulations, budget development, presentation and sales of landscape projects.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PST-2431 Planting Design.

PST-2450 Crop Cycles and Alternative Growing Methods
03 Semester Credits
Students will learn how to bring a food or ornamental crop to market for profit. Determination of which crops will have the highest margin and at what time of year that margin is highest. Non-traditional methods of raising food and ornamental crops and season extension. Applied practice will focus on using high-tunnels, grow pots, slabs, hydroponic, aeroponic, aquaponic growing systems, pot-in-pot, and other soil-less methods.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): PST-1351 Plant Production.

PST-2470 Small Scale Agriculture
01 Semester Credit
Students will receive hands on experience in small scale, urban agriculture. Emphasis is on selecting, planting, cultivating, and growing various crops. Students will be able to assess growing conditions, soil conditions, and economic factors that impact crop production within the urban setting.
Lecture 00 hours. Laboratory 07 hours.
Prerequisite(s): PST-2450 Crop Cycles and Alternative Growing Methods.

PST-2950 Field Experience
03 Semester Credits
Field experience in student's occupational objectives in plant science, landscaping and/or horticulture. Student and employer follow training agreement as developed by student, employer and supervising faculty.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 36 hours per week.
Prerequisite(s): Departmental approval: satisfactory completion of coursework deemed sufficient to prepare the student for entry level work in chosen work area.

POLITICAL SCIENCE - POL

POL-1010 American National Government
03 Semester Credits
Nature, purpose, theories and forms of government of the United States at national level. Relationships between structure, function and process. Dynamics of political change, including role and significance of U.S. Constitution. Current issues of American public policy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS011

POL-101H Honors American National Government
03 Semester Credits
Nature, purpose, and function of government of the United States at the national level. Relationships between structure, function and process. Dynamics of political change, including role and significance of U.S. Constitution. Current issues of American public policy with a focus on the analysis and interpretation of primary source materials.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or eligibility for ENG-101H Honors College Composition I.
OAN Approved: OSS011

POL-1020 State and Local Government
03 Semester Credits
Examination of state and local governments within federal system, intergovernmental relations, metropolitan problems, dynamics of electoral process, including impacts of public policy decisions on individual lives. Several policy areas may be studied.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS014

POL-1040 Introduction to Peace and Conflict Studies
03 Semester Credits
Introduction to conflict analysis and conflict resolution. Provide solid foundation for further inquiry and application. Examines definitions of conflict and diverse views of its resolution. Exploration of contemporary studies of individual behavior and social life as they relate to the origins of conflict and violent and peaceful social change. Specific conflict situations approached through models of sociocultural dynamics.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment; or eligibility for ENG-101H Honors College Composition I, or departmental approval: permission from instructor.

POL-179H Honors Contract in Political Science
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing POL 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level honors course in Political Science, whose instructor approves the Honors Contract.

POL-2030 Comparative Politics
03 Semester Credits
Examination of selected industrialized democracies including the United Kingdom, France and Germany; transitional states including Russia; the theocratic regime in Iran; and one developing country from either Central America, Africa or Asia. Explores the ideological underpinnings, economic systems and most salient political and social issues of each of these case-study states.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and POL-1010 American National Government.

POL-2040 Conflict Resolution Skills
03 Semester Credits
Skills-based course in conflict management and resolution. Increase awareness, develop skills, and gain knowledge of constructive conflict management processes and approaches. Explore causes of conflict, conflict styles, and interpersonal conflict communication skills such as assertiveness and active listening. Introduce constructive conflict management approaches including negotiation, mediation, nonviolent action and Alternative Dispute Resolution approaches.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I; or departmental approval.

POL-2050 Study Abroad in Peace and Conflict Resolution
03 Semester Credits
Study abroad opportunity covering theory and practice of Conflict Resolution and Peace Studies. Students will have an opportunity to meet with decision makers across fields while experiencing the rich culture of the country/countries. Students will begin to understand issues from multiple cultural perspectives, enhance their intercultural communication and adjustment skills, and analyze conflict resolution efforts and their impact at multiple levels. Basic language and cultural instruction will be included along with excursions to areas of interest. Requires participation in a travel abroad experience. Additional costs required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and POL-1040 Introduction to Peace and Conflict Studies, and POL-2040 Conflict Resolution Skills, and departmental approval instructor permission required.

POL-2060 Political Systems of Africa
03 Semester Credits
Comparative discussion of selected topics in Africa with particular focus on the interrelationship between internal and external affairs. Examination of colonial policies, party systems, interest groups and modes of development.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): POL-1010 American National Government is recommended.

POL-2070 International Relations
03 Semester Credits
Study of International Relations. Explores how individuals, Nation-States, non-governmental and international organizations interact with one another. Emphasis on major subfields of security and political economy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and POL-1010 American National Government.
OAN Approved: OSS012

POL-2100 Constitutional Law
03 Semester Credits
The origins and development of American constitutional and legal system. Emphasizes the structure and role of Supreme Court in constitutional interpretation and major decisions concerning important areas of litigation. Major areas of emphasis include federalism, separation of powers, civil liberties, civil rights, and rights of the criminally accused. Historical and current court cases discussed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and POL-1010 American National Government.

POL-2110 Terrorism and Counterterrorism
03 Semester Credits
Interdisciplinary examination of terrorism within its historical context. Examine select acts of global and domestic terrorism. Analyze terrorism and its social, economic, religious and ideological dimensions. Includes how democratic nations should respond to terrorism and terrorism in the future.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I.

POL-2120 Women and Politics
03 Semester Credits
[This course is cross-listed as WST-2120. Credit can only be earned once for either course.] This course examines women's political life in the United States. Women's involvement in all aspects of the political process will be addressed. Substantive areas include women and democracy, their political participation, and role in governing institutions. The course also includes discussion on the struggle for equal rights and issues of public policy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): POL-1010 American National Government, or HIST-1020 History of Civilization II, or HIST-1520 United States History Since 1877.

POL-2130 Politics of Race
03 Semester Credits
Analysis of minority group interactions within the American political system. Focus on the strategies employed both within and outside government to achieve political ideals and their roles and political behaviors in national, state, and local levels
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or POL-1010 American National Government.

POL-2140 Implementing Peace Studies and Conflict Management Theories and Practices with Service Learning
03 Semester Credits
This course will integrate theories and skills in Peace Studies and Conflict Management with service learning. Students will gain practical experience, serve their community, and engage with issues surrounding the promotion of social justice, social service, or conflict management at local, regional, national, or international levels. A minimum of 40 hours service learning required over the course of the semester.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): POL-1040 Introduction to Peace and Conflict Studies, and POL-2040 Conflict Resolution Skills.

PRACTICAL NURSING - PNUR

PNUR-1300 Introduction to Patient Care
02 Semester Credits
Principles and practices of basic nursing care to individuals with selected health deviations. Designed for those students without hands-on patient care experience. Clinical lab test out is available for students that are currently STNAs or PCAs to demonstrate proficiency and qualify to have this course waived.
Lecture 01 hour. Laboratory 03 hours.
Other Required Hours: Laboratory: On-campus 03 hours.
Prerequisite(s): Departmental approval: admission to Practical Nursing Program; and BIO-1050 Human Biology or concurrent enrollment; and BIO-105L Human Biology Laboratory or concurrent enrollment; ENG-1010 College Composition I, or concurrent enrollment; MATH-1141 Applied Algebra and Mathematical Reasoning, or concurrent enrollment, and concurrent enrollment in PNUR-1321 Nursing Management of Adults I.

PNUR-1321 Nursing Management of Adults I
07 Semester Credits
Use of the nursing process and scientific principles in providing care for patients with various health problems, the body's response to illness and stress, and its adaptations. Identifies common nursing interventions to meet basic needs of the adult patient.
Lecture 04 hours. Laboratory 09 hours.
Other Required Hours: Laboratory: On-campus and Clinical: 09 hours.
Prerequisite(s): Departmental approval: admission to Practical Nursing Program, and BIO-1050 Human Biology, or concurrent enrollment; and BIO-105L Human Biology Laboratory or concurrent enrollment; and ENG-1010 College Composition I, or concurrent enrollment; and MATH-1141 Applied Algebra and Mathematical Reasoning, or concurrent enrollment.

PNUR-1330 Nursing Management of Adults II
08 Semester Credits
Focuses on care of adults with acute and recurring medical and surgical conditions. Students develop skills in problem-solving through use of the nursing process as applied to individual situations, with goal of providing safe, competent, and standard nursing interventions to individual adult patient.
Lecture 04 hours. Laboratory 12 hours.
Other Required Hours: Laboratory: On-campus and Clinical: 12 hours.
Prerequisite(s): PNUR-1321 Nursing Management of Adults I and PNUR-1300 Introduction to Patient Care, BIO-1050 Human Biology or concurrent enrollment; and BIO-105L Human Biology Laboratory or concurrent enrollment; and PSY-1010 General Psychology or concurrent enrollment, and departmental approval: admission to Practical Nursing Program.

PNUR-1341 Lifespan Nursing for the Practical Nurse
04 Semester Credits
Designed to provide nursing care to individuals with selected health deviations across the lifespan. Emphasis on nursing responsibility in assessment of normal and abnormal occurrences. Childbearing experience, nursing skills, and measures related primarily to ill newborn, children and adolescents considered in relation to entire family. Emotional and physical aspects incorporated. Provides opportunity for leadership in the adult health care setting, with multiple patients.
Lecture 02 hours. Laboratory 06 hours.
Other Required Hours: Laboratory: on campus and clinical hours 06.
Prerequisite(s): PSY-2020 Life Span Development, or concurrent enrollment; and PNUR-1330 Nursing Management of Adults II and departmental approval.

PSYCHOLOGY - PSY

PSY-1010 General Psychology
03 Semester Credits
Scientific study of human behavior. Topics include the history of psychology, scientific methods, biological processes, sensation and perception, consciousness, learning, intelligence, human development, motivation and emotion, personality, abnormal behavior, social psychology and diversity.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OSS0015

PSY-101H Honors General Psychology
03 Semester Credits
Examination of historical and conceptual foundations of modern psychology, its methodology and enduring issues within subdisciplines. Research basis of psychology and discussion of original source materials emphasized.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Completion of ENG-1010 College Composition I with B or higher or eligibility for ENG-101H Honors College Composition I, or psychology departmental approval.

PSY-1050 Introduction to Industrial/Organizational Psychology
03 Semester Credits
Focuses on the application of research to the workplace and provides an overview of psychological principles as they relate to issues of industry and organizations. Topics include personnel selection, job analysis and design, job descriptions, training, motivational theories, job attitudes, performance appraisal, testing and assessment, teamwork, stress, workplace violence and U.S. employment laws related to personnel decisions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

PSY-1060 Cross-Cultural Competency for Health Care Providers
01 Semester Credit
Focuses on cultural sensitivity, diversity awareness and multicultural communication skills for health care providers. Includes communicating with patients in ways that are culturally aware and sensitive. Practice communication skills using scenarios involving patients of diverse backgrounds.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, and DMS-1303 Introduction to Sonography, and DMS-1351 Patient Care Skills.

PSY-179H Honors Contract in Psychology
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing PSY 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Psychology, whose instructor approves Honors Contract.

PSY-2010 Child Growth and Development
03 Semester Credits
Study of human growth and development from conception through puberty. Emphasis on biological, cognitive, social and emotional development. Physiological and psychological processes examined. Major developmental issues examined from diverse perspectives.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS045

PSY-201H Honors Child Growth and Development
03 Semester Credits
The physical, intellectual, personal and social development of humans from conception through adolescence is examined from the perspective of multiple psychological theories. Basic and applied research in developmental psychology is emphasized.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-101H Honors General Psychology or PSY-1010 General Psychology, with a grade of "B" or higher; or departmental approval.

PSY-2020 Life Span Development
04 Semester Credits
Study of human growth and development throughout the life span. Emphasis on biological, cognitive, social and emotional development. Major issues examined from diverse perspectives.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS048

PSY-202H Honors Life Span Development
04 Semester Credits
Study of human growth and development throughout the life span. Analysis and evaluation of major theories and research findings in the field of developmental psychology. Emphasis on biological, cognitive, social and emotional development. Examine the impact of diversity/culture on life span development. Appraise the major issues of life span development and the influence of diversity/culture. Students will analyze, appraise and apply the major developmental theories to everyday life scenarios. Students will construct an understanding of cross cultural development across the life span.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology with a grade of "B" or higher; or PSY-101H Honors General Psychology; and ENG-1010 College Composition I or ENG-101H Honors College Composition I.

PSY-2040 Social Psychology
03 Semester Credits
Social influence on the individual's ideas and behaviors; emphasis on issues such as attraction, prejudice, conformity and interpersonal communication.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS016

PSY-2050 Psychology of Personality
03 Semester Credits
Scientific study of personality, including motivation and development. Normal and abnormal personality considered along with its clinical applications and relevance to business and industry.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS018

PSY-2060 Adolescent Psychology
03 Semester Credits
Examines human development from puberty to young adulthood from a variety of perspectives. Variations in development related to gender, social and cultural factors considered. Includes physical and sexual maturation; identity and self-image; family and peer relations; social, emotional and moral behavior; cognition and academic performance; work and leisure behavior; and transition to independence.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS046

PSY-2070 Behavior Modification
03 Semester Credits
Basic conditioning and learning principles emphasizing primary, social and token reinforcement. Applications to normal and abnormal behavior and uses in the home, school, work, hospital and correctional settings. Implications and ethics of behavioral control examined.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

PSY-2080 Abnormal Psychology
03 Semester Credits
Descriptive survey of behavioral and psychological disorders. Topics include past and present views of abnormal behavior; diagnostic and assessment procedures; classification; and causes, prevention and remediation of disorders.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS017

PSY-2100 Introduction to Aging
03 Semester Credits
Overview of the psychological aspects of maturation. Consideration of biological, emotional, perceptual, cognitive and psychosocial conditions encountered in young, middle-aged and senior adults.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OSS047

PSY-2110 Educational Psychology
03 Semester Credits
Examines the psychological basis of teaching and learning. Topics include theories of development and learning, learner motivation, learner differences, instructional strategies and assessment. Effects of cultural, social, and emotional factors on educational processes are also examined. This course is a requirement of teacher education programs.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.
OAN Approved: OED003

PSY-2120 Multicultural Health Psychology
03 Semester Credits
Exploration and study of current topics, research, and theory in the specialty of Health Psychology across many cultures. An overview of topics such as psychoneuroimmunology and health, the basic issues and processes. Examination of the connections between the mind and body and the impact of cognition, emotions and behavior (lifestyle choices) on the physiology of common acute and chronic illnesses and cultural influences. Exploration of stress and coping styles with an emphasis on prevention and treatment. A survey of quality-of-life issues as created by health needs and resources available in the community for treatment.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

RADIOGRAPHY - RADT

RADT-1300 Fundamentals of Radiography
04 Semester Credits
Basic study of ionizing radiation relative to its nature, production, interaction with matter and effect on radiographic quality. Includes the fundamentals of radiation protection and image acquisition methods.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval: admission to program.

RADT-1350 Radiographic Technique
03 Semester Credits
Analysis and application of radiographic factors influencing the recording and visibility of radiographic image, considering both film screen and digital technology. Students required to conduct x-ray exposure experiments, under supervision, using standard energized equipment and digital equipment.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): RADT-1300 Fundamentals of Radiography, or departmental approval.

RADT-1400 Radiographic Positioning
03 Semester Credits
Introduction to and application of radiographic positioning for upper and lower extremities, chest, pelvis, abdomen, gastrointestinal and urinary systems including use of contrast media. Basic concepts of patient care and the role of the radiographer as a member of the health care team. Specific radiological patient care skills used in radiology practices. Discussion of legal issues and doctrines with introduction of medico-legal terminology. Special emphasis on the American Registry of Radiologic Technologists' Standards of Ethics.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval: admission to program.

RADT-1410 Intermediate Radiographic Positioning
03 Semester Credits
Essentials of radiographic procedures involving cerebral and facial cranium, vertebral column, thoracic cage, and specific projections of upper extremity articulations. Techniques and positioning variations for trauma, pediatric, geriatric and age specific patients. Communication skills for patient-focused care, being mindful of standard precautions, and appropriate safety practices. Additional hours required for practicing radiographic positioning assignments under direct supervision of registered radiographer.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): RADT-1400 Radiographic Positioning, and departmental approval: admission to program.

RADT-1911 Clinical Radiography I
07 Semester Credits
Supervised sessions emphasizing practical application of radiographic positioning for routine diagnostic and mobile examinations; selection of appropriate radiographic exposures; methods of radiation protection; demonstration of skills related to departmental procedures which are fundamental to the operation of the Radiology department. Clinical experience in hospital environment for 16 weeks.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 36 hours per week to total 576 hours during the semester offering.
Prerequisite(s): Departmental approval: admission to program.

RADT-191S Clinical Radiography I
05 Semester Credits
Supervised sessions provide the student with practical experience to apply basic positioning and patient care skills acquired in didactic studies. Selection of appropriate radiographic exposures and methods of radiation protection as they correlate to radiographic procedures. Clinical experience is gained through general diagnostic procedures, fluoroscopy, mobile radiography and emergency procedures using a competency based format in hospital environment for 10 weeks.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed Practice: 36 hours per week.
Prerequisite(s): Departmental approval: admission to program.

RADT-2350 Radiographic Pathology
03 Semester Credits
Study and identification of selected pathologic conditions. Manifestation of diseases of the human body and their radiographic appearance. Adjustment of techniques due to pathologic changes and best imaging procedures will be covered.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging, and RADT-1350 Radiographic Technique, or departmental approval.

RADT-2361 Interventional Radiography and Pharmacology
02 Semester Credits
Introduction to specialized imaging procedures of Interventional Radiography within Diagnostic Radiography. To provide individuals with knowledge and skills to effectively contribute as a member of specialized imaging teams. Apply basic concepts of pharmacology in Interventional Radiography.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging; and concurrent enrollment in RADT-2350 Radiographic Pathology; and departmental approval: admission to program.

RADT-2400 Imaging Systems
03 Semester Credits
Presentation of imaging systems and imaging modalities. Topics include conventional and digital fluoroscopy, image intensification, video-tape recorders, conventional tomography, computerized tomography, magnetic resonance and mammography.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in RADT-1350 Radiographic Technique.

RADT-2510 Fundamentals of Mammography
04 Semester Credits
Introduction to mammography, historical development, patient education and assessment. Anatomy, physiology and pathology of the breast, including benign and malignant conditions, stages of breast cancer and treatment options. Basic and advanced positioning techniques including special cases such as the post-surgical breast. Case studies and mammography image critique. Study of physics of mammography, instrumentation equipment and quality assurance emphasizing image processing quality control. Modular courses RADT-251A, RADT-251B, RADT-251C and RADT-251D together will also meet requirements for this course.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): Admission to the Mammography program, or departmental approval.

RADT-251A Introduction to Mammography
01 Semester Credits
Introduction to mammography, historical development, patient education and assessment.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251B Anatomy and Pathology of the Breast
01 Semester Credits
Anatomy, physiology and pathology of the breast, including benign and malignant conditions, stages of breast cancer and treatment options.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251C Positioning Techniques for Breast Imaging
01 Semester Credits
Basic and advanced positioning techniques including special cases such as the post surgical breast. Case studies and mammography image critique.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251D Physics of Mammography
01 Semester Credits
Study of physics of mammography, instrumentation equipment and quality assurance emphasizing image processing quality control.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-2520 Advanced Procedures in Mammography
04 Semester Credits
Study of sterile technique, infection control, interventional procedures and OSHA regulations. Ultrasound breast imaging, including anatomy on ultrasound images. Ultrasound physics and ultrasound imaged pathologies. Comprehensive Registry Review. Standards of care, legal issues, and MQSA guidelines for the Breast Center addressed. Accreditation process and preparation for FDA/MQSA inspection. Modular courses RADT-252A, RADT-252B, RADT-252C and RADT-252D together will also meet requirements for this course.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): RADT-2510 Fundamentals of Mammography; or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252A Sterile Technique and Interventional Procedures
01 Semester Credits
Study of sterile technique, infection control, interventional procedures and OSHA regulations as applicable to the Breast Imaging Department.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252B Ultrasound Breast Imaging and Registry Review
01 Semester Credits
Ultrasound breast imaging, including anatomy on ultrasound images. Ultrasound physics and ultrasound imaged pathologies. Comprehensive Registry Review.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252C Legal Issues and MQSA Guidelines
01 Semester Credits
Standards of care, legal issues, and MQSA guidelines for the Breast Center will be addressed.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252D Accreditation Process for Mammography
01 Semester Credits
Accreditation process and preparation for FDA/MQSA/ACR inspection. Study required QC test frequencies and corrective action for ACR/MQSA and manufacturer specifications.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-2911 Clinical Radiography II
07 Semester Credits
Supervised sessions emphasizing practical application of radiographic positioning with emphasis on vertebra, cranium and articulatory system for pediatric, ambulatory and geriatric patients. Clinical experience in hospital environment for 16 weeks.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 36 hours per week to total 576 hours during the clinical semester.
Prerequisite(s): RADT-1911 Clinical Radiography I, and departmental approval: admission to program.

RADT-291S Clinical Radiography II
07 Semester Credits
Supervised sessions emphasizing development of medical imaging skills. Emphasis on cranium, vertebra, and articular system for patients including pediatric and geriatric populations. Experience gained through general diagnostic procedures, fluoroscopy, mobile radiography, and emergency procedures and digital imaging using a competency based system. Clinical experience in hospital environment for 16 weeks.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 36 hours per week.
Prerequisite(s): RADT-191S Clinical Radiography I, and departmental approval: admission to program.

RADT-2921 Clinical Radiography III
05 Semester Credits
Capstone course in Radiology. Supervised sessions emphasizing practical application of radiographic positioning with clinical experience emphasis on selected radiographic procedures including fluoroscopy, special procedures, ER/trauma, surgery, and mobiles and general radiography. Includes use of specialized equipment. Clinical experience in hospital environment for 10 weeks.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 36 hours per week to total 360 hours during the clinical semester.
Prerequisite(s): RADT-2911 Clinical Radiography II, and departmental approval: admission to program.

RADT-292S Clinical Radiography III
07 Semester Credits
Capstone course in Radiography. Supervised sessions provide development and practical application of radiographic positioning during general radiographic procedures, fluoroscopy, tomography, mobile imaging and emergency procedures. Rotations include surgery, cardiovascular and interventional radiography, and digital imaging. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation oncology, and nuclear medicine. Includes use of specialized equipment. Clinical experience in hospital environment for 16 weeks.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 36 hours per week to total 576 hours during the clinical semester.
Prerequisite(s): RADT-291S Clinical Radiography II, and departmental approval: admission to program.

RADT-2930 Mammography Applications
03 Semester Credits
Supervised sessions emphasizing practical application of mammography patient preparation and positioning for diagnostic and screening examinations using appropriate exposures, radiation protection and demonstrating professional/ethical skills. Performance, evaluation and recording of quality control tests, as required by the Mammography Quality Standards Act (MQSA) and the American College of Radiology (ACR), will be documented. Clinical experience in the mammography department of hospital environment for 16 weeks also includes interventional/special examinations.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 16 hours per week.
Prerequisite(s): RADT-2510 Fundamentals of Mammography; or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2520 Advanced Procedures in Mammography; or concurrent enrollment in RADT-252A Sterile Technique and Interventional Procedures, and RADT-252B Ultrasound Breast Imaging and Registry Review, and RADT-252C Legal Issues and MQSA Guidelines, and RADT-252D Accreditation Process for Mammography; or departmental approval.

RECORDING ARTS AND TECHNOLOGY - RAT

RAT-1010 Survey of the Recording Industry
03 Semester Credits
Introduction to the recording industry, intended for students who have a general interest in music, sound recordings and the entertainment industry. Topics include recording industry elements and practices; employment trends and outlook; copyrights, publishing and legal issues; impact of the personal computer and the Internet on the recording industry; how traditional and non-traditional record companies work; tools of the modern recording studio; the history of recorded sound; "critical listening" exercises identifying key elements of popular recorded music styles.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

RAT-1100 Sound Recording and Design
03 Semester Credits
Introduction to theory of sound and recording process for media production. Course topics include principles of sound and hearing, audio terminology, recording equipment operation, storage mediums and recording techniques for location and studio applications. This is an introductory audio course for students interested in audio for video, television, film and digital media arts.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): Departmental approval.

RAT-1160 Making Independent Recordings
03 Semester Credits
Basic guide to making and selling independent recordings. Topics include operation of record companies, recording procedures, planning, budgets, copyrights, publishing, graphics and printing, manufacturing process, promotion and sales strategies, and setting up your own small business.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

RAT-1300 Introduction to Recording
03 Semester Credits
Introduction to theory of sound and the recording process. Study of audio terminology, principles of sound and hearing, basic equipment, recorder operation, analog and digital signal storage methods.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

RAT-1310 Studio Operations
04 Semester Credits
Theory and practical applications of the recording studio. Topics include equipment setup and interface, small console signal flow and operating levels, patch bays, studio documentation, basic voice and commercial recording, editing and mixing techniques.
Lecture 01 hour. Laboratory 06 hours.
Prerequisite(s): RAT-1300 Introduction to Recording or concurrent enrollment, or departmental approval.

RAT-1320 Audio Transducers
03 Semester Credits
Theory, characteristics and operation of various microphone types, loudspeakers, crossovers and speaker/room monitoring considerations.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-1300 Introduction to Recording or concurrent enrollment, and RAT-1310 Studio Operations or concurrent enrollment; or departmental approval.

RAT-1400 Concert Promotion
03 Semester Credits
Provides a basic guide to concert promotion. Topics include concert planning, organization, partnering, booking, sponsorships, contracts, unions, radio, press, television, street teams, flyers, budgets, graphics, printing, promotion and sales strategies, performance rights organizations, insurance, security, governmental regulations, and setting up your own small business. Work as a team to produce an actual concert or concert series.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

RAT-1450 Concert Tour Management
03 Semester Credits
Comprehensive study of live concert tour and road management, and is intended for individuals interested in careers in live music production, recording artists, artist managers, booking agents and record company personnel. Topics include types of tours, budgets, accounting, logistics, tour coordination, interaction with other tour professionals, contracts and merchandising.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): None.

RAT-1500 Recording Theory I
03 Semester Credits
Introduction to practical techniques of multi-track recording. Session operating procedures, multiple microphone placement, track assignment, overdubbing, mixdown, and console and recorder operation included.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): RAT-1320 Audio Transducers, and concurrent enrollment in RAT-1511 Recording Lab I.

RAT-1511 Recordi
ng Lab I
02 Semester Credits
Practical applications of analog and digital theory and techniques covered in Recording Theory I. Student will record and mix multi-track music and audio for video projects in a professional studio environment.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): Concurrent enrollment in RAT-1500 Recording Theory I, or departmental approval.

RAT-1520 Audio Signal Processing
03 Semester Credits
Theory and operation of audio processing equipment. Introduction to entire range of studio effects devices including equalizers, variable gain amplifiers including compressors, limiters, gates and expanders, analog and digital delays and reverberation.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-1500 Recording Theory I or concurrent enrollment, and RAT-1511 Recording Lab I or concurrent enrollment; or departmental approval.

RAT-1530 Digital Audio Theory
03 Semester Credits
Theory, methods and practical applications of current digital recording systems. Topics include tape and disc-based recorders, operating system installation and maintenance, data storage methods, recording, editing and digital signal processing, and integration of digital recording equipment into modern studio environment. Student will demonstrate fundamental proficiencies in current digital recording methods and procedures.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-1300 Introduction to Recording, RAT-1310 Studio Operations, and MUS-1130 MIDI Technology I; or departmental approval.

RAT-1600 Concert Technical Production
03 Semester Credits
Concert Technical Production is a comprehensive applied study of all aspects of venue and show production. Topics include production, lighting, sound, staging, personnel, stage management, stagehand training, touring road crew protocol, venue load in/load out procedures and musical instrument technical support at live music events. Students will apply above principles in weekly labs at live music concerts.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): None.

RAT-2300 Recording Theory II
03 Semester Credits
Continuation of practical techniques of recording. Topics include intermediate recording and mixing theory, recording techniques, critical listening and intermediate ear training.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): RAT-1500 Recording Theory I, and RAT-1511 Recording Lab I, and concurrent enrollment in RAT-2311 Recording Lab II; or departmental approval.

RAT-2311 Recording Lab II
02 Semester Credits
Practical applications of theory and techniques covered in Recording Theory. Student will produce, record and mix various styles of musical and audio for video projects. Includes human relations and talent management.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): Concurrent enrollment in RAT-2300 Recording Theory II, or departmental approval.

RAT-2330 Digital Audio Mixing
03 Semester Credits
Advanced applications of digital audio recording, editing and mixing using current digital console and non-linear workstation environments. Topics include virtual console basics, digital signal processing, plug-ins, digital signal routing, digital automation basics, file interchange and basic project mastering techniques.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-1530 Digital Audio Theory, or departmental approval.

RAT-2341 Location Recording
02 Semester Credits
Techniques used in non-studio recording for news gathering, conference, public speaking, music and sound effects recording. Main emphasis will be hands-on, and students will record, edit and mix a variety of location projects.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): RAT-1320 Audio Transducers, or departmental approval.

RAT-2350 Audio Mastering
03 Semester Credits
Comprehensive applied study of the CD mastering process. Topics include theory and processes of preparing masters for various types of duplication and distribution, including CD, DVD and internet-distributed media formats. Students will perform CD pre-preparation using analog and disc-based editing tools, including current state of the art equalizers, compressors and limiters. The course will also cover current mastering trends, genre specific mastering considerations and archiving from analog and digital source material.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-1520 Audio Signal Processing, RAT-1530 Digital Audio Theory, RAT-2300 Recording Theory II, RAT-2311 Recording Lab II, or departmental approval.

RAT-2440 Sound for Theatre
03 Semester Credits
Introduction to the essentials of theatrical sound. Topics covered include microphone use, microphone placement, amplifications, theatrical acoustics, Foley sound, recorded effects, and production methodology.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, and RAT-1300 Introduction to Recording, and RAT-1310 Studio Operations.

RAT-2520 Acoustics and Recording Studio Design
03 Semester Credits
Principles of sound, room measurement techniques, and discussion of acoustical properties of room materials and their effect on room acoustics. Special emphasis on cost-effective studio design -- how to build a recording studio with limited budget.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

RAT-2540 Live Sound Reinforcement
03 Semester Credits
Theory and operation of various live sound reinforcement systems. Includes acoustics, system setup, signal flow, mixing consoles, microphones, signal processing, amps, crossovers and speaker systems.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-1320 Audio Transducers, or departmental approval.

RAT-2550 Advanced Live Sound Reinforcement
03 Semester Credits
Setup and operate sound systems at live music concerts under the direction of a faculty supervisor. Topics include sound system components, assembly, operation, location recording, technical maintenance and performance. Serve as crew for a minimum of twelve shows during the semester at local venues using small and medium size sound systems.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): RAT-1520 Audio Signal Processing, and RAT-2540 Live Sound Reinforcement.

RAT-2940 Audio Recording Field Experience
01-02 Semester Credits
Cooperative effort between the College and local and national audio-related businesses to provide students with work experience in industry setting. Student, instructor and internship supervisor will develop and implement an "Individual Field Experience Training Plan" which includes general responsibilities, and a training sequence designed to maximize hands-on industry training under actual working conditions.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 to 24 hours per week.
Prerequisite(s): RAT-2990 Recording Arts and Technology Capstone, or departmental approval.

RAT-2990 Recording Arts and Technology Capstone
03 Semester Credits
Capstone course in Recording Arts and Technology. Student will design and implement a capstone recording project that applies the technical, oral, behavioral and written skills learned in previous RAT coursework, resulting in a cumulative evaluation of student recording skills based on established RAT standards. Includes discussion of emerging audio technologies and their impact on recording industry career opportunities.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): RAT-2300 Recording Theory II, and RAT-2311 Recording Lab II.

RELIGIOUS STUDIES - REL

REL-1010 Introduction to Religious Studies
03 Semester Credits
Comprehensive introduction to concepts of religion, attributes of God, myth and symbol, faith and reason, rituals, and overview of major historical religions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

REL-179H Honors Contract in Religious Studies
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing REL 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Religious Studies, whose instructor approves the Honors Contract.

REL-2010 Religious Traditions of Western Christianity
03 Semester Credits
Comprehensive introduction to history, writings, teachings, and liturgical practices of Western Christianity. Includes historical Jesus, new testament church, patristic church, medieval church, Protestant Reformation, and Church today (including ecumenical concerns following the Second Vatican Council).
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2020 Religious Traditions of Judaism
03 Semester Credits
Comprehensive introduction to history, writings, teachings, and liturgical practices of Judaism. Includes historical background, Old Testament, special Jewish festivals, and Judaism's adaptation to modern society.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2030 Religious Traditions of Islam
03 Semester Credits
Comprehensive introduction to history, writings, teachings, and liturgical practices of Islam. Includes historical background, the Quran, special Islamic festivals, and Islam's adaptation to modern society.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2040 Religious Traditions of India
03 Semester Credits
Comprehensive introduction to history, writings, teachings, and liturgical practices of the religious traditions of India. Focus on Hinduism, Jainism and Sikhism.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2050 Religious Traditions of China and Japan
03 Semester Credits
Comprehensive introduction to history, writings, teachings, and liturgical practices of Buddhism, Confucianism, Taoism, and Shinto. Topics include lives and teachings of Buddha, Confucius, and Lao Tzu.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2060 African-American Religious Experience
03 Semester Credits
Comprehensive introduction to religious movements and institutions of African-Americans from the period of slavery to present. Includes historical background, Protestantism, Islam, civil rights movement and modern role of religion in African-American life.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

RESPIRATORY CARE - RESP

RESP-1300 Respiratory Care Equipment
04 Semester Credits
Overview of application of physical principles pertaining to physiologic function and diagnostic and therapeutic modalities employed in field of Respiratory Care. Function and operation of respiratory care equipment: primary gas systems, gas regulating devices, oxygen controllers, humidifiers, nebulizers, oxygen administering devices, oxygen analyzers, airways, manual resuscitators, monitoring and measuring equipment, and sterilization methods.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): Departmental approval.

RESP-1310 Cardiopulmonary Physiology
03 Semester Credits
Physiology of cardiovascular and pulmonary systems with emphasis on electrophysiology of the heart, electrocardiography interpretation, blood flow characteristics and hemodynamics. Pulmonary system emphasis on lung volumes, dynamics of ventilation, pulmonary function tests, diffusion, ventilation to perfusion characteristics, gas transport, oxygenation studies and control of ventilation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

RESP-1320 Acid-Base and Hemodynamics
02 Semester Credits
Overview of acid-base regulation, integrating the physiologic functions of the renal and respiratory systems. Emphasis is on body buffer systems, oxygen and carbon dioxide transport systems, basic chemistry, and circulating blood forces through the body. Patient analysis and principles of equipment used in the analysis of acid base, oxygenation status, cardiac output and cardiac blood pressures will be addressed.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): RESP-1300 Respiratory Care Equipment, and RESP-1310 Cardiopulmonary Physiology.

RESP-1330 Cardiopulmonary Assessment and Pulmonary Diseases
05 Semester Credits
Theory and application of cardiopulmonary assessment, medical records, and charting. Includes physical assessment, assessment of lab values, radiologic evaluation, vital signs, EKG and pulmonary function testing and interpretation. Discussion of diseases including emphysema, chronic bronchitis, asthma, bronchiectasis, cystic fibrosis, pneumoconiosis, adult respiratory distress syndrome, pneumonia, pulmonary edema, cancer, acquired immune deficiency syndrome, tuberculosis, myasthenia gravis, Guillain-Barre and amyotrophic lateral sclerosis. Emphasis is on identifying signs and symptoms of pulmonary diseases and basic respiratory management of the patient.
Lecture 04 hours. Laboratory 03 hours.
Prerequisite(s): RESP-1300 Respiratory Care Equipment, and RESP-1310 Cardiopulmonary Physiology.

RESP-1340 Pharmacology for Respiratory Care
02 Semester Credits
General principles of pharmacology and calculations of drug dosages. Discussion of pharmacological principles and agents used in the treatment of cardiopulmonary disorders.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): RESP-1300 Respiratory Care Equipment, and RESP-1310 Cardiopulmonary Physiology.

RESP-1700 Asthma Management
01 Semester Credit
Introduction to asthma pathology and treatment. Emphasizes web-based education to asthma symptoms, risk factors, severity, pharmacologic treatment, and care plans. Cultural concepts of health and disease.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

RESP-2210 Introduction to Mechanical Ventilation
01 Semester Credit
Introduction to mechanical ventilation with special emphasis on ventilator terminology. Covers information necessary to understand basic functions of a life-support ventilator.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in RESP-2910 Respiratory Care Directed Practice I.

RESP-2300 Basic Therapeutic Procedures
03 Semester Credits
Theory, clinical application and analysis of basic respiratory care procedures. Emphasis on oxygen therapy, medical gas therapy, tracheal suctioning, humidity and aerosol therapy, chest physical therapy, incentive spirometry, intermittent positive pressure breathing, airway management, bronchoscopy, and thoracotomy tubes.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): RESP-1330 Cardiopulmonary Assessment and Pulmonary Diseases.

RESP-2310 Mechanical Ventilation
04 Semester Credits
Theory and application of mechanical ventilation techniques with emphasis on mechanical ventilator characteristics, physiologic effects, patient set-up and evaluation, maintenance of oxygenation, weaning techniques, and nutritional concerns. Discussion on ventilator management and the use of high frequency ventilation. Discussion on the medicolegal issues involving life support systems.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): RESP-2210 Introduction to Mechanical Ventilation, and concurrent enrollment in RESP-2920 Respiratory Care Directed Practice II.

RESP-2320 Pediatric/Neonatal Respiratory Care
02 Semester Credits
Presentation of theory and its practical application to pediatric and neonatal respiratory disease states. Includes pathophysiology, etiology, patient assessment and treatment using equipment unique to this specialty area.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): RESP-2300 Basic Therapeutic Procedures and concurrent enrollment in RESP-2310 Mechanical Ventilation.

RESP-2330 Respiratory Home Care/Rehabilitation
01 Semester Credit
Identification of the therapist's role in home care and pulmonary rehabilitation. Presentation of oxygen therapy and delivery systems in the private home. Procedure for institution and maintenance of home mechanical ventilation. Outline of new trends in home care and pulmonary rehabilitation. Guidelines on setting up hospital-based pulmonary rehabilitation programs along with patient management and follow-up strategies.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): RESP-2920 Respiratory Care Directed Practice II.

RESP-2341 Patient Management Problems
01 Semester Credit
Reinforces the clinical education components of information gathering and decision-making specific to assessment and treatment of cardiopulmonary impairment. Specific emphasis placed on the methodologies involved in obtaining and prioritizing diagnostic information. Comprehensive self-assessment at advanced practitioner level of respiratory care steps involved in the research process.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): RESP-2920 Respiratory Care Directed Practice II.

RESP-2910 Respiratory Care Directed Practice I
03 Semester Credits
Directed practice in the clinical setting on respiratory care equipment, policies, and procedures. Emphasis on patient assessment, bedside pulmonary function testing, aerosol therapy, incentive spirometry and oxygen therapy.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 192 hours. (24 hours per week for 8 weeks.)
Prerequisite(s): RESP-1330 Cardiopulmonary Assessment and Pulmonary Diseases, and RESP-1340 Pharmacology for Respiratory Care.

RESP-2920 Respiratory Care Directed Practice II
05 Semester Credits
Directed practice in the clinical setting on respiratory therapy equipment, policies, and procedures. Emphasis on intubation, arterial blood gas punctures and analysis, bronchopulmonary hygiene, intermittent positive pressure breathing, manual ventilation and suctioning, and mechanical ventilation. Clinical activities also include proficiencies completed in patient assessment, aerosol therapy, incentive spirometry, bedside pulmonary function testing, and oxygen therapy.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 360 hours. (24 hours per week for 15 weeks.)
Prerequisite(s): RESP-2310 Mechanical Ventilation or concurrent enrollment, and RESP-2910 Respiratory Care Directed Practice I.

RESP-2930 Respiratory Care Directed Practice III
05 Semester Credits
Capstone course in Respiratory Care. Directed practice in clinical setting on respiratory therapy equipment, policies, and procedures. Emphasis on adult volume/pressure ventilation and continuous positive airway pressure, pulmonary function testing in the laboratory, pediatric patient care, home care, rehabilitation, weaning from mechanical ventilation, respiratory care in the extended care facility environment, and patient transport.
Lecture 01 hour. Laboratory 00 hours.
Other Required Hours: Directed practice: 360 hours. (24 hours per week.)
Prerequisite(s): RESP-2920 Respiratory Care Directed Practice II.

RUSSIAN - RUSS

RUSS-1010 Beginning Russian I
04 Semester Credits
Introduction to modern Russian language. Emphasis on speaking, understanding spoken Russian, reading and writing through multiple approaches including audio, video and computer components. Supporting study of basic principles of grammar.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

RUSS-1020 Beginning Russian II
04 Semester Credits
Continued study of grammar and vocabulary. Oral and written exercises. Reading of texts of medium difficulty. Developing aural comprehension skills and ability for oral expression through patterns learned from audio-visual materials used in classroom.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): RUSS-1010 Beginning Russian I, or departmental approval.

RUSS-2010 Intermediate Russian I
03 Semester Credits
Introduction to more advanced vocabulary and speech patterns and continuation of in-depth study of grammar. Practical application of skills of understanding, speaking, reading and writing Russian. Cultural exposure through reading texts and using multi-media approaches. Attendance at various cultural events may be required.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): RUSS-1020 Beginning Russian II, or departmental approval.

RUSS-2020 Intermediate Russian II
03 Semester Credits
In-depth study of advanced vocabulary and speech patterns, complex sentence structures and grammar. Advanced skills in understanding, speaking, reading and writing. Continued cultural exposure through text reading, film viewing, audio, video and computer materials and discussions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): RUSS-2010 Intermediate Russian I, or departmental approval.

RUSS-2410 Russian Conversation and Composition
03 Semester Credits
Conversation and composition revolve around topics of general interest taken from everyday life. In conversing, students develop pronunciation, intonation, fluency and comprehension skills. Writing fosters practice of familiar terminology mixed with new vocabulary and idioms.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): RUSS-2020 Intermediate Russian II, or departmental approval.

RUSS-2420 Russian Literature and Culture
03 Semester Credits
Survey of Russian literature, emphasizing 19th and 20th centuries, highlighting prose and verse of representative writers and their works in perspective of traditional and contemporary Russian culture.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): RUSS-2020 Intermediate Russian II, or departmental approval.

SOCIOLOGY - SOC

SOC-1010 Introductory Sociology
03 Semester Credits
An overview of the principles, sociological perspectives, theories, concepts, and research methods used in the field with more intensive study in the following areas: culture, socialization, formal organizations, social structure, and social stratification. Additional emphasis is placed on the application of sociology to current events.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OSS021

SOC-101H Honors Introductory Sociology
03 Semester Credits
In-depth analysis of sociological perspectives, theories, concepts, and research methods. Emphasizes thorough comprehension of concepts such as culture, socialization, and social stratification through application of concepts to real-world situations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG 101H Honors College Composition I.

SOC-1020 Social Institutions
03 Semester Credits
Examination of major social institutions; the family, religion, education, polity, economy, and mass communications; employing principles, concepts, theories and research methods.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or SSCI-1030 Introduction to Social Science I, or ANTH-1010 Cultural Anthropology.

SOC-179H Honors Contract in Sociology
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing SOC 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Sociology, whose instructor approves the Honors Contract.

SOC-2010 Social Problems
03 Semester Credits
Analysis of contemporary American social problems such as race, poverty, drugs, sex, violence, crime and delinquency. Sociological approach used to understand underlying factors and history of problems and to evaluate individual and societal solutions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.
OAN Approved: OSS025

SOC-201H Honors Social Problems
03 Semester Credits
In-depth sociological analysis of contemporary social problems in the United States, cross-cultural solutions and their implications for individuals, social institutions and society. Emphasis on application of sociological imagination, sociological theories and multiple research methods to understand social forces that promote social inequalities and their consequences, based on race/ethnicity, gender, social class and other factors. Course culminates in student's clarification and appraisal of personal values, and formulation of personal strategy to influence social policy and affect change regarding a specific social problem examined in the course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, and eligibility for ENG-101H Honors College Composition I.

SOC-2020 Sociology of the Family
03 Semester Credits
Historical, comparative, and contemporary analysis of marriages and families and their relationship to other social institutions. Sociological perspectives used to understand social, psychological and economic aspects of intimate interpersonal relations across the lifecourse and among a variety of lifestyles and cultures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2051 Introduction to Social Welfare
03 Semester Credits
Surveys history, functioning, and social issues of social welfare system relating them to broader American socio-economic and political systems. Special focus on problems of economically and socially disadvantaged groups.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2060 Human Behavior and the Social Environment
03 Semester Credits
Social work perspective on human development across the life cycle. Human diversity approach consistent with the needs of social work students preparing for practice.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, and PSY-1010 General Psychology or PSY-101H Honors General Psychology.

SOC-2070 Poverty in the United States
03 Semester Credits
Survey of social and personal dimensions of life in the inner city and other areas of poverty in United States. For person wishing to develop an in-depth understanding and/or intending to work in such areas.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-2050 Introduction to Social Welfare.

SOC-2100 Aging and Society
03 Semester Credits
Cross-cultural examination of social, biological and psychological process of aging. Societies studied with regards to social characteristics of older citizens, their social roles and relations with various social institutions, friends and voluntary associations. Impact of social class, race, ethnicity, and religion on aging and ageism considered.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2110 Death and Dying
03 Semester Credits
Examination of death and dying through a multi-disciplinary approach to understand the connection of death and dying in various contexts: sociological, ethical, medical, legal, psychological, and religious.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2150 Deviance
03 Semester Credits
Examination of nature of deviance, theories, social and societal reactions. Different types of deviant behavior examined, including sexual deviance, criminal homicide, drugs, medical deviance and other forms of deviant behavior.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2160 Introduction to Criminology
03 Semester Credits
To develop a sociological framework for examining crime. Review and apply major theories of criminal behavior. Critically examine how specific behaviors and social conditions become defined as crime. Use of sociological principles to assess the criminal justice system's ability to deter, punish, and rehabilitate offenders.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ANTH-1010 Cultural Anthropology, or PSY-1010 General Psychology, or SOC-1010 Introductory Sociology, or LAWE-1000 Introduction to Criminal Justice.

SOC-2210 Dating and Intimate Relationships
03 Semester Credits
Intimate relationships studied on life course continuum from pre-teen to late adulthood, taking into consideration the profound effects exerted by ethnicity, race, gender, human sexuality, socioeconomic status, age, and place of residency. Analysis of the state, quality and issues related to various types of intimate relationships over time with emphasis on friendship, dating, cohabitation, marriage, dissolution and resolution. Students use C. Wright Mill's concepts of the sociological imagination, public issues and personal troubles to link events in society to the state of intimate relationships in America today.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or ANTH-1010 Cultural Anthropology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2310 Contemporary American Black-White Relations
03 Semester Credits
Sociological and psychological analysis of contemporary American black-white relations. Study of minority-majority behavior patterns as related to social-historical structure, stratification, and power. Consideration of programs, movements and alternative solutions to present conditions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2410 Sociology of Gender
03 Semester Credits
Analysis of the social construction of gender, gender roles, and gender stratification in American society. Compare gender assumptions within social and cross-cultural contexts. Examine socialization and social psychological influences on gender identity, the impact of gender in relationships, the importance of sex and gender in institutions and organizations, and the impact of recent social movements and social policies.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ANTH-1010 Cultural Anthropology, or SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or any 2000 level course in Sociology.

SOC-2510 Urban Sociology
03 Semester Credits
Analysis of historical development of contemporary metropolis with its challenges to diversity, equality, inclusion, and change. Sociological concepts, theories and research methods used to characterize urban life and examine interrelatedness of social institutions typical of postmodern society. Cross-national comparisons drawn.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2550 Race and Ethnic Relations
03 Semester Credits
Analysis of sources, processes, and consequences of current intergroup relations in the United States; identification of various segments of population, their history and patterns of adaptation to prejudice and discrimination; and exploration of attempts to equalize power differences and structured social inequality. Includes cross-cultural comparisons.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SOC-1010 Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or HIST-2160 African American History 1877-present, or ANTH-1010 Cultural Anthropology.
OAN Approved: OSS024

SOC-2830 Cooperative Field Experience
01-03 Semester Credits
Limited to students in Cooperative Education program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education program.

SPANISH - SPAN

SPAN-1011 Beginning Spanish Language and Cultures I
04 Semester Credits
Introduction to Spanish language and cultures through multiple approaches with emphasis on spoken and written communication, listening and reading comprehension, and cultural awareness. Practice of basic functional Spanish in basic oral (listening-speaking) and written (reading-writing) communication situations and cultural contexts.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): None.

SPAN-1021 Beginning Spanish Language and Cultures II
04 Semester Credits
Second beginning course continues introducing Spanish language and cultures through multiple approaches with emphasis on development of spoken and written communication, listening and reading comprehension, and cultural awareness. Practice of functional Spanish in oral (listening-speaking) and written (reading-writing) communication situations and cultural contexts.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): SPAN-1011 Beginning Spanish I, or one year of high school Spanish, or departmental approval.

SPAN-2010 Intermediate Spanish I
03 Semester Credits
Intensive exercises in written and oral expression. Grammar review and vocabulary building. Study of Spanish and Mexican civilizations. Introduction to literature.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPAN-1021 Beginning Spanish II, or two years of high school Spanish, or departmental approval.

SPAN-2020 Intermediate Spanish II
03 Semester Credits
Intensive exercises in written and oral expression. Additional grammar review and vocabulary building. Further exploration of Spanish.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPAN-2010 Intermediate Spanish I, or three years of high school Spanish, or departmental approval.

SPAN-2411 Spanish Conversation and Composition
03 Semester Credits
Discussion on topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Practice in writing compositions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPAN-2020 Intermediate Spanish II, or concurrent enrollment with departmental approval: three years of high school Spanish.

SPAN-2420 Introduction to Spanish Culture, Civilization, and Literature
03 Semester Credits
Introduction to Spanish civilization and literature from early beginning to present day. Special emphasis on interrelationship between history and geography, and literature of Spain and its culture.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPAN-2020 Intermediate Spanish II, or concurrent enrollment with departmental approval: three years of high school Spanish.

SPAN-2430 Civilization, Culture, and Literature of Latin America
03 Semester Credits
Instruction in Spanish. Civilization and literature of Latin America from pre-Columbian period to present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPAN-2020 Intermediate Spanish II, or concurrent enrollment with departmental approval: three years of high school Spanish.

SPEECH COMMUNICATION - SPCH

SPCH-0910 Basic Communication Skills
03 Semester Credits
Demonstrate ways communication can be processed, distorted, or shared. Special emphasis on personal communication growth, processing information, message analysis and verbal expression as basic communication skills necessary for college achievement.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

SPCH-1000 Fundamentals of Interpersonal Communication
03 Semester Credits
Purpose and process of verbal and non-verbal communication to strengthen daily communication skills. Special emphasis given to perception, self concept, expressing feelings, empathy and listening as learned interpersonal skills. Combines theoretical concepts with experiential learning through lecture, discussion, and simulations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OCM002

SPCH-1010 Fundamentals of Speech Communication
03 Semester Credits
Effective speech communication. Application of principles of speech content and delivery to a variety of practical speaking and listening situations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OCM004

SPCH-101H Honors Fundamentals of Speech Communication
03 Semester Credits
In-depth study and application of effective speech communication. Includes principles of speech content and delivery in a variety of speaking and listening situations. Research in the origins and history of speech including classic Greek, Roman, and contemporary models. Emphasis on speaking and speech evaluation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OCM004

SPCH-1050 Voice and Articulation
03 Semester Credits
Practical course in application of both theory and technique to conscious vocal control and development of articulation and pronunciation standards. Individual and group practice. Performance through exercises and readings.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

SPCH-1210 Group Discussion
03 Semester Credits
Basic elements of communications and small group theory as employed in typical small group situation. Emphasis placed on individual's responsibility in discussion setting, focusing on development of leadership abilities within each group. Analysis of group interaction in problem-solving process for task-oriented groups.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.
OAN Approved: OCM003

SPCH-2010 Advanced Public Speaking
03 Semester Credits
Organizing and presenting informative speeches, persuasive speeches and speeches for special occasions. Emphasis on using evidence and reasoning to support ideas, adapting to the audience, developing effective oral style, and improving physical and vocal attributes of delivery.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPCH-1010 Fundamentals of Speech Communication, or departmental approval: comparable knowledge or skills.

SPCH-2020 Interviewing
03 Semester Credits
Theory and practice of interviewing, including interview structures, questioning techniques and formats, and a range of interview types. Specific practice in selection and workplace interviewing. Modular courses SPCH-202A, SPCH-202B, and SPCH-202C together will also meet requirements for this course.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

SPCH-202A Interviewing Overview
01 Semester Credit
Theory and practice of interviewing, including interview structures, questioning techniques and formats, interviewing etiquette, listening skills, and nonverbal communication issues in interviewing. This course required before taking other interviewing modules on specific interview types. Verify transferability of this modular course with your receiving institution.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

SPCH-202B Selection Interviewing
01 Semester Credit
Theory and practice of selection interviewing, from the point of view of both the applicant and the employer. Verify transferability of this modular course with your receiving institution.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): SPCH-202A Interviewing Overview.

SPCH-202C Workplace Interviewing
01 Semester Credit
Theory and practice of interviewing in the workplace, specifically including performance appraisal, exit, and disciplinary interviews, as well as workplace coaching. Verify transferability of this modular course with your receiving institution.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): SPCH-202A Interviewing Overview.

SPCH-2050 Oral Interpretation
03 Semester Credits
Development of student's oral ability to communicate various types of written material with understanding and appreciation.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPCH-1010 Fundamentals of Speech Communication.

SPCH-2060 Interviewing for Information
01 Semester Credit
Theory and practice of interviewing for information, specifically journalistic and information gathering interviewing, health related interviewing, and survey interviewing. Verify transferability of this course with your receiving institution.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): SPCH-2020 Interviewing, or SPCH-202A Interviewing Overview.

SPCH-2070 Relational Interviewing
01 Semester Credit
Theory and practice of interviewing conducted to affect relationships, specifically problem-solving interviews, persuasive interviews, and counseling interviews. Verify transferability of this course with your receiving institution.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): SPCH-2020 Interviewing or SPCH-202A Interviewing Overview.

SPCH-2110 Argumentation and Debate
03 Semester Credits
Discovering, selecting and evaluating evidence and arrangement into orderly persuasive oral and written argument. Special emphasis on causes and effects of prejudice, remedies and influence of language on human behavior.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPCH-1010 Fundamentals of Speech Communication, or departmental approval: comparable knowledge or skills.

SPCH-2120 Forensics Activity
01 Semester Credit
Participation in variety of forensic activities by assignment including intercollegiate debate, choral reading, reader's theatre, and individual events. (May be repeated for a maximum of three credit hours.)
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): SPCH-2110 Argumentation and Debate, or SPCH-2050 Oral Interpretation, or departmental approval: comparable knowledge or skills.

SPCH-2130 Business and Professional Communication
03 Semester Credits
Familiarizes students with theories and practices of oral communication which occur in organizational/business environment in individual or group situations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPCH-1000 Fundamentals of Interpersonal Communication, or SPCH-1010 Fundamentals of Speech Communication, or SPCH-1210 Group Discussion, or departmental approval: comparable knowledge or skills.

SPCH-2150 Introduction to Speech Pathology
03 Semester Credits
Survey of profession of speech pathology and introduction to various organic and functional speech disorders including deviant articulation, delayed speech development, and stuttering. Techniques for diagnosis and treatment explored.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPCH-1050 Voice and Articulation, and departmental approval: sophomore standing or consent of instructor.

SPCH-2160 Intercultural Communication
03 Semester Credits
Theory and application of communication concepts operating between people of different cultures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

SPCH-2180 Principles of Phonetics
03 Semester Credits
Study of the theory, principles and practices that are employed to describe the sounds of spoken English. Introduction to the International Phonetic Alphabet (IPA) and its application in transcribing the sounds of normal, deviant and accented speech. Course content is relevant to the disciplines of speech and hearing science, education, linguistics and theatre.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SPCH-1050 Voice and Articulation, or departmental approval.

SPORT AND EXERCISE STUDIES - SES

SES-1000 Introduction to Sport and Exercise Studies
01 Semester Credit
An overview of the field of exercise science and the Sport and Exercise Studies program at Cuyahoga Community College. Objectives include describing various aspects of careers, identifying professional resources and organizations, and determining opportunities for advanced study in sport and exercise studies. Requires observation and assignments outside of the classroom.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): None.

SES-1040 Teaching Exercise Training Techniques
03 Semester Credits
Instruction on how to teach basic principles, concepts, and techniques of exercise. Students will learn to instruct resistance training, cardiovascular, and flexibility exercises and activities. Includes proper instructional exercise techniques, guidelines, safety, injury prevention, and basic exercise programming. Students will assist in teaching exercise techniques to PE and/or recreation classes. Outside class assignments may be required.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

SES-1100 Fundamentals of Fitness and Sport Management
03 Semester Credits
Fundamental topics in fitness and sport management including sociocultural dimensions, management and leadership at every level from amateur to professional, ethics, marketing, communication, budget and finance, legal issues, economics, governance, research, and field experience in sport management. Outside visitations to facility sites will be required for this class.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Eligibility for ENG-1010 College Composition I.

SES-1200 Fitness and Wellness Coaching
02 Semester Credits
Concepts of fitness and wellness coaching including health behavior change theories, client assessment, goal setting, evaluation processes, coaching dialogue, and coaching ethics. Students will learn how to develop a coaching approach. Coaching sessions required in class and/or out of class.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): None.

SES-2000 Essentials of Sports Injury Care
03 Semester Credits
Introduces students to injury prevention, basic emergency care, basic sports trauma, risk management, and specific sport conditions relevant to fitness specialists, coaches, and athletic trainers. Practical competency in basic taping, wrapping and bracing.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-1000 Introduction to Sport and Exercise Studies, and SES-1040 Teaching Exercise Training Techniques, and SES-1200 Fitness and Wellness Coaching, and departmental approval: admission to the program and cleared background check.

SES-2100 Sport and Exercise Physiology
03 Semester Credits
Concepts of exercise physiology as it relates to exercise training, physical activity, and sport performance. Analysis of how the body adapts to the acute stress of exercise and the chronic stress of physical training through lecture and lab activities.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2130 Kinesiology: Fundamentals of Human Movement
03 Semester Credits
Study of the basic anatomical and mechanical aspects of human movement. Evaluation of muscle actions, joint motion, and kinesiology principles related to basic motor skills, exercise, dance, and sport.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I and SES-2100 Sport and Exercise Physiology, or departmental approval.

SES-2210 Exercise Testing, Measurement, and Evaluation
03 Semester Credits
Covers basic exercise testing skills, risk stratification, and interpretation of results needed to assess health and physical fitness components. Measurement and evaluation concepts will also be introduced.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-1100 Fundamentals of Fitness and Sport Management and SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2220 Exercise Prescription and Program Design
03 Semester Credits
Design, implement and evaluate appropriate exercise prescriptions and programs for a variety of healthy and "at risk" populations. Behavior change, motivational concepts, and other specific programming issues will also be addressed.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-2210 Exercise Testing, Measurement, and Evaluation, or departmental approval.

SES-2300 Personal Training Certification Preparation
03 Semester Credits
Preparation for nationally accredited personal training certification. Covers exercise physiology, anatomy, kinesiology, biomechanics, exercise techniques, exercise testing, exercise prescription and program design, behavior modification, injury prevention, first aid, legal issues, business issues, and professional ethics.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2310 Advanced Training Concepts and Techniques
03 Semester Credits
Advanced exercise techniques and advanced training program concepts for resistance training, cardiorespiratory training, flexibility training, and sports training.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-1000 Introduction to Sport and Exercise Studies, and SES-1200 Fitness and Wellness Coaching, and SES-1040 Teaching Exercise Training Techniques; and concurrent enrollment in SES-2000 Essentials of Sports Injury Care; and departmental approval: cleared background check.

SES-2320 Group Fitness Instructor
03 Semester Credits
Preparation for career as Group Fitness/ Exercise Instructor. Focus is on developing instructional techniques such as cueing, choreography, and how to safely modify classes to meet the needs of both healthy individuals and special populations for all formats of group exercise classes.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2330 Motor Learning and Development
03 Semester Credits
Introduces key motor learning and motor control concepts and analysis of developing fundamental motor skills.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2340 Analysis of Motor Skills
03 Semester Credits
Introduction to the fundamentals of biomechanics related to human movement and the science of motor skill diagnosis.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2350 Exercise For Special Populations
03 Semester Credits
An overview of procedures, concepts, and modifications related to fitness testing and exercise programming for various life stages and chronic diseases. Benefits of exercise and public health implications for each condition will be addressed.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2400 Sports Coaching: Principles and Concepts
03 Semester Credits
Theories and principles for coaching sports and sport skills. Emphasis on the development of a coaching philosophy, coaching ethics and the impact of contemporary trends and issues on coaching, and skills common to all coaching activities.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): SES-2000 Essentials of Sports Injury Care, or departmental approval.

SES-2840 Practicum: Sport and Exercise Studies
02 Semester Credits
Capstone Course: Apply practical skills by working in the field of health, wellness, and fitness through practicum experience on campus or off site experiences. Health, wellness and fitness assessment, program design, program evaluation, and daily operation of a fitness facility. Includes topics relevant to case studies, exercise programming, legal and safety concerns, continuing education and certification opportunities, job search, and resume building. Completion and submission of professional program portfolio.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: Eight hours a week for fifteen weeks; Seminar 1 hour a week.
Prerequisite(s): SES-2130 Kinesiology: Fundamentals of Human Movement, or concurrent enrollment ; and SES-2220 Exercise Prescription and Program Design, or concurrent enrollment ;and departmental approval.

SURGICAL TECHNOLOGY - SURT

SURT-1000 Survey of Surgical Technology
01 Semester Credits
Designed to familiarize students seeking a career in health-care within the profession of surgical technology. Course provides an overview of history, professional organization, philosophy and practice of surgical technology. Discussion of roles and responsibilities of operating room personnel will also be provided as well as study of asepsis, instrumentation, positioning and draping.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): MA-1020 Medical Terminology I, and departmental approval.

SURT-1300 Introduction to Surgery
05 Semester Credits
Presentation and discussion of development of modern day surgery, organization of operating room department, roles of operating room personnel, health care reform practices, and care of surgical patient. Infection control applicable to operative setting discussed including sterilization of surgical supplies, sterile techniques, and application of sterile techniques in operating room. Discussion of special items used in operating room, general and regional anesthesia, wound healing, sutures, and staplers. Legal and ethical aspects of operating room practice introduced.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in SURT-130L Surgery Lab and departmental approval: Admission to program.

SURT-130L Surgery Lab
02 Semester Credits
Practice of assistant circulating skills and scrub skills of surgical technologist. Patient transportation and transfer skills, operation of the surgical bed, patient positioning, operation of the electrosurgical unit and suction system, sterile techniques utilized when opening and dispensing sterile supplies, hair removal, skin preparation, urinary catheterization, surgical scrub, gowning and gloving. Employability and problem solving skills introduced.
Lecture 00 hour. Laboratory 06 hours.
Prerequisite(s): Concurrent enrollment in SURT-1300 Introduction to Surgery and departmental approval: Admission to program.

SURT-1330 General Surgery
05 Semester Credits
Includes steps of an operative procedure, features of general surgery, hemostasis, operative drains, surgical specimens, layers of abdominal wall, abdominal incisions and laparotomy. Discussion on operative procedures may include hernia procedures of the abdominal region, liver and biliary procedures, pancreas and spleen procedures, gastric and related esophageal procedures, lower gastrointestinal procedures, breast surgery, gynecological and obstetrical procedures, and plastics/reconstructive surgery.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and concurrent enrollment in SURT-1911 Clinical Experience I.

SURT-1700 Sterile Processing Tech I
04 Semester Credits
Presentation and discussion of development and history of a modern Sterile Processing Department. Roles and responsibilities of Sterile Processing Technicians. Review of the anatomy and physiology of the human body in relation to processing of medical devices and patient care equipment. Discussion of basic microbiology and identification of common microbes and diseases found in today's health care environment. Presentation and discussion of infection control techniques in relation to disease transmission. Demonstration of appropriate decontamination techniques and protocol of medical devices and patient care equipment to eliminate the occurrence of a health care acquired infection. Discussion of federal and private organizations affecting daily functions of field of study. Legal and ethical aspects of Sterile Processing practice introduced.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment, and MA-1020 Medical Terminology I, or concurrent enrollment, and MATH-0950 Beginning Algebra I , and concurrent enrollment in SURT-1720 Introduction to Hospital Administration, and departmental approval: admission to Sterile Processing Distribution program.

SURT-1710 Sterile Processing Tech II
04 Semester Credits
Presentation and discussion of techniques and protocol of processing patient care equipment. Review and demonstration of the various packaging methods currently in use in today's health care environment for sterile processing of critical medical devices. Discussion and identification of surgical instruments including techniques for recognizing damage and/or poor working condition to allow technicians to remove for preventive maintenance. Discussion and identification of the various methods of sterilization currently used in health care. Demonstration of appropriate monitoring techniques to achieve required degree of sterile assurance level. Identification of sterile storage procedures and concepts. Review and demonstration of appropriate distribution methods and effect each has on the cost of med/surgical supplies.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): SURT-1700 Sterile Processing Tech I, and SURT-1720 Introduction to Hospital Administration, and concurrent enrollment in SURT-1861, or departmental approval.

SURT-1720 Introduction to Hospital Administration
01 Semester Credit
Presentation and discussion of history, development and current trends in the daily operations of modern hospitals. Hospital governance, administration and management. Review of functions of clinical patient care areas of inpatient care, outpatient care, surgery, emergency services, ancillary diagnostic and rehabilitation services. Review of patient, facility and administrative support services. Discussion of critical interrelated functions of all departments of hospital to insure quality patient care is delivered. Introduction to hospital budgeting, marketing, financing, billing, quality improvement and accreditation. Presentation of case studies to emphasize actual ethical concerns that may be experienced in performance of duties.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Concurrent enrollment in SURT-1700 Sterile Processing Tech I, and admission to the Sterile Processing and Distribution program.

SURT-1861 Clinical Experience: Sterile Processing
02 Semester Credits
Supervised clinical experience in central service/materials management department of health care facility covering principles and practices of cleaning, decontamination, and sterilization of medical instruments and apparatus. Fundamentals of wrapping, sterile set-ups, safety rules and regulations, inventory control, recordkeeping and quality assurance.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Directed Practice: 240 hours per semester.
Prerequisite(s): SURT-1700 Sterile Processing Tech I, and concurrent enrollment in SURT-1710 Sterile Processing Tech II.

SURT-1911 Clinical Experience I
03 Semester Credits
Beginning level scrubbing and instrumentation skills while caring for a surgical patient in operating room at assigned affiliated hospital or surgery center. Skills performed correlate with skills learned in surgery lab. Includes scrubbing, gowning and gloving, back table and mayo set-ups, surgical draping, instrumentation skills, basic procedural knowledge and employability skills. Students perform primarily in the second scrub role, gradually increasing to the first scrub role.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Practicum: 16 hours per week in hospital setting.
Seminar: 1 hour per week.
Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and concurrent enrollment in SURT-1330 General Surgery.

SURT-1921 Clinical Experience II
02 Semester Credits
Practical application of previously learned surgical skills at assigned affiliated hospital. Students perform in both first and second scrub roles during operative procedures, increasing in proficiency. Weekly CST Exam review and post-clinical experience discussion.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Practicum: 16 hours per week in hospital setting for 8-weeks. Seminar: 1 hour per week for 8-weeks.
Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I.

SURT-2300 Surgical Specialties
05 Semester Credits
Presentation and discussion of surgical specialty procedures; includes ophthalmic, otorhinolaryngology, oral/maxillofacial, genitourinary, orthopedic, cardio/thoracic, peripheral vascular, neurosurgery, transplant, and trauma surgical procedures.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I and SURT-1921 Clinical Experience II and concurrent enrollment in SURT-2851 Clinical Experience III.

SURT-2851 Clinical Experience III
03 Semester Credits
Practical application of previously learned surgical skills at assigned affiliated hospital. Basic competency of scrub skills relating to general, gynecological and specialty surgical procedures. Students perform primarily in the first scrub role during operative procedures, increasing in proficiency. Weekly CST Exam review and post-clinical experience discussion.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Practicum: 16 hours per week in hospital setting.
Seminar: 1 hour per week.
Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I and SURT-1921 Clinical Experience II and concurrent enrollment in SURT-2300 Surgical Specialties.

SURT-2862 Clinical Experience IV
04 Semester Credits
Capstone course in Surgical Technology, with a focus on specialty surgical procedures. Practical application of previously learned surgical skills at assigned affiliated hospital. Students perform primarily in the first scrub role. Weekly CST Exam review and post-clinical experience discussion. All students must register and sit for the Certified Surgical Technology (CST) Examination at the end of the course. Each student is responsible to pay all costs associated with the examination.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Practicum: 24 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I and SURT-1921 Clinical Experience II and SURT-2300 Surgical Specialties and SURT-2851 Clinical Experience III.

THEATRE ARTS - THEA

THEA-1010 Theatre Appreciation
03 Semester Credits
Examination of theatre as art form. Study of how playwrights, directors, actors, scenic designers, costumers, make-up artists, and technicians approach their crafts. Students not required to perform.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

THEA-1100 Survey and Appreciation of American Musical Theatre
03 Semester Credits
Survey and appreciation of dramatic, musical and staging development of American musical theatre from 18th century through 20th century, including mega-musicals of the 1990's.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

THEA-1300 Fundamentals of Theatrical Makeup
03 Semester Credits
Practical application of theory and techniques of makeup for performers.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

THEA-1320 Introduction to Stage Costumes
03 Semester Credits
An introduction to the theories, principles and basic skills of costume design. Includes design process, fabrication, construction techniques and methodology.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

THEA-1400 Stage Design I - Scenery
03 Semester Credits
Theory and practice of scenic design. Orientation to creating elements of stage scenery.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

THEA-1410 Stage Design II - Scenery and Lighting
03 Semester Credits
Examination of scenic design styles. Preparation of floor plan, elevations and colored renderings to use in creating a scale model. Study and practice of stage lighting design.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1400 Stage Design I - Scenery, or departmental approval: prior stage design experience.

THEA-1430 Introduction to Scenery and Stagecrafts
03 Semester Credits
Workshop in technical theatre to include scenery, lighting, costumes, properties and sound by classroom study and laboratory work. Interested students may be assigned to productions. Repeatable. No more than six credits may be applied to elective degree requirements.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1010 Theatre Appreciation or concurrent enrollment.

THEA-1440 Introduction to Stage Lighting
03 Semester Credits
An introduction to the historical and technical perspectives of the art of lighting design; emphasis on principals of design within the collaborative process. Topics include properties of light and electricity, how these properties can be influenced, and the equipment used to affect theatrical lighting.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

THEA-1500 Acting I
03 Semester Credits
Exploration of theory and practice of basic tools of acting: body movement, vocal production, and imagination. Introduction to character analysis, scene study and improvisation.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.
OAN Approved: OAH027

THEA-1510 Acting II
03 Semester Credits
In-depth exploration of theory and application of basic techniques of acting: actor's tools, improvisation, character analysis and scene analysis. Introduction to auditioning. Emphasis on refining imaginative, vocal and physical skills required for creating character.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1500 Acting I, or departmental approval: prior acting experience.

THEA-1520 Improvisation and Performance I
03 Semester Credits
Synthesizes concept and technique through the directed practice of improvisational performance. Utilizes the communal/ensemble exercises provided in Spolin's 'Improvisation for the Theatre' to explore the seven aspects of spontaneity and create narrative improvisations. Also, explores concepts of character, behavior in environment, creating the who? what? and where? of dramatic scenes, creating from given circumstances, and will involve themselves with the special problems of improvisation in performance. Course is primarily active and participatory in nature and culminates with a public performance based on this exploration and discovery.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

THEA-1530 Stagecrafts
02 Semester Credits
Workshop in technical theatre: scenery, lighting, costumes, properties and sound by classroom study and/or by assignment in campus theatrical productions. Repeatable. No more than six credits may be applied to elective degree requirements.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): None.

THEA-1540 Rehearsal and Performance
02 Semester Credits
Practical experience for students accepted as cast members of a College theatre production. May be repeated twice - no more than 4 credits to be applied to elective degree requirements.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Concentrated practice: 14 hours per week.
Prerequisite(s): By audition, or Director/Producer approval.
OAN Approved: OAH025

THEA-1550 Practicum in Technical Theatre
02 Semester Credits
Practical experience in stage work in a department production or department approved special project. Emphasis on backstage assistant, carpentry, painting, design assistant, assistant stage manager, stage manager, or assistant technical director. Repeatable. No more than four credits may be applied to elective degree requirements.
Lecture 00 hour. Laboratory 00 hours.
Other Required Hours: Concentrated practice: 14 hours per week.
Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, or concurrent enrollment.

THEA-1600 Acting for the Camera I
03 Semester Credits
Studio situation to learn basic studio and on-location techniques, video performance training, audio broadcast techniques and to acquire mass media experience for use in professional settings or for personal advancement.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

THEA-2010 Script Analysis
03 Semester Credits
Principles, theories and techniques of play script analysis for actor, director, designer, dramaturg, or playwright.
Lecture 03 hours. Laboratory 00 hours.
Other Required Hours: Additional time out of class to attend at least two theatre productions over the length of the course.
Prerequisite(s): THEA-1010 Theatre Appreciation, or ENG-1010 College Composition I.
OAN Approved: OAH024

THEA-2100 Arts Management
03 Semester Credits
Introduction to principles and methods of management of arts and cultural institutions. Detailed study of organizational structures, funding and revenue, facilities scheduling and production, marketing, community relations and legal issues.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

THEA-2210 History of Theatre and Drama I
03 Semester Credits
History of theatre and drama from its origins to Europe's Renaissance. Includes development of physical theatre, evolution of dramatic presentations, theatrical conventions and theatre techniques.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

THEA-2220 History of Theatre and Drama II
03 Semester Credits
Traces history of theatre and drama from Europe's Renaissance to present theatrical conventions. Beginning where History of Theatre and Drama I ends, development of physical theatre, evolution of dramatic presentations, and theatre techniques are covered.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): THEA-2210 History of Theatre and Drama I, or departmental approval.

THEA-2400 Playwriting
03 Semester Credits
Preparation and analysis of short scripts for the stage.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, and THEA-1010 Theatre Appreciation; or departmental approval.

THEA-2440 Sound for Theatre
03 Semester Credits
Introduction to the essentials of theatrical sound. Topics covered include microphone use, microphone placement, amplifications, theatrical acoustics, Foley sound, recorded effects, and production methodology.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, and RAT-1300 Introduction to Recording, and RAT-1310 Studio Operations.

THEA-2450 Drafting For Theatre
03 Semester Credits
Drafting techniques for theatre design and technology students. Topics include plans, elevations, sections, detailed drawings and light plots.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, and THEA-1440 Introduction to Stage Lighting.

THEA-2500 Acting III
03 Semester Credits
Advanced exploration and refinement of acting techniques as applied to various approaches to creating character. Refinement of audition technique. Focus on scene study and methods of characterization.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1510 Acting II, or departmental approval: prior acting experience.

THEA-2510 Acting IV
03 Semester Credits
Application of scene analysis skills and methods of characterization to advanced scene styles. Consideration of period demands. Identification of individual approach to acting.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-2500 Acting III, or departmental approval: prior acting experience.

THEA-2520 Improvisation and Performance II
03 Semester Credits
Synthesize concept and technique through the directed practice of long-form improvisational performance. Apply the skills discovered in Improvisation and Performance to the creation of long-form narrative structures. Develop an advanced improvisational ensemble that performs regularly before a public audience. Apply Spolin's seven aspects of spontaneity to create narrative improvisations from minimal given circumstances. Explore advanced forms of improvisation including musical improvisation, script development from improvisation, subject and incident specific performances and "Harolds". Course is primarily active and participatory in nature and requires participation in numerous public performances based on this exploration.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1520 Improvisation and Performance I.

THEA-2540 Advanced Rehearsal and Performance
02 Semester Credits
Advanced practical experience for students involved in a college theatre production as cast members or stage managers. May be repeated twice - no more than 4 credits to be applied to elective degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Concentrated practice: 14 hours per week.
Prerequisite(s): THEA-1540 Rehearsal and Performance.

THEA-2550 Advanced Practicum in Technical Theatre
02 Semester Credits
Advanced practical experience in stage work in a department production or department approved special project. Emphasis in management of the following: offstage operation, carpentry, painting, or set and lighting design. Title positions can include Assistant Stage Manager or Assistant Technical Director. Repeatable. No more than six credits may be applied to elective degree requirements.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Concentrated practice: 14 hours per week.
Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts.

THEA-2600 Acting for the Camera II
03 Semester Credits
Video performance training leading to the preparation of sample tapes; audition procedures and conduct; financial aspects of local and national market; director for camera; interaction and shot composition.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): THEA-1600 Acting for the Camera I, or departmental approval: prior experience.

THEA-2740 Internship
03 Semester Credits
Provides student with on-the-job application of skills learned in the liberal arts and specifically Theatre. Each internship based on individualized learning contract. Requirement for one credit is 180 hours of approved work per semester.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Internship: 180 clock hours of approved work per credit hour.
Prerequisite(s): Department approval: completion of 30 semester credits; completion of 15 semester credits at Cuyahoga Community College; 2.75 GPA; completion of 20 semester credits in liberal arts; completion of 9 semester credits in Theatre; two letters of recommendation from liberal arts faculty, one of which must be from area of placement.

THEA-2830 Cooperative Field Experience
01-03 Semester Credits
(see current semester Credit Schedule for offerings)

URBAN STUDIES - UST

UST-1010 Introduction to Urban Studies
03 Semester Credits
Interdisciplinary examination of background of major urban issues and challenges facing U.S. urban areas. Emphasis on description and analysis of roots of contemporary urban America.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

UST-1020 Urban Geography
03 Semester Credits
Geographical study of cities and their demographics. Emphasizes patterns of urbanization, urban life and urban spaces including human behavior and impact of natural resources.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

UST-1120 History of Cleveland
03 Semester Credits
Development of Cleveland from New England village to metropolitan area. Role of economic and technical changes, immigration, reform, world war, demographics, labor unions, transportation and political leadership examined. Rise of suburban areas in post World War II, decline of central city and prospects for revival. Explains how each major era of the city shaped the present.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

UST-179H Honors Contract in Urban Studies
01 Semester Credit
Honors Contract complements and exceeds the requirements and objectives for an existing UST 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Must be taken concurrently with a 1000-level course in Urban Studies, whose instructor approves the Honors Contract.

UST-2020 Urban Cultures
03 Semester Credits
Interdisciplinary examination of cultural diversity within urban populations. Special emphasis on interaction of groups, their social institutions, and value systems.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ANTH-1010 Cultural Anthropology, or SOC-1010 Introductory Sociology, or UST-1010 Introduction to Urban Studies.

UST-2070 Urban Politics
03 Semester Credits
Analysis of the political process and the impact of public policies on urban problems, structures, and political behavior in American cities. Focus on central cities, suburbs, and metropolitan areas. Emphasis on efforts to make cities function more efficiently and to improve quality of life for inhabitants.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): POL-1010 American National Government, or UST-1010 Introduction to Urban Studies.

UST-2640 American Urban History
03 Semester Credits
Comparative growth of American cities from towns to megalopolis. Emphasis on the spatial expansion to the development of urban economy, historical functioning of political system and population changes. Includes urban/suburban and majority/minority issues.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): UST-1010 Introduction to Urban Studies; or HIST-1520 United States History Since 1877; or HIST-2160 African American History 1877-present; or departmental approval.

VETERINARY TECHNOLOGY - VT

VT-1100 Veterinary Medical Terminology
01 Semester Credit
Terminology utilized by veterinary health care professionals and animal owners. Emphasis on identification and definition of word components. Includes spelling, pronunciation, word analysis, common colloquialisms and abbreviations. Usage of medical terms related to all major body systems.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

VT-1200 Veterinary Law and Ethics
01 Semester Credit
Overview of history and status of animals in American law and effect on modern veterinary technician. Discussion of ethical questions and dilemmas commonly encountered in veterinary medicine. Overview of regulatory agencies (state and federal) that affect and oversee veterinary technicians. Discussion of veterinary technician's role in malpractice situations.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval.

VT-1320 Veterinary Office Applications
03 Semester Credits
Overview of veterinary practice management including veterinary medical record keeping, marketing, facility design, staff responsibilities, interoffice communications, and public relation techniques. Automated veterinary office processing and recordkeeping. Computer hardware and software commonly found in small to mid-sized veterinary practices described along with office procedures and work flow.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval.

VT-1401 Veterinary Science I
04 Semester Credits
Recognition of physical and behavioral characteristics of commonly encountered dog and cat breeds. Introduction to basic companion animal and laboratory animal behavior, husbandry and nutrition. Laboratory focuses on non-invasive clinical management techniques including physical examination, grooming, and other in-office procedures.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): Departmental approval: admission to program.

VT-1451 Veterinary Diagnostic Imaging
02 Semester Credits
Introduction to radiography, ultrasonography, CT, MRI, and nuclear scintigraphy imaging modalities. Preparation, use and maintenance of radiography and ultrasonography equipment. Acquisition and processing of digital and analog diagnositic images.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): VT-1100 Veterinary Medical Terminology; and VT-1401 Veterinary Science I; and BIO-1420 Anatomy and Physiology of Domestic Animals II or concurrent enrollment.

VT-1500 Veterinary Science II
04 Semester Credits
Recognition of physical and behavioral characteristics of commonly encountered breeds of horses, cattle, sheep and pigs. Basic food animal and equine behavior, husbandry and nutrition. Laboratory focuses on restraint, handling and performance of common veterinary procedures used as part of large animal management and/or treatment of common clinical conditions. Field trips included in laboratory portion of course.
Lecture 03 hours. Laboratory 02 hours.
Prerequisite(s): VT-1401 Veterinary Science I, VT-1100 Veterinary Medical Terminology and VT-1200 Veterinary Law and Ethics, and BIO-1420 Anatomy and Physiology of Domestic Animals II, or concurrent enrollment.

VT-1520 Veterinary Parasitology
02 Semester Credits
Study of identification techniques, nomenclature, life cycles, epidemiology and control of internal and external parasites of small animals, horses and cattle.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): VT-1100 Veterinary Medical Terminology; VT-1200 Veterinary Law and Ethics; BIO-1420 Anatomy and Physiology of Domestic Animals II or concurrent enrollment, and departmental approval: admission to program.

VT-1600 Veterinary Surgical Nursing and Assisting
03 Semester Credits
Fundamentals of routine veterinary surgery including instrumentation, patient preparation, aseptic technique, fluid therapy, wound healing, specialized procedures and general nursing care. Fundamentals of electrocardiography including operation of electrocardiograph, origin of the ECG tracing and recognition of common cardiac arrhythmias.
Lecture 01 hours. Laboratory 06 hours.
Prerequisite(s): VT-1401 Veterinary Science I, and BIO-1420 Anatomy and Physiology of Domestic Animals II or concurrent enrollment.

VT-2300 Pharmacology for Veterinary Technicians
02 Semester Credits
Introduction to veterinary pharmacology including common drug terminology, classifications and usages of drugs, dosage calculations, methods of drug administration, side effects and contraindications.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): VT-1200 Veterinary Law, and VT-1401 Veterinary Science I, and BIO-1420 Anatomy and Physiology of Domestic Animals II.

VT-2401 Veterinary Pathology I
02 Semester Credits
Veterinary hematology and chemistry laboratory procedures including complete blood counts and clinical chemistries performed commonly in veterinary practices.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): BIO-1420 Anatomy and Physiology of Domestic Animals II, and BIO-2500 Microbiology or concurrent enrollment; and VT-1520 Veterinary Parasitology.

VT-2411 Veterinary Pathology II
02 Semester Credits
Veterinary medical laboratory procedures performed commonly in veterinary practices including urinalysis, veterinary microbiologic techniques, vaginal cytology, ear cytology, cytology of tissues and fluids, bone marrow evaluation, serology, coagulation tests and necropsy.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): VT-2401 Veterinary Pathology I.

VT-2500 Small Animal Health and Disease
02 Semester Credits
Physiological systems approach to the most frequently encountered diseases and metabolic problems of dogs and cats including disease names, definition and history, animals at risk, causes and signs, diagnosis, treatment and prevention.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): VT-2300 Pharmacology for Veterinary Technicians.

VT-2510 Large Animal Health and Disease
02 Semester Credits
Study of the most frequently encountered diseases and clinical problems of horses, cows, sheep and swine including disease names, definition and history, animals at risk, causes and signs, treatment and prevention.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): VT-2300 Pharmacology for Veterinary Technicians.

VT-2600 Anesthesiology, Emergency Techniques and Dentistry
03 Semester Credits
Fundamentals of veterinary anesthesiology, emergency medicine and veterinary dentistry. Students learn how to administer and monitor anesthesia, assist with cardiopulmonary resuscitation, and perform routine veterinary dental prophylactic techniques.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VT-1600 Veterinary Surgical Nursing and Assisting, VT-2300 Pharmacology for Veterinary Technicians, and VT-1500 Veterinary Science II.

VT-2700 Avian and Exotic Animal Medicine
02 Semester Credits
Introduction to avian and exotic animal husbandry, physical examination, clinical procedures, and common clinical conditions. Field trips may be included.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): VT-1520 Veterinary Parasitology, and BIO-2500 Microbiology and VT-2600 Anesthesiology, Emergency Techniques and Dentistry.

VT-2851 Veterinary Practicum and Seminar I
01 Semester Credit
Includes practicum and on-campus seminar. In practicum, students observe and assist with common procedures in clinical settings. Clinical settings include small animal practice, animal population control facility, laboratory animal facility, equine practice, food animal practice/facility, and exotic animal practice/facility. In seminar, students discuss individual clinical situations occurring during practicum experience and study technician's role in euthanasia of an animal including methodology, mental preparation, and understanding of the grieving owner.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 3 1/2 hours per week.
Seminar: 1/2 hour per week.
Prerequisite(s): VT-1500 Veterinary Science II.

VT-2860 Veterinary Practicum and Seminar II
02 Semester Credits
Includes practicum and on-campus seminar. In practicum, students observe and assist with common procedures in clinical settings. Clinical settings include small animal practice, animal population control facility, laboratory animal facility, equine practice, food animal practice/facility, and exotic animal practice/facility. In seminar, students discuss individual clinical situations occurring during the veterinary practicum experience, study the technician's role in pediatrics and first aid, and prepare to search for employment.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): VT-2851 Veterinary Practicum and Seminar I.

VT-2940 Veterinary Field Experience
02 Semester Credits
Capstone course in Veterinary Technology. Clinical experience involving the practice of techniques commonly used in veterinary medicine. Students assigned to two different types of veterinary facilities. Site options may include small animal practices, animal emergency clinics, referral practices, equine practices, mixed practices, food animal practices, laboratory animal facilities, and the Cleveland Metroparks Zoo.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 24 hours per week.
Prerequisite(s): VT-2860 Veterinary Practicum and Seminar II, and VT-2600 Anesthesiology, Emergency Techniques and Dentistry.

VISUAL COMMUNICATION AND DESIGN - VC&D

VC&D-1000 Visual Communication Foundation
03 Semester Credits
Develop skills needed to communicate visually in any media. Learn how effective layouts, illustrations, photographs, videos, and web sites convey ideas via the principles of visual communication and design.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

VC&D-1015 Digital Studio Basics
03 Semester Credits
Hands-on overview of industry standard design software for print and digital media. Best practices in studio work-flow and file management are emphasized.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): None.

VC&D-1061 History of Graphic Design
03 Semester Credits
Survey of graphic design and the world events that have influenced visual communication from the invention of writing to the computer age and new media. Explores the cultural influences and technical innovations in graphic design movements, subsequent counter-movements, and their implications. The influence of world events and the emergence of trends in graphic design will be presented following an historical timeline. The impression of the past on subsequent graphic design trends will be noted.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

VC&D-1200 Typography and Layout
03 Semester Credits
Development, terminology, letterform, classification, selection and specification of typefaces. Emphasis on aesthetic and communicative aspects of typography. Introduction to techniques used to design and effectively communicate with typography.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-1000 Visual Communication Foundation, or concurrent enrollment; and VC&D-1015 Digital Studio Basics, or concurrent enrollment.

VC&D-1430 2D Design
03 Semester Credits
Technical and aesthetic fundamentals in the creation of two-dimensional designs for print, interactive, broadcast and other media utilizing industry standard 2D graphics and design applications.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-1015 Digital Studio Basics, or concurrent enrollment; or VC&D-1000 Visual Communication Foundation, or ART-1080 Visual Design I.

VC&D-1940 Field Experience I
01-03 Semester Credits
Field experience is planned paid or unpaid work activity, which relates to an individual student's occupational objectives. With permission of a faculty advisor, field experience replaces elective courses in student's associate degree program. Experience coordinated by faculty member who assists student in planning experience, visits site of experience for conference with student and his/her supervisor at least once during semester, and assigns course grade to student after appropriate consultation with employer/supervisor.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12-36 hours per week.
Prerequisite(s): Departmental approval.

VC&D-2301 Graphic Design and Illustration
03 Semester Credits
Exploration of advanced tools and techniques used in illustrating content for integrated media. Projects may include advanced content creation for print, interactive, broadcast, and other media utilizing industry standard 2D graphics and design applications.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-1430 2D Design or concurrent enrollment.

VC&D-2401 Designing for Production
03 Semester Credits
Techniques and methods in assembling and finalizing production art and design for printing and digital media. Terminology, paper, ink, printing, production art and design. Tools, materials, and practical considerations in preparing design for production art.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VCGD-2231 Publication Design.

VC&D-2530 Professional Practice in Visual Communication and Design
03 Semester Credits
Exploration of business and marketing practices necessary for successful career in visual communication and design. Emphasis on financial, legal, organizational, promotional, interpersonal and ethical skills as practiced in this diverse industry.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Departmental approval: sophomore level status or industry experience.

VC&D-2541 Individual Projects
03 Semester Credits
Individual projects in visual communication and design in areas of student`s choice. Progress and grading determined on individual basis according to criteria mutually agreed upon between student and instructor. May be repeated for up to six credits.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VC&D-1430 2D Design or departmental approval.

VC&D-2600 Graphic Production
02 Semester Credits
Techniques and methods in assembling and finalizing production art and design for printing and other media. Emphasis on preparation and practical considerations for various electronic media.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): VC&D-2401 Designing for Production or concurrent enrollment.

VC&D-2701 Media Design
03 Semester Credits
Designing for electronic media, from concept to completion. Explores the interaction of type, image, motion, sound, sequence and how they communicate, as well as technical challenges of designing for various digital media.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-1430 2D Design; or VCIM-1570 Web Publishing I: HTML; or concurrent enrollment; or ITWM-1010 Creating Web Pages with HTML and JavaScript or concurrent enrollment; or departmental approval.

VC&D-2830 Cooperative Field Experience
03 Semester Credits
Open to students eligible for the Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: 180 clock hours of approved work per credit hour.
Prerequisite(s): Formal application into the Cooperative Education program.

VC&D-2940 Field Experience II
01-03 Semester Credits
Field experience is planned paid or unpaid work activity, which relates to individual student's occupational objectives. With permission of faculty advisor, field experiences replace elective courses in student's associate degree program. Experience coordinated by faculty member who assists student in planning experience, visits site of experience for conference with student and his/her supervisor at least once during semester, and assigns course grade to student after appropriate consultation with employer/supervisor. May be repeated for a maximum of six credits.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Field experience: 12 to 36 hours per week.
Prerequisite(s): Departmental approval.

VC&D-2991 Portfolio Preparation
03 Semester Credits
Capstone course in Visual Communication and Design. Covers all aspects of creation and presentation of professional portfolio. Emphasize individual strengths and areas of specialization. Students edit and modify work where required. Add new pieces to final portfolio that meets industry standards. Analyze appropriate presentation materials, business forms and protocols, develop promotional pieces and presentation style and techniques.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VC&D-2301 Graphic Design and Illustration, or concurrent enrollment; or VC&D-2701 Media Design, or concurrent enrollment; or VCDV-2280 Advanced Digital Video and Digital Filmmaking: Exploring Genre and Technique, or concurrent enrollment or VCIM-2200 Game Design III: Game Design Studio, or concurrent enrollment.

VISUAL COMMUNICATION AND DESIGN (Digital Video and Digital Filmmaking) - VCDV

VCDV-1180 Introduction to Digital Video and Digital Filmmaking
03 Semester Credits
Provides a strong technical foundation for further study and practice in the art and technology of motion media. Analysis of examples of visual storytelling with regard to how lighting, color palette, picture composition, sound, performance, staging, editing and graphics work in concert to communicate theme. Hands-on instruction in producing and maintaining desired image and sound quality in production and post-production. Introduces the three phases of a media production: Pre-production, Production, Post-production.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1015 Digital Studio Basics or concurrent enrollment.

VCDV-2180 Digital Cinematography
03 Semester Credits
Focus on issues facing Directors of Photography, Camera Operators, and Digital Imaging Technicians, working in digital motion media acquisition. Discussion of current options in acquisition format motion media and the limitations vs. advantages of a variety of cameras, lights, and related grip equipment. Focus on understanding crew roles and set etiquette. Hands-on experience in digital cinematography: learning to control a variety of lighting instruments to produce desired effects. Emphasis on the practical use of light, color, picture composition, and camera movement to communicate a mood or theme.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCDV-1180 Introduction to Digital Video and Digital Filmmaking.

VCDV-2280 Advanced Digital Video and Digital Filmmaking: Exploring Genre and Technique
03 Semester Credits
This intensive, intermediate-level course emphasizes style and technique for scripting, shooting, and editing digital video productions and a variety of genres. Editing styles for music video (cutting to the beat), narrative (continuity editing), documentary footage, and experimental are examined in relation to film theory and visual design principles. Hands-on use of cameras, lighting, and sound design equipment for digital video in the context of actual productions. Students utilize digital workstations and industry standard online editing applications. Students take a film through all stages of a production from pre-production planning to post production. Emphasis on collaboration.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCDV-1180 Introduction to Digital Video and Digital Filmmaking, and VCDV-2180 Digital Cinematography or departmental approval: previous coursework and/or experience.

VCDV-2380 Visual Effects Compositing for Digital Video
03 Semester Credits
Focus on planning, producing and editing visual effects (VFX) and special effects (SFX) for film and video. Students digitally combine multiple video and graphic sources to create convincing moving image composites. Emphasis on shot composition, matching lighting, camera angles and movement. Hands-on projects involve green screen filming, motion mattes, vector-based animation for mattes, titles and motion graphics, rotoscoping and digital painting.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1430 2D Design; and VCDV-1180 Introduction to Digital Video and Digital Filmmaking, and VCDV-2180 Digital Cinematography; or departmental approval: previous coursework and/or experience.

VCDV-2480 Motion Graphics for Digital Video
03 Semester Credits
Focus on combining visual elements from a variety of sources into a composite motion graphic. Projects include film titles, logo animation, broadcast graphics, and kinetic digital display. Emphasis on the interplay of typography, animated graphics, movie clips and sound. Exploration of the literal and stylistic communication of meaning through interaction of type and image.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1430 2D Design; and VCDV-1180 Introduction to Digital Video and Digital Filmmaking, and VC&D-1200 Typography and Layout; or departmental approval: previous coursework and/or experience.

VCDV-2580 Digital Versatile Disk (DVD) Authoring and Design
03 Semester Credits
Focus on planning, designing, and executing a digital versatile disk (DVD). Topics include theory of DVD interface, history of DVD technology, basic non-linear editing, basic audio editing, exporting MPEG2 video and audio streams, developing flowcharts and storyboards for DVD interface, and designing still and motion menus.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1430 2D Design; and VCDV-1180 Introduction to Digital Video and Digital Filmmaking; or department approval: previous coursework and/or experience.

VCDV-2680 Advanced Digital Cinematography
03 Semester Credits
Focus on advanced issues facing directors of photography working in digital video both in the studio and on location. Current acquisition formats for motion media productions and limitations vs. advantages of a variety of standard and high definition digital video formats discussed. Gain professional level competency in digital cinematography technologies, including controlling lighting instruments and cameras, to produce desired effects for a variety of motion media. Emphasis on practical use of light, color, picture composition, and camera movement to communicate a mood or theme, and how the craft of cinematography is used as a storytelling device.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCDV-2180 Digital Cinematography, and VCDV-1180 Introduction to Digital Video and Digital Filmmaking, or department approval.

VCDV-2780 Advanced Motion Graphics
03 Semester Credits
Focus on technical proficiency in industry-standard motion graphics software application. Builds upon concepts and techniques introduced in VCDV-2480 Motion Graphics.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCDV-2480 Motion Graphics for Digital Video, or departmental approval: equivalent work experience.

VISUAL COMMUNICATION AND DESIGN (Graphic Design) ●(Advertising Design)- VCAD/ VCGD

VCAD-2520 Creative Advertising Campaign
03 Semester Credits
Advertising campaign from initial campaign concept through presentation. Conceptual thinking and problem-solving for magazine, billboard, and TV/video storyboard advertising. Various facets of advertising agency structure, including the team concept. Designer's role in research, analysis, planning, conceptualizing, copywriting and presentation.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VCGD-1500 Advertising and Design, or departmental approval.

VCAD-2621 Advertising Studio I
03 Semester Credits
Hands-on directed individualized project-based course specialized for advertising design majors. Advertising design and marketing project proposals to be selected, approved, and arranged collaboratively between instructor and student. Design creativity, marketing, and visual communication skills stressed. Emphasis on further developing advertising and marketing skills and working one-on-one with instructor providing design direction to attain conceptual and technical skills to bring final designs to successful completion.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VC&D-2301 Graphic Design and Illustration or VCGD-2231 Publication Design.

VCAD-2721 Advertising Studio II
03 Semester Credits
Advanced projects for advertising design majors simulating real-world professional and practical experience as set in ad agencies and corporate marketing studios. Development of ad campaigns, double-spread ads, multi-page marketing layouts and publications. Practical experience in teamwork collaboration, advanced delivery techniques for print and/or other media, production processes, budget development and meeting client`s needs within set timelines.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VCAD-2621 Advertising Studio I.

VCGD-1500 Advertising and Design
03 Semester Credits
Fundamentals of advertising and design for print and other media. Examines design process and appropriate use of research. Examines and evaluates layout and delivery mode, evolution of presentation from thumbnail to storyboard, and critical analysis of designer/client relations. Includes material usage, technical and hand skill development, and application of presentation techniques to real-world problem solving.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-1200 Typography and Layout, and VC&D-1430 2D Design or concurrent enrollment.

VCGD-2131 Magazine Design
03 Semester Credits
Magazine design including masthead, cover, contents, editorial and feature page formats. Emphasis on using sophisticated design, typography, and images to communicate. Exploration of practical and production considerations involved in magazine design as a product itself.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VCGD-1500 Advertising and Design.

VCGD-2231 Publication Design
03 Semester Credits
Publication design including masthead, column, editorial and feature story page formats. Emphasis on using typography and images on multiple page formats. Exploration of practical and production considerations involved in publication design.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VCGD-1500 Advertising and Design, or departmental approval.

VCGD-2331 Brand Identity Design
03 Semester Credits
Comprehensive corporate graphics emphasizing design process in creating corporate and brand identity. Visual and non-visual aspects of corporate graphics and brand applications will be explored. Emphasis will be placed on logo design and brand application design in order to create a cohesive corporate brand identity.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-2301 Graphic Design and Illustration; or concurrent enrollment.

VCGD-2431 Package Design
03 Semester Credits
Comprehensive package design course from initial concept to presentation of package mock-ups. Conceptual thinking and problem solving using typography, color and images on folded, soft packaging and rigid packaging. Methods, materials, practical and production considerations involved in packaging design as well as environmental issues in relation to green or sustainable package design.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-2301 Graphic Design and Illustration or concurrent enrollment; or departmental approval.

VCGD-2631 Graphic Design Studio
03 Semester Credits
Advanced graphic design projects using industry software and standards. Course builds upon sequential graphic design courses to explore complex solutions to visual communication and design problems. Emphasis on individual and team projects applied to contemporary design media.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VCGD-2231 Publication Design or concurrent enrollment.

VCGD-2730 Graphic Design Studio II
02 Semester Credits
Advanced projects for graphic design majors simulating real-world professional and practical experience as set in graphic design and production design studios. Emphasis on development and design of spreads, multi-page layouts and publications. Practical experience in teamwork collaboration, advanced featuring delivery techniques for print and/or other media, production processes, budget development, and meeting client's needs within set timelines.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): VC&D-2200 Multi-Page Layout and Design or concurrent enrollment, or VCGD-2631 Graphic Design Studio I or concurrent enrollment.

VISUAL COMMUNICATION AND DESIGN (Illustration) - VCIL

VCIL-1141 Rendering Techniques
03 Semester Credits
Analog and digital rendering for visual communication and design applications. Emphasis on formal qualities of two dimensional illustration techniques used to render images.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1015 Digital Studio Basics; or concurrent enrollment.

VCIL-1640 3D Design
03 Semester Credits
Technical and aesthetic fundamentals of 3D design. Use of industry standard software to develop 3D graphics for screen and print applications. Projects may include 3D design and visualization for information graphics, product visualization, prototyping, logo design, and environmental visualization. Various design techniques, including 3D parametric modeling, polygonal modeling and NURBS/HyperNURBS based modeling solutions. Introduces basic modeling, staging, lighting, texture and shader strategies to realize 3D concepts.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VC&D-1015 Digital Studio Basics or concurrent enrollment; or departmental approval.

VCIL-2040 3D Motion
03 Semester Credits
Technical and aesthetic fundamentals of 3D motion design and 3D animation. Use of industry standard software to develop 3D animation for broadcast and Internet audience. Projects may include 3D motion graphics and animation for information graphics, product visualization, instructional design, and environmental visualization. Various topics, including 3D modeling, key framing, timeline and camera animation. Introduces basic animation strategies to complete 3D motion graphics and visualization concepts.
Lecture 02 hours. Laboratory 02 hours.
Prerequisite(s): VCIL-1640 3D Design or concurrent enrollment; or departmental approval.

VCIL-2141 Illustration Techniques
03 Semester Credits
Use of industry standard tools to explore formal and aesthetic solutions for two-dimensional still images. Emphasis on experimentation with aesthetic and technical elements of digital illustration.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIL-1141 Rendering Techniques or concurrent enrollment.

VCIL-2241 Advanced Illustration
03 Semester Credits
Various tools, materials and techniques used with advanced illustration. Emphasis placed on illustration for commentary, narrative, persuasion, visualization and instruction. Focus on creating illustration for audience and client requirements.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIL-1141 Rendering Techniques or concurrent enrollment.

VCIL-2341 Illustration for Story, Sequence & Narrative
03 Semester Credits
Technical and aesthetic fundamentals of sequential illustration. Use of industry standard software to design, develop, publish and present illustration for narrative application. Introduces basic strategies of illustration for concept art, comics, books, graphic novels, games, storyboards and other work driven by narrative, story or sequential imagery.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIL-1141 Rendering Techniques and VCIL-1640 3D Design.

VCIL-2440 3D Simulation
03 Semester Credits
Advanced technical and aesthetic issues concerning 3D modeling, 3D motion graphics, 3D animation and 3D simulation using industry standard software. Course emphasizes static and dynamic animation strategies utilizing joints, kinematics, dynamics, constraints, set driven keys, rigid body dynamics, effectors and node based animations to create product, instructional, character or environmental 3D simulations and animations. Applied projects for use in various visualization and game design disciplines.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIL-2040 3D Motion or departmental approval.

VCIL-2540 3D Studio
03 Semester Credits
Advanced 3D modeling, 3D motion graphics and 3D animation using industry standard software. Course builds upon sequential 3D courses to provide advanced platform for custom 3D design, illustration, visualization, simulation or animation projects. Develop projects to satisfy audience/client, target market and production needs.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIL-2040 3D Motion or departmental approval.

VCIL-2641 Illustration Studio
03 Semester Credits
Hands-on, directed, individualized, project-based course, specialized for illustration majors. Illustration proposals and projects to be selected, approved and arranged collaboratively between instructor and student. Emphasis on illustration for various audiences including, design, advertising, visualization, publishing and entertainment industries.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VCIL-2341 Illustration for Story, Sequence & Narrative or concurrent enrollment.

VCIL-2741 Illustration Studio II
03 Semester Credits
Advanced projects for illustration majors simulating real-world professional and practical projects.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VCIL-2641 Illustration Studio or concurrent enrollment.

VISUAL COMMUNICATION AND DESIGN (Web and Interactive Media) - VCIM

VCIM-1200 Game Design I: Introduction to Game Design
03 Semester Credits
Foundation of game design with an emphasis on concept, planning and creation of game prototypes. Topics include history of games from tabletop to tablet, markets, mechanics, prototyping, play testing, and analysis. Students will explore theme, genre, rules, tools, goals, and peripheral concepts of game design.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1015 Digital Studio Basics, or concurrent enrollment.

VCIM-1400 Game Design II: Game Engines
03 Semester Credits
Applied technical and aesthetic fundamentals of 2D and 3D game design using industry-standard game engines. Emphasis on design and interaction of 2D and 3D assets to be used in instructional, promotional, and entertainment games.
Lecture 02 hours. Laboratory 03 hours.
Departmental Approval: OR
Prerequisite(s): VCIM-1200 Game Design I: Introduction to Game Design, or concurrent enrollment.

VCIM-1570 Web Publishing I: HTML
03 Semester Credits
Foundational web design, planning and construction with emphasis on web standards, usability and accessibility. Students construct web pages in (X)HTML and CSS using basic text-editing software. Topics include analysis of how and why a website succeeds or fails, aesthetics and visual design for web, planning, creation, uploading and registration of sites, troubleshooting, search engine optimization and basic marketing strategies.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VC&D-1000 Visual Communication Foundation; or concurrent enrollment, and VC&D-1015 Digital Studio Basics; or concurrent enrollment or concurrent enrollment.

VCIM-1770 Web Publishing II: Site Theory & Construction
03 Semester Credits
Expansion and continuation of topics introduced in Web Publishing I. Planning, designing, constructing and publishing a web site using industry standard tools.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIM-1570 Web Publishing I: HTML.

VCIM-1970 Midpoint Portfolio Review
01 Semester Credit
Sophomore level portfolio review. Individual strengths and areas of specialization are reviewed and evaluated. Students are encouraged to edit and modify existing work to prepare for advanced courses, projects, and final portfolio.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: completion of 18 core credits at 1000 level, or completion of 9 core credits and concurrent enrollment of an additional 9.

VCIM-2071 Service-Learning Web and Interactive Studio
03 Semester Credits
This is a service-learning course. Web and Interactive Media students will work on "real world", client based community projects for non-profit organizations. Design, technical and professional practices such as contracts, client relations, and team work will be put into action.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIM-2280 Web Publishing III: Media Rich Websites or VCIM-2380 Interactive Media II or departmental approval.

VCIM-2200 Game Design III: Game Design Studio
03 Semester Credits
Create a variety of game projects for an intended audience, platform or device. Course emphasizes game design pipeline of planning, design, testing, refining, and publishing.
Lecture 01 hour. Laboratory 05 hours.
Departmental Approval: OR
Prerequisite(s): VCIM-1400 Game Design II: Game Engines.

VCIM-2270 Animation for the Web and Media
03 Semester Credits
[This course is cross-listed as ART-2151. Credit can only be applied to degree requirements once for either course.] Technical and aesthetic fundamentals of 2D animation as they pertain to the Internet. Use of current software to develop interactive, animated graphics and interfaces. Various techniques including tweening, frame by frame, onion skinning, shape and color morphing as well as non-linear structure, interactivity, communication, scripting and troubleshooting. Acquisition or creation and integration of music, sound and video. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): ART-1080 Visual Design I, or ART-1091 Color Theory and Application, or VC&D-1015 Digital Studio Basics or departmental approval: comparable skills.

VCIM-2280 Web Publishing III: Media Rich Websites
03 Semester Credits
Developing media rich websites with JavaScript, jQuery or Flash. Emphasis includes building SEO (Search Engine Optimization) and responsive, device-friendly websites that integrate social media, videos, photos and music.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIM-1770 Web Publishing II: Site Theory & Construction, or ITWM-1010 Creating Web Pages with HTML and JavaScript.

VCIM-2290 Web Publishing IV: Data Driven Sites
03 Semester Credits
Learn to create data driven, dynamic websites. Combines an overview of programming terms and concepts with practical examples.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): ITWM-1010 Creating Web Pages with HTML and JavaScript or VCIM-1570 Web Publishing I: HTML.

VCIM-2371 Interactive Media I
03 Semester Credits
Create a variety of interactive projects. Tell stories incorporating photos, video, sound, music, narration, typography, illustration and animation. Structure, communication, scripting, sequencing and troubleshooting emphasized.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIM-2270 Animation for the Web and Media, or VCIL-1640 3D Design; or departmental approval.

VCIM-2380 Interactive Media II: App Design
03 Semester Credits
Explores current and emerging interactive technologies such as Apps, touch screens and games. May be repeated twice for credit; only 3 credits can apply to meet degree requirements.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCIM-2280 Web Publishing III: Media Rich Websites or VCIM-2371 Interactive Media I.

VCIM-2400 Game Design Portfolio
03 Semester Credits
Develop and refine a body of work focusing on specific role(s) in the game design industry. Develop and promote assets, projects, portfolio, demo reel, blog and game presentation.
Lecture 01 hour. Laboratory 04 hours.
Prerequisite(s): VCIM-2200 Game Design III: Game Design Studio, or concurrent enrollment

VCIM-2470 Virtual Reality Imaging
02 Semester Credits
Technical and aesthetic concepts of virtual reality photography. Use of computer hardware and software for creating virtual reality images. Images used for interactive onscreen presentations or output as large scale panoramic photographic prints.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): VCPH-1450 Digital Imaging I, and VC&D-1010 Macintosh Basics; or departmental approval.

VCIM-2571 Interactive Media Studio
03 Semester Credits
Course offers broad possibilities for the conception and creation of advanced interactive projects. Students are encouraged to explore concepts and techniques beyond the parameters of previous course work. Individual students or teams work with the instructor to set the criteria, research, and ultimately complete the project. Repeatable: students may pursue different projects for up to six credits.
Lecture 01 hour. Laboratory 05 hours.
Prerequisite(s): VCIM-1970 Midpoint Portfolio Review or VCIM-2200 Game Design III: Game Design Studio; or concurrent enrollment; or departmental approval.

VCIM-2940 Field Experience
03 Semester Credits
Planned work activity, paid or unpaid, in the field of Web or Interactive Media. Coordinated by faculty member and employer. Experience should reinforce classroom/lab skills.
Lecture 00 hours. Laboratory 00 hours.
Field experience: 36 hours per week, working in the field.
Prerequisite(s): VCIM-2380 Interactive Media II , or concurrent enrollment; or VCIM-2290 Web Publishing IV: Data Driven Sites, or concurrent enrollment.

VISUAL COMMUNICATION AND DESIGN (Photography) - VCPH

VCPH-1050 Black and White Photography I
03 Semester Credits
Introduction to technical and aesthetic fundamentals of black and white photography. Camera operation, exposure and development of film and printing techniques, and aesthetics of contemporary photography. Student must provide own camera, film, and printing paper.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.
OAN Approved: OAH006

VCPH-1150 History of Photography
03 Semester Credits
Survey of history of world photography from 1839 to present. Technical and aesthetic evolution of photography and its changing role in society.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

VCPH-1261Photography I
03 Semester Credits
[This course is cross-listed as ART-1261. Credit can only be earned once for either course.] Explore the fundamentals of digital capture, digital output, and learn how to maximize the capabilities of a digital camera shooting in available light. Conceptual issues and stylistic characteristics of several photographic genres discussed. Visual assignments used to explore a variety of photographic traditions and increase understanding of digital technology, while expanding critical thinking and the conceptual photographic eye. Students must have their own digital camera with manually adjustable aperture, shutter speed and ISO settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box or binder also required. Paper, box, binder and a limited selection of cameras available at Tri-C bookstores.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.
OAN Approved: OAH002

VCPH-1450 Digital Imaging I
03 Semester Credits
Introduction to technical and aesthetic fundamentals of digital image manipulation using the most current computer software and hardware systems for the input, modification and output of digital photographs.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): None.

VCPH-2050 Commercial Studio Techniques I
03 Semester Credits
Introduction to the use of strobe lighting and direct digital capture in commercial studio and location photography environments. Topics include an introduction to portraiture, product, food, fashion, and advertising photography. Efficient workflow in the creation and post-production of appropriately formatted digital files. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-1450 Digital Imaging I, or concurrent enrollment; and VCPH-2260 Photography II, or concurrent enrollment; or departmental approval: submission of portfolio of photographs.

VCPH-2260 Photography II
03 Semester Credits
Students build on their skill base and create images that have a conceptual basis as opposed to being strictly documentary in nature. Advanced color and black & white file conversion and outputting. Critical thinking used in group work discussions. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-1261 Photography I and VCPH-1450 Digital Imaging I, or concurrent enrollment.

VCPH-2450 Digital Imaging II
03 Semester Credits
Advanced visual problem solving in digital imaging. Refined techniques for compositing and digital illustration in commercial based environments. Photographic images and components supplied and created by the student form the foundation on which projects are built for print, multimedia, and Web applications.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-1450 Digital Imaging I, or departmental approval: prior digital imaging experience.

VCPH-2541 Individual Projects - Photography
03 Semester Credits
Individual photography-based projects created in areas of student`s design, based on submission and approval of a written proposal. Progress and grading determined on individual basis according to criteria mutually agreed upon between student and instructor. Includes examples of projects created by photographers from many photographic genres including fine art, documentary, advertising and editorial as well as work done by the instructor. Other media such as audio, video, and integrated web-based options such as web sites and blogs will be shown and discussed. May be repeated for up to six credits.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-1450 Digital Imaging I, and VCPH-2260 Photography II or departmental approval with submission of a photographic print or high resolution digital portfolio.

VCPH-2550 Commercial Studio Techniques II
03 Semester Credits
Advanced lighting and camera techniques for commercial studio and location photography. Concept development for photo illustration. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-2050 Commercial Studio Techniques I, and VCPH-1450 Digital Imaging I, or departmental approval: submission of portfolio of photographs.

VCPH-2660 Photography III
03 Semester Credits
Advanced studio and documentary photographic techniques. Advanced critical thinking and responsive writing. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-1450 Digital Imaging I; and VCPH-2260 Photography II; or departmental approval: submission of portfolio of photographs.

VCPH-2760 Editorial Photography
03 Semester Credits
Introduction to the technical, aesthetic, business and ethical issues in a range of photographic practices including editorial, wedding, event, and photojournalistic settings. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): VCPH-1450 Digital Imaging I, and VCPH-2260 Photography II, or departmental approval: submission of portfolio of photographs.
OAN Approved: OCM011

VCPH-2990 Photographic Portfolio Preparation
02 Semester Credits
Capstone course for Visual Communication and Design - Photography. Covers all aspects of the creation and presentation of a professional photographic portfolio and web presence. Portfolios emphasize individual strengths and areas of specialization. Edit and modify existing work for the portfolio where required; complete the final portfolio to the standards of the photography industry. Analysis of appropriate presentation and business materials and protocols, development of self-promotional pieces, and discussion of presentation styles and techniques, both traditional and digital.
Lecture 01 hour. Laboratory 03 hours.
Prerequisite(s): VCPH-2550 Commercial Studio Techniques II, and VCPH-2450 Digital Imaging II or departmental approval: sufficient quantity of successfully completed work for portfolio inclusion. This is the capstone course for photography students.

WOMEN'S STUDIES - WST

WST-1510 Introduction to Women's Studies
03 Semester Credits
Introduction to field of women's studies, which transcends traditional disciplinary boundaries. Analysis of gender's role in shaping human societies of past and present: their history and experiences, their expression through arts and literature, philosophy of feminism, and comparative conditions of women in diverse cultures.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

WST-1520 Women's Films
03 Semester Credits
Introduction to genre of women's films through study of classic and contemporary depictions. Use of film analysis in theme, character, plot, dramatic conflict, photography, sound, light, editing, and acting.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): None.

WST-200H Honors Women and Reform
03 Semester Credits
Analysis of the reform roles of women in American history from colonial times to the present as individuals and as organized groups; special focus on social movements and institutionalized reforms.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, or WST-1510 Introduction to Women's Studies.

WST-2010 Women in the World
03 Semester Credits
Study of the role of gender in shaping comparative cultural experiences in the world; analysis of theoretical basis of gender; and comparing status of women in work, politics, and other social institutions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): WST-1510 Introduction to Women's Studies, or ENG-1010 College Composition I.

WST-2020 Women, Science and Technology
03 Semester Credits
[This course is cross-listed as HIST-2020. Credit can only be earned once for either course.] Study of gendered relationships in scientific theory, organization and dissemination of scientific expertise, and technological development, and the impact of these on health care, medicine, business, manufacturing, cultural norms and women's experience.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): WST-1510 Introduction to Women`s Studies or ENG-1010 College Composition I; or concurrent enrollment; or ENG-101H Honors College Composition I, or concurrent enrollment.

WST-2030 Women and Art
03 Semester Credits
Analysis of women's roles in art history, both as the creators and subjects of art; concentration on western survey prehistory to the 21st century with comparisons to non-western representations.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or WST-1510 Introduction to Women's Studies.

WST-2050 Introduction to Personal and Reflective Writing
03 Semester Credits
[This course is cross-listed as ENG-2050. Credit can only be earned once for either course.] The examination of personal, narrative, and self reflective writing from journals, memoirs, letters, essays, poetry, blogs, autobiographies, biographies, and other non-fiction works, through discussion, and various formal and informal writing assignments.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I.

WST-2120 Women and Politics
03 Semester Credits
[This course is cross-listed as POL-2120. Credit can only be earned once for either course.] This course examines women's political life in the United States. Women's involvement in all aspects of the political process will be addressed. Substantive areas include women and democracy, their political participation, and their role in governing institutions. The course also includes discussion on the struggle for equal rights and issues of public policy.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): POL-1010 American National Government, or HIST-1020 History of Civilization II, or HIST-1520 United States History Since 1877.

WST-2850 Practicum in Women's Studies
03 Semester Credits
Practicum includes weekly seminar plus placement in non-profit or profit organization supportive of women and family interests, mentorship relationship with a leader in business, government and social service, or employment in an approved facility. Note: Course may not transfer.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 7 hours per week.
Seminar: 2 hours per week.
Prerequisite(s): WST-1510 Introduction to Women's Studies.