

columbus
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BULLETIN

Course Descriptions

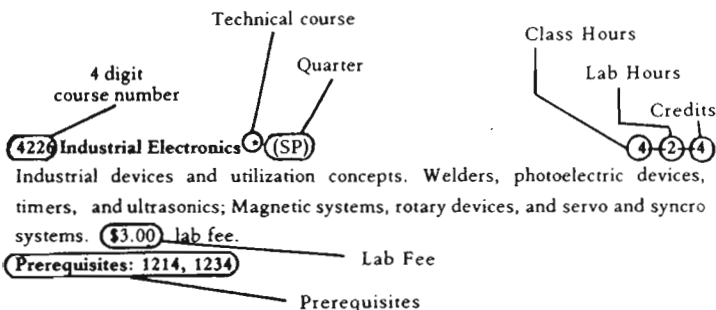
Columbus Tech's Course Numbering System

To make scheduling move more smoothly, no two courses at Columbus Tech have the same number. The first two digits of a course's four digit number identify for you the department; the last two numbers identify the individual course within the department

Listed below are the various departments in order of their course numbers. Refer to this chart to find in which department a given course can be found. For example, 7513 Family Counseling would be found in the Course Descriptions section under Social Services.

02xx ROTC	43xx Mechanical Engineering Technology
09xx General Courses	44xx Industrial Technology
10xx Communication Skills	45xx Heating and Air Conditioning
11xx Mathematics	47xx Welding
13xx Basic Science	51xx Architectural Technology
15xx Behavioral Science	52xx Construction Management
22xx Hospitality Management	53xx Civil Engineering Technology
24xx Graphic Communications	57xx Industrial Laboratory
25xx Aviation Maintenance	75xx Social Services
27xx Business Data Processing	76xx Safety
28xx Banking/Finance	77xx Interpreting/Transliterating
29xx Retail Management	78xx Law Enforcement
30xx Wholesale Management	79xx Fire Science
33xx Secretarial Science	80xx Medical Laboratory
34xx Insurance	81xx Dental Laboratory
35xx Public Administration	82xx Optometric Assisting
36xx Real Estate	83xx Emergency Medical Services
37xx Accounting	84xx Mental Health/Mental Retardation
38xx Business Management	85xx Nursing
41xx Automotive Maintenance	86xx Respiratory Therapy
42xx Electronic Engineering Technology	89xx Animal Health

Explanation of Course Description Codes



Four digit course number - first two digits indicate the department; the second two identify the specific course. Two digits followed by XX, indicate an elective requirement for which only the department is specified; here the student may choose the specific course, subject to approval of his advisor. Where no digits appear, the elective may come from more than one department. It usually connotes a General Education course.

Technical Course - identifies courses within the student's major field. These may be used to work toward fulfilling departmental regulations that require students to take a certain number of technical courses.

Quarter - indicates which quarter or quarters the course is offered during the year. A-autumn, W-winter, SP-spring, SU-summer.

Prerequisites - identifies any course work that must have been successfully completed before the student is eligible to enroll for the course. For example, if the number 1002 were listed as a prerequisite for a course, then only students who have completed 1002 would be eligible to register for the course.

Concurrent Courses - identifies any course work that must be completed during the same quarter as the course in which you are enrolling. For example, if course 4205 is concurrent with course 4204, both courses must be taken during the same quarter.

Class Hours - tells the number of hours per week a particular course meets in a lecture classroom.

Lab hours - tells the number of hours per week a particular class meets in a laboratory situation. This is usually in addition to class hours.

Credits - identifies the number of credits awarded to students who successfully complete the course.

Lab Fee - identifies the amount of money (if any) required of students registering for the course. This fee is needed to help offset the cost of consumable materials used in lab situations. Examples are chemicals, glassware, booklets, manuals, and edibles.

Accounting Technology

3701 Principles of Accounting I*(W,SP)

5-3-6

An introductory course in accounting including; the meaning and purpose of accounting; accounting statements; balance sheet, income statement, and statement of retained earnings; the theory of debits and credits, ledger accounts and the trial balance, journalizing and posting; statement preparation; accounting records; adjusting and closing entries; accounting for notes and interest; and accounting for pre-paid, unearned, and accrued items. Application of accounting principles to sole proprietorships and partnerships. \$5.00 lab fee.

- 3702 Principles of Accounting II*(SP,SU)** 5-3-6
A continuation of course no. 3701 including discussion of: valuation and cost allocation in accounting for a firm's investment in productive resources (inventories, plant and equipment and intangibles); accounting problems peculiar to corporations, focusing on long-term liabilities and stockholders' equity sections; and analysis of accounting data for planning and interpretation. \$2.00 lab fee.
Prerequisite: 3701
- 3703 Intermediate Accounting I*(A)** 4-3-5
A continuation of accounting theory. An in-depth study of the accounting process and accounting records; the nature and content of accounting statements: balance sheets, income statements, statements of retained earnings; analysis of working capital; analysis and methods of valuations and statement presentation of the following items: cash and temporary investments, receivables, and inventories.
Prerequisite: 3702
- 3704 Intermediate Accounting II*(W)** 4-3-5
A continuation of course no. 3703 including analysis and methods of valuation and statement presentation of the following items: current liabilities -contractual and contingent items; investments in plant, and equipment -their acquisition, use, retirement, depreciation and depletion, and reevaluation; intangible assets, deferred charges and long-term liabilities. \$3.00 lab fee.
Prerequisite: 3703
- 3711 Basic Business Machines*(A,W,SP,SU)** 0-3-1
Instruction and practice in operation of office machines with major emphasis on electronic calculators. Familiarization with the operation of office reproducing machines. \$7.00 lab fee.
- 3712 Accounting Machines and Systems*(A,W,SP,SU)** 2-3-3
Systems Fundamentals. Areas of systems activity within an organization: the systems department, its personnel and its operation, charting, systems communications and instruction manuals. Instruction and practice in setting up and using mini-computers. \$15.00 lab fee.
- 3713 Data Processing for Accountants*(SP,SU)** 1-3-2
A survey of computer systems, hardware and software systems. The use and application of terminals and computer service centers. The application of mini-computers to accounting systems. \$12.00 lab fee.
Prerequisite: 3701
- 3714 Cost Accounting*(A)** 4-3-5
A study of the field of job order cost accounting; the cost cycle; methods of handling materials, labor costs, and manufacturing overhead expenditures (controllable and uncontrollable); process cost accounting; by-products and joint products; fundamental cost-volume-profit relationships (break-even analysis); flexible and standard costs. \$4.00 lab fee.
Prerequisite: 3702
- 3716 Auditing*(W,SU)** 3-3-4
Independent and internal audits, professional ethics, legal liability, internal control, auditing standards and procedures. Evidential matter, auditors approach and techniques, reports, statistical sampling, management advisory services.
Prerequisite: 3702
- 3723 Business Finance*(A,SU)** 2-3-3
Forms of business organization; corporate securities; financing through securities; sources and management of working capital; administration of income; expansion and combination, reorganization, receivership, and dissolution. \$3.00 lab fee.
Prerequisite: 3702
- 3725 Financial Statement Analysis*(SP,SU)** 2-3-3
Tools of analysis, percentages, comparisons - past performance, industry standards. Basic ratios-equity, current, quick, working capital, return on equity. Turnovers, inventories, receivables. \$3.00 lab fee.
Prerequisite: 3723
- 3735 State and Local Taxation*(A,SU)** 2-3-3
Payroll taxes, withholding and reports. Unemployment, industrial insurance contributions, workmen's relief funds. Franchise taxes. Personal property taxes. Classified and intangible taxes. City income taxes. Sales and use taxes. Real estate taxes. Vehicle and other taxes. \$5.00 lab fee.
Prerequisite: 3702
- 3736 Federal Taxation*(W,SU)** 4-3-5
Individual income taxes; returns, income exemptions, deductions, gains and losses, rates, adjustments. Problems of proprietorship, partnerships, corporations - inventories, depreciation, accounting, installment and deferred sales treatment. Filing requirements, payments, refunds, claims. Tax planning techniques. \$5.00 lab fee.
Prerequisite: 3702
- 3745 Advanced Accounting*(SP)** 4-3-5
Problems peculiar to partnerships, receiverships, fiduciaries, installment sales, consignments, insurance, estates and trusts; compound interest applications; governmental accounting; branches, consolidations, mergers and foreign exchange.
Prerequisite: 3704
- 3746 Accounting Practice*(SP)** 3-3-4
A detailed study of accounting systems as applied to specific industries. Industries studied; retailing, construction, utilities, and government. Material from all previous courses applied. Accounts from local firms presented and developed in clinic approach. \$6.00 lab fee.
Prerequisite: 3704
- 3747 Advanced Taxation*(SP)** 3-3-4
A continuation of Federal Taxation 3736, including non-liquidating distributions, accumulated earnings and undistributed income. Sub-chapter S corporations, stock redemption and partial liquidations, corporate reorganization and estate and gift taxation.
Prerequisite: 3704 and 3736
- 3748 Controllership/CPA Review*(SP)** 3-3-4
Executive accounting problems of industrial accounting organizations; study and analysis of cost systems, accounting data and special problems of manufacturing industries that confront management accountants/practical accounting problems and questions on accounting theory, law and auditing as presented in C.P.A. examinations.
Prerequisite: 3704
- 3749 Public Administration/Fund Accounting*(SP)** 3-3-4
Accounting principles, standards and procedures applicable to enterprises operated not-for-profit; covers governmental units, institutions such as universities and hospitals, charitable organizations, fraternal organizations, religious groups, clubs, etc.
Prerequisite: 3704
- 3762 Financial Accounting*(A,W,SP,SU)** 4-0-4
The first of a two quarter sequence introducing Accounting to students with no bookkeeping or accounting background. The course is a fundamental study of principles and procedures of doubleentry accounting as applied to sole proprietorships, partnerships, and corporations. Concepts of this first course are continued and applied in the second course, Managerial Accounting. Students are advised to avoid any time lapse between these courses. \$2.00 lab fee.
- 3763 Managerial Accounting*(A,W,SP,SU)** 3-0-3
An extension of Financial Accounting applying introductory accounting techniques to business situations. It is designed to acquaint the student with the use of accounting information in the control of a business operation and the interpretation of such information for management's use. This course is an overview of the analysis of financial statements, cost and responsibility accounting, budgeting, cost volume profit analysis and decision making.
Prerequisite: 3701 or 3762

Air Force ROTC

- 0201 The Air Force Today I** 1-1-1.5
A study of the Doctrine, Mission and Organization of the United States Air Force, with emphasis on officership and Reserve Officer Training.
- 0202 The Air Force Today II** 1-1-1.5
A study of the Mission and Organization of the Air Force through its various Commands and a general look at Air Force Doctrine as related to other Military Branches.

0203 The Development of Air Power I 1-1-1.5
This course will examine the historical role of air power. This survey course will provide an overview of the multifaceted story of military airpower from the use of balloons for reconnaissance to the uses of air power in modern war.

0204 The Development of Air Power II 1-1-1.5
This course provides an understanding of the historical role of air power in our society. It begins with the post World War II period and continues through the Vietnam conflict.

NOTE - An Air Force Training Laboratory of one hour each week is required each quarter a student is enrolled in Aerospace Studies courses.

Animal Health Technology

8902 Animal Health Technology I*(A) 5-0-5
Discussion of the career opportunities and duties of a technician. The laws and ethics related to animal care and to animal health technicians. Pertinent records kept in an animal facility and a veterinary hospital. Other managerial information and basic accounting principles. An introduction to animal species, including physiological data, gestation, breeding information, important concepts of genetics, nutrition and research usage. \$45.00 lab fee.

8904 Animal Health and Diseases *(A,W) 3-0-3
This course deals with animal health, disease prevention and signs of disease in each of the species.
Prerequisites: 8986

8907 Animal Health Technology II*(W) 4-2-5
Study of animal caging systems including kennel management, physical handling of the animals, proper restraint for certain procedures, environment temperature control, sanitation and sterilization, basic animal science and the principles of gnotobiotics. In addition, a general study of clinic operations from the front desk through all sections including the clinical laboratory. \$45.00 lab fee.
Prerequisites: 1321

8916 Clinical Procedures I(Surgery)*(SP) 3-0-3
Discussion of surgery room preparation, animal preparation, animal after-care and assisting the veterinarian during surgery.
Prerequisites: 8902, 1322, 8907

8917 Clinical Procedures II (Radiology) *(SP) 3-0-3
Lectures, demonstrations and laboratory exercises covering the following topics: Terminology, care and maintenance of radiological equipment and techniques of exposing and developing radiographs. Radiographic positioning, animal measurement, and instrument settings are studied.
Prerequisites: 1322

8918 Clinical Procedures III (Pharmacology)*(SU) 3-0-3
The study of disinfectants, insecticides, anthelmintics, antibiotics and other drugs commonly used in veterinary medicine. The administration and calculation of the proper dosage is studied. \$45.00 lab fee.
Prerequisite: 8916

8919 Clinical Procedures IV (Anesthesiology)*(SP) 3-0-3
The study of anesthetic agents and the use and maintenance of inhalation anesthetic equipment. Ancillary monitoring equipment are studied. Special surgical instruments are discussed.
Prerequisite: 1322

8926 Clinical Laboratory I*(SP,SU) 2-6-5
Course designed to teach the use of equipment necessary to perform complete blood counts. Students learn to use the hemocytometer, pipet, centrifuge and spectrophotometer. Emphasis on the differential white blood counts and reticulocyte counts and most other tests utilized in a clinical hematology laboratory.
Prerequisites: 8907

8927 Clinical Laboratory II*(A,W) 2-6-5
Student performs tests on urine, including protein, glucose and ketones, and other tests performed in routine urinalysis laboratory. Students learn characteristics of and tests performed on transudates, exudates, and cerebrospinal fluid. Students perform blood chemistries, including glucose,

BUN, creatinine, bilirubin and enzymes. Special emphasis on the methods used in the clinical laboratory at the Ohio State University College of Veterinary Medicine.
Prerequisite: 8926

8929 Clinical Laboratory III*(A,W) 2-6-5
Course includes processes necessary to identify causative agents of bacterial infections. Student performs susceptibility testing to identify chemical or antibiotic agents necessary for treatment. Basic bacteriological procedures which include isolation of colonies on culture plate and Gram stain are taught. Serologic procedures, identification of leptospirosis and brucellosis by antigen-antibody detections, are introduced.
Prerequisites: 8986

8931 Clinical Application I*(SP) 0-6-3
Practical application of procedures used in Veterinary clinics and hospitals. Includes drug and fluid administration, radiographs, surgical and anesthesiology procedures, collecting laboratory samples and any other tasks performed in Veterinary facilities. \$45.00 lab fee.
Prerequisite: 1322

8932 Clinical Application II*(A,W) 0-6-3
A continuation of course 8931. \$45.00 lab fee.
Prerequisites: 8986

8986 Clinical Experience I*(SU,A) 0-30-6
A rotation through various departments and areas of the Ohio State University Veterinary Hospital. The student will work closely with junior and senior veterinary medical students under the supervision of the College of Veterinary Medicine faculty. \$45.00 lab fee.
Prerequisite: 27 technical credits

8987 Clinical Experience II*(W,SP) 0-30-6
A continuation of course 8986. \$45.00 lab fee.
Prerequisite: All 89XX course.

8988 Research Report*(W,SP) 1-0-1
Selected research projects for senior students which may include both library research and laboratory investigation under supervision of the faculty, in the student's major field of interest. Presentation of a formal research paper is required. Prerequisite: 36 technical credits.

Architecture Technology

5101 Architectural Graphics I*(A) 0-9-3
Lettering, line work, orthographic projection, isometric and oblique drawings, and preliminary drawing techniques used in the architect's office. Field trips. \$10.00 lab fee.

5102 Architectural Graphics II*(W) 0-9-3
Descriptive geometry with the objective of developing problem solving techniques in three dimensions including the intersection of lines and surfaces, the intersection of surfaces, the development of irregular shapes, the intersection of solids and shades and shadows. \$10.00 lab fee.
Prerequisite: 5101 or equivalent

5103 Architectural Graphics III*(SP) 1-11-5
Site development requirements including coordination with local government authorities for right-of-way, utilities, zoning and codes, development of topography and meets and bounds of property. Introduction of construction surveying and the use of the level and transit on the construction site. Field trips. \$10.00 lab fee.
Prerequisite: 5102

5104 Architectural Graphics IV*(A) 1-9-4
Line presentation with one, two, and three point perspective techniques and perspective chart techniques. Freehand and presentation drawing techniques used in the Architects' offices. \$10.00 lab fee.
Prerequisite: 5102

5105 Architectural Graphics V*(W) 1-9-4
Generation of selected details utilized by trade mechanics involved with items as wall construction, elevator construction, roof structure and crane-way construction. Multiple material floor and wall finish details, and the coordination of details within working drawings. Working drawing organization and specification notes. Field trips. \$10.00 lab fee.
Prerequisites: 5122

5106 Architectural Graphics VI*(SP) 0-15-5
 Complete working drawing project with office procedures and requirements emphasized. Detailed coordination with consultants' drawings and manufacturer's literature. Independent use of office product files and technical information. Field trips. \$15.00 lab fee.
 Prerequisites: 5105

5111 Materials and Processes of Construction I*(A) 2-4-4
 The properties, standards, unit measurements, production processes, and economics of material systems. The materials considered are concrete, masonry, wood, steel, and non-ferrous metals and alloys. Field trips will be taken to local manufacturing plants and fabrication shops. \$10.00 lab fee.

5112 Materials and Processes of Construction II*(W) 2-4-4
 The properties, standards, unit measurements, production processes, and economics of materials and their use in buildings are studied. The materials considered are plaster, acoustical finishes, waterproofing, roofing, flooring, wall coverings, doors, windows, hardware, glass, paints, and sealouts. Field trips will be taken to construction sites as related to various materials. \$10.00 lab fee.

5114 Mechanical Systems I (Heating and Ventilating)*(W) 2-4-4
 Fundamentals of comfort conditioning. Methods of heating, ventilating, and air conditioning; coordination with the elements of the building. Job construction techniques, detailing, schedules, trade association recommendations, shop drawings. Conventional symbols and nomenclature. Economic evaluations & research forecasts. Field trips. An introduction to solar heating is included. \$10.00 lab fee.

5115 Mechanical Systems II (Electrical Equipment)*(SP) 2-4-4
 Fundamentals of lighting, electrical systems equipment for buildings. Essentials of electrical code and association standards. Conventional symbols, nomenclature and layouts. Coordination of electrical work with the elements of the building, fixture and equipment schedules, electrical work economics, and research forecasts. Field trips. \$10.00 lab fee.

5116 Mechanical Systems III (Plumbing and Sanitation)*(A) 2-2-3
 Plumbing codes and standards, layout techniques, conventional symbols and nomenclature, coordination with other elements of building, schedules, details, shop drawings, economics, research forecasts. \$10.00 lab fee.

5121 Survey of Architecture* (A) 3-2-4
 A survey of architecture in America from 1600 to present. The men and ideas that shaped construction. Emphasis on modern construction.

5122 Structural Systems I (Wood)*(SP) 1-5-3
 Wood construction techniques; and detailing of conventional, post and beam, panel, prefabrication, light and heavy truss, millwork and laminated plywood systems. Shop drawing techniques and checking. Field trips. \$10.00 lab fee.
 Prerequisites: 4644

5123 Structural Systems II (Steel)*(A) 1-5-3
 Drafting room use of steel construction handbook and steel detailing. Structural plan layout, details, schedules, shop drawing techniques and checking, coordination of steel elements with other parts of building. Field trips. \$10.00 lab fee.
 Prerequisites: 4645

5124 Structural Systems III (Concrete and Masonry)*(W) 1-5-3
 Drafting room use of concrete reinforcing steel handbook and masonry handbook. Fundamentals of construction details and detailing, shop drawings, shop and job fabrication, job layout; and construction techniques. Coordination with other elements of the building, computer techniques, and economics of concrete and masonry construction. Field trips. \$10.00 lab fee.
 Prerequisites: 4645

5125 Estimating*(SP) 1-5-3
 Building cost estimating methods, detailed materials and labor takeoff methods, contractors' overhead costs, wage withholding, and payroll deduction. Insurance, tax, bond, and economics of construction costs. \$10.00 lab fee.
 Prerequisites: 5112

5127 Specifications, Codes and Standards*(W) 2-4-4
 The fundamentals of specifications organization into trade division, the content and referencing to other bidding and construction documents including contracts. Familiarization with Building Codes and Regulations used in the

drawing production process. Utilization of manufacturer's and association standards used in the drawing production process. \$10.00 lab fee.

Automotive Maintenance Technology

4102 Service Orientation and Maintenance* 5-10-9
 A basic course covering safety, the use of service publications and the technical knowledge and skills in all areas of an automobile to teach a minimum skill level. The student will have the terminal skills for employment as an Automotive Service Station Attendant or a background to advance to higher level courses. \$15.00 lab fee.
 Prerequisite for all other automotive technical courses.

4104 Automotive Welding* 1-4-3
 Introductory course designed to provide students with basic entry level welding skills usable in the automotive service field. \$20.00 lab fee.
 Prerequisite: 4102

4111 Brake Systems* 2-4-4
 Course covers basic brake systems. Includes theory, testing and service on current brake systems. \$15.00.
 Prerequisite: 4102

4112 Automotive Powerplants I 3-6-5
 An introductory course designed to provide students with the basic knowledge and skills in the areas of basic internal combustion engines, principles of operations, engine diagnosis and testing, engine construction, lubrication systems, cooling systems, in-car repair and service, and engine removal and installation. \$10.00 lab fee.
 Prerequisite: 4102

4113 Basic Automotive Electricity* 3-3-4
 Introductory course covering basic principles of electricity and magnetism; automotive DC circuits; battery theory, testing and service; use of automotive electrical test equipment; diagnosis techniques. \$15.00 lab fee.
 Prerequisite: 4102

4114 Automotive Electricity II* 2-5-4
 Course covers inspection, diagnosis, and service of automotive starting and charging systems. \$10.00 lab fee.
 Prerequisite: 4113

4115 Engine Diagnosis and Tune-Up* 4-8-7
 An advanced course in engine performance analysis and tune-up. \$15.00 lab fee.
 Prerequisite: 4113

4116 Manual Transmission and Rear Axle* 1-5-3
 Operational theory, diagnosis and repair of clutches, manual transmissions, drive lines and differentials. \$10.00.
 Prerequisite: 4102

4117 Ignition and Environmental Systems* 2-4-4
 Designed to provide students with basic knowledge and skill in the following areas: (1) carburation, (2) fuel delivery systems, (3) fuel injection, (4) supercharging and turbocharging, (5) environmental systems. \$15.00 lab fee.
 Prerequisite: 4102

4118 Automotive Diesels and Dynamometers 2-10-6
 An advanced course designed to provide students with knowledge and skill in: (1) performance testing of an automobile using Sun's Roadmatic Chassis Dynamometer and Go-Power Engine Dynamometer and (2) automotive diesel applications. \$15.00 lab fee.
 Prerequisite: 4102

4119 Service and Parts Management* 3-6-5
 This course will cover the management positions of an automobile dealership. The student will know the technical, legal and business knowledge necessary to achieve these positions after acquiring working experience in this field. Major emphasis is placed on the parts and service management units.
 Prerequisite: 6th Quarter Status

- 4121 Suspension and Steering Systems*** 2-4-4
Course covering basic suspension and steering systems. Course includes topics covering the theory, testing and service of current suspension and steering systems. \$15.00 lab fee.
Prerequisite: 4102
- 4122 Automotive Powerplants II** 5-10-9
An advanced course designed minor service techniques for currently found systems are covered. \$15.00.
Prerequisite: 4102
- 4124 Electrical and Vacuum Systems*** 2-6-4
Advanced course covering vacuum devices; interpretation of chassis wiring diagrams and vacuum wiring diagrams; proper use of diagnostic equipment; repair of malfunctioning electrical and vacuum components. \$10.00 lab fee.
Prerequisite: 4113
- 4125 Automotive Accessories*** 2-4-4
Advanced course in the proper diagnosis, service and repair of power operated accessories, signaling devices, speed controls, wiper systems, charging and minor service techniques for currently found systems are covered. \$15.00 lab fee.
Prerequisite: 4102
- 4135 Automatic Transmissions*** 2-5-4
Theory, operation and maintenance of currently used automatic transmissions. Proper diagnosis of system malfunctions is stressed. \$15.00 lab fee.
Prerequisite: 4102
- 4144 Air Conditioning*** 2-3-3
Basic course covering the theory and operation of automotive air conditioning systems. Diagnosis, charging and minor service techniques for currently found systems are covered. \$15.00 lab fee.
Prerequisite: 4102

Aviation Maintenance Technology

- 2508 Aircraft Environmental Control Systems*(SP, SU)** 3-3-4
Inspection and repair and cabin atmosphere control systems; inspection check, troubleshooting, service and repairing of ice and rain control systems. Maintenance of aircraft fire control system. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2509 Aircraft Fluid Systems*(A, W, SP, SU)** 8-9-11
Basic hydraulic and pneumatic principles. Basic hydraulic systems. Brake systems. Hydraulic line, fittings, fluids, pumps, and actuating devices. Inspection, troubleshooting, repair. Vacuum systems; maintenance, inspection, and repair. Aircraft fuel systems. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2511 Aircraft Rigging, Assembly and Inspection*(A, W, SP, SU)** 2-6-5
Airplane nomenclature. Disassembly and assembly sequence and procedure. Alignment procedures. Airplane overhaul. Fundamentals and methods of rigging. Stability in flight, control surfaces. Control cables; inspection, installation, splicing. Landing gear assembly; types, maintenance, repair. Fuel systems. Aircraft appliances and miscellaneous equipment. Servicing and handling of aircraft. Heating, pressurization, and other internal systems. Instrument installation and inspection. Weight and balance review. Inspection of complete aircraft. FAA report forms. Helicopter theory and maintenance. Aerodynamics of the helicopter. \$8.00 lab fee.
Prerequisites: Aviation Courses 2501 through 2509, 2553, 2557
- 2512 Powerplant Theory and Maintenance (Reciprocating Engines)*(W, SU)** 7-12-11
Principles, development, and design of internal combustion engines. Engine maintenance, repair, and overhaul. Inspection and troubleshooting. Identification of aircraft materials, parts, and components. Calibration of tools and testing equipment. Engine run-in, testing, and maintenance. Hazards of aircraft engine operation. Lubrication systems. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2513 Powerplant Theory and Maintenance (Turbine Engine)*(SP, SU)** 3-3-4
Principles, development, design and classification of turbine engines. Engine inspection, maintenance, repair and overhaul. Installation and removal of turbine engines. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2514 Magnetos and Ignition Systems*(W, SP)** 7-8-10
Basic electrical principles in ignition systems. Magneto theory, construction, operation, overhaul. Review of combustion principles. Types of magnetos, distributor. Magneto timing; internal and external. Harness construction, inspection, overhaul, and testing. Booster systems. Low tension ignition systems. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2515 Carburetion and Fuel Controls*(W, SP)** 4-6-6
Float carburetors: theory, construction, operation, troubleshooting maintenance, and overhaul. Pressure injection carburetors: theory, construction, inspection, maintenance, and troubleshooting. Direct pressure injection systems. Fuel systems and requirements: gravity and pressure systems. Induction systems and supercharging. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2516 Propellers*(A, SP)** 5-6-7
Aerodynamic principles of propellers. Propeller types, construction and materials. Inspection, repair, and troubleshooting. Installation, removal, tracking and balancing. Controllable propellers. Constant speed governor control: construction, operation, maintenance, adjustment, troubleshooting. Reversible propellers. Hazards of propeller operation. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553
- 2517 Powerplant and Systems Inspection*(A, W, SP, SU)** 6-8-9
Condensation and coordination of previously accumulated knowledge. Inspection of power plants and power plant systems, use of inspection equipment and aids. Procedures for returning aircraft to active service. \$8.00 lab fee.
Prerequisites: 2501, 2502, 2504, 2553, 2512, through 2516
- 2553 Basic Aviation Technology*(SU, W)** 5-8-9
Basic electricity for the aviation maintenance system including reading and interpreting electrical circuit diagrams utilized in troubleshooting aircraft electrical systems. Batteries and generators. Performing ground operation and servicing of aircraft. Understanding maintenance publications, forms and records. \$8.00 lab fee.

2557 Aircraft Electrical Systems*(SP, SU) 6-10-10
 Review of fundamentals of electricity. Generator control systems. Direct current motors. Electrical engine starting systems: types, inspection, maintenance, overhaul, troubleshooting. Review of basic alternating current principles. Alternating current motors. Alternating current instrument systems. Reading electrical blueprints. Wiring practices, bonding, shielding. Electrical systems. Electrical power units. Radio installations, and inspection. \$8.00 lab fee.
 Prerequisites: 2501, 2502, 2504, 2553

2585 Advanced Aircraft Maintenance* 0-6-3
 Advanced instruction in the maintenance rebuilding and overhaul of aircraft structures, systems, and powerplants. The course is designed to allow the student to concentrate in an area which will further his knowledge and skills. Work will be performed on actual aircraft. Offered on demand.

Banking/Finance Technology

2801 Introduction to Consumer Finance* (A,W,SP,SU) 3-0-3
 A study of the history of consumer credit and social institutions, social aspects of consumer credit, institutions of consumer credit, customer relations in consumer credit, and operational aspects of consumer credit.

2803 Money and Banking* (A,W,SP,SU) 3-2-3
 Control and operation of banking and monetary systems with emphasis on supply and demand and governmental control.
 Prerequisites: 3806, 3762

2805 Analyzing Financial Statements* (A,SP) 4-0-4
 This course is organized into two main sections: Characteristics of Financial Statements and Financial Statement Analysis. The first section serves as a useful review of basic accounting principles for those students who have studied accounting. The second section covers the techniques of financial statement analysis.

2806 Principles of Bank Operations* (A,W,SP) 4-0-4
 Presents the fundamentals of bank functions in a descriptive fashion so that the beginning banker may acquire a broad (and operational) perspective. The descriptive orientation is intentional. Banking is increasingly dependent upon personnel who have the broad perspective so necessary for career advancement.

2807 Financial Institutions and Markets*(W,SU) 3-0-3
 This course covers the spectrum of financial institutions and markets. The U.S. financial system is in a constant state of flux and this course presents current changes in laws, regulations, forms of organizations, markets, and institutions. Also covered is the development of new financial markets and new institutions. The recent erratic fluctuations of financial markets makes this a timely and interesting course.

2809 Bank Investments* 4-0-4
 Because the bank's needs for primary reserves and loanable funds limit the funds available for investment, this course describes the nature of such funds and how their uses are determined. It also analyzes the primary and secondary reserve needs of commercial banks, the sources of reserves, and their random and cyclical fluctuations, and shows the influence of these factors on investment policy. This analysis is followed by a study of yield changes as they affect a bank's long-term holdings.

2811 Federal Reserve System* 4-0-4
 Examines the operations and policies of the Federal Reserve System during critical periods over the past 60 years. The approach taken is topical rather than chronological, thereby enabling students to compare and contrast Federal Reserve policies dealing with similar problems at different periods in time. Attention is given to international monetary affairs and economic developments affecting the American fiscal system.

2813 Credit Administration* (W,SP) 5-0-5
 Analytical study of credit control, and management of collections. Topics include: management and analysis of consumer and commercial credit, business credit, government credit, and foreign credit.
 Prerequisites: 3806, 3313, 3762

2815 Business Financial Management* 4-0-4
 This new five-volume set's primary objective is to acquaint the student thoroughly with the principles of finance as applied to the operations of a profit-seeking (nonbank) firm. Active participation in the process of financial administration and decision making teaches the student to use the tools and

techniques necessary for the efficient financial management of a modern business enterprise. An up-to-date overview of the activities of the modern business financial manager is provided.

2816 Agricultural Finance* 4-0-4
 Reflecting the rapid growth of the off-farm agribusiness sectors (the suppliers of farm inputs), this course emphasizes general principles associated with the evaluation of management and the use of capital, rather than stressing the examination of land and labor resources, which are more closely aligned with agricultural production. An understanding of agricultural finance should help the banker in satisfying the credit needs of modern agriculture.

2818 Installment Credit* 4-0-4
 In this course, the techniques of installment lending are presented concisely. Emphasis is placed on establishing the credit, obtaining and checking information, servicing the loan, and collecting the amounts due. Each phase of a bank's installment credit operation is carefully scrutinized. Other topics discussed are inventory financing, special loan programs, business development and advertising, and the public relations aspect of installment lending.

2819 Banking/Finance Seminar & Research* (W,SP) 1-2-2
 The student receives exposure to the practical aspects of banking/finance through a series of guest speakers, field trips, and projects.

2823 Corporation Finance* (A, SP) 5-0-5
 A study of business organization. Means of financing, financial management of working capital, administration of income, expansion and merger, reorganization, receivership, and dissolution.
 Prerequisites: 3806 and 3762.

2827 Trust Functions and Services* 4-0-4
 Presents a complete picture of the services rendered by institutions engaged in trust business. Providing an introduction to the services and duties involved in trust operations, the course is intended for all bankers, not only those who are engaged in trust business. It endeavors to keep clear the distinction between business and legal aspects of trust functions.

2831 Savings and Time Deposits* 4-0-4
 Reflects recognition of the fact that a knowledge of the historical development of savings institutions and an awareness of the basic economic function of the savings process are necessary to an understanding of the current operations and policies of these institutions. It begins with a review of the economics of the savings process in order to clarify important differences between financial savings by individuals or organizations and real savings that appear as capital formation. Different types of financial savings are reviewed in order to describe the system of financial flows of income to capital investment.

2834 Management of Commercial Bank Funds* 4-0-4
 Those necessary principles from which the student can derive an adequate philosophy of funds management. Differences between practices in large banks and smaller institutions are spelled out so that this text is useful to bankers in institutions of all sizes.

2836 International Banking* 4-0-4
 The second edition of this next course is an introduction to a vast field for those working in international departments, as well as for those involved in the domestic activities of their banks. The essential objective of this course is to present the basic framework and fundamentals of international banking: how money is transferred from one country to another, how trade is financed, what the international agencies are and how they supplement the work of commercial banks, and how money is changed from one currency to another.

2838 Law and Banking* 4-0-4
 An introduction to basic American Law, presenting the rules of Law which underlie banking. Topics include jurisdiction, the court system and civil procedure, contracts, quasi-contracts, property, torts and crimes, agencies, partnerships, corporations, sales of personal property, commercial paper, bank deposits and collections, documents of title, and secured transactions. Emphasis is on the Uniform Commercial Code.

2881 Banking/Finance Internship I (A,W,SP,SU) 0-25-4
 The internship provides students with valuable on-the-job work experience and training in the banking and finance field. Students will learn actual job skills under the supervision of an employer. This is an opportunity for students to earn money, acquire work experience and learn at the same time.

2882 Banking/Finance Internship II (A,W,SP,SU) 0-25-4
 A continuation of 2881.

2883 Banking/Finance Internship III (A,W,SP,SU)	0-25-4
A continuation of 2882.	
2885 Banking/Finance Special Problems I (A,W,SP,SU)	0-6-2
This course is to be taken concurrently with the internship. The job skills which the student is learning will be studied and reported in a term paper.	
2886 Banking/Finance Special Problems II (A,W,SP,SU)	0-6-2
A continuation of 2885.	
2887 Banking/Finance Special Problems III (A,W,SP,SU)	0-6-2
A continuation of 2886.	

Basic Sciences

1301-1306 Special Topics in Biological and Physical Sciences (on demand)	1-6
Selected materials from the regular course offerings, designed to meet specific needs. May be used for independent studies. Lab fee determined according to content.	
1307 Science Skills (on demand)	3-0-3
A course for students who lack the basic skills for entrance into 1341, 1342, and 1343. The skills emphasized are measurement, observation, graphing, and scientific reading. Students will participate in class exercises designed to give them practice in these skills.	
1311 Inorganic Chemistry(A,SP)	4-3-5
An introductory course in fundamental chemical concepts and laboratory techniques. Topics include atomic structure, periodic classification of elements, chemical equations, chemical calculations, solutions, acids and bases equilibria and the gas laws. \$8.00 lab fee. Prerequisites: High School Algebra, 1341 or equivalent	
1312 Organic Chemistry(W,SU)	4-3-5
A course in fundamental organic chemistry. The study of carbon compounds: aliphatic hydrocarbons, alcohols, ethers, aldehydes, ketones, carbohydrates, lipids, and proteins. Related laboratory. \$8.00 lab fee. Prerequisite: 1311 or equivalent	
1313 General and Biological Chemistry(A,W)	3-3-4
A review of basic inorganic chemistry and a study of the properties and nomenclature of carbon compounds, with emphasis on biological applications. An examination of the properties of biologically important carbohydrates, lipids, and proteins. \$8.00 lab fee. Prerequisite: 1188 or equivalent, 1341 or equivalent	
1315 General Microbiology(A,W,SP,SU,)	2-5-4
Use of a bright field microscope and demonstration and explanation of other types. A study of bacteria and bacteriological techniques for cultivation and isolation in pure culture. Use of various stains and certain reagents used in biochemical techniques for identification. Aseptic and anaerobic techniques. Susceptibility testing. Methods of physically and chemically controlling bacterial growth and contamination. Isolation techniques of human normal flora. \$10.00 lab fee. Prerequisite: 1341 or equivalent	
1316 Microorganisms and Disease (on demand)	3-0-3
A basic study of the concepts of microbial disease. Topics covered are host-parasite interactions and resistance and immunity to disease, including the development of the immune system and mechanisms of antigen-antibody reactions. Additional topics for detailed discussion include specific pathogenic bacteria pertinent to health field personnel. Prerequisite: 1315 or equivalent	
1321 Anatomy and Physiology I(A,SP)	2-5-4
Basic cell and tissue structure and function are presented. Anatomical and functional detail are presented for urinary, reproductive and digestive organ systems. Anatomical detail of the skeleton and muscular systems are presented in laboratory. The cat is utilized as a representative mammal in the laboratory. \$15.00 lab fee. Prerequisite: High School Biology or 1343. 1321 is not open to students with credit for 1331 and 1332 or 1361, 1363, 1364, and 1365.	

1322 Human Physiology (A,SP)	4-0-4
Functional detail of all human organ systems (except special senses, intergumentary and endocrine) are presented in detail. Basic functioning of the cell and tissues is also presented. Prerequisite: 1331 or concurrent with 1331. 1332 is not open to students with credit for 1321, 1322, 1363, or 1365.	

1323 General Health Problems(W)	4-0-4
Emphasis is placed on contemporary problems associated with physical and social health within the community. The biologic causes as well as sociologic causes of the problems are discussed and analyzed. The scope of the course encompasses prenatal situations through old age.	

1324 Human Genetics and Society (W)	3-0-3
A study of Mendelian genetics as it relates to the human organism. Special emphasis is placed upon human genetic anomalies and their social and psychological ramifications. The role of genetic counseling is discussed. 1331-1332	

1331 Human Anatomy(A,SP)	0-6-3
All organ systems of the human are presented in anatomical detail. Except for the special senses, integumentary and endocrine systems, functioning is treated superficially. The cat and organs of the sheep are utilized as representative of mammalian anatomy. \$20.00 lab fee. Prerequisite: High School biology or 1343 1331 is not open to students with credit for 1321 or 1361.	

1332 Human Physiology(A,SP)	4-0-4
Functional detail of all human organ systems (except special senses, intergumentary and endocrine) are presented in detail. Basic functioning of the cell and tissues is also presented. Prerequisite: 1331 or concurrent with 1331. 1332 is not open to students with credit for 1321, 1322, 1363, 1363, or 1365.	

1341 Survey of Chemistry (A,W,SP,SU)	3-3-4
Basic concepts of the physical sciences with an emphasis on the physical and chemical properties of matter. Related laboratory work and demonstrations. \$5.00 lab fee. Prerequisite: 1105 or equivalent recommended. 1431 is not open to students who have credit for 1381 or 1392.	

1342 Survey of Physics(A,W,SP,SU)	3-3-4
A study of the basic concepts of physics with emphasis on energy in its various forms. Topics include mechanics, heat, electricity, and waves. Related laboratory work and demonstrations. \$3.00 lab fee. Prerequisite: 1105 or equivalent recommended 1342 is not open to students who have credit for 1381 or 1392.	

1343 Introduction to Biological Sciences (A,W,SP,SU)	4-0-4
Basic biological concepts are presented with emphasis on cell organelles, properties of the cell membrane, metabolic activities of the cell, basic biochemistry of DNA, RNA, and protein synthesis, and genetics. Fundamentals of chemistry including atomic structure, elements, compounds, basic chemical reactions, organic compounds, acids, bases, buffers and enzymes are presented. 1343 is not open to students who have credit for 1321, 1331, 1332, or 1361.	

1344 Introduction to Anatomy and Physiology(A,SP)	3-0-3
A general overview of normal human anatomy and physiology. Topics include the cell, tissues, musculo-skeletal, nervous, cardiovascular, genitourinary, digestive, respiratory and endocrine systems. 1344 is not open to students who have credit for 1321, 1331, 1332, or 1361.	

1361 Human Anatomy(A,W)	2-4-4
Starting with cells and tissues, all the organ systems of humans are presented in anatomical detail. Functioning is treated superficially. The cat is utilized as a representative mammal in the laboratory. \$15.00 lab fee. Prerequisite: 1343 or High School Biology 1361 is not open to students who have credit for 1321 and 1322.	

1362 Human Embryology (on demand)	2-0-2
Starting with gametogenesis and reproduction, the embryological development of humans from fertilization to birth is presented for morphogenesis and organogenesis of the following: face, neck, pharynx, limbs, circulatory system, nervous system, respiratory system, digestive system, urinary system, and reproductive system. Prerequisite: 1361 and 1366 or permission of instructor	

1363 Human Physiology and Biophysics I (W,SP) 3-3-4
The functioning of the various systems of the human body is presented in detail. Topics include cell physiology, metabolism, nutrition, digestion, body temperature regulation and the musculo-skeletal system. \$4.00 lab fee.
Prerequisite: 1361

1365 Human Physiology and Biophysics III(A,W) 3-3-4
A continuation of 1364. The following topics are presented in an integrative manner: renal physiology, fluid and electrolyte balance, acid-base balance, endocrine and nervous systems. \$4.00 lab fee.
Prerequisites: 1364 or 1322

1366 Human Physiology I 3-3-4
The functioning of the various systems of the human body is presented in detail. Topics include cell physiology, neural and endocrine regulation. \$4.00 lab fee.
Prerequisite: 1361.
1366 is not open to students with credit for 1332, or 1321 and 1322.

1367 Human Physiology II 3-3-4
A continuation of 1366. The major topic is regulation of the internal environment. This includes cardiovascular physiology, blood, renal physiology, fluid and electrolyte, acid-base balance, regulation of respiration, digestion, metabolism, and energy balance. \$8.00 lab fee.
Prerequisite: 1366 or equivalent.
1367 is not open to students with credit for 1332 or 1321 and 1322.

1368 Human Physiology III 3-3-4
A continuation of 1367. Topics include immunology, responses to external environment (sensory systems, body mechanics, and movement), reproduction, and inheritance. \$4.00 lab fee.
Prerequisite: 1367 or equivalent.
1368 is not open to students with credit for 1332, or 1321 and 1322.

1371 Physics and Technology (on demand) 3-0-3
A study of the development of physics and technology from antiquity to the present. Diverse attitudes of many scientists, writers and philosophers toward physics and technology, particularly in the nineteenth and twentieth centuries, are presented. Students are encouraged to look at all sides of controversial questions concerning present-day physics and technology.

1381 Physics I (Mechanics)(A,W,SP) 3-3-4
A course in the basic principles of mechanics. Major topics include equilibrium of rigid bodies, particle motion, Newton's laws of motion, work, and energy conservation principles, and rotational motion. Related laboratory and demonstrations. \$1.00 lab fee.
Prerequisite: 1111 or equivalent.

1382 Physics II (Electricity and Magnetism)(SP) 3-3-4
A course in the basic principles of electricity and magnetism. Major topics include electric charge and fields, capacitance and resistance, currents, DC circuits, magnetic forces and fields, magnetic properties of matter, and alternating current. Related laboratory and demonstrations. \$1.00 lab fee.
Prerequisite: 1111 or equivalent.

1383 Physics III (Properties of Matter) (A,SP,SU) 3-3-4
A course in the basic principles associated with the mechanical and thermal properties of matter. Major topics include elasticity, fluid mechanics, heat and temperature, energy transformations, heat transfer, ideal and real gases, thermodynamics, vibrations and wave motion. Related laboratory and demonstrations. \$1.00 lab fee.
Prerequisite: 1111 or equivalent.

1384 Physics IV (Light and Modern Physics)(W) 3-3-4
A course in the basic principles of electromagnetic waves, physical and geometric optics, and atomic theory. Applications of principles to optical instrumentation, electron vacuum tubes, solid state electron devices, X-ray tubes, and lasers are featured. Related laboratory and demonstrations. \$1.00 lab fee.
Prerequisite: 1181, 1111 or equivalent

1392 Medical Physics I (Mechanics and Heat) (on demand) 3-3-4
A course in the basic principles of mechanics and heat. The relationship between theory and experiment is emphasized through problem-solving, laboratory exercises and demonstrations. Applications to physiology are featured, and include such topics as biomechanics, circulation, respiration, body heat production and heat transfer. \$1.00 lab fee.
Prerequisite: 1181 or equivalent

1392 is not open to students who have credit for 1381 or 1383.

1393 Medical Physics II (Electricity, Magnetism, and Optics) 3-3-4
(on demand)

A course in the basic principles of electricity, magnetism, and optics which emphasizes the relationship between theory and experiment. Laboratory exercises and demonstrations are intended to provide practical experience in the use of measuring instruments, particularly those of the medical sciences. \$1.00 lab fee.
Prerequisite: 1181 or equivalent

1393 is not open to students who have credit for 1382 or 1384.

Behavioral Sciences

1501 Beginning Philosophy 3-0-3
A study of the definitions and the historical development of philosophy. A survey of the great thinkers, systems of logic, scientific method, and existentialism will be included. \$2.00 lab fee.

1505 Social Issues in Economics 3-0-3
An introduction to the study of the socio-economic issues relative to supply, demand, and scarcity. The course is designed to familiarize students with capitalism, socialism, production, public funding, taxation, labor force, inflation, business, financing, conservation, money and the banking system as they relate to the socio-economic problems of our society. \$2.00 lab fee.

1511 Animal Behavior 3-0-3
A general introduction to the field of Animal Behavior including: a) a history of the field; b) methods of research; c) insights obtained from laboratory and field research regarding learning, social organization, socialization and communication among various animal species; and d) practical applications of animal behavior research to the understanding of humans as animals, the training of pets, the conservation of endangered species, and the design and maintenance of zoos. \$3.00 lab fee.

1512 Human Sexuality 3-0-3
A study of the facts, fallacies and feelings surrounding human sexuality through the use of speakers, films, small group interaction, readings, journals and techniques of the American Association of Sex Educators, Counselors and Therapists to aid students in working through some of the conflicts and confusion surrounding sexual learnings and values.

1514 General Sociology 3-0-3
An introductory course dealing with the microscopic and macroscopic aspects of social reality; the issues of social change; the major components of social life; and the major social institutions. Emphasis is on the scientific method of approaching the fundamental concepts of human society. \$2.00 lab fee.

1515 Human Behavior 3-0-3
A course designed to help the student develop his awareness of human behavior patterns, interpersonal communication and realization of self and other's interaction. \$2.00 lab fee.
Prerequisite: 1522 or 1514

1516 Political Science 3-0-3
An introductory course emphasizing the relationship between citizens and government, and the roles played by each in policy making decisions. \$2.00 lab fee.

1518 Sociology of Urban Life 3-0-3
An introductory course designed to give the student exposure to urban sociology and related areas. Covers both intellectual and practical natures of our cities and how urban areas have changed and what can be expected in the future. Analyzes early city growth, the influence of natural environment, technology, and population. Covers urbanization in the U.S.; planning and social questions relating to cities. Discusses the urban explosion in Latin America, Africa, the Middle East and Asia. Looks to the future with speculations on what cities should or will be like. \$2.00 lab fee.
Prerequisite: 1514

1522 General Psychology 3-0-3
An introductory course requiring application of the scientific method in treatment of the following topics: research methodology, beginning statistics, and theories of physical, cognitive, moral and emotional development, sensation, perception, learning, motivation, intelligence, memory, personality, coping processes, abnormality and adjustment, and the individual within society. \$2.00 lab fee.

1523 Child and Adolescent Psychology 4-0-4

A developmental psychology course covering human development from conception through the adolescent period. Research and theory will be utilized in describing and attempting to explain how the individual child develops. Emphasis will be placed on developmental norms and the wide variety of behavior in the "normal child". \$2.00 lab fee. Prerequisite: 1522

1524 Adult Psychology 4-0-4

A developmental psychology course covering human development from young adulthood to old age. Research and theory will be examined in relation to: youth, young adult, middleage, elderly, death, and dying. \$2.00 lab fee. Prerequisite: 1523

1525 Marriage and Family Relations 3-0-3

Sociology of the family course which explores the impact of modern society upon marriage and family relationships. Key concepts covered include: research, theoretical frameworks, family change, alternative life styles, sub-cultural and social class variations, mate selection, sexual norms, marital adjustments, parenthood, dissolution, remarriage, and the family of the future. \$2.00 lab fee. Prerequisite: 1514 or 1522

1526 Abnormal Psychology 3-0-3

Abnormal Psychology is a course which presents to the students the basic concepts of abnormalities as defined by the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM III). The course illuminates the classification scheme of diagnoses listing descriptive terms and symptoms of all diagnoses. This course examines the myths, philosophies and major perspectives in the field of mental health including the proposed revisions for D.S.M. III. \$2.00 lab fee. Prerequisite: 1522

1527 Contemporary Cultural Anthropology 3-0-3

This course is a survey of physical and cultural anthropology in order to provide the student with background information necessary for the examination of contemporary subcultural groups in the United States, Ohio and Metropolitan Columbus Area. \$2.00 lab fee. Prerequisite: 1514

1528 Ethnic Studies 3-0-3

A course which explores the pluralistic nature of American society and focuses upon the experience, past and present, of major ethnic groups in the United States. \$1.00 lab fee.

1529 Bio-Medical Ethics 3-0-3

Bio-Medical Ethics is an introductory philosophy course that requires the reasoned application of ethical principles in the following issues: informed consent, patient's rights, lying and truth telling in medicine, suicide, behavior control, active and passive euthanasia, heroic medicine, eugenics, genetic counseling, health care delivery, and birth control. The ethical principles of autonomy, justice, and non-maleficence will be examined in-depth. Treatment of the above issues will include political implications of the control of the technological imperative. \$1.00 lab fee.

1531 Child Development I 3-0-3

A study of the developmental patterns of children from conception up to chronological age of six years. The traditional child development approach is utilized with emphasis upon physical, social, and emotional development. Observation of children is an integral part of the course. \$2.00 lab fee. Prerequisite: 1522

1532 Child Development II 3-0-3

A study of developmental patterns of children from the age of six through adolescence. The traditional child development approach will be utilized with emphasis on cognitive, physical, social, and emotional development. Observation of children with the use of language, and objective techniques will be an integral part of the course. \$2.00 lab fee. Prerequisite: 1531

1533 Physical Handicaps 3-0-3

Orientation of the most common disabling conditions from infancy through aging, including the study of etiology, physical manifestations, and basic rehabilitation concepts. \$2.00 lab fee. Prerequisite: 1522

1535 Speech and Audiology 3-0-3

A study of the distinctions between speech, hearing and language with emphasis on the normal course of speech sound development with recognition of "different" versus "deficient" speech patterns and hearing malfunctions. \$2.00 lab fee. Prerequisite: 1522

1541 Community Sociology 4-0-4

A study of the institutions and community from the sociological imagination perspective. The influence that mores, education, employment, attitudes, history and motives have upon the individual as well as the community at large will be studied. \$2.00 lab fee. Prerequisite: 1514 or 1522

1542 Social Psychology I 4-0-4

A study of the human condition and human behavior through a scientific attempt toward explanation of how thoughts, feelings and actions of individuals are influenced by actual, imagined, or implied phenomena. The sampling of traditional and contemporary theory and empirical research is emphasized. \$2.00 lab fee.

1543 Social Psychology II 4-0-4

Students experience how to be a sensitive participant in a group. Group dynamics is incorporated with emphasis on understanding how one is perceived by the participant and observer. \$2.00 lab fee. Prerequisite: 1542 or permission of instructor

1545 Institutional Racism 3-0-3

The purpose of this course is to provide students with knowledge and understanding of how institutional racism affects minorities from all levels of institutions. \$1.00 lab fee. Prerequisite: 1514

1573 Adaptive Behavior I 3-0-3

A study of the depth and scope of stress and tension from a holistic approach. Research and theory will be examined in relation to: the problems and potential for achieving solutions, underlying causes from stress-producing environments, methods for measuring stress, techniques for alleviating and managing stress and tension. \$2.00 lab fee. Prerequisite: 1514 or 1522

1574 Adaptive Behavior II 3-0-3

Continuation of Adaptive Behavior I. \$2.00 lab fee. Prerequisite: 1573 or permission of instructor

1575 Industrial Psychology 3-0-3

A course emphasizing organizational structure, group behavior, and individualized adjustment. It will introduce the student to the application of psychological principles, perspectives, and methods to various areas of industrial and organizational behavior, including selection, training, motivation, leadership, and the satisfaction of human needs in both work and living. \$2.00 lab fee. Prerequisite: 1515 or 1522

Independent Studies (on demand)		
1591 Independent Study I	1 credit	\$1.00 lab fee
1592 Independent Study II	2 credits	\$1.00 lab fee
1593 Independent Study III	3 credits	\$1.00 lab fee
1594 Independent Study IV	3 credits	\$1.00 lab fee
1595 Independent Study V	3 credits	\$1.00 lab fee

Each of the above is an individualized, student-structured elective course that permits the student to pursue his own interests within the context of a faculty-guided program. Prerequisite: One course in Psychology or Sociology or related subject and approval by instructor.

Business Data Processing Technology

2714 BASIC Business Language*(A,W,SP,SU) 2-3-3

Introduction to the BASIC programming language with business applications. \$25.00 lab fee. Prerequisite: 2729 or permission of instructor.

2715 COBOL I*(A) 2-8-5

Introduction to the concepts and techniques of the COBOL programming language using structured programming techniques. \$40.00 lab fee. Prerequisite: 2722 or permission of instructor.

2717 RPG II*(W,SU) 2-8-5

Study of the fundamentals of the Report Program Generator (RPG) programming language, particularly as it applies to a small computer. \$40.00 lab fee. Prerequisite: 2729

Business Management Technology

2718 FORTRAN IV*(SP) 2-3-3
Introduction to the FORTRAN IV programming language as used in a business environment through the use of lecture and lab problems. \$25.00 lab fee.
Prerequisite: 2729

2719 P.L./1*(SP) 2-3-3
Introduction to the concepts and techniques of the PL/1 language, including the procedures concept, the declare verb, read, get, put, write features, and page formatting. \$25.00 lab fee.
Prerequisite: 2729

2721 Assembler Language I*(W,SP,SU) 2-8-5
Introduction to programming in Assembly Language. Proficiency in programming is achieved by the coding and running of lab problems on the computer. \$40.00 lab fee.
Prerequisite: 2729

2722 Assembler Language II*(SP,SU) 2-8-5
Introduction to magnetic disk properties and file organization concepts. Students code and run Assembly Language programs which process sequential disk files. \$40.00 lab fee.
Prerequisite: 2721

2723 Assembler Language III*(A,SU) 2-8-5
The utility sort/merge program is introduced and all aspects of programming indexed sequential files are studied in theory and in the lab environment using Assembly Language. \$40.00 lab fee.
Prerequisite: 2722

2726 Systems Analysis I*(A) 4-0-4
Introduction to the science of systems analysis, to include introduction to models, simulation, and an overview of specific business systems.
Prerequisite: 2722

2727 Systems Analysis II*(W) 5-0-5
Explanation of systems flowcharting and documentation and detailed and detailed discussion of common business applications. Also, a case is used to explore how the science of systems analysis can be applied to a medium size business.

2728 Advanced Topics in B.D.P.*(W) 3-0-3
Selected topics of current interest will be presented, including a discussion of operating systems and OS job control.
Prerequisite: 2723

2729 Principles of Business Data Processing*(A,W,SP) 4-2-5
This course is designed to introduce the student to: (1) Business Data Processing Technology, (2) how computers are used in business, (3) the use of computer terminals, and (4) the flowcharting and problem solving process. \$5.00 lab fee.
Prerequisite: Placement in Math 1121 or completion of Math 1108

2755 COBOL II*(W) 2-8-5
A continuation of 2715, COBOL I. Advanced topics in the COBOL language are examined including SORT feature, Indexed, Sequential, Access methods and COBOL linkage conventions. \$40.00 lab fee.
Prerequisite: 2715

2756 COBOL III*(SP) 2-8-5
A Continuation of COBOL II covering advanced topics and on-line programming using terminals. \$40.00 lab fee.
Prerequisite: 2755

2757 Final Project*(SP) 2-8-5
System design and implementation of a challenging computer project. \$40.00 lab fee.
Prerequisites: 2723, 2755, 2757

2781 Survey of Business Data Processing*(A,W,SP,SU) 1-2-2
This course is designed to introduce the student to the ways in which computers are used in business from a non-technical point of view. This course is not intended for BDP majors; BDP majors should take 2729 Principles of Business Data Processing.

3801 Marketing (A,W,SP,SU) 5-0-5
A study of marketing fundamentals, consumption and consumer behavior, retailing and wholesaling structures. The functions performed in marketing, marketing policies, and a critical appraisal of the field of marketing.

3803 Personal Finance* (A,W,SP,SU) 3-0-3
The organization and function of our modern economic society with emphasis on personal investing, insurance programs, capital requirements for business, and return of invested capital.

3804 Office Management (A,W,SP,SU) 2-2-3
The course is designed to assist the student in understanding the flow of business, human relations, and general office procedures in the small office. Instruction will include telephone etiquette, pegboard accounting, credit administration along with the basic functions of the small office.

3806 Macroeconomics (A,W,SP,SU) 3-0-3
An analysis of the basic functioning of the Economic System, limited to aggregate concepts. The phenomena of inflation, unemployment and economic growth and the tools and techniques used for their control.

3807 Microeconomics (A,W,SP,SU) 3-0-3
An analysis of the fundamental economic principles that govern the operation of a single business firm.
Prerequisite: 3806

3808 Advertising* (W,SP) 3-0-3
An in-depth exploration of advertising as a part of the "marketing mix." The course is designed to provide students with useful information about advertising either as a consumer, a career area or as a manager of a marketing business. Non-credit elective when 2902 is used for credit.

3809 Small Business Systems (W) 3-0-3
An overview of business management. How a business operates. Factors of production. Financial considerations. Personal Supervision.

3812 Government and Business* (A,W,SP) 3-0-3
Various government legislation and regulations and how they affect business, the consumer, and society as a whole.

3813 Management(A,W,SP,SU) 3-0-3
A study of the principles and practices of management.

3815 Promotion* (A,W,SP,SU) 5-0-5
Selling as a promotion on activity of marketing. Advertising, sales promotion, publicity, and personal selling are each explored individually as well as a complete selling package. Selling as an activity of profit and not-for-profit business is included.

3816 Fundamentals of Investments* (W,SU) 3-0-3
A fundamental evaluation of the costs and risks and returns of investments within the current business and economic environment: the various types of investments available, utilization of financial information, effects of inflation and taxes, and methods and theories for evaluation.

3818 Consumer Behavior* (A,SU) 3-0-3
Survey of various techniques employed by professional salesmen. Techniques employed by "big ticket" salesmen, wholesale and industrial salesmen, and those salesmen involved with intangibles.

3819 Tech Selling* (A,W,SP,SU) 3-0-3
Survey of various techniques employed by professional salesmen. Techniques employed by "big ticket" salesmen, wholesale and industrial salesmen, and those salesmen involved with intangibles.

3821 Introduction to Business (A,W,SP,SU) 3-0-3
A general introduction to business activities, the capitalistic system, and business terminology. Personnel, finance, managerial controls, law, regulated industries, and taxation.

- 3822 Sales Management* (SP)** 1-2-2
Techniques of good instruction. The organization of sales meetings, including location, time props and promotion. Each student to organize product and service presentations, and develop the lesson plans and visual aids necessary for the various presentations.
- 3823 Business Law I (A,W,SP,SU)** 3-0-3
A survey of the legal framework of business, including contracts, agency, sales, negotiable instruments, bankruptcy, partnerships, and corporation law.
- 3824 Business Law II (W,SP)** 3-0-3
A continuation of Business Law I, covering government regulations, trust and insurance.
- 3832 Personnel Management*(A,W,SP,SU)** 3-0-3
The philosophy, principles, and methods of personnel management: organizational structure, areas of responsibility and authority, policy making, procurement, and placement, training, evaluation, wage and salary administration, and benefit programs.
- 3833 Management Decisions* (A)** 3-0-3
A practical presentation of the concepts underlying steps in the process of decision-making. Simulations are used in the decision-making process.
Prerequisite: 3762
- 3835 Industrial Relations* (W,SP)** 3-0-3
A survey of industrial relations, including the history of the labor movement labor legislation, collective bargaining, daily contract administration, and grievance procedures.
- 3842 Business Management Internship I* (A,W,SP,SU)** 0-25-4
Supervised on-the-job application of knowledge and skills acquired in the classroom. This course is to be taken concurrently with 3843.
- 3843 Special Problems in Business Management I* (A,W,SP,SU)** 0-6-2
Application of Business Management knowledge to specific areas of on-the-job internship. This course is to be taken concurrently with 3842.
- 3846 Business Management Internship II* (A,W,SP,SU)** 0-25-4
Continuation of 3842. This course is to be taken concurrently with 3847.
Prerequisite: 3842
- 3847 Special Problems in Business Management II* (A,W,SP,SU)** 0-6-2
Continuation of 3843. This course is to be taken concurrently with 3846.
- 3852 Principles of Transportation* (A,W,SP,SU)** 3-0-3
A course designed to acquaint you with the domestic transportation system. Emphasis is placed on the movement of cargo and people by rail, air, sea, and pipeline. Regulatory laws, agencies and enforcement are studied.
- 3881-3889 Studies in Contemporary Business I-IX** ARR
Studies in Contemporary Business is a specially designed series of courses to meet the needs of the constantly changing business community and student population. Instructional methods may include seminar, travel, field experience, research, lecture series, and video tapes. All students work with an instructor assigned by the Department Chairperson. Advisor approval required.
- 3891 - 3893 Studies in Contemporary Business X-XII (A,W,SP,SU)** ARR
A continuation of 3881-3899.
- 3161 Planning*** 1-0-1
To decide in advance what is to be done in the future - how to establish goals and objectives with plans to achieve them - organize operations - effectively staff and supervise employees - control activities. Without plans and objectives confusion may well exist.
- 3162 Directing*** 1-0-1
How to best issue instructions, assignments, orders, and guiding and overseeing employees - how to build an effective work force and motivate each worker to accomplish the organization's objectives.
- 3163 Leadership Styles*** 1-0-1
Recognition of leadership styles must take place before coherence in positive supervisory growth and development can be achieved. Participants will actively identify their own productivity within the organizational environment and will determine the circumstance under which a particular style would be appropriate.
- 3164 Organizing*** 1-0-1
How to design an "activity - authority network"; how to build, develop and maintain working relationships that will contribute to the objectives of the organization - to know what it means to organize.
- 3165 Controlling*** 1-0-1
How to control any differences between what should be done and what is being done - keep informed of actual performance through observation reports, discussion, charts and other techniques - to take necessary corrective steps.
- 3166 Management By Objectives*** 1-0-1
This course will identify components that should be included in a MBO program - key phases of planning will be identified, implemented, and the controlling processes in the supervisor's operation will be emphasized - practice in formulating sound objectives will be accomplished and evaluation of relative success and settings of new objectives will be exercised.
- 3167 Effective Time Management*** 1-0-1
You will study the concepts and skills that successful executives apply in managing their time effectively. Emphasis will be on identifying ways to minimize time spent on unproductive tasks and developing an action plan for increasing time effectiveness.
- 3168 Budgeting*** 1-0-1
For most supervisors, budgeting is a special form of planning. In the course the process of setting goals and objectives is related to income and expenses. Time management, training, maintaining performance standards and inventory control will be related to the budgeting process. It also covers the broad function of projecting income and expenses and operating under a budget for a department or work unit.
- 3169 Staffing*** 1-0-1
The responsibilities of staffing - the evaluation and appraisal of performance - the orientation, training and development required for employee increased responsibilities and operational efficiency - the staffing considerations necessary to include Equal Employment Opportunity requirements.
- 3171 Equal Employment Opportunity is Good Business*** 2-0-1.5
Understand the theories of proof of unlawful discrimination and the legality of specific employment practices so as to make recommendations for improvement and correction in the employment scene.
- 3172 Internal Investigation of the EEO Complaint*** 2-0-1.5
A practical, advanced course for personnel specialists and managers designed to prepare for state and federal EEO investigations. Learn skills and gain practical experience in analyzing the charge affidavit, determining issues, interviewing witnesses, preparing affidavits and evidence. Application of the theories of discrimination and rules of evidence in fact finding will be discussed.
- 3173 EEO and the Employee Selection Process*** 2-0-1.5
The entire employee selection process as it relates to current state and federal Equal Employment Opportunity laws, as well as career counseling, disciplinary and exit interviews will be discussed.
- 3174 Management Training For Supervisors*** 3-0-3
A comprehensive examination of management functions and techniques and of the role of a supervisor. This course will increase awareness of the role and give proven methods and techniques to do a better job. Major areas covered include: setting objectives, problems identification techniques, decision making, time management, management styles, motivation, training subordinates, performance evaluation, verbal and non-verbal communications, interviewing techniques, and a look at the challenge of leadership in an organizational setting. Emphasis will be placed on actual on-the-job problems.
- 3175 Problem Solving and Decision Making*** 1-0-1
To recognize that a person does not plan well is one thing. Getting that person to plan more effectively is quite another. This course provides methods to distinguish problems from symptoms, indepth examination of the process and techniques of setting goals and objectives, and it emphasizes the development of workable action steps to get results on the job. Objective versus subjective decision-making will be analyzed.
- 3176 Interpersonal Relationship*** 1-0-1
This course will focus on determinants of human behavior and techniques for shaping behavior. Participants will be prepared to increase productivity as they perform their present responsibilities. (Interpersonal relationships will be improved by a better understanding of all persons including themselves.)

3177 Motivation of Subordinates to Achieve* 1-0-1
 This seminar addresses one of the most challenging questions of supervision: how can we better understand each employee and draw out his/her capabilities? Three theories of motivation will be analyzed, compared, and contrasted and a variety of practice exercises will be employed to assist in the application of motivation theory to supervisory decisions.

3178 Delegation* 1-0-1
 Probably the easiest way to determine the overall effectiveness of a supervisor is to observe his or her ability to delegate work and responsibility to others. This course explores the fears and rewards of delegation with emphasis on techniques to delegate effectively.

3179 Effective Communication* 1-0-1
 Provides the individual in the supervisory capacity with a basic overview of verbal, non-verbal, and written communication skills as they relate to effective job performance and employee relations. Emphasis will be placed on the importance of effective communication in the work environment.

3181 Effective Oral and Written Communication* 1-0-1
 Reviews the elements of good speech, a look at "the fear factor" (anxiety when speaking before groups) and practical experience in speaking and podium presence. The course will also focus on how to prepare effectively memorandums and letters with emphasis placed on style, organization and clarity.

3182 Supervisory Report Writing* 1-0-1
 Improves basic business communication skills through a study of style and technique. It will concentrate on the exploration of the art of research and fact finding, effective use of facts, figures, language, writing style and layout.

3183 Managerial Psychology* 1-0-1
 Explores behavior modification concepts and techniques which will enable managers to meet organizational goals and needs by motivating employees to work with them rather than just for them.

3184 Supervisory Attitudes* 1-0-1
 Reviews some relatively new concepts about attitudes and how the effective supervisor puts them to use for increased productivity.

3185 Stress Management* 1-0-1
 Methods and techniques of handling tension and stress - your own pattern of stress - how to live with reasonable amounts of stress - how stress can be advantageous - how to control stress at the supervisory level.

5312 Surveying II*(SU,A) 2-6-4
 Advanced surveying and mapping problems including introduction to celestial observation, establishment of meridians, parallels of latitude, section and subdivision lines: horizontal and vertical curvature, transition curves, introduction to photogrammetry, legal considerations for boundary description. \$10.00 lab fee.
 Prerequisite: 5311

5313 Materials and Testing*(A) 1-5-3
 Methods of manufacture and properties of commonly used construction materials. Standard methods for conducting tests of physical properties, direct observation of production processes and plant fabrication. Visits to operating laboratories and construction projects. \$10.00 lab fee.
 Prerequisite: 4645 or permission of instructor

5315 Highway Construction*(A) 2-6-4
 Elements of route location construction materials, methods and procedures. Relation of design standards to topography and prospective traffic. Earthwork measurement. Physical design standards. Financing. \$5.00 lab fee.
 Prerequisites: 5311

5316 Elementary Hydraulics*(W,SP) 2-2-3
 Study of water at rest and in motion; criteria for measurement of pressure, velocity, friction and capacity of open channels, pipe lines and metering devices. \$5.00 lab fee.
 Prerequisite: 1111, 5328

5321 Advanced Civil Engineering Graphics*(W,SP) 2-6-4
 Advanced drawing procedures and methods for contract drawings with emphasis on ink work, formality and accuracy. \$7.00 lab fee.
 Prerequisites: 5301 or permission of instructor

5325 Townsite and Urban Development*(W) 1-5-3
 Municipal subdivision planning, calculations and preliminary cost considerations. Public and private interest conflicts. \$5.00 lab fee.
 Prerequisites: 5312

5327 Water Supply Systems*(SP) 2-3-3
 A study in design and planning of water supply, storage, treatment, transmission and distribution systems. \$10.00 lab fee.
 Prerequisite: 5316

5328 Storm and Wastewater Systems*(A) 2-3-3
 A study in planning and design of storm water and sanitary collection systems and treatment processes. \$10.00 lab fee.
 Prerequisite: 5327

5329 Civil Engineering Professional Practices*(A,W) 3-0-3
 A study of the related disciplines within the Civil Engineering Profession through contact with public agencies and private companies employing civil engineers and technicians and through general instructional methods. \$5.00 lab fee.

5333 Structural Steel*(W) 1-5-3
 Sizing, layout and selection of structural steel component found in Civil Engineering structures such as building frames, bridges, tanks and piling. Technical usage of steel reference manuals and detailing standards. Computer techniques in structural selection and steel construction economics. \$5.00 lab fee.
 Prerequisites: 4645, 5313 concurrent

5334 Structural Concrete*(SP) 1-5-3
 Sizing, layout and selection of structural concrete components found in civil engineering structures such as building frames, bridges, highways, marine structures, tanks and piling. Technical usage of concrete reference manuals and detailing standards. Computer techniques in structural selection and structural economics. \$5.00 lab fee. Prerequisites: 4645, 5313 concurrent

5335 Mass Transit Systems*(SP) 2-2-3
 This course will provide an overview of surface transportation systems including planning, implementation, operation and marketing. \$5.00 lab fee.
 Prerequisites: 5325 or permission of instructor

Civil Engineering Technology

5301 Engineering Graphics I*(A,W) 2-6-4
 Use of basic drafting instruments, tools and equipment. Geometric constructions. Line work with emphasis on lettering, symbols and conventions. Mapping and construction details. Graphical problem solutions. Emphasis on precision. \$7.00 lab fee.

5306 Construction Methods and Estimating*(W,SP) 1-5-3
 Computation of basic quantities for labor and material costs. Utilization of general detail data for cost analysis. Preparation of bills of material. Measurement of contract quantities for acceptance and payment. \$5.00 lab fee.
 Prerequisites: 5201 or 5301

5307 Geotechnical Engineering*(A,W) 2-3-3
 Analysis of soil behavior, and the design and construction of substructures, those parts of structures that transmit loads of structures into the earth. Investigation of the principles of excavation, tunneling & building earth supported structures. \$5.00 lab fee.
 Prerequisites: 4644

5311 Surveying I*(SP,SU) 2-6-4
 Full scale application of field methods. Collection of record data. Conversion of field data for use in maps and plats. Preparation of plats and incidental drawings. Emphasis on precision in use of tools and equipment. Computation to determine precision of field work. Boundary descriptions, resolution of conflicts, replacement of missing data. \$10.00 lab fee.

5337 Civil Engineering Project*(SP) 2-8-5
The participant will plan, design and prepare detailed drawings for a project thereby integrating knowledge gained in preceding Civil Engineering courses. Professional Civil Engineering office atmosphere, techniques and procedures will be simulated to provide the student with design-draw experience.
\$10.00 lab fee.
Prerequisite: 2nd year or permission of instructor

5338 Engineering Environmental Analysis*(W) 1-5-3
A study in environmental considerations which enter into the civil engineering planning process. \$5.00 lab fee.

5339 Engineering Economics*(SP) 2-2-3
A study in decision-making; development of the skills, principles and techniques needed for alternative evaluation based on economic factors.
\$2.00 lab fee.

Communication Skills

1001 Language Development (A,W,SP,SU) 3-0-3
Skills for developing confidence in writing, reading and listening. Concentration on English essentials for writing sentences to paragraphs.
Prerequisite: 1095 or placement as a result of essay placement test.

1002 Beginning Composition (A,W,SP,SU) 3-0-3
An introduction to the skills required for writing clear, concise expository paragraphs and themes.
Prerequisite: 1001 or placement.

1003 Essay and Research (A,W,SP,SU) 3-0-3
A continuation of Communication Skills 1002, expanded to include exposition and argumentation, research techniques and research papers.
Prerequisites: 1002 or 1018

1004 Technical Writing (A,W,SP,SU) 1-2-2
Principles and practice in writing required of engineering and scientific technicians, including resumes, letters, memos, and various technical reports as required of a student's technology.
Prerequisite: 1003 and at least two quarters or equivalent in the technology.

1007 Creative Writing (SP) 3-0-3
A discussion and in-depth study of the techniques of creative writing, and the actual writing of short stories, plays, or articles.
Prerequisite: 1003

1014 Business Communications (A,W,SP,SU) 1-2-2
Emphasis on learning to write business letters by doing. Grammar and mechanics of writing are integrated with instruction and practice in writing business letters and other business communication. Business etiquette, written and oral reports.
Prerequisite: 1002 and at least two quarters in a technology or equivalent.

1018 Communications (A,W,SP,SU) 5-0-5
A combination of Communication Skills 1002 and 1024. It integrates the skills of listening, speaking, reading and writing and employs the methods of description, narration, and exposition. \$1.00 lab fee.
Prerequisite: 1001 or placement as a result of essay placement test.

1024 Speech (A,W,SP,SU) 1-2-2
The stimulation of the imagination and its application to the spoken word through the student's practice of the tools of effective communication in a supervised classroom situation. \$1.00 lab fee.

1027 Conference and Group Discussion (W) 3-0-3
Designed to develop the attitudes, skills, and knowledge of methods necessary to effectively participate in discussion by conferences, committees and other small groups. Role playing using various conference and group forms and parliamentary procedure.
Prerequisites: 1002 and 1024

1037 Twentieth Century American Literature (W) 3-0-3
The study of modern essays, short fiction, poetry, and novel with emphasis on appreciation of literature.
Prerequisite: 1002

1038 Afro-American Literature (SU) 3-0-3
A survey of Afro-American literature from slavery to the present including a study of slave narratives, folklore, short stories, drama, and poetry.
Prerequisite: 1002

1039 Survey of World Literature (SP) 3-0-3
Survey course in literature of African, Asian and European countries. Emphasis on the beauty of literature of these countries and how it reflects the history and culture of the people.
Prerequisite: 1002

1041 Journalism (SP) 3-0-3
Introduction to the mass media in America, especially newspapers and broadcasting; analysis of forces and institutions affecting media behavior, and the resulting quality of performance. Writing of articles for newspaper or magazine.
Prerequisite: 1002

1055 Developmental English as a Second Language 9-0-9
Designed for the non-native speaker of English who has some knowledge of the language but who needs further work on vocabulary, intonation, and structure of American English. Primarily spoken English work, but begin some writing and reading. Three (3) credits applicable toward graduation.

1056 English as a Second Language: Conversation and Composition 9-0-9
Intensive practice with the spoken language. Selected readings from current prose. Fundamentals of writing. Daily practice with the written language. Three (3) credits applicable toward graduation.

1057 English as a Second Language: Theme and Research 9-0-9
A continuation of 1056 in conversation and composition with emphasis on composition and reading. Library work and research techniques. Three (3) credits applicable toward graduation.

Construction Management Technology

5201 Construction Drawings and Quantity Surveys* (A,W,SP,SU) 1-8-4
Construction drawing reading and interpretation as related to residential, commercial, industrial, highway and public works construction projects. Interpretation of the relationships of plan, elevation, sections and details, and the coordination with specifications. Determination of material quantity take-offs for ordering. \$10.00 lab fee.

5202 Managing A Construction Company* (A,W) 2-3-3
An overview of the operations of a construction firm with a simulation of the operation by teams demonstrating the skills and competencies required. \$5.00 lab fee.

5203 Construction Company Financial Management* (W,SP) 2-3-3
A review of the records required and the methods of producing these records as applied to the medium size contracting. The course summarizes the financial records required for operations and government reporting. \$5.00 lab fee.

5211 Construction Field Supervision* (SP) 2-3-3
An overview of the principles of field supervision which includes leadership skills, motivation techniques, problem solving processes, communication methods and useful supervisory aids for construction projects. \$5.00 lab fee.

5221 Construction Contract Documents* (W) 2-3-3
Intensive study of all documents related to a project with emphasis on the important legal aspects of each, and the role of the contractor in the project. \$5.00 lab fee.

5222 Managing Construction Equipment*(W) 2-3-3
An intensive study of equipment management as it relates to the construction industry. Provides methods to calculate the production rates, operation costs, and value of the types of equipment for use in effective bidding.

5231 Construction Decision Analysis* (SP) 2-3-3
Application of data analysis principles to the area of problem identification, specifying work objectives, and project execution. \$5.00 lab fee.

5232 Construction Communications and Records* (SP) 2-3-3
Identification of the types of records required for project management, the legal aspects of project records, and management communication requirements and documentation. \$5.00 lab fee.

5234 Construction Methods & Strategies* (W,SP) 2-3-3
A study of the methods used in work-site preparation, materials handling systems, the assembly of construction materials and systems, and the strategies employed to control and coordinate these activities. \$5.00 lab fee.

5241 Construction Planning and Scheduling* (A, W) 2-3-3
A study of project control and coordination through systematic planning and scheduling, including operational adjustments for resource changes and alterations. On-line computer usage of CPM analysis. \$5.00 lab fee.

5242 Construction Safety and Loss Prevention* (A) 2-3-3
Identification of work hazards and unsafe practices, safety programs and training, and the role of O.S.H.A. and insurance companies in safety. Red Cross first aid and CPR training are included. Development of theft reduction programs with the aid of law enforcement officers and insurance companies. \$5.00 lab fee.

5243 Construction Leadership and Motivation* (A) 2-3-3
Development of leadership skills through analysis of supervisory styles and personnel motivation techniques. \$5.00 lab fee.

5244 Construction Communications Design & Problem Solving* (A) 2-3-3
Application of data analysis principles to the area of problem identification, specifying work objectives & project execution. Study techniques of written and oral communication to include keeping daily records of on-site job activities. \$5.00 lab fee.

5245 Construction Bidding Strategy* (A) 2-3-3
Extended study of how bids should be analyzed, how overhead and profit can be calculated and how to determine the financial objectives of the construction company. \$5.00 lab fee.
Prerequisite: 5306

5251 Construction Process Controls* (W) 2-3-3
Analysis of methods and techniques of cost analysis to develop skills in controlling production operating costs. \$5.00 lab fee.

5252 Construction Law Contract Law*(W,SP) 2-3-3
Analysis of the special conditions of construction law as applied to on-site conditions, document usage, and labor negotiations of disputes, grievances, and master contracts. \$5.00 lab fee.

5253 Construction Labor Law* (A,W) 2-3-3
Investigation of the legal areas of bidding, contracts, contract extras, insurance and bonding, fee collection, dispute resolution, arbitration and litigation as related to construction projects. \$5.00 lab fee.

5254 Construction Quality Assurance 2-3-3
A study of the techniques and methodology used in controlling quality on the construction job, including records keeping. \$5.00 lab fee.

5261 Construction Project Management* (SP) 0-9-3
Simulation of project situation emphasizing job start, control assignments, control structures, organization, and move-out phases of construction. \$10.00 lab fee.

5262 Construction Productivity Analysis* (SP) 2-3-3
Developing and testing methods of production from analysis of project histories, equipment analysis, and manpower utilization studies. \$5.00 lab fee.

5263 Construction Disputes & Claims* (SP) 2-3-3
A study of the techniques of resolving contract disputes and methods of avoiding construction claims. \$5.00 lab fee.

5274 House Construction (A,W,SP,SU) 3-0-3
The basic construction of a residential home from the ground up, emphasizing construction methods, equipment, structure, materials and terminology. \$5.00 lab fee.

Dental Laboratory Technology

8108 Dental Materials I* 3-0-3
This course involves a comprehensive study of the chemical and physical properties of materials used by the dental technician.

8109 Dental Materials II* 2-0-2
This course is a continuation of the study of materials begun in 8108.

8121 Complete Dentures I* 1-6-3
This course involves an introduction to complete dentures and includes a study of the procedures from preliminary impressions through wax contouring, with special emphasis upon artificial tooth arrangement.

8122 Complete Dentures II* 1-3-2
This course is a continuation of the study of complete dentures and includes procedural material from flasking through patient remount and occlusal adjustments. \$70.00 lab fee.

8123 Complete Dentures III* 1-6-3
This course involves a study of procedures required to solve specific post-insertion problems, e.g. repair, rebase, and reline. In addition, the student is introduced to the immediate denture technique. \$70.00 lab fee.

8124 Complete Dentures IV* 1-3-2
In this course, the student will fabricate an overdenture and will concentrate upon characterization of complete dentures. \$70.00 lab fee.

8125 Dental Morphology and Anatomy* 2-3-3
This course provides the student with an introduction to the masticatory system. The student will be exposed to the significant structures and landmarks of the oral cavity, with extensive study of the permanent dentition. \$70.00 lab fee.

8132 Occlusion * 1-6-3
This course will entail a study of occlusal morphology, the temporomandibular joint and mandibular movements.

8142 Removable Partial Dentures I * 1-6-3
This course is a basic study of removable partial dentures, and presents principles such as survey, design, and fabrication.

8143 Removable Partial Dentures II* 1-3-2
This course will involve an intensification of the study of survey, design and fabrication of removable partial dentures.

8144 Removable Partial Dentures III* 1-6-3
During this course, the student will apply acquired knowledge and skills by fabrication of removable partial dentures. The didactic portion will encompass the specialized designs such as stressbreakers, precision attachments and the RPI technique.

8153 Fixed Partial Dentures I* 1-6-3
This course will introduce the student to the fixed appliance. The content will be limited to the single unit crown.

8154 Fixed Partial Dentures II* 1-6-3
This course is designed to extend the students' experiences in construction of fixed appliances and will contain material related to fixed partial denture assembly for soldering. In addition, the student will fabricate a three unit bridge using the single casting technique.

8155 Fixed Partial Dentures III* 1-6-3
This course will extend the students' experiences in fixed partial dentures construction by introducing the acrylic veneer, resin crown, and Steel's facings.

8156 Fixed Partial Dentures IV* 2-6-4
This course will involve a study of fixed partial denture cases and procedures not covered previously. The student will study precision attachments, temporary appliances, and die-lok trays. In addition, the student will fabricate a crown for an abutment tooth with an existing removable partial denture. \$70.00 lab fee.

8164 History and Ethics* 2-0-2
This course deals with the history of dental technology and its effect upon dentistry. In addition, the course will explore current problems and situations a dental technician must cope with.

- 8175 Dental Ceramics I*** 1-6-3
This course is an introduction to dental ceramics and will involve a study and construction of porcelain fused to metal restorations.
- 8176 Dental Ceramics II*** 2-6-4
This course will entail a continuation of the study of porcelain fused to metal restorations and will introduce the porcelain jacket crown for study. \$70.00 lab fee.
- 8185 Orthodontics and Pedodontics*** 1-3-2
This course will entail a basic introduction to the laboratory skills necessary to provide services in the areas of orthodontics and pedodontics.
- 8196 Applied Laboratory I*** 0-8-3
This course consists entirely of laboratory and is intended to simulate a working laboratory. The student will fabricate fixed and removable appliances for a full mouth rehabilitation case which is patterned after the Dentroll technique case.
- 8197 Applied Laboratory II*** 0-20-7
This course consists entirely of laboratory and is intended to simulate a working laboratory situation with regard to work schedules, case flow, and coping with real problems. \$70.00 lab fee.

Developmental Courses

- 1095 Language Skills (A,W,SP,SU)** 2-2-3
For development of basic writing skills to include grammar review and sentence structure procedures. A variety of individualized approaches will be used. \$2.00 lab fee.
- 1104 Arithmetic Skills (A,W,SP,SU)** 4-0-4
For development of basic arithmetic skills in addition, subtraction, multiplication, division, percents, decimals and fractions. A modular approach will be used for each area. \$10.00 lab fee.
- 1094 Basic Spoken English as a Second Language** 9-0-9
Designed for the non-native speaker of English who has little or no experience with the spoken language. There will be intensive practice in class and in a listening center to help the student master the basic structural patterns, vocabulary, and the sound of conversational American English.
- 1093 Spelling and Vocabulary (A,W,SP,SU)** 2-0-2
For development of spelling skills through the use of phonics, personal word lists and basic spelling rules. \$5.00 lab fee.
- 1092 Reading and Study Skills (A,W,SP,SU)** 3-0-3
For development of reading speed, comprehension and study skills to become more effective students. \$5.00 lab fee.
- 1091 Speed Reading (W,SP,SU)** 3-0-3
A course designed to help the student acquire the maximum amount of reading flexibility by developing perceptual skills and advanced reading techniques with emphasis on speed and comprehension. \$10.00 lab fee.

Electronic Engineering Technology

- 4211 DC Fundamentals* (A,W)** 4-0-4
An introduction to direct current fundamentals, electronics, physics, current and voltage. Work, power, series and parallel resistances. Network theorems, magnetic circuits, electrical measurement devices, inductance and capacitance. Concurrent with 1111, 4261.
- 4212 AC Fundamentals* (W,SP)** 4-0-4
Analysis of alternating-current fundamentals. Reactance, complex algebra, and impedance. Networks and power. Transformers, coupled circuits and polyphase systems. Concurrent with 1112.
Prerequisites: 4211, 4261
- 4213 Introduction Electronic Devices*(SP, SU)** 4-0-4
Introduction to electronic devices, JFET and Bipolar Auxiliary components. Rectifiers, filter, and regulators. Basic amplifiers. Concurrent with 1113.
Prerequisites: 4212, 4262
- 4214 Electronic Devices Circuit Analysis*(A)** 4-0-4
Analysis of linear circuits. Small signal and large signal methods. Special amplifiers, feedback, linear IC's and oscillators.
Prerequisites: 4213, 4263
- 4215 Electronics Communications I*(W)** 4-0-4
An introduction to electronic communication circuits and systems. Basic transmitter and receiver systems are discussed, including SSB, multiplex and subcarrier.
Prerequisite: 4214
- 4216 Digital Computers*(W)** 4-0-4
Digital computer operations and applications. Boolean algebra. Logic circuits and design. Computer systems. Digital architecture.
Prerequisite: 4225
- 4217 Calculus for Electronics I*(A)** 3-0-3
Practical application of differential calculus to electronic circuitry. Functions, limits, algebraic differentiation, differentials, higher derivatives, maxima and minima, and introduction to integrals.
Prerequisite: 1113 concurrent with 4214 or 4225
- 4218 Calculus for Electronics II*(W)** 3-0-3
A continuation of calculus for Electronics I. Define integrals, trigonometric functions, logarithmic and exponential functions, hyperbolic functions.
Prerequisite: 4217
- 4219 Calculus for Electronics III*(S)** 3-0-3
A continuation of calculus for Electronics II. Partial derivatives, integration techniques, double integrals, Maclaurin's series, Taylor's series, Fourier series. Introduction to Differential Equations.
Prerequisite: 4218
- 4225 Pulse and Logic Circuits*(A)** 4-0-4
Nonsinusoidal circuits. Pulse amplification and wave-shaping. Multivibrators. Time-base and logic circuits. Transient analysis. Basic digital concepts.
Prerequisite: 4213
- 4226 Industrial Electronics*(SP)** 4-0-4
Industrial devices and utilization concepts. Timers, welders, photo-electric devices and ultrasonics. Magnetic systems, rotary devices, and servo and synchro, systems. This course includes microprocessors. Concurrent with 4276. \$10.00 lab fee.
Prerequisite: 4216
- 4235 Computer Programming*(SP)** 2-2-2
An introduction to computer programming. Computer language. Digital computers are available for student to use throughout the program. Introduction to microprocessors. \$5.00 lab fee.
- 4236 Electronics Communications II*(SP)** 3-3-4
A continuation of Communications I. Ultra-high frequency, transceiver, microwave principles, systems and antennas. \$5.00 lab fee.
Prerequisite: 4215
- 4246 Analog Computers*(SP)** 1-3-2
Fundamentals of analog computers covering circuits and equipment. \$5.00 lab fee.

- 4201 Electronic Drafting*(A,W,SP)** 1-3-2
An elementary course. Fundamentals of drawing and drafting. Use of templates, including lettering and electronic templates. Electrical circuit drawings, terms, symbols, and standards. \$10.00 lab fee.

4261 DC Laboratory*(A,W) 0-6-2
Laboratory study of DC fundamentals, electrical measurement devices, network theorems. Concurrent with 4211. \$15.00 lab fee.

4262 AC Laboratory*(W,SP) 0-6-2
Laboratory study of signal sources, oscilloscopes, reactance, AC networks, transformers and filter circuits. Concurrent with 4212. \$15.00 lab fee.
Prerequisite: 4211, 4261

4263 Introductory Electronic Devices Laboratory*(SP,SU) 0-6-2
Laboratory study of transistor characteristics and amplifiers. Concurrent with 4213. \$15.00 lab fee.
Prerequisites: 4212, 4262

4264 Electronic Devices Circuit Analysis Laboratory*(A) 0-6-2
Laboratory study of amplifiers, oscillators, special purpose devices, response, and feedback. Concurrent with 4214. \$15.00 lab fee.

4265 Communications Laboratory*(W) 0-6-2
Laboratory study of communication circuitry, AM, FM, commercial systems. Concurrent with 4215. \$15.00 lab fee.

4266 Digital Computer Laboratory*(W) 0-6-2
Laboratory study of complete systems utilizing logic trainers, memory core trainers, the Digiac 3080 and SCM 7816 computers. Concurrent with 4216. \$20.00 lab fee.

4275 Pulse and Logic Laboratory*(A) 0-6-2
Laboratory study of pulse, wave shaping circuits, logic circuits, and transients. Concurrent with 4225. \$10.00 lab fee.

4276 Industrial Laboratory* 0-6-2
This is a design laboratory utilizing modern techniques for the control of industrial operations. \$20.00 lab fee.

Emergency Medical Services Technology

8301 Emergency Victim Care 3-6-6
This course provides a first phase of training in the career structure of the Emergency Medical Technician (EMT); the course covers all the knowledge and skills required to take the State Certification Examinations. \$20.00 lab fee.

8302 Advanced EMT-A 2-2-3
In depth study into a patient assessment, shock physiology, fluid and intravenous therapy is the direction of this course. Training in these areas takes place in the classroom and clinical areas. \$23.00 lab fee.
Prerequisite: 8301.

8305 EMT-P I 4-2-5
This course encompasses the training of the paramedic in the areas of his role, triage and assessment of victims, care of the victim in the areas of shock, respiratory system, intravenous therapy. The training includes the care for involvement due to medical or traumatic emergencies, communications and telemetry. \$25.00 lab fee.
Prerequisite: 8301, Concurrent 8313.

8306 EMT-P II 4-2-5
This course encompasses the training of the paramedic in the areas of: The evaluation and care of the cardiovascular system, specific medical situations, and emotional emergencies. \$15.00 lab fee.
Prerequisites 8305, Concurrent 8314 & 8306.

8307 EMT-P III 4-2-5
This course encompasses the training of the paramedic in the areas of: Central nervous system, musculoskeletal system, soft tissue injuries, obstetric and gynecologic, neonatal and pediatric, rescue. \$15.00 lab fee.
Prerequisites: 8306, Concurrent 8315 & 8361.

8313 Hospital Clinical I 0-6-2
Hospital clinical, observation and experience, encompassing the didactic areas covered in 8305. Concurrent with 8305.

8314 Hospital Clinical II 0-6-2
Hospital clinical, observation and experience, encompassing the didactic areas covered in 8306. Concurrent with 8306 & 8360.

8315 Hospital Clinical III 0-6-2
Hospital clinical, observation and experience, encompassing the didactic areas covered in 8307. Concurrent with 8307 & 8361.

8361 Vehicle Clinical I 0-5-1
Vehicle clinical, observation & experience. Concurrent with 8306 & 8314.

8362 Vehicle Clinical II 0-5-1
Vehicle clinical, observation & experience. Concurrent with 8307 & 8315.

8317 Advanced Care for E.M.T.-P 2-2-3
This course will encompass in-depth patient assessment and monitoring. The course will also provide training and up-date on the newest methods and expansions of treatment in the area of pre-hospital care. \$10.00 lab fee.
Prerequisite: 8306.

8325 Advanced Rescue 2-2-3
This course deals with getting the EMT to an entrapped victim and removing the victim from the entrapment. Special rescue techniques will be covered in the areas of: Vehicle, Fire, Building, Farm, Water, Wilderness and Electrical. \$15.00 lab fee.
Prerequisite 8301.

8326 E.M.S. Systems 3-0-3
This course deals with the history, development, organization, funding, and control of E.M.S. It will involve the student in planning and coordination of an E.M.S. system.
Prerequisite: 8301

8334 Legal Principals for E.M.T. 1-0-1
This course encompasses the laws and regulations which govern the EMT and his actions. The course also deals with the rights of the patient and professionalism of the E.M.T.
Prerequisite: 8301.

8344 Emergency Psychiatric Intervention 2-2-3
This course deals with the E.M.T.'s approach to victims exhibiting abnormal behavior and provides an in-depth look into methods of evaluation and management of these people.
Prerequisites: 8301.

8351 Special Topics for Paramedics 0-0-3
In this course the paramedic will be required to develop and present an in-depth study in an area of their individual interest.
Prerequisite: 8301.

8354 Disaster Aid 3-0-3
This course will familiarize the EMT with disaster planning, community needs assessment, organization and control in development of a community disaster plan, and in developing testing procedures for this plan.
Prerequisite: 8301.

8355 Public Health Education 3-0-3
This course will involve the paramedic in the role of public health educator from needs assessment, organizations involved to implementation, and the student will be required to do some practical public health education.
Prerequisite: 8301.

8356 Handling Hazardous Materials Situations 3-2-4
This course encompasses the safety factors and care the paramedic must consider when dealing with victims exposed to hazardous materials, (i.e. toxic fumes, radioactive materials, electrical, explosive and flammable materials).
Prerequisite: 8301.

8357 Pediatrics for the Paramedic 2-2-3
This course involves the paramedic in detailed evaluation and treatments specific to the pediatric patient. Included in the course format are the differences in approach, assessment, physical-physiological activities as compared with the adult.
Prerequisite: 8305.

Fire Science/Safety Technology

- 7601 Introduction to Occupational Health and Safety*** 4-0-4
An introduction to the principles of occupational health and safety. A survey course covering basic principles and techniques.
- 7602 Motor Fleet Safety*** 4-0-4
A basic introduction to problems and practices of motor fleet safety programming with emphasis on regulatory requirements. \$2.00 lab fee.
- 7605 Human Factors in Safety*** 4-0-4
Designed to acquaint the serious student with the physiological and psychological factors that contribute to accident causation, and exploration of theoretical and research findings.
- 7606 Safety Program Management*** 3-0-3
Designed to acquaint the student with the common elements of a modern safety program.
Prerequisite: 7601, 7612, and 7613
- 7611 Safety and Health Standards, Codes and Regulations*** 4-0-4
A review of the important occupational safety and health standards and codes with particular emphasis on application of these codes to typical work situations. \$2.00 lab fee.
Prerequisite: 7601
- 7612 Physical Hazards Control I*** 4-0-4
An examination of physical hazards in the work environment and methods of control.
- 7613 Physical Hazards Control II*** 4-0-4
A continuation of Physical Hazards Control I. An examination of the control of physical hazards in the work environment.
Prerequisite: 7612
- 7614 Elements of Industrial Hygiene*** 4-0-4
A basic introduction to the field of Industrial Hygiene. A survey of the effects of toxic agents on the body and general methods of control.
Prerequisites: 7601
- 7615 Techniques of Industrial Hygiene*** 4-0-4
Exploration of basic categories of field instruments for detection of toxic substances with explanation of underlying theoretical principles.
Prerequisite: 7614
- 7616 Product Safety*** 4-0-4
A course aimed chiefly at product and processes and the hazards inherent in them. Particular attention is given to new chemicals, plastics and their processes. \$2.00 lab fee.
- 7901 Introduction to Fire Protection*** 3-0-3
Survey of fire protection; the role, history and development of the fire service. Organization of the fire service. Other topics: fire equipment and apparatus, communications, records and reports, insurance rating systems, and the law as it pertains to the fire service.
- 7902 Fire Prevention Practices*** 3-0-3
A study of buildings and other structures with emphasis on fire protection procedures and practices. Fire ratings of materials. Inspection practices, explosive flammable storage, and codes and fire ordinances.
- 7903 Fire Prevention Codes*** 4-0-4
A study of important building construction and fire safety codes with emphasis on fire prevention and enforcement.
- 7904 Fire Hydraulics*** 3-2-4
An introduction to hydraulic theory. Drafting of water, velocity and discharge, friction loss, engine and nozzle pressure, fire streams, and pressure losses in flowing hydrants. Practice in application of hydraulic principles. Flow and pump testing as well as study of water distribution. \$2.00 lab fee.
Prerequisites: 1171 and 1341
- 7905 Fire Investigation Methods*** 3-2-4
A study of the principles of fire investigations including recognition, preservation, collection, and presentation of arson evidence. Arson laws, interrogation of witnesses, application of photography, preparation of reports and adjustment of insured losses. Estimation of loss due to fire, smoke, and water. \$5.00 lab fee.
- 7906 Administration of a Fire Department** 3-0-3
The contemporary fire protection agency, its functions, structure, and operational techniques. Principles of organization, staffing, budgeting, controlling, coordinating, planning, research in fire protection. The development and maintenance of liaison and cooperation between fire and police departments.
- 7909 Chemistry of Hazardous Materials I*** 3-2-4
Concepts of chemistry needed to understand hazardous materials. \$6.00 lab fee.
- 7912 Fire Protection Systems*** 3-0-3
The design and operation of fire protection systems, including water distribution, direction, alarm and watchman services and protection systems for special hazards. Carbon dioxide, dry chemical foam and water spray systems studied in detail. Standpipes and sprinkler systems and methods of re-establishment after use. Fire protection engineers serve as guest lecturers.
- 7913 Chemistry of Hazardous Materials II*** 3-2-4
An analysis of chemical reaction as the causative agent of fire. Topics discussed: redox reactions, reaction rates, toxic compounds, and hazardous combinations of chemicals. Hazards of radioactive materials, poisonous gases and LP gases. Methods of transportation of hazardous materials, DOT regulations and markings. \$6.00 lab fee.
Prerequisite: 7909
- 7914 Fire Fighting Command I*** 4-0-4
Group operations and command strategy at the company officer level. The training of the company to operate as a team. Methods of implementing plans developed at the chief level.
- 7915 Fire Fighting Command II*** 3-0-3
Group operations and command strategy at the chief officer level. Pre-planning of firefighting operations, employment of personnel and equipment. Specific tactical problems analyzed. Operations and tactics including mutual and outside aid in fire fighting. \$3.00 lab fee.
Prerequisite: 7914
- 7916 Legal Aspects of Fire Protection*** 3-0-3
Introduction to law, civil and criminal actions, the judicial system. Municipal liability for acts of the fire department and its members. Pensions, salary and compensation, and termination. Duty owed by the public to members of the fire department. The initiation, operation, liability, and legal aspects of mutual aid, primary response contracts, and private contracts.
- 7917 Community Affairs I-Local Government** 3-0-3
The role of local government in the community; its structure, organization, responsibility. Local government politics and the community. Methods and principles of local budgeting. Urban, suburban, rural and community structure.
- 7919 Personnel Training Methods** 3-0-3
Methods of instruction, application of audio visual equipment, testing, and evaluation, and preparation of materials are introduced. Special emphasis is placed upon planning an organizational training program. Methods of evaluation. \$3.00 lab fee.
- 7921 Fire Fighting Practices*** 4-0-4
Techniques and procedures of fire fighting with emphasis on the role of the individual firefighter. Methods of extinguishing fires, life saving procedures, special fire fighting equipment, salvage, prevention rekindling and overhauling. Experienced firefighters having graduated from a fire department academy may receive credit for this course upon recommendation by the local fire department. \$5.00 lab fee.
Concurrent with: 7961
- 7923 Fire Safety Education*** 3-0-3
A course designed to generate methods and techniques for providing an education program in fire safety for a community, for a school, or for a municipality.
- 7926 Fire Protection Seminar*** 2-0-2
Discussions of the particular problems related to the fire fighting services. Students research and report on areas of special interest. Authorities invited to present special interest programs.
- 7927 Supervisory Methods** 3-0-3
Supervision techniques applied to public service personnel. The study of the need for job descriptions and job procedures, civil service requirements, report, oral and written directions, work evaluation, and conference leadership. Methods of instruction effective in teaching and motivating personnel.

- 7928 Public Relations** 3-0-3
The psychology of relations between public service employees and the general population. Policies and practices of community relations as they apply to public service agencies. Current national and local community problems.
- 7933 Fire Fighting Problems*** 2-0-2
Methods of fighting aircraft and marine fires. Methods of fighting fires in industrial processes involving hazardous or unknown materials. \$3.00 lab fee.
- 7934 Fire Insurance*** 2-0-2
The history and principle of fire insurance. The principles and practices of inspection for the purpose of determining premium rates.
- 7935 Building Construction*** 4-0-4
An introduction to the present practices of building construction. Local and state building codes and laws applied to fire protection. An insight into the contents of concealed space, location of ventilation equipment, plumbing and electrical cut-offs. Relationships between construction materials and fire damage of a building. \$2.00 lab fee.
- 7941 Building Construction Blueprint Analysis** 1-2-2
A course designed to allow a fire prevention officer to read, understand, and analyze construction blueprints so that he may be able to enforce fire safety codes.
- 7961 Fire Fighting Practices Laboratory*** 0-4-2
Laboratory to accompany 7921 Fire Fighting Practices. \$2.00 lab fee.
Concurrent with: 7921

General Courses

- 0901 Career Planning** 3-0-3
A course aimed at exploring career attitudes and objectives with emphasis on theories of career choices, sources of career information and the problems involved in choosing a career. \$2.00 lab fee.
- 0902 Career Options for Women** 3-0-3
A course designed to assist women explore career opportunities that have traditionally been closed to them, as well as the educational opportunities for support of these careers.
- 0941 The Black Leaders in America and Their Philosophies** 3-0-3
The purpose of this course is to give students a deeper insight on different black leaders and their philosophies.
- 0942 The Black Man and His History** 3-0-3
The purpose of this course is to give students a better understanding of the history of the black man during the building of America.
- 0943 Traditional African Religions and Western Culture** 3-0-3
The purpose of this course is to give students new insights on the influence of Africa on new world black culture. This course will cover the way African people understood their religion, philosophy and other social roles within their own culture.
- 0944 Perspectives on Black Culture** 3-0-3
A course designed to help the student understand the historical and cultural roots of Black Americans and to illuminate the nature of the struggle of Black People.
- 0945 Black Civilization and Western Culture** 3-0-3
The purpose of this course is to give students a better understanding of early black civilization, and the downfall of black civilization, with African influence on the Western Culture.

Graphic Communications Technology

- 2402 Survey Photo Offset*** 2-5-4
A basic study of the technique of the various operations and processes of printing and duplication and their application and impact in the graphic communication industry. \$10.00 lab fee.

- 2403 Offset Press Operation*** 2-5-4
Techniques of offset press operation, press design, register systems, dampening systems, cylinder preparation and operational procedures. \$10.00 lab fee.
- 2404 Printing Production Management*** 2-5-4
A comprehensive study of printing management, practices and procedures. An analysis of job components, from layout to bindery and shipping department. Practical application of above by work in the laboratory.
- 2407 Estimating & Costing*** 2-5-4
Principles of estimating and pricing printing. Analysis of specifications, determination of material and the use of production data for assigning time to personnel and machines. Theory and practice of cost determination in the graphic arts industry. \$10.00 lab fee.
- 2408 Photography I*** 2-4-4
An introduction to the principles of continuous time photography emphasizing the manipulative functions, operative settings, shutter speed and focus control of cameras and enlargers; elements of composition and lighting and applied practice of film development and print processing. \$25.00 lab fee.
- 2409 Photography II*** 2-5-4
Advanced applied still photography of small format (35mm) black and white, with emphasis on craftsmanship, problem solving and visual communications. This course exposes the student to more extensive use of lighting, filters, films and printing papers. It is required that each student have a 35mm camera with variable shutter speeds, aperture and light meter. \$25.00 lab fee.
Prerequisite: Photography I or permission of instructor.
- 2412 Copy Preparation*** 2-5-4
An introduction to drawing board composition and the fitting of copy, selection of type and paste-up of mechanicals for the camera. \$15.00 lab fee.
- 2413 Design and Typography*** 2-5-4
A study of the theory and practice of layout and design for production of the printed message. The development of efficient procedures in the preparation of roughs, layouts and comprehensives. \$15.00 lab fee.
- 2417 Lithographic Stripping*** 2-5-4
A study of stripping operations. The assembly of photographic film for sequence and position. Preparation of masks, screens, surprints and reverses. Proofing system, contacting and duplicating film. \$35.00 lab fee.
- 2418 Basic Video Production** 2-4-4
An introduction to basic video production (with audio), using black and white video equipment to give students a working knowledge of video cameras, tape recorders, microphones, videotape, editing equipment, tape formats, and transfer of film to videotape. \$10.00 lab fee.
- 2419 Video Production II** 2-4-4
An intermediate course in video production, following Basic Video Production, and covering multicamera color TV studio production, along with Umatic video cassette editing, character generation, special effects generation, video test equipment setup and operation, multisource audio recording and editing, set design and graphics for television. \$10.00 lab fee. Prerequisite: 2418 or permission of instructor
- 2423 Printing Papers*** 1-2-2
A study of the manufacture and selection of paper used in printing operation; sizes, colors, characteristics, limitations and packaging of printing papers. Field trips to a paper mill and a paper distributor.
- 2435 Lithographic Camera*** 2-5-4
A study of film, film development, camera optical systems, camera calibration and exposure determination for line and halftone. Litho darkroom procedures. \$50.00 lab fee.
- 2436 Photo Typesetting Systems*** 2-5-4
A study and application of photo-typesetting equipment, autotape keyboards, video display terminals for editing, corrections and storing of formats, and programs. Output and processing procedures. \$25.00 lab fee.
- 2437 Introduction to Color Separation*** 2-4-4
An introduction to the basic principles of color separation photography for the graphic arts industry. The techniques of dealing with reflection and transmission copy, masking, and the direct and indirect methods of separating colors. \$50.00 lab fee.
Prerequisite: 2435

2438 Silk Screen* 2-4-4
Theory and practice of the silk screen process. Frame construction; stencil making, hand and film; screen fabric materials. Screening on paper, fabrics, and metal. Decal printing, electronic circuit, and metal decorating. \$35.00 lab fee.

2439 Photo Typsetting II 2-5-4
A continuation of increasingly difficult lab projects for direct preparation of job placement in the photocomposition industry. Techniques in the following areas are covered: total composer manipulation, tabulation, floppy disk memory, programming of typesetter, trouble shooting and machine maintenance. \$25.00 lab fee.
Prerequisite: 2436 Photo Typsetting I or permission of instructor

Heating and Air Conditioning Technology

4511 HAC Graphics I* (A) 0-6-3
A course designed for the student with no previous experience in reading or drafting HAC blueprints. Content includes learning how to interpret and draw basic HAC blueprint symbology. The course is structured toward drafting ductwork systems for residential structures. This course leads to understanding the heat loss/gain calculations performed in 4522. \$10.00 lab fee.

4512 Basic Piping* (A) 2-4-4
Selection of the proper pipe, consideration of the joining method, and sizing will be combined with a study of symbology used in piping diagrams. \$15.00 lab fee.

4513 Survey of HAC* (A) 3-4-4
A course designed to introduce students to the various people within the engineering, sales, contracting and service community with which they will be expected to interact. The course also deals with various business aspects between the above professions, e.g. bidding, contracting, bonding, purchasing, designing, in plant procedures, etc. The course will utilize the conventional classroom structure, as well as on site visits, and individual studies. \$5.00 lab fee.

4521 HAC Graphics II* (W) 0-6-3
A follow-up course to HAC Graphics I, this course includes drafting exercises in commercial equipment, ductwork and systems. Projects in piping layouts, diffuse schedules and typical notes used on large job blueprints will also be assigned. \$10.00 lab fee.
Prerequisite: 4511 or equivalent.

4522 HAC Load Calculations* (W) 2-4-4
A course designed to take the student through the procedures used in determining residential heat gain/loss calculations and from this data, designing ductwork systems and selecting equipment. ACCA design manuals will be used and subjects such as heat transmission, factors, external static pressure, infiltration, enthalpy and ductwork sizing will be included. This course should precede 4531. \$8.00 lab fee.

4531 Air Distribution Systems*(SP) 3-4-5
This course deals with commercial heat gain/loss calculations and should follow 4522. The basics of Air Distribution Systems used in commercial applications will be discussed and compared, along with correct balancing procedures. The factor of sound as it applies to these types of systems will also be included. \$10.00 lab fee.

4532 Heating and Cooling Equipment I* (SP) 3-2-4
This course will discuss most of the components used to make up the environmental conditioning systems in today's buildings. Chillers, unit heaters and furnaces, radiant heating devices, boilers, and backup equipment required to properly operate the components. Emphasis will be placed on the proper operation of the equipment and some attention will be given to the preventative maintenance. \$5.00 lab fee.

4541 Principles of Refrigeration* (W) 2-3-3
A basic investigation of the various types of refrigeration devices and support equipment. D-X, centrifugal, evaporative, and the many combination systems that are found in building systems. \$10.00 lab fee.

4542 Industrial Safety and Code Compliance* (A) 2-3-3
A basic introduction to First Aid, and CPR as well as emergency procedures for on the job safety. Also, an introduction to the various codes that affect the workplace and jobsite. OSHA, NFPA, state and local building codes, etc. will be covered. \$5.00 lab fee.

4551 Electric Power* (W) 3-3-4
This course is designed to discuss major power systems in the modern building as well as factors that must be considered in the selection of electrical devices. Some of the major areas to be covered are: wiring diagrams, power distribution, service panels, overload protection, power surge, cost considerations, codes, controls wiring, etc. \$12.00 lab fee.

4552 HAC Instrumentation* (W) 2-4-4
This course starts with basic knowledge of the combustion process as applied to fossil fuels and then builds a working knowledge of instruments used to test these processes. Instruments used in the refrigeration cycle and energy auditing are then explained and demonstrated in student exercises. \$10.00 lab fee.

4553 Automatic Controls* (W) 2-2-3
A course that will introduce the student to the various control systems as well as the components that make up the systems. Emphasis will be placed on operators, sensors, and various pneumatic and electric devices used in modern control systems. \$10.00 lab fee.

4561 Hand Tools Laboratory* (SP) 2-4-4
This course will build elementary skill in welding, brazing, soldering, threading, cutting, swaging, and other manual skills that relate to important hand tools and processes in the HAC field. \$15.00 lab fee.

4563 Energy Management* (SP) 2-3-3
This course includes an overview of the world energy supply, consumption and waste. Much attention will be given to building energy survey and calculation techniques, analysis and decision making on energy policy, as well as computer simulations and how conservation measures may be utilized. \$15.00 lab fee.

4566 Advanced Problem* (SP) 0-8-4
An advanced problem that will allow the student to use the knowledge gained during the last two years. At their option the student may select a problem that emphasizes the design or practical service aspects of a heating and cooling system. \$12.00 lab fee.

Hospitality Management Technology

2201 Survey of Hospitality Industry*(A) 3-0-3
Introduction to management of restaurants, and of institution food services and lodging facilities to provide an overview of the industry. The role of related professional associations is studied, as well as trade journals and publications. Field trips provide a background of organization, operation and management.

2202 Food Service Equipment*(W) 5-3-6
A study of equipment used in the storage, preparation, and service of food. Proper operation, cleaning, and maintenance are discussed. Purchase considerations are presented for major production and nonproduction equipment. \$10.00 lab fee.

2203 Bar Management and Wine Technology*(A,SP) 3-2-4
Classification, history, and control of wines and spirits. The Ohio laws and regulations of alcohol control. The art of mixology. \$25.00 lab fee.

2205 Records and Cost Control*(A,SP) 3-2-4
Record keeping and controls needed in food service operations. Consideration given to; preparation of budgets, determination of selling prices of operations, ratio analysis of existing operation's income statements and balance sheets, scheduling employees and maintaining prescribed labor and food cost percentages. This course is the equivalent of course 410 from the EIAHMA.

- 2208 Food Preparation I Laboratory*** 0-6-2
A field experience food preparation laboratory stressing preparation terminology, use of standardized recipes and preparation of protein foods, identification and proper use of knives and utensils, under the direction of a professional chef to satisfy the requirements of the chef apprenticeship training program. This is the laboratory portion only of Course No. 2211. Prerequisite: 2209
- 2209 Food Preparation I Lecture*(SP)** 3-0-3
An introductory foods course including basic chemistry and physics of foods; definitions and terminology of food preparation; detailed study of protein foods-eggs, milk and dairy products, meats, seafoods and poultry and fats used in food preparation. This is the lecture portion only of Course No. 2211, and offered to chef apprentices.
- 2211 Food Preparation I*(A)** 3-6-5
A laboratory course in basic food preparation including basic chemistry and physics of foods, definitions and terminology of food preparations, use of standardized recipes, detailed study of protein foods, egg, milk and dairy products, meats, seafoods and poultry, and fats. Preparation of small quantities of a variety of foods in order to master basic skills required for all types of food preparation. \$45.00 lab fee.
- 2212 Food Preparation II*(W)** 3-6-5
A laboratory course in quantity food preparation. Detailed study of fruits, vegetables, starches, baked goods and desserts; use of equipment required for quantity food production; preparation and evaluation of the quality of standardized quantity recipes; estimation of raw material needs and management of the lab. \$45.00 lab fee. Prerequisite: 2211
- 2214 Gourmet Cooking*(SP)** 1-8-4
The principles and preparation of gourmet foods and classical cuisine. International specialties. \$50.00 lab fee.
- 2215 Food Preparation II Lecture*(W)** 3-0-3
A continuation of 2209 including detailed study of fruits, vegetables, starches, baked goods and desserts. Standardized quantity recipes, standards of quality food products, and estimation of raw material needs for various recipes will be discussed. This is the lecture portion of Course No. 2212, and offered to chef apprentices.
- 2216 Food Preparation II Laboratory** 0-6-2
A field experience laboratory under the direction of a professional chef utilizing the principles of quantity food production, equipment required for the preparation of large quantity recipes, evaluation of the quality of products, estimation of raw material needs and costing of recipes, to satisfy the requirements of the chef apprenticeship training program. This is the laboratory portion only of Course No. 2212. Prerequisite: 2215
- 2217 Food Specialties I (Garde Manger)*(SP)** 1-3-2
Special Garde Manger techniques such as vegetable carvings, appetizers, aspic, chateaufroids, terrines and galantines are studied. Buffet showpieces will be included, as well as boning and carving of poultry and meats. Manipulation of the tools which are used is stressed. Open to second year cook apprentices. \$40.00 lab fee.
- 2218 Food Specialties II (Baking)*(A)** 1-3-2
Fundamentals of baking including preparation of yeast breads, puff pastries, cakes, pies, cookies and puddings; as well as techniques in sugar cooking and decorating, and preparing of specialty desserts. Open to third year cook apprentices. \$30.00 lab fee.
- 2221 Food Service Manager Certification Course*(Quarter arranged)** 2-0-2
A course designed for managers/supervisors. Discussions and practical application of material related to Ohio Sanitation Laws and Regulations, accident prevention, causes of foodborne illnesses, proper food handling practices, procedures for conducting a food service sanitation inspection, methods used when cleaning and sanitizing, developing an effective insect and rodent control program, and disaster planning. Student must be employed in food service. Offered in cooperation with the Ohio Department of Health. \$12.00 lab fee.
- 2222 Sanitation and Safety*(A)** 3-2-4
Detailed study of the control of bacteria in the food service industry. Good practices in housekeeping, sanitary food handling, and personal cleanliness. Practical problems concerned with protection of health and with prevention of food spoilage and contamination. Importance of safety and accident prevention. Includes 8 hour American Red Cross Standard First Aid course. \$10.00 lab fee.
- 2223 Food Purchasing and Specifications*(SP)** 5-3-6
Provides a working knowledge of procurement methods and procedures and of records kept when purchasing and receiving food. Special emphasis is given to writing specifications, determining quantities to order, controlling portion cost, evaluating product quality, and determining availability. Field trips allow the student to see food processing and wholesale food markets. \$10.00 lab fee.
- 2224 Hospitality Personnel Management*(A,SU)** 3-2-4
Supervisory techniques applied to hospitality management. A study of organizational structures, job descriptions and specifications, employee application forms, and interviewing techniques used for the selection of employees. Improving communication and job performance with the development of orientation, training, and work simplification programs. Prerequisite: 3813
- 2225 Restaurant Menu Planning*(W)** 2-2-3
Historical background of menus. Principles of menu making. Sample menus. Merchandising the menu. Food, labor, and overhead costs in determining prices. Customer market in pricing.
- 2237 Food Service Layout and Planning*(SP)** 2-5-4
Food service layout, planning and analysis. Space requirements. Layout flow line charts. Receiving and storage facilities. Selection of materials for floors, walls and ventilation systems. Time and motion studies. Consideration given to convenience food production. Prerequisite: 2202
- 2241 Hotel-Motel Management Survey*(SP)** 2-2-3
Covers the history of the lodging industry and club management. Internal operations and management skills are studied. This course follows the guidelines for courses 103 and 106 from the Educational Institute of the American Hotel and Motel Association. EIAHMA certificates will be awarded to those who successfully complete the Challenge Examination.
- 2242 Food and Beverage Management Survey*(SU,W)** 3-0-3
Surveys entire food and beverage operations from purchasing, receiving and storage to preparation and service. It follows the guidelines of course 309 from the Educational Institute of the American Hotel and Motel Association. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.
- 2243 Hotel-Motel Law*(A)** 3-0-3
Provides a general knowledge of the law as it applies to the hotel-motel industry. This course follows guidelines of course 307 from the Educational Institute of the American Hotel and Motel Association. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.
- 2244 Hotel-Motel Accounting*(W)** 2-2-3
Correlates basic accounting principles to the accounting activities relevant to the lodging industry. This course follows guidelines of course 302 from the Educational Institute of the American Hotel and Motel Association. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.
- 2245 Front Office Procedure*(SU,A)** 3-0-3
The principles required to organize, operate and manage a front office in a hotel or motel. Guest needs, salesmanship and procedures used in different types of front office operations. This course follows guidelines of Course 301 from the Educational Institute of the American Hotel and Motel Association. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.
- 2246 Hospitality Sales*(W)** 2-2-3
Selection of an advertising media to convey a particular message to a selected market. Preparation of advertisements (layouts and copy). Market analysis and consumer surveys. Customer relations. This course follows guidelines of course 305 from the Educational Institute of the American Hotel and Motel Association. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.

- 2247 Tourism and the Hospitality Industry*(W)** 3-0-3
Provides a comprehensive study of tourism principles, practices and philosophies. Illustrates how and why the various components of tourism integrate with other segments of the hospitality industry. This course follows the guidelines of course 324 from the Educational Institute of AH&MA. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.
- 2248 Hospitality Security Management*(A)** 3-0-3
An introduction to the security field as it relates to the lodging industry and the challenges facing it, such as crime, natural disasters, terrorism and fires. This course follows the guidelines of course 330 from the Educational Institute of American Hotel and Motel Association. An EIAHMA certificate will be awarded to those who successfully complete the Challenge Examination.
- 2253 Nutrition(SP,SU)** 4-2-5
A study of normal nutrition and its role in promoting good health. Includes composition and functions of foods, nutritional needs throughout the life cycle, and contemporary concerns.
- 2261 Dietetic Technician Clinical Experience I*** 0-6-2
Practical application of information presented in the classroom from 2202, 2211, and 2222 to related health-care facilities. Skills are developed through supervised learning situations to evaluate food-service systems, to assist in food production and service, and to maintain established standards of sanitation and safety. Concurrent with 2202, 2211, and 2222. \$10.00 lab fee.
- 2262 Dietetic Technician Clinical Experience II*** 0-6-2
Practical application of information presented in the classroom from 2202 and 2212 to related health-care facilities. Skills are developed through supervised learning situations to operate, maintain, and select equipment, to supervise quantity food production, to maintain food quality and portion control, and to develop and/or test products. Concurrent with 2202 and 2212. \$10.00 lab fee.
Prerequisite: 2261
- 2263 Dietetic Technician Clinical Experience III*** 0-6-2
Practical application of information presented in the classroom from 2223 and 2253 to related health-care facilities. Skills are developed through supervised learning situations to procure and store food, supplies, and equipment used to calculate food costs, and to determine and meet the nutritional needs of selected patients. Concurrent with 2223 and 2253. \$10.00 lab fee.
Prerequisite: 2275
- 2264 Menu Planning*(SP)** 2-2-3
Principles and practices of menu planning related to schools and industries, hospitals and health care institutions. Consideration of costs, utilization of employees, equipment, purchasing, inventory, and storage.
Prerequisite: 2275
- 2265 Dietetic Technician Seminar*** 1-0-1
An in-depth study of management related problems and recent developments in health-care food service departments. Specific areas of study include nutritional assessment, development of dietary department budgets, employee motivation, computer assisted programs for inventory and menu planning, and new concepts in the preparation and serving of food. Individual student project to be selected and presented. Concurrent with 2269. \$10.00 lab fee.
Prerequisite: 2268
- 2267 Dietetic Technician Clinical Experience IV*** 0-9-3
Practical application of information presented in the classroom from 2205, 2224, and 2273 to related health-care facilities. Skills are developed through supervised learning situations to maintain and develop cost control systems, to select, train, schedule, and supervise employees, to supervise food production, and to evaluate employee performance. Concurrent with 2205, 2224, and 2273. \$10.00 lab fee.
Prerequisite: 3813 and 2263
- 2268 Dietetic Technician Clinical Experience V*** 0-6-2
Practical application of information presented in the classroom from 2275 to related health-care facilities. Skills are developed through supervised learning situations to interview patients, to evaluate nutritional data collected, to understand the rationale for dietary modifications and associated medical terminology, and to assist in the preparation and service of special diet meals. Concurrent with 2275. \$10.00 lab fee.
Prerequisite: 2253 and 2267
- 2269 Dietetic Technician Clinical Experience VI*** 0-9-3
Practical application of information presented in the classroom from 2264 and 2265 to related health-care facilities. Skills are developed through supervised learning situations to assess patient nutritional status, to assist in developing a nutritional care plan for patients, to plan regular and modified menus considering nutritional needs, budget, employee skills, and equipment available. Concurrent with 2264 and 2265. \$10.00 lab fee.
Prerequisite: 2275 and 2268
- 2273 Food Service and Catering*(A)** 2-4-4
Determination of the type of service best suited for an operation. Planning, implementing, and evaluating meals served for special activities.
- 2275 Diet Therapy*(W)** 4-3-5
Ways in which variations in caloric content, consistency and nutrient composition may be employed to meet individual dietary requirements. Rationale for dietary modifications and related medical terminology. Special diet meals prepared and tasted. \$10.00 lab fee.
Prerequisite: 2253
- 2283 Hospitality Field Experience I* (Quarter Arranged)** 0-24-2
A practical application of principles taught in the classroom. Hotel and restaurant students will take part in actual supervised work experience in the hospitality industry. A minimum of 24 hours per week will be spent in employment and bi-weekly classroom discussion of experiences and observation will be included.
- 2284 Hospitality Field Experience II* (Quarter Arranged)** 0-24-2
A continuation of 2283. Students will have job experiences to be better prepared for obligations in hospitality management upon completion of the educational program. A minimum of 24 hours per week will be spent in employment and bi-weekly classroom discussions of experiences and observation will be included.
- 2285 Special Problems in Hospitality Management* (Quarter arranged)** 2-0-2 Arranged
A problem of special interest to the student, requiring library and/or on-the-job study selected and reported by the student with advice from a faculty member.
- 2291 Dietetic Assistant Seminar I*(A)** 3-0-3
A study of the types of health-care facilities, typical health-care organizational structures, role of the dietetic assistant, regulations and how they affect food-service in health-care facilities. Discussions concentrating on food service safety and sanitation principles, utilization and care of equipment. Concurrent with 2294.
- 2292 Dietetic Assistant Seminar II*(W)** 3-0-3
Explanation of methods and records used in procurement, receiving, and storage of food and related items. Survey of control measures for maintaining quality, quantity, and cost of food production. Concurrent with 2295.
Prerequisites: 2291 and 2294
- 2293 Dietetic Assistant Seminar III*(SP)** 3-0-3
Develop an ability to interview patients of residents to identify food preferences and to assess nutritional needs. Plan nutritionally adequate menus to prevent or treat specific diseases. Introduction to the techniques used to improve supervisory skills, improve employee efficiency and evaluate job performance based on written objectives. Concurrent with 2296.
Prerequisites: 2292 and 2295

2294 Dietetic Assistant Clinical Experience I*(A) 0-5-2
Supervised work related learning experiences to be performed on the job following material presented in the classroom from Dietetic Assistant Seminar I. Student must be employed fulltime in the dietary department of a healthcare facility or other acceptable food service facilities. Concurrent with 2291. \$15.00 lab fee.

2295 Dietetic Assistant Clinical Experience II*(W) 0-5-2
Supervised work related learning experiences to be performed on the job following material presented in the classroom from Dietetic Assistant Seminar II. Student must be employed fulltime in the dietary department of a healthcare facility or other acceptable food service facilities. Concurrent with 2292. \$15.00.
Prerequisites: 2291 and 2294

2296 Dietetic Assistant Clinical Experience III*(SP) 0-5-2
Supervised work related learning experiences to be performed on the job following materials presented in the classroom from Dietetic Assistant Seminar III. Student must be employed fulltime in the dietary department of a healthcare facility or other acceptable food service facilities. Concurrent with 2293. \$15.00 lab fee.

Industrial Laboratory Technology

5704 Survey of Laboratory Technologies* (A) 1-2-2
The importance and purpose of the technician in the industrial lab. Emphasis will be placed on the opportunities available to the technician in both production and research and development. Visitations will be made to companies and agencies involved in food processing, manufacturing, chemical testing and research and development.

5711 Chemistry for Laboratory Technicians* (W) 3-4-5
A course in the fundamental chemical principles for laboratory technicians. Emphasis is placed on solutions, chemical equilibrium energy, electrochemistry and the properties of the more important chemical families. Laboratory exercises will provide the basis for the development of proper technique. \$15.00 lab fee.
Prerequisite: 1311

5721 Basic Analytical Chemistry & Instrumentation I* (SP) 2-6-4
Introductory qualitative and quantitative analysis including some of the traditional techniques used. Lab work to include identification of cations and gravimetric, volumetric determinations. Introduction of potentiometric titration and spectronic 20 spectrophotometer. \$15.00 lab fee.
Prerequisite: 5711

5722 Analytical Chemistry & Instrumentation II *(A) 2-6-4
A continuation of Basic Analytical Chemistry and Instrumentation I. Increased emphasis will be placed on instrumentation. Introduction of additional electrometric methods including UV visible and infrared spectrum, plus flame photometry. \$15.00 lab fee.
Prerequisite: 5721

5723 Basic Analytical Chemistry & Instrumentation III* (W) 2-6-4
This is a continuation of Basic Analytical Chemistry and Instrumentation II. Introduction of the autoanalyzer and separation methods including paper, column and gas chromatography and ion exchange residence. Attention will be given to some fundamental mechanisms in order to give the student a basic working knowledge of instruments. \$15.00 lab fee.

5731 Environmental Biology* (A) 4-2-5
Topics and exercises will be designed to make the student aware of the interrelationships between the components of the biosphere and how these relationships are balanced. Emphasis will be placed on the interdependence of the food chain, the problems of overexploration and current proposed solutions. The carbon, nitrogen and water cycles will be discussed.
\$10.00 lab fee.

5735 Environmental Monitoring* (W) 4-2-5
Quality monitoring systems of air, water and soil. The course materials will survey the processes used for water pollution control and water quality analysis. Topics also include environmental quality, how it is defined, what are its limits and analytical parameters. Laboratory exercises will expose the student to the instruments, procedures and biological and chemical systems used to monitor environmental quality. \$4.00 lab fee Prerequisites: 5721, 5731

5738 Water and Waste Water Management (SP) 4-2-5
Course content will include a variety of water distribution systems. Relationships of water to community health, economics, industry and development will be discussed. Methods used for treatment of water for consumption or industrial use will be covered along with the handling of effluence from industrial and civic sewage systems. Discussions will detail the present problems of said systems in the most advanced proposed solutions. \$3.00 lab fee
Prerequisites: 5731, 5721

5741 Biochemistry* (A) 3-4-5
General biochemistry theories and principles will be covered in lectures. Biochemistry of fats, carbohydrates, nucleic acids, amino acids, toxins, drugs and pollutants will be discussed. Laboratory exercises will relate to the general properties in detection of the biological molecules. \$10.00 lab fee.
Prerequisites: 1312, 5711

5751 Organic Quantitative Analysis* (SP) 2-6-5
Quantitative analysis of organic compounds by way of functional groups. Preparation of organic compounds in the study of associated techniques. \$10.00 lab fee.
Prerequisites: 1312, 5721

5761 Unit Operations and Process Control* (SP) 2-6-5
An introduction to basic chemical engineering theory and practice to include the introductory principles of measurement and control of chemical processes. \$10.00 lab fee.
Prerequisites: 1393, 5721

5771 Analytical Surveying of Food and Drugs* (SP) 2-6-5
The course is to include discussion of the operational procedures, quality control and analytical labs for various types of industrial products of a biological nature. Inplant health, the contamination control procedures will be covered both from the standpoint of hazards to the employees as well as hazards to the product. Laboratory exercises will include some of the instruments and procedures used to monitor the quality composition of products and safety of employees. \$10.00 lab fee.
Prerequisites: 5721, 5741

5772 Quality Food & Drug Production Processes* (SP) 2-6-5
An introduction to the processes used by industry for large scale production of food, milk, drugs and other products of a biological nature. Problems of quality control as related to economics, logistics and microbial contaminations and chemical degradation of the product will be discussed. \$10.00 lab fee.
Prerequisites: 1315, 5721, 5741

5773 Instrument Electronics* (A) 3-3-4
This course is designed to cover the basic principles of electricity, AC and DC circuit concepts and circuit analysis methods. Students will study these principles as they apply to the function and operation of various analytical instruments used in industrial laboratories, including PH meters, multimeters, spectrophotometers, chromatographs, etc. \$5.00 lab fee.

5791 Special Project* (SP) 0-10-5
Individual study of an area of special interest under the direction of the staff. \$10.00 lab fee.
Prerequisite: 5723, depends on project.

Industrial Technology

4401 Introduction to Machining I 3-0-3

Instruction in this course is based upon selected operations performed on the bench, drill press, engine lathe, vertical milling machine, pedestal grinder and metal saws. The primary objective of the instruction is to present problems of preparing tooling, holding work, removing metal to required sizes, and selecting the machine for processing the work.

4402 Machining Practices II 3-0-3

The machine families of shapers and planers, grinding machines and the horizontal boring, drilling and milling machines are studied. Emphasis is placed on types and major components, operations and the cutting tools, tool and work holding devices and safety on the machines. Speed and feed calculations as applied to those machine families are also discussed to give the student a better understanding of the machines.

Prerequisite: 4401, 4481 or permission

4403 Advanced Machine Practices 3-0-3

Designed to acquaint the student with technical developments that are occurring in industry, such as thread and gear rolling, chemical milling, electrolytic, electrical discharge machining, tape controlled machines, tracer lathes, duplicating milling, broaching, centerless grinding and thread grinding.

Prerequisite: 4402, 4482

4404 Industrial Drafting I 1-4-3

This course provides knowledge of basic mechanical drafting standards used in industry and develops skills in creating a quality drawing. Orthographic, projection, dimensioning, sectioning and isometric are covered, plus the fundamental skill of sketching. \$6.00 lab fee.

4405 Industrial Hydraulics and Pneumatics 3-0-3

This is the study of the components used in hydraulic circuitry. Design, selection application and maintenance criteria for valve pumps, cylinders and related devices will be evaluated. Stressed is the application of these components to industrial circuitry used on machine tool, material handling devices and jig and fixture tooling.

4409 Basic Computer Concepts 4-0-4

The importance of Data Processing systems in business operations is covered in terms of the impact of automation and the need for improved processing methods. Numbering systems and data coding methods are covered thoroughly in connection with their use in the processing and storage of data using electronic computers.

Input and output devices used by modern computers are evaluated as to their application in various business situations as well as the media used by these devices to record data.

Problem solving concepts, software, programming languages and elementary systems design are included in the course.

4411 Project, Industrial Research 3-0-3

A research study whereby the student will prepare written reports and/or manuscripts. The student will meet with the instructor and be assigned the responsibility of researching, through developing and outlining job titles and responsibilities starting from the floor level (example: forman/group leader or equivalent) and identifying those responsibility positions to include top management: (President/General Manager or equivalent). The research will cover three size plants or organizations - small, medium and large industrial plants each having a different product line.

4413 Industrial Research Study 3-0-3

A project set up by the instructor, assigning the students to explore or research new concepts of technical hardware, software, concepts or skills that have been introduced to the market effecting industrial output of the product line. Methods of production and skills that have changed mandating the employee to seek new skills or methods of production to keep employable in the labor market.

4414 Research Project 3-0-3

A course defined by the student and instructor which pertains to any new or unusual industrial electrical/electronic application, not covered in the curriculum. To improve the ability of the student to be better prepared for the job requirements.

4421 Principles of Supervision I 3-0-3

A study of management with emphasis upon the student as the manager. Topics covered include self development with special attention to leadership, attitudes, morale, motivation and communications. Students will participate in group dynamics, role playing, case studies and class projects/discussions.

4422 Principles of Supervision II 3-0-3

A study of managing in a dynamic environment. The science of getting results through others. Techniques for managing yourself, managing others and managing the business.

Prerequisite: 4421

4423 Principles of Supervision III 3-0-3

This course deals with the administrative problems that must be faced by management in developing and using human resources.

The student will have the opportunity to demonstrate his ability in an area of supervisory work-reports as they relate to the specific supervisory assignment. Areas may include office supervision, production supervision, specific skilled trades supervision and etc.

Prerequisite: 4422

4427 Basic Accounting I 2-3-3

An introductory course designed for those with no background in accounting or as a refresher for those with limited background in the basic fundamentals of these areas. The course is a fundamental study of the principles and procedures of double-entry accounting as applied to the sole proprietorship form of business. The course takes the student through the basic accounting cycle.

4428 Basic Accounting II 2-3-3

A continuation of Introduction to Accounting. Account group as they apply to partnership and corporate forms of business are studied for their problems of composition, valuation, recognition, and appropriate accounting treatment at a basic level. The course is problem oriented.

Prerequisite: 4427

4429 Basic Accounting III 2-3-3

A continuation of Accounting II. This course is designed to enable the student to study in depth the principles and procedures of financial accounting, with emphasis on preparation of financial reports for internal as well as external use. The course is problem oriented.

Prerequisite: 4428

4431 Die Design I 2-3-3

The student is introduced to the profession of laying out working drawings for dies used in the manufacturing of sheet metal stampings. He is taught the basics of preparation of plans, designs, drawings, and other specifications which are used as complete guides by the manufacturer who does the actual building of these devices. Covers blanking, single, double, multiple group dies, cut off and shearing dies, trimming and cutoff dies. \$6.00 lab fee.

Prerequisite: 4404 or permission.

4432 Die Design II 2-3-3

The continued study of preparing working drawings, plans of designs for the manufacturing or production of sheet metal stampings. It continues with (shear type) cut-off dies incorporating notching and punching operations in several different applications commonly used in industry today. \$6.00 lab fee.

Prerequisite: 4431

4433 Die Design III 2-3-3

This course introduces the basic fundamentals of plastic and die cast mold construction and operations.

The mold dies of single and multiple-cavity design are covered in lecturer-discussions correlated with the machinery of the molds employing various production machine techniques. \$6.00 lab fee.

Prerequisite: 4432

4434 Introduction to Tool & Die Making I 3-0-3

Covers the basic details, techniques and theory of stamping dies. Includes practices that a beginning die maker must learn and acquire. Essential facts of cutting and forming operations are described and then related to the manner in which the dies must function in order to achieve the desired results. Discusses primary die components such as punches, punch plates, die blocks and strippers and individual entities in addition to their function as a part of the complete die. Field experience credit available. See course 4497.

- 4435 Tool & Die Making II** 3-0-3
A continuation of related theory in Tool and Die Making I progressing to the more advanced stages of complete dies. Students are presented subject areas whereby each subject is begun at its necessary foundation level and is developed to the point where the die maker can understand completely the particular type of die discussed. Covers inverted and compound dies using the "blank-through principle", the "chop off" principle; the "parting" principle using secondary operations drawing operations. Field experience credit available. See course 4498. Prerequisite: 4434
- 4436 Advanced Die Making** 3-0-3
Continues the study of the principles of dies; the operation, construction, use and design for the more complex dies used in the fabrication of sheet metal parts in presses. Field Experience credit available. See course 4498 Prerequisite: 4435
- 4441 Plant Layout and Conveyors** 2-0-2
A familiarization course in the problems of the placement of plant equipment in its many aspects as it affects the maintenance man. A study is made of conveyors, their construction principles purpose and design plus auxiliary equipment such as guarding, piping, venting and duct work. Field experience credit available. See course 4499
- 4442 Industrial Rigging** 2-0-2
The principles of rigging, proper handling of equipment and the understanding of proper application of wire rope, pulleys, rollers and other mechanical advantages. Includes proper understanding and application of power equipment including high lifts. Safety is stressed in each subject area covered.
- 4443 Mechanical Linkage** 2-0-2
A study of gears, shafts, power screws, racks, cams, motors, motor housing, and table ways used in the construction of industrial machinery, the understanding of mechanical advantages and control, and the servicing and maintenance of the equipment components. Field experience credit available. See course 4449. \$5.00 lab fee.
- 4444 Maintenance Welding** 3-3-4
A welding program for maintenance people who will be presented with the basics of laying out steel, burning with a hand torch, introduced to heating, soldering, brazing and gas welding skills. The fundamentals of electrical arc welding skills will be presented utilizing several common types of electrodes on various thicknesses of steel and various joint designs. \$20.00 lab fee.
- 4445 Mechanical Power Transmission** 2-0-2
The understanding of the basic principles and concepts of operation of many components contributing to the transmission of power to accomplish work. Field experience credit available. See course 4488. \$10.00 lab fee.
- 4446 Industrial Plumbing** 3-0-3
An introduction to the field of plumbing. Fundamentals of installation, maintenance, and the repair of both water supply and drainage systems.
- 4447 Packing Seals and Bearings** 2-0-2
The characteristics, nomenclature and proper understanding of all types and kinds of bearings and assemblies. Included is the principles of lubrication and preventative maintenance procedures. Field experience credit available. See course 4448. \$10.00 lab fee.
- 4448 Field Experience - Packing Seals & Bearings** 0-24-2
Lab application and on-the-job training, as it applies to theory course 4447. With participating companies.
- 4449 Field Experience - Mechanical Linkage** 0-24-2
Lab application and on-the-job training, as it applies to theory course 4443. With participating companies.
- 4451 Electronic/Electrical Schematics** 2-2-3
An introductory drawing course incorporating the use of instruments, instructions and practice to produce quality schematics, pictorial diagrams using lettering, electronic and electrical symbols. The student will be able to demonstrate free hand sketching and will be taught industrial standards and practices used in the field of electronics and electricity. \$6.00 lab fee.
- 4452 Residential and Commercial Codes and Prints** 1-4-3
The student will be able to interpret typical plans and specifications, utilizing the National Electric Code. He will be required to draw his own plans, according to local and state code for a single dwelling and light commercial building. \$15.00 lab fee.
- 4453 Industrial Codes and Prints** 1-4-3
Continued study in industrial blue prints, wiring diagrams and specifications. Systems such as power distribution, lighting, heating, and other controls are studied by means of design projects. The National Electric Code is studied as an integral part of each assignment. \$6.00 lab fee. Prerequisite:4452
- 4454 Heating and Cooling Controls, Industrial** 1-4-3
This course provides additional troubleshooting skills as they apply to heating and cooling installations on most common appliances. Troubleshooting is taught and practices using a variety of problem conditions which incorporates some mechanical problems along with the electrical problems that are encountered in heat pumps, electric home air conditioners, oil fired hot water heating systems and refrigeration/freezer units. \$10.00 lab fee.
- 4455 Instrumentation and Controls I** 3-0-3
A study of electronic measurement and recording of pressure, temperature flow, position and strain, and how these principles may be applied to other measurements and recording problems. The student will be taught the knowledge necessary for installing instruments found in industry.
- 4456 Instrumentation and Controls II** 3-0-3
Continued study of basic methods of measurement and control of pressure, temperature, flow and position. The electrical and mechanical fundamentals of typical process control systems are examined in depth. Emphasis on industrial applications.
- 4457 Field Experience - Industrial Rigging** 0-24-2
Lab application and on-the-job training, as it applies to the theory course 4442. With participating companies.
- 4458 Field Experience - Plant Layout and Conveyors** 0-24-2
Lab application and on-the-job training, as it applies to the theory course 4442. With participating companies.
- 4459 Industrial Metals** 2-2-3
A study of ferrous and non-ferrous metals as they apply to understanding requirements shown on parts produced in an industrial plant production operation, or as required in maintenance.
- 4461 Industrial Electricity I** 3-0-3
The basic electricity course will provide the student with knowledge and experience in introduction to circuits, electrical measurements using volt-ohm-meters, voltage and current distribution. Ohm's Law, Kirschoff's Law, electro-magnetism, electrical power, Inductance, capacitance, RCL circuits, impedance and transformers. The course is designed to provide electrical theory without over emphasizing mathematical formulas.
- 4462 Industrial Electricity II** 3-0-3
Application of diodes, rectifiers, voltage and current regulators, transistors, amplification, FET's, Op-amps, Lange scale integrated circuits, and interfacing. The theory is taught by use of circuit approximations (Black box theory) and input-output signals. The student will also learn theory behind test equipment used in laboratory course. Prerequisites: 4461, 4471
- 4463 Industrial Electricity III** 3-0-3
Basic theory and application into control systems, industrial power supplies, D.C. motors and generators (series and shunt), Digital motor control, and the troubleshooting of motors and motor controls. Student will learn practical uses of manufacturer's specifications for replacement of motors and their respective control system.

- 4464 Industrial Electricity IV** 3-0-3
This advanced course presents to the student industrial controls training which allows him to develop simple control systems, gradually learning more complex systems as he progresses. The theory on rotating machines and transformers is learned as an inherent part of the control system and includes the practical elements such as machine connections, reduced voltage starting, protection devices, as well as the theory of machine operation and machine characteristics.
Prerequisites: 4463, 4473
- 4465 Machine Repair I** 3-0-3
This course presents to the student the essentials of machinery and equipment installation and repair. Covers the principles of laying out baselines and reference points, foundation mounts, bolting and securing, vibration control, leveling and the study of important machine data as per the manufacturer. \$15.00 lab fee.
- 4466 Machinery's Hand Book** 2-0-2
The course develops instruction in the use of the "MACHINERY'S HANDBOOK" from mathematics, specifications, machining and the standards tables found in the hand book. The student selects the values for specified parameters. The derivation of formulas encountered in the tables is presented.
- 4467 Job Relations and Safety** 2-2-3
A course designed to acquaint the student in his role in the metal removal (machinist/tool and die) industry. Emphasis is directed to his personal habits and attitudes, safety and motivation. Communications and responsibilities of the individual in the work environment is stressed using class room and group discussions covering a description of jobs in terms of job performance requirements, skills and knowledge.
- 4468 Industrial Blue Print Reading I** 2-2-3
A basic course presenting instructional material in the correct sequence for students, apprentices, journeymen and others who need to know how to read and interpret engineering drawings. Assignments will contain related technical information and principles of drafting necessary to interpret shop drawings.
- 4469 Industrial Blue Print Reading II** 2-2-3
A continuation of print reading enabling the student to review with understanding actual production blue prints. Covers geometric dimensions and tolerances, thread elements, common and unusual machine practices, machine terms and common abbreviations. Covers in more detail, assembly drawings, materials and processes, and better visualization. Presents some sketching ability.
Prerequisite: 4468
- 4471 Lab for Industrial Electricity I** 0-5-2
Practical application of fundamentals of basic electricity using electrical power sources, VOM's, FET multimeters, and power meters for measurement of voltage, current, resistance, and power. Emphasis is placed on the construction, application, and troubleshooting of electrical circuits. \$15.00 lab fee.
- 4472 Lab for Industrial Electricity II** 0-5-2
The student will construct, interface, and troubleshoot electronic circuits using diodes, transistors, IC's, and standard electrical components. The student will learn the use of VOM's, FET and Digital multimeters, function generators, oscilloscopes, curve tracers, and the other tools and test equipment as required. The construction of the circuits will be accomplished on a circuit board so designed to require minimum construction time with maximum practical experience. \$15.00 lab fee.
Prerequisites: 4461, 4471
- 4473 Lab for Industrial Electricity III** 0-5-2
The supportive laboratory courses for construction, application and troubleshooting of motors and their respective control systems. Student will use VOM's, Analog and digital tachometers, power meters, oscilloscopes, multifunctional generators, and other tools and test equipment as required. \$15.00 lab fee.
Prerequisites: 4462, 4472
- 4474 Lab for Industrial Electricity IV** 0-5-2
Students receive practical "hands on" application which incorporates the theory covered in the classroom, permits troubleshooting skills, wiring manual and magnetic starting circuits, three phase reversing, common indicator lights and limit switches, motor sequencing and transistorized relay controls in a very practical step by step learning situation as is found in most industrial applications. \$15.00 lab fee.
Prerequisites: 4463, 4473
- 4475 Lab for Machine Repair I** 0-4-2
The student is provided with the application skills of the theory presented in the above class presentations. The tools, equipment and methods are presented to support common practices used in most machine repair responsibilities assigned the maintenance person. \$15.00 lab fee.
- 4476 Heat Treatment** 2-2-3
The practices of basic heat treatments are developed in a series of fundamental lectures and demonstrations. The changes in mechanical properties induced by heat treating and the understanding of the different methods and applications to anneal and improve qualities of steels are explored. \$3.00 lab fee. Field experience credit available. See course 4491.
- 4477 Quality Control II** 2-2-3
Advanced study of theory and application of inspection practices and equipment commonly found and used in industry as it applies to tool room and inspection divisions within most machining plants. Field experience credit available. See course 4487.
- 4478 Industrial Machines I** 3-0-3
This is a continuation of skills and theory presented to students who have completed the three machining practice courses. Concentration is oriented toward the specific needs and task to meet the third year requirements as outlined in the National Machining, Tool & Die Association testing and evaluation.
Prerequisites: 4403, 4483
- 4479 Industrial Machines II** 3-0-3
Review of requirements necessary to satisfactorily complete the fourth year requirements as outlined in the National Machine, Tool & Die and Precision Making Association. Also incorporates cost analysis and the importance of economics of production practices as it applies to the various machine tools.
Prerequisites: 4478, 4493
- 4481 Lab for Industrial Machining I** 0-4-2
Laboratory application to reinforce the theory presented in the class room. Specific jobs are assigned to utilize gauge blocks and sine for applications and other specific areas of measuring standards. It covers the calibration of precision measuring instruments, establishing precise angles and often the positioning of machine tool components and cutting tools. \$15.00 lab fee.
- 4482 Laboratory II (for Machining Practices II)** 0-4-2
Continuation of application involving more complex operations utilizing various optional equipment or methods. Covers drill press operations, engine lathe, horizontal and vertical mills, and grinding operations. \$15.00 lab fee.
Prerequisites: 4401, 4481
- 4483 Lab for Advanced Machine Practices III** 0-4-2
This course permits the student to select operations on most of the common machine tools which permits introduction of "hands on theory and application" of more involved, more advanced applications. A project is identified, the processes are detailed as per print specifications and the completion of the project is completed an checked using common inspection tools found in industry. \$15.00 lab fee.
Prerequisites: 4402, 4482
- 4485 Lab for Hydraulics and Pneumatics** 0-4-2
Hydraulic and pneumatic control and power systems are studied using operational training systems. An emphasis is placed on measurements of system efficiency and practical troubleshooting techniques. \$10.00 lab fee.
- 4487 Field Experience - Quality Control** 0-24-2
Lab application and on-the-job training, as it applies to theory course 4477. With participating companies.
- 4488 Field Experience - Power Transmissions** 0-24-2
Lab application and on-the-job training, as it applies to theory course 4445. With participating companies.

- 4489 Lab for Computer Concepts** 0-4-2
Application of the concepts discussed in the theory class, a study of the basic programming language that will enable students to apply programming concepts to the efficient solution of engineering and business applications on a computer.
- 4491 Field Experience - Heat Treatment** 0-24-2
Lab application and on-the-job training, as it applies to the theory course 4476. With participating companies.
- 4492 Field Experience - Machinery's Handbook** 0-24-2
Lab application and on-the-job training, as it applies to the theory course 4466. With participating companies.
- 4493 Lab for Industrial Machines I** 0-4-2
Laboratory application to reinforce the theory presented in the classroom. Specific job are assigned to utilize gauge blocks and sine for application and other specific areas of measuring standards. It covers the calibration of precision measuring instruments, establishing precise angles and often the positioning of machine tool components and cutting tools. \$15.00 lab fee.
- 4494 Lab for Industrial Machines II** 0-4-2
A Continuation of advanced machines skills with emphasis placed on the economics of production practices, utilizing various jobs, to explore applications, tooling and machines to make the determinations. \$15.00 lab fee.
- 4495 Lab for Instrumentation and Controls I** 0-4-2
The student will be required to perform the application skills discussed in the theory class. \$15.00 lab fee.
- 4496 Lab for Instrumentation and Controls II** 0-4-2
Laboratory experience with electronic and electro mechanical measurement instruments and systems. Both open and closed loop control systems are studied using operational systems. \$15.00 lab fee.
Prerequisites: 4455, 4495
- 4497 Field Experience - Tool & Die I** 0-24-2
Lab application and on-the-job training as it applies to theory course 4434. With participating companies.
Prerequisite: 4481, 4482, 4483.
- 4498 Field Experience - Tool & Die II** 0-24-2
Lab application and on-the-job training as it applies to theory course 4435. With participating companies.
Prerequisite: 4497.
- 4499 Field Experience - Tool & Die III** 0-24-2
Lab application and on-the-job training as it applies to theory course 4436. With participating companies.
Prerequisite: 4498.

Insurance Technology

- 3401 Principles of Insurance*** 3-0-3
An introduction to the general principles of insurance and the basic principles that underlie the entire field of insurance. The course can be used as an elective for other technologies.
- 3402 Life Insurance*** 3-0-3
An examination of the role of the consumer and the producer in life insurance coverages. Materials covered will include analysis of needs, insurance contracts, rates, legal aspects and estate planning.
- 3403 Property Insurance*** 3-0-3
Coverages, policy provisions and concepts common to property insurance including the standard fire policy, extended coverage endorsement, dwelling forms, crime insurance, business interruption forms, inland and ocean marine coverages, and the property coverages of various personal and commercial multiple line contracts.
- 3404 Casualty Insurance*** 3-0-3
Coverages, policy provisions, and concepts common to liability insurance policies, suretyship, the liability insurance aspects of multiple-line contracts and life, health and social insurance coverages.
- 3405 Social Insurance*** 3-0-3
Coverages of insurance programs that deal with the problems of premature death, old age, occupational and non-occupational disability, health care and unemployment. Emphasis will be placed on the Federal Social Security program, Medicare, State Workers Compensation Plan and the State/Federal Unemployment Compensation Plans.

- 3406 Agency Operations*** 3-0-3
A producers approach to all kinds of insurance with a broad coverage of materials designed to give the student a perspective of what is involved in agency operations. Activities and special problems of work within an insurance agency are covered.
Prerequisite: Permission of instructor

- 3407 Agency Practicum I*** 1-14-3
A continuation of 3407. The student is placed in an agency working four hours a day, three days a week. The on-the-job experience is supervised by an internship coordinator to aid in the student's growth and development.
Prerequisite: Permission of instructor

- 3408 Agency Practicum II*** 1-14-3
A continuation of 3407. The student is placed in an agency working four hours a day, three days a week. The on-the-job experience is supervised by an internship coordinator to aid in the student's growth and development.
Prerequisite: Permission of instructor

- 3409 The World of Insurance*** 3-0-3
A study of the integration of people with technology, organizational structure and the demands of insurance organizations. Particular emphasis is placed on the relationship of the individual and requirements of insurance type organizations.

- 3415 Human Resource Management*** 3-0-3
This course is designed to develop the knowledge and understanding of manpower needs in both public and private organizations. The impact upon the organization (i.e. laws, regulations, social norms, hiring, training and compensation). The primary emphasis will be to present an organization focus from the employee's and manager's point of view.

- 3421 Company Operations*** 3-0-3
This course will examine insurance marketing, underwriting, reinsurance, rate making, claims adjusting, loss control, activities and other insurer functions and activities.
Prerequisite: Permission of instructor

- 3422 Company Practicum I*** 1-14-3
The student is placed in an insurance company working four hours a day, three days a week. The on-the-job experience is supervised by an internship coordinator to aid in the student's growth and development.
Prerequisite: Permission of instructor

- 3423 Company Practicum II*** 1-14-3
A continuation of 3422. The student is placed in an insurance company working four hours a day, three days a week. The on-the-job experience is supervised by an internship coordinator to aid in the student's growth and development.
Prerequisite: Permission of instructor

- 3425 Insurance Law*** 3-0-3
A study of the legal environment of insurance, and the interaction of law and insurance activities. Additionally, directions for the proper application of general legal principles to factual patterns common in insurance transactions are covered.

Interpreting/Transliterating Technology

- 7701 Introduction to Interpreting/Transliterating** 3-0-3
Covers the difference between interpreting, translating, and transliterating; also introduces kinds of interpreting/transliterating situations; surveys the various sign systems; and discusses the role of the interpreter.

- 7702 English for the Interpreter** 3-0-3
Covers the principles of grammar and vocabulary development that an interpreter needs in a variety of situations.

- 7703 Physical Aspects of Interpreting/Transliterating** 2-0-2
Identifies auxiliary factors of interpreting that can convey meaning or hinder meaning or comfort for the deaf consumer; course covers dress, physical appearance, lighting, background, seating, mouthing, and positioning.
Prerequisite: 7701

- 7704 Special Problems in Interpreting/Transliterating** 3-0-3
Utilizes role playing techniques to help the interpreter develop the skills and poise needed to handle the frustrations and problems that arise in interpreting situations; deals with the non-human entity of interpreting.
Prerequisite: 7701

7705 Legal and Ethical Aspects of Interpreting/Transliterating 3-0-3
Analyzes the RID Code, "professional" ethics, confidentiality vs. privilege, legal liability, and the role of the interpreter.
Prerequisite: 7701

7706 Signs Systems Vocabulary 3-0-3
Compares signs used in codes, systems, and in Ameslan; analyzes signs from both conceptual and philosophical viewpoints.
Prerequisite: 7701

7707 Specialized Interpreting/Transliterating 3-0-3
Discussion, demonstration, and field trips designed to acquaint the student with the special skills needed for legal interpreting, deaf blind and oral deaf persons, educational, and medical situations.
Prerequisite: 7701

7711 Introduction to Ameslan 2-2-3
Covers the development of ASL as a visual language as it progresses from non-verbal communication to structured language. \$5.00 lab fee for videotapes.

7712 Ameslan I 2-2-3
Course expands upon basic ASL principles and develops conversational competence by focusing on the major grammatical features of ASL, further study of the cultural aspects of the Deaf Community, and the acquisition of additional sign vocabulary. \$5.00 lab fee for videotapes.
Prerequisite: 7711

7713 Ameslan II 2-2-3
Course continues to expand upon the principles covered in 7712; vocabulary acquisition focuses on how to conceptually sign English idioms/phrases; more intense work on expanding receptive skills. \$5.00 lab fee for videotapes.
Prerequisites: 7711, 7712

7714 Ameslan III 2-2-3
Continues to expand upon principles covered in 7712 and 7713; a more in depth look at principles such as pronominalization, sentence types, and locatives; vocabulary acquisition focuses on ASL idioms. \$5.00 lab fee for videotapes.
Prerequisites: 7711, 7712, 7713

7715 Linguistics of ASL 3-0-3
Ties together all the linguistic principles studied in Ameslan; particular attention is given, not to the signs, but to the properties and morphological analysis of Ameslan.
Prerequisites: 7711, 7712, 7713, 7714

7716 Artistic Interpreting 3-0-3
Covers conceptually signing songs, poems, etc., as these relate to platform and performing arts interpreting; opportunities are provided for group glossing, individual glossing, and critiques.

7721 Orientation to Deafness 3-0-3
Discusses the psychological, social, and cultural aspects of deafness; looks at population, employment, and marriage patterns.

7722 Patterns of Language Development 3-0-3
Compares the normal patterns of language development of hearing children, prelingual deaf children, and postlingual deaf children.

7731 Voice to Sign Interpreting/Transliterating I 1-4-3
Self analysis; utilizes video taping situations so the student can see himself as the deaf person sees him; builds from the sentence to the short story level. \$5.00 lab fee.

7732 Voice to Sign Interpreting/Transliterating II 1-4-3
Continues to develop skills in delivery techniques; course moves from the short story level to lecture and formal presentations; develops more rapid levels of delivery. \$5.00 lab fee.
Prerequisite: 7731

7733 Sign to Voice Transliterating I 1-4-3
Practice techniques of orally expressing what is being signed in formal and informal situations; uses video practice tapes. \$5.00 lab fee.

7734 Sign to Voice Transliterating II 1-4-3
Continues to develop techniques of orally expressing what is being signed; emphasis is on a more technical level of material; uses video practice tapes and live signers. \$5.00 lab fee. Prerequisite: 7733

7735 Sign to Voice Interpreting I 1-4-3
Practices the techniques of conceptually expressing what is being signed in formal and informal situations; uses video practice tapes. \$5.00 lab fee.

7736 Sign to Voice Interpreting II 1-4-3
Continues to develop techniques of orally expressing what is being signed; emphasis is on voicing for persons who use ASL or persons with minimal English skills. \$5.00 lab fee.
Prerequisite: 2235

7741 Field Experience Seminar I 1-0-1
Group discussions of experiences arising during field experiences. Concurrent with Field Experience I, 7743.

7742 Field Experience Seminar II 1-0-1
Group discussions of experiences arising during field experiences. Concurrent with Field Experience II, 7744.
Prerequisite: 7741

7743 Field Experience I 0-12-4
Using in the field the concepts learned in the classroom, students will be assigned to work in a variety of situations on a part-time basis.

7744 Field Experience II 0-12-4
Using in the field the concepts learned in the classroom, students will be assigned to work in a variety of situations on a part-time basis.
Prerequisite: 7743

7765 Introduction to Sign English 3-0-3
Course emphasizes the use of signs in the straight English context. In addition to fingerspelling, numbers, and a sign vocabulary of 350 words, this course covers the basic principles of manual communication through non-verbal techniques and concept development. \$5.00 lab fee for video-tapes.

7766 Sign English I 3-0-3
Course emphasizes the use of signs in straight English context. The course covers an additional vocabulary of 500 words. In addition to vocabulary building, course concentrates on signing idioms and increasing receptive skills. \$5.00 lab fee for videotapes.
Prerequisite: 7765

Law Enforcement Technology

7801 Introduction to Law Enforcement* 3-0-3
A survey of law enforcement, its role, history, and development of English Common Law. An introduction to modern police practices and the functions of other agencies involved in the administration of criminal justice and the law enforcement officer's ethics. An introduction to local, state, and federal court procedures.

7802 Crime Prevention Techniques* 3-0-3
Survey of the use of patrol procedures in crime prevention. Included are the purpose and types of patrol, deviant behavior, police communications including radio, teletype and computerized communication systems. Observation and perception, identification and description of individuals and property, a summary of the use and types of weaponry and techniques by call, required by requests for police service.

7803 Traffic Administration* 3-0-3
An orientation to highway traffic administration. Discusses the responsibilities of agencies involved in the highway transportation system with emphasis on the police function. Included are supervision enforcement definitions and rates, accident prevention and control problems, basic principles of traffic law enforcement, and the federal standards for highway safety that have a direct bearing on police operations.

7804 Juvenile Procedures* 4-0-4
Organization, functions, and jurisdiction of juvenile agencies. Processing and detention of juveniles. Statutes and court procedures relating to juveniles. Police services for juveniles and neglected children. Rights and liabilities of minors and their parents.

- 7805 Ohio Criminal Code*** 5-0-5
The study of the statutes of Ohio to crime and criminal procedures with emphasis on the specific elements necessary to constitute individual crimes. An introduction to civil law as it relates to the law enforcement officer.
- 7811 Criminal Evidence and Procedures I*** 4-0-4
Analysis of statutes and court decisions on the accumulation, presentation, and admissibility of criminal evidence. The origin, development, and philosophy of the rules of evidence. Concurrent with 7861.
- 7812 Criminal Evidence and Procedures II*** 4-0-4
Tests for admissibility of evidence and types of evidence. Arrest, search, entrapment, and opinion testimony. Prerequisite: 7811, Concurrent with 7862
- 7813 Traffic Accident Investigation*** 5-0-5
An in depth study of the procedure and objectives in accidents, gathering facts from road, vehicle and witnesses, hit and run investigation, measurements and diagrams, utilization of skid marks evidence, proper methods of recording accident data, use of accident template and a practical application of the recommended method of submitting the Ohio State Traffic Crash report.
- 7816 Case Preparation*** 3-2-4
A study of the necessary reports, review of case and conference with prosecutor, witnesses and technical reports. Proper submission of physical evidence, psychology of courtroom testimony. Participation in mock trials followed by actual courtroom trial visitations.
- 7819 Supervision of Public Service Personnel*** 3-0-3
Supervision techniques applied to public service personnel. The study of the need for job descriptions and job procedures, civil service requirements, reports, oral and written directions, work evaluation, conference leadership. Methods of instruction effective in teaching and motivating personnel.
- 7821 Local Government** 3-0-3
The role of local government in the community: its structure, organization, and responsibility. Local government politics and the community. Methods and principles of local budgeting. Urban, suburban, rural and community structure.
- 7822 Police Community Relations** 3-0-3
The psychology of relations between law enforcement officers and the general population. Policies and practices of community relations as they apply to law enforcement agencies. Current national and local community problems.
- 7824 Investigation and Interviewing** 3-0-3
An analysis of the use of interviewing as a tool in investigation. Covering preparation of an interview, types of interviews, interview techniques and their psychological application to obtaining accurate and admissible statements.
- 7825 Constitutional Law*** 5-0-5
A study of Federal and State Constitutional Law and the Bill of Rights with emphasis on the rights to due process of law, equal protection of the law, jury trial, and assistance of counsel. Interpretation of the Constitution by the United States Supreme Court as given in their decisions.
- 7826 Police Administration** 3-0-3
The contemporary local law enforcement agency, its functions, structure, and operational techniques. Principles of organization, staffing, budgeting, controlling, coordination, planning and research. The development and maintenance of liaison between agencies.
- 7827 Criminology** 3-0-3
A sociological approach to the crime problem. Some of the topics are: crime and the population, the handling of the problem, the role of the victim, explanation of crime, treatment methods.
- 7828 Municipal Finance*** 3-0-3
An administrative view of municipal finance. A summary of budgeting, cost accounting, salaries, taxes, monthly allocations, balance sheets, operating expenses, purchasing and requisitioning are studied.
Prerequisites: 7819 or 7826
- 7831 Police Photography*** 1-4-3
Photography at specific crime scenes. Photography of criminal evidence. Micro and macro photography. Preparing the court exhibit. Darkroom techniques. Use and care of photographic equipment. \$4.00 lab fee.
- 7832 Fingerprinting*** 3-0-3
A study of fingerprinting recognition and classification procedures. Analysis of distinguishing features of fingerprint patterns. Instruction in photography of latent prints prior to lifting. Proper methods of lifting and preserving evidence. \$1.00 lab fee.
- 7833 Police Department Intelligence*** 3-0-3
The collection and evaluation of information dealing with security and safety of the municipality. Methods of observation of criminal and subversive organizations, checking on rumors, intro-police communications, and the use of informants.
- 7834 Police Department Organization*** 3-0-3
An introduction to the principles governing the organization and administration of law enforcement organizations. Included for study are: functions and activities, development of policy, significance of community relations in effective police work, and training and control of police forces.
- 7835 Family Crisis Intervention*** 3-0-3
An analysis of the changing role of the law enforcement officer. Police have historically dealt with family problems on the basis of keeping the peace. The police officer must resolve more than just the disturbance. A study of the methods and procedures of family crisis intervention.
- 7836 Juvenile Delinquency*** 3-0-3
The philosophy and methods of police programs for the prevention and control of juvenile delinquency and youth crime. Emphasis on specific techniques and consideration of the issues and problems to be resolved by police.
- 7841 Major Crime I*** 3-0-3
Principles and techniques of investigation and prosecution of major crimes. Emphasis on methods involving homicide, suicide, assault and rape. Human physiology as applied to police investigation.
- 7842 Major Crime II*** 3-0-3
Principles and techniques of investigation and prosecuting of major crimes. Emphasis on methods, involving auto theft, burglary, and grand larceny. "Methods of Operation" techniques.
- 7843 Techniques of Instruction** 3-0-3
Methods of instruction, application of audio visual equipment, testing, and evaluation, and preparation of materials are introduced. Special emphasis is placed upon planning an organizational training program. Methods of evaluation. \$3.00 lab fee.
- 7844 Safety Education*** 3-0-3
Methods of motivation and instruction of children and adults with emphasis on the subject of safety education. Principles of automobile, bicycle, motorcycle, pedestrian and firearm safety. \$5.00 lab fee.
- 7845 Penology*** 3-0-3
A study of the admitting, quartering, and releasing of prisoners. Emphasis on city and county systems for handling prisoners.
- 7846 History of Law Enforcement*** 3-0-3
A study of law enforcement from early civilization through the modern police department. Reference to notable crimes in history, their particulars, and results in law enforcement procedures change. Scientific advances and their role in law enforcement. An appreciation for the profession of law enforcement.
- 7847 Police Records*** 3-0-3
The necessity, techniques, and details of keeping records in a police department. Criminal records, filing, and cross-reference system. Officer report writing.
- 7849 Crime Laboratory Techniques*** 3-0-3
A study of special chemical and physical procedures used in the crime laboratory. The use of specialized instrumentation: microscope and microphotography, x-ray equipment, and spectrophotometers.
- 7861 Criminalistics I*** 9-4-2
The laboratory includes the recognition, collection, and preservation of evidence and its preparation for court presentation. An introduction to fingerprint comparison. \$5.00 lab fee. Concurrent: 7811
- 7862 Criminalistics II*** 0-4-2
The laboratory includes examination techniques for blood, hair and fiber, firearms identification, toolmark comparison, latent fingerprints, questioned document examination and trace evidence. \$5.00 lab fee. Prerequisites: 7811, 7861 Concurrent: 7812

Mathematics

- 7871 Correctional Law*** 4-0-4
This course will cover the various Supreme Court rulings that deal with the care and treatment of prisoners confined in institutions. It will include the use of force, the right to have visitors, receive mail, attend religious functions, and the right to treatment. It will cover the due process of law that the prisoner is entitled to in confinement.
- 7872 Contemporary Corrections*** 3-0-3
This course covers the history of corrections, including the various philosophies that influenced correctional behavior, the development of the penitentiary system, the effect of court rulings on the operation of the institutions, and an insight into the future of the correctional system.
- 7873 Community Based Corrections*** 3-0-3
This course will investigate alternative models of corrections in place of institutionalizing the offender. Several leading authors will discuss various alternatives and the benefits that will derive from the placing of the offender back in the community rather than in an institution.
- 7874 Institutional Corrections*** 3-0-3
This course will cover some of the problems of corrections today and their solutions. It will deal with the treatment of offenders, past and present, and with future trends in this field.
- 7875 Counseling - Probation & Parole*** 4-0-4
This course covers the responsibilities and duties of the correctional counselor and caseworker. Emphasis is placed upon the application of professional standards of casework in the correctional setting. Extra stress is placed on the functions of the parole and probation officers.
- 7876 Correctional Administration*** 3-0-3
This course will cover the various phases of administration as they relate to corrections. Three basic stages are covered: executive, midmanagement, staff line operations. Each of these levels will be discussed as they relate to institutions, community-based institutions, and operation of probation and parole. The problems and possible solutions to them will be covered for each division of corrections.
- 7881 Introduction to Security*** 3-0-3
This course is designed to provide a general background in security for the beginner. It covers some of fundamental systems used for loss prevention, fire destruction, and personnel safety. It covers the basic idea of construction for security reasons as well as beauty and functionalism. It helps to relate security to all members of a company and the responsibility each has to the prevention of loss, both material and human.
- 7882 Security*** 3-0-3
This course will combine the practical with the theoretical as it examines the nature of crime, criminals, and selected criminal offenses; major security concerns; and the techniques, sophisticated hardware, and personnel utilized to reduce or eliminate security problems.
- 7883 Goals & Standards for Private Security*** 3-0-3
This course will investigate the creation and enforcement of rules and regulations to govern private security agencies and agents. Based on the Official Private Security Task Force Report published in 1976, the minimum standards for obtaining a license and registering as a security person will be discussed. Basic requirements and educational levels will be stated and minimum age and disability requirements will also be covered. The creation of a Regulatory Board will also be covered.
- 7884 Collateral Duty and Safety*** 4-0-4
A basic introduction to problems and practices of collateral duty and safety personnel.
- 7885 Development of a Security Program*** 3-0-3
This course is designed to inform the student how to conduct various surveys of a corporation to determine its vulnerability to theft and other hazards. It describes the various methods of conducting these surveys by questionnaires, study of procedure manuals and survey forms. Demonstrates how procedures and standards are prepared.
- 7886 Security Management*** 3-0-3
Introduction of the dynamics of corporate crime prevention. An in-depth analysis of the techniques of risk management in the formulation of definitive corporate security policies and examines the impact of crime on corporate productivity and profits.

- 1105 Introduction to Algebra(D-A,W,SP,SU)** 4-0-4
(E-A,W,SP,SU)
Transition from arithmetic to algebra: The Real Number System; signed numbers; elementary algebraic operations; linear equations and formulas; problem solving by equation; factoring; the rectangular coordinate system and graphs of linear equations.
- 1108 Introduction to Technical Mathematics(D-A,W,SP,SU)** 4-0-4
(E-A,W,SP,SU)
Systems of linear equations; operations with algebraic fractions; special products and factoring; exponents, radicals, and radical equations; solving quadratic equations by factoring, completing the square, and by formula; inequalities and their graphs.
- 1111 Technical Mathematics I(D-A,W,SP,SU)** 4-0-4
(E-A,W,SP,SU)
An introduction to computer programming in BASIC: operations with algebraic expressions: rectangular coordinates: solving linear equations in one variable: right triangle trigonometry and graphing of the sine and cosine functions.
- 1112 Technical Mathematics II(D-A,W,SP,SU)** 4-0-4
(E-A,W,SP,SU)
Solutions to systems of linear equations by graphing, by algebra, and by determinants: exponents and radicals: complex numbers (the j -operator): exponential and logarithmic functions: variation: vectors and oblique triangles: computer applications using BASIC.
Prerequisite: 1111
- 1113 Technical Mathematics III(D-A,W,SP,SU)** 4-0-4
(E-A,W,SP,SU)
The straight line, circle, parabola, ellipse, hyperbola: quadratic equations: polar coordinates: trigonometric identities and trigonometric equations: computer applications using BASIC.
Prerequisite: 1112
- 1114 Technical Mathematics IV(D-SP,SU) (E-SP,SU)** 4-0-4
An introduction to differential and integral calculus with related applications: curvilinear motion; related rates; maxima and minima; areas under curves and volumes of revolution; derivatives of trigonometric, logarithmic, and exponential functions.
Prerequisite: 1113
- 1115 Technical Mathematics V (on demand)** 4-0-4
Differentiation and integration in polar coordinates. Infinite Maclaurin, Taylor, and Fourier Series. First order differential equations. Partial derivatives and double integrals. Integration: Logarithm forms; tables; power rule; trigonometric substitution; by parts; exponential form; and inverse trigonometric forms.
Prerequisite: 1114
- 1121 BDP Math I(D-A,W,SP) (E-A,W,SP,SU)** 4-0-4
A study of the real numbers system: basic algebraic operations: linear equations and inequalities in one and two variables: quadratic equations: definitions and operations in set theory: a comparison of the decimal, octal, and hexadecimal number systems including conversion principals and procedures: an introduction to logic with truth tables and flowcharts.
- 1122 BDP Math II(D-A,W,SP,SU) (E-A,W,SP,SU)** 4-0-4
Relations and functions: quadratic, exponential, and logarithmic: systems of equations and solutions by algebraic, matrix, and determinant methods: linear programming by graphing, algebraic, matrix, and simplex methods: Boolean Algebra.
Prerequisite: 1121
- 1126 Probability and Statistics(D-A,SP,SU) (E-A,SP,SU)** 4-0-4
An introduction to programming using BASIC, Micro-computers, and the SPSS program; the description of sample data: numerical methods analyzing data: percentiles, quartiles and Z -scores: probability: the binomial distribution and the normal distribution: linear correlation and regression: sampling, including the Central Limit Theorem.
Prerequisite: 1122

1131 Business Mathematics(D-A,W,SP,SU) (E-A,W,SP,SU) 4-0-4
 Fundamental arithmetic processes emphasizing common and decimal fractions. Percentage methods are applied to cash and trade discounts, commissions, markup and depreciation. Simple interest on promissory notes and unpaid balances. Bank discount, compound interest, tables and formulas. Payroll computations. Income statement and balance sheet analysis.

1141 Business Statistics(D-A,W,SP,)(E-A,W) 4-0-4
 An introduction to the BASIC language and SPSS system: descriptive statistics: probability distributions: sample statistics: statistical inference: estimation and hypothesis testing: with application: to business problems.

1154 Survey Closures By Computer(D-A,SP) 2-2-3
 Provides instruction in application of electronic computer equipment to programmed automatic solution of algebraic and trigonometric problems such as are frequently encountered in civil engineering and surveying operations. The course is structured on use of a scientifically based computer language with special reference to geometric relationships. \$10.00 lab fee.

1155 Computer Application to Mathematics(D-A,W,SP,SU) 3-0-3
 Basic language, using terminals, writing computer programs in BASIC, solving typical mathematical problems, and writing programs related to the student's own technology. \$10.00 lab fee.

1171 Industrial Math/Algebra 4-0-4
 Airthmetic operations on fractions and decimals; Introduction to the Metric System; Ratio and Proportion; Signed Numbers; Elementary algebraic operations; Linear equations and formulas.

1172 Industrial Geometry 4-0-4
 Area and perimeter of plane figures; Area of polygons and circles; Area of sectors and ring sections; Volume and surface area of solids; Basic geometric constructions.
 Prerequisite: 1171

1173 Industrial Trigonometry 4-0-4
 Basic principles of Trigonometry; Tapers and Diameters; Speed ratios of pulleys and gears; Cutting speeds; Gear formulae.
 Prerequisite: 1172

1181 Mathematics for Health Technologies(D-A,SP) (E-A,SP) 4-0-4
 An introduction to computer programming in BASIC: a review of algebraic expressions and operations: the Metric system: functions and their graphs: ratio and proportion: logarithms: an introduction to descriptive statistics:

Mechanical Engineering Technology

4301 Industrial Organization and Management*(A) 2-3-3
 A review of industrial management principles, problems, and practices as viewed from the policy making level. An overview of modern management principles; organization structure; operational planning, organization, and control; managerial functions; and related subjects.

4302 Industrial Supervision I - Principles and Practices*(W) 2-3-3
 A functional analysis of the industrial supervisor's job. Problems in dealing with employees, machines, and processes. A review of supervisory management principles, functions, and their application at the front-line supervisory level.

4303 Industrial Supervision II - Labor Relations*(W) 2-3-3
 Principles and practices of recruiting, selection, developing compensating, and utilizing manpower resources at the front-line supervisory level. Collective bargaining agreements and applications at the working level in the management process.

4304 Industrial Supervision III - Safety and Environment*(A) 2-3-3
 The industrial supervisor's role in safety management. Problems of the front-line supervisor in handling safety and accident control. Review of O.S.H.A. Activities and environmental protection movements as related to the industrial environment.

4305 Purchasing, Stores, and Inventory Control*(A) 2-3-3
 The purchasing function. Inventory maintenance and control. Principles and Practices of material handling and management in the production process. The supervisor's responsibility for materials, supplies, and equipment.

4306 Time and Motion Study*(A) 2-4-4
 The student is taught a logical treatment of motion and time study. The how, why, when, and where of motion and time study are carefully kept in focus. Time standards by mathematical analysis is only one of many problem solving techniques taught.

4307 Industrial Electricity*(A) 3-2-4
 Students are provided the knowledge of electrical machine control. Subjects covered are electrical components, circuit design, power factors, trouble shooting, and maintenance.

4308 Production, Scheduling, and Control*(SP) 3-2-4
 Controlling the flow of production items for the time the raw material is received until the shipping of the products. Flowcharts, bar charts, and other schedule control items are reviewed and practiced.

4310 Machine Shop I 2-4-4
 A study of the operations of basic machine shop procedures with emphasis on layout, hand tools, the physics of metal cutting, band saw and hack saw and related safety procedures. \$10.00 lab fee.

4311 Cost Estimations*(SP) 2-3-3
 The student learns to estimate the cost of material, labor, and overhead for typical products manufactured by production methods.

4320 Blue Print Reading 2-0-2
 A course of study in the interpretation of engineering drawings, with emphasis on dimensioning, tolerances and understanding of conventional orthographic and isometric drawings.

4330 Machine Shop II 2-4-4
 A continuation of 4310 Machine Shop I. Basic machine shop procedures with emphasis on lathes, shaper and milling machines and related safety practices. \$10.00 lab fee.

4340 Shop Math 2-0-2
 A course in simple addition, subtraction, multiplication and division problems related to problems inherent to shop work. Additional problems associated with geometry as required with cutting tools, feeds and speeds used with machine tools.

4350 Machine Shop III 1-3-3
 A continuation of Machine Shop II. Basic machine shop procedures with emphasis on grinding, electrical discharge, drilling and tapping, with related safety practices. \$10.00 lab fee.

4360 Drafting 0-4-2
 A course in engineering drawing, including the principles of orthographic, isometric and oblique drawing. Involving dimensioning, sectioning and applied descriptive geometry. Emphasis placed on detail and assembly drawings. \$6.00 lab fee.

4370 Machine Shop IV 2-4-4
 A continuation of Machine Shop III. Basic machine shop procedures with emphasis on numerical control of machine tools with application to milling machines, drilling machines, etc. \$10.00 lab fee.

4380 Quality Control 1-2-2
 A course of study in the use of measuring tools and gages used in the inspection and checking of parts as related to machine shop production. Emphasis is placed on the use of micrometers, height gages, protractors, scales and other related equipment including hardness and tension testers.

4601 Mechanical Drafting I*(A, W, SP, SU) 0-6-3
 A beginning course including principles of orthographic, isometric, and oblique projection. Dimensioning, sectioning, and applied descriptive geometry. Emphasis on making complete detail and assembly drawings. \$6.00 lab fee. Prerequisite: 4600 or H.S.

4602 Mechanical Drafting II*(A, W, SP, SU) 0-6-3
 A continuation of Mechanical Drafting I, including advanced drafting practices, industrial standards, and the drawing of machine elements. \$6.00 lab fee. Prerequisite: 4601

4604 Basic Mechanisms*(A) 0-9-4
 A study of the basic mechanisms used in the construction of industrial machinery, such as linkages, cams, and gear trains. \$6.00 lab fee. Prerequisites: 4602, 4607, 1113

- 4605 Machine Design*(SP)** 0-8-4
A study of the design of machine elements; beams, bearings, shafts, gears, clutches, power screws, and fasteners. Emphasis on loading and stress considerations in the design. \$6.00 lab fee.
Prerequisites: 1113, 4602
- 4606 Tool Design*(SP)** 0-9-4
A study of the principles of design of production tooling, including jigs, fixtures, and various types of dies. \$6.00 lab fee.
Prerequisite: 4602
- 4607 Descriptive Analysis*** 1-2-2
The course is designed to give the students preliminary work towards problems in numerical control, statics, and strength of materials.
Prerequisite: 1112
- 4608 Introduction to Mechanical Technology*** 2-3-3
An introductory course in the study methods and science of interpretation of orthographic drawings, tolerances, castings, slides, bearings, gears, fasteners, springs, etc.
- 4610 Shop Math** 3-0-3
Simple addition, multiplication, subtraction and division problems with fractions, decimals and the metric system. Practical problems relating to the machine tools lab. Gear ratios, gear geometry, pulley ratios, axial movement of threaded shaft relative to revolutions. Feed and speed problems coupled with problems involving time elements.
- 4611 Machine Tools*(W)** 3-6-6
A study of the operation of the basic machine tools and the related theory. Cutting tool materials, cutting tool geometry, machining time, indexing, and helical milling. \$15.00 lab fee.
Prerequisite: 4612
- 4612 Manufacturing Processes I*(A)** 2-2-3
A course in the basic manufacturing processes used in production of machine parts. Study of the extraction and refinement of metals, production machining methods and production machine tools, precision dimensional inspection methods, hotforging methods, coldworking methods, and foundry methods.
- 4613 Manufacturing Processes II*(SP)** 2-2-3
Continuation of Manufacturing Process I. Laboratory work in welding and visits to manufacturing plants. Further study of cast metals. Welding equipment and procedures, welds, and weld inspection. Injection molding and powdered metals, plus Quality Control. \$4.00 lab fee.
- 4615 Materials Science*** 2-3-3
A basic course in the structure, properties and use of various materials used in the engineering discipline. Prerequisite: 1112
- 4616 Design Problems*(A)** 0-9-4
An advanced project. Student used his knowledge and initiative to analyze a problem in machine design: gathers data, makes sketches, calculations, and work drawings, and checks his work. \$5.00 lab fee.
Prerequisites: 1113, 4602
- 4620 Geometry** 3-0-3
Problems relative to manufacturing such as volume and weight of steel, aluminum, and other materials. The correct method for calculating the weight of a very small production parts, regardless of the material it is made from, to the approximate weight of a large machine tool, die, or fixture.
- 4626 Hydraulics and Pneumatics*(W)** 4-2-5
A course in the elementary theory of fluid flow and power transmission in hydraulic machines. Emphasis on the design, the principles of operation, and the use of hydraulic components in hydraulic and pneumatic circuits. \$3.00 lab fee.
Prerequisites: 1113, 4607
- 4630 Trigonometry** 3-0-3
The solving of problems that are right triangles, equilateral triangles, parallelograms, circles, and other shapes. The use of trigonometric functions is emphasized as well as logarithms and slide rule. The extraction of square root and the solving of compound angles are also covered.
- 4634 Fortran IV*(W)** 1-2-2
Elementary computer science concepts. The language rules of Fortran. Writing programs. Testing on the IBM 570/138. \$5.00 lab fee.
Prerequisites: 1113, 4607
- 4635 Numerical Control*(SP)** 2-4-4
A fundamental course, including principles of numerical control, operation sheets, transfer of references, programming manuscript, tape preparation, and basic numerical control systems. Programming of a machine part requires a point-to-point application, and production of the part on the numerical control machine tool. Programming and production of a more complex machine part on the numerical control machine. An introduction to the APT programming. Study of advanced applications of numerically controlled manufacturing equipment. Numerical control aspects of tooling. \$5.00 lab fee.
Prerequisites: 1113, 4607
- 4640 Algebra (Related to Manufacturing)** 3-0-3
Solution of actual manufacturing problems in addition, subtraction, multiplication and division of fractions; decimal fractions; decimal fractions percentage; metric conversions; exponents and logarithms geometry of areas and volumes; solution of linear and quadratic equations; polynomial addition, subtraction, multiplication and division; rectangular coordinate graphs of equations; interest and depreciation; numerical tables; trigonometry; sines, cosines, tangents; ratio and proportion; statistical frequency and sampling curves.
- 4644 Statics*(A)** 3-2-4
The study of loads as applied to structures, including study of reactions, shears, and bending moments by analytical and graphical methods. Study of centroid location and moments of inertia.
Prerequisite: 1113, 4607 (Mech. Tech only)
- 4645 Strength of Materials*(W)** 3-2-4
A continuation of statics, including stresses in beams, deflections of beams, statically indeterminate beams, columns, eccentrically applied loads, combined stresses and stress concentration.
Prerequisite: 4644
- 4650 Mechanical Drafting III** 0-6-3
A continuation of 4602 with more emphasis on components of machine tools. The correct procedure for drawing gears and racks, motors, motor housing, table ways, ball screws, etc. \$5.00 lab fee.
Prerequisite: 4602
- 4660 Mechanical Drafting IV** 0-6-3
A continuation of Mechanical Drafting III with strong emphasis on hydraulic system components. Pumps of all types, valves, accumulators, reservoirs, and piping. \$6.00 lab fee.
Prerequisite: 4650
- 4661 Plant Mechanical Systems*(SP)** 2-2-3
The course is designed to familiarize students in facilities design and plant maintenance.
- 4670 Welding (Gas and Electric)** 2-2-3
Classroom and laboratory time is spent studying the correct procedure for welding sheet metal, steel castings, mild steel, and the exotic steels. Actual welding problems are done in the lab, except those problems related to exotic steels. These problems can only be studied in theory in the classroom.
- 4680 Descriptive Geometry** 3-0-3
The course prepares the student to develop working drawings. Emphasis is placed on descriptive geometry and refers to principles of analytical, plane, and solid geometry.

Medical Laboratory Technology

- 8001 Medical Technology I*(A,SP)** 0-6-2
Orientation to the field of medical technology; defining the role of the medical laboratory technician, overview of working conditions and places of employment, medical terminology, reporting methods, medical ethics, medical legal responsibilities and the collection of blood specimens. \$35.00 lab fee.
Prerequisite: Admission to program
- 8002 Medical Technology II*(W,SU)** 2-4-4
A study of laboratory safety, spectrophotometry, quality control and the use and maintenance of laboratory equipment including the bright field and dark field microscopes, spectrophotometer, autoanalyzer, centrifuge, analytical balance, pH meter and other instruments. Emphasis is also placed on laboratory mathematics, particularly in solution preparation and dilutions. \$60.00 lab fee.
Prerequisite: 8001 or permission of Department Chair

8005 Blood Banking*(W,SU) 3-15-8
 Procedures are stressed in ABO and Rh typing, antibody screening, and crossmatching of patient and donor bloods. Studies and laboratory techniques also include discussion of most all blood group systems, phenotyping, identification of atypical antibodies, and the selection of proper donor blood in cases of crossmatching incompatibilities. Sufficient time is also spent studying transfusion therapy, the problems concerning fetal-maternal blood incompatibilities, and various other immunological procedures. \$70.00 lab fee.
 Prerequisites: 8007 or permission of Department Chairman

8017 Microbiology I*(A,SP) 0-20-7
 Includes the study of bacteriology, mycology, and parasitology. Bacteriology includes the cultivation and identification of organisms through the utilization of primary and secondary culture techniques, staining techniques, anaerobic techniques, biochemical techniques, serological techniques, and microscopic examination. Other methods studied include antibiotic sensitivity testing, staining of mycobacteria, processing of various cultures such as throats, urines, blood and stools, and the preparation of culture media and stains. Parasitology includes the study of host-parasite relationships, and microscopic examination of the various helminths and protozoa. Mycology includes the study of various types of fungi. \$70.00 lab fee.
 Prerequisite: 8005 or permission of Department Chairman

8019 Cellular Hematology*(W,SU) 3-12-7
 The origin, formation, and differentiation of blood formed elements are studied. This includes techniques in counting the following: red cells and white cells both automated and manual, platelets, reticulocytes, and eosinophils. The preparation of stained blood smears for the identification of blood cells which aid in the diagnosis of anemias, leukemias, hemoglobinopathies, and infectious states. Hemoglobin studies are performed to evaluate both quantity and types. \$35.00 lab fee.
 Prerequisite: 8001 or permission of department chairperson.

8023 Urinalysis*(A,SP) 2-4-4
 The study of this course includes the complete laboratory procedures, qualitative and quantitative for the routine examination of urine chemically, physically, and microscopically. The theory and application of kidney function are included. \$35.00 lab fee.
 Prerequisite: Admission to program

8025 Clinical Chemistry*(A,SP) 0-20-7
 This is a basic course in clinical chemistry. Introduction is given to the student in the analytical techniques used in a hospital laboratory. This course will contain information about the methodology used in a clinical chemistry laboratory as to principle, reagents, specimens, controls, procedure, instruments, normal and abnormal tests results, and the correlation of these results with clinical conditions. \$70.00 lab fee.
 Prerequisite: 8017 or permission of Department Chairman

8031 Special Topics in Medical Laboratory (A,W,SP,SU) 1-0-1
8083 Special Topics in Medical Laboratory (A,W,SP,SU) 2-0-2
8033 Special Topics in Medical Laboratory (A,W,SP,SU) 3-0-3

Advanced study for the medical laboratory student in the areas of laboratory management, laboratory instrumentation or technical areas of hematology, immunology, blood banking, microbiology, clinical chemistry and urinalysis.
 Prerequisite: Permission of department chairperson.

8082 Clinical Experience I 0-16-4
 Two-quarter internship providing a practical application of the skills and abilities learned during the previous five quarters. The students are assigned to an accredited hospital laboratory as a trainee. Students will apply their talent as members of the laboratory department. The student will be involved for three weeks each in the Hematology Section; four weeks each in the Bacteriology and Serology Section; Clinical Chemistry Section and the Blood Banking Section of the laboratory; and will spend one week each in Urinalysis and Immunology.

8083 Medical Laboratory Clinical Experience II 0-32-8
 Continuation of 8082. \$70.00 lab fee.

8084 Medical Technology Case Studies 1-3-2
 Review of all technical areas immediately prior to clinical placement through the use of case study presentations and accompanying laboratory work. \$35.00 lab fee.
 Prerequisite: 8025 or permission of department chairperson.

8085 Special Problems in Medical Laboratory Technology I (A,W,SP,SU) 1-0-1

8086 Special Problems in Medical Laboratory Technology II (A,W,SP,SU) 1-0-1
 During the internship period, the student will keep a weekly log indicating scope and degree of activity in the laboratory. A copy of this work will be filed with the hospital and a copy filed with the Institute. A problem of special interest to the student, requiring library and/or laboratory study will be selected by the student and the faculty coordinator. This course includes open discussion of intern related problems, lectures on laboratory management, demonstration of other employment opportunities, interviewing techniques and case studies.
 Prerequisite: All Medical Laboratory Courses.

Mental Health and Mental Retardation Technology

8401 Principles of Human Services* 4-0-4
 Overview of history and development of mental health services. Theories of mental health. Mental health care delivery system. Roles and functions of the traditional and nontraditional mental health worker. The mental health needs of residents of Columbus and Franklin County. Contemporary legislation. Medical Model vs. Human Service Model. Beginning communication skills and helping relationship components. A survey of agencies employing MHT's, field trips, and guest lectures.

8411 Introduction to Mental Retardation and Developmental Disabilities* 4-0-4
 This is an introductory course covering terminology, history, assessment, legal rights, classifications, normalization, and community resources in relation to mental retardation and developmental disabilities. The student will visit several community agencies serving the MR/DD population. Beginning concepts related to working with families of persons who are mentally retarded or developmentally disabled are also covered.

8416 Helping Skills III The Group* 3-2-4
 This is an intensive course in the theoretical and practical aspects of effective helping using group as the unit of attention. The classroom focus is on formation process and content, stages of development, leadership role(s), problematic issues of the group. The student participates as a group member in a 2-hour living laboratory.
 Prerequisite: 8434 or permission

8421 Values and Attitudes for the MHT* 2-0-1
 A study of the values, beliefs, and attitudes, necessary for effective helping relationships. Values clarification and exploration for the beginning student. Conducted through a small group experience to facilitate interpersonal understanding.

8422 Helping Skills I* 4-0-4
 This is one of a three-part modular series of intermediate courses designed to provide the trainee with knowledge of key concepts and theories as well as some specific skills related to a particular area. Introduction to helping skills: interviewing, taking social histories, client assessment, action program planning, referrals, and crisis intervention. *Must take 8492 concurrently.

8423 Residential Treatment* 4-0-4
 This is one of a three-part modular series of intermediate courses designed to provide the student with knowledge of key concepts and theories as well as some specific skills related to this particular area. A history of institutional care will be taught; contemporary concepts of 24-hour-a-day care, treatment, and rehabilitation; therapeutic programming, the treatment team, impact of institutionalization, and problems of community acceptance. *Must take 8493 concurrently.

8424 Principles of Behavior Management* 4-0-4
 This is part of a series of intermediate courses designed to coordinate clinical (practical) experiences with theoretical and academic knowledge in a particular area. This course will focus on behavior management, in-depth application in a variety of settings. Emphasis is on skill development at an intermediate level as well as knowledge of theory. This course will also focus on data collection, assessment, and treatment planning with an MR/DD population.
 *Must take 8494 concurrently.

- 8426 Social Policy*** 4-1-4
Understanding of social policy and its relationship to mental health and work of the MHT. Overview of U.S. Social Welfare Institutions: Family, Church, government economic policy. In-depth examination of social welfare policies/programs at national, state, and local level in areas of housing, health care, and income maintenance. Skills in use of model for agency analysis and social action for social change.
Prerequisites: 8422, 8423, 8424 or permission.
- 8434 Helping Skills II - The Individual*** 4-0-4
This is an intensive course in the theoretical and practical aspects of effective helping through the counseling relationship. There is a heavy emphasis on practice of skills using the counseling laboratory, video-tape, small study groups, and role-play sessions.
Prerequisite: 8422, 8423, 8424 or permission.
- 8435 Basic Course in Residential Childcare*** 2-2-3
A practice and theory course, teaches workers how to create an environment fostering productive growth and development for resident populations in a wide variety of settings; concentrates on the development of skills and knowledge workers need most; understanding behavior and personality development, self-awareness, problem solving, disciplinary management and communication with clients.
A two-quarter sequence.
- 8437 Career Seminar*** 0-2-1
A small group seminar designed to prepare the student to seek and find employment. Survey of employers, job opportunities, pay scales, etc. Review of resume writing for a professional MH/MR position, filling in application forms, presentation of self, interview conduct.
- 8438 Chemical Dependency: Alcohol and Other Drugs*** 4-0-4
Explores the nature, prevention, and treatment of chemical addiction. Covers the physiological aspect of intoxication and addiction, sociological issues, special problems of families, women, and youth, and intervention strategies.
- 8439 Cross-Cultural Communication in Mental Health/Resettlement*** 4-0-4
Provides knowledge, awareness, and skills to service culturally unique populations in a sensitive and effective way; helps workers understand culturally specific systems for defining and dealing with mental health problems; to assist in resolving the personal adjustment problems of refugees, immigrants, and other culturally unique individuals.
- 8471 Effective Residential Management for Growth*** 4-0-4
Introduces general concepts about mental retardation and developmental disabilities. Deals with the group home residents as people, encouraging the students to identify their values and attitudes as well as common myths and fallacies that relate to the MR/DD population. This course will also focus on the student's ability to respond to problems in the group home in a planful, sensitive way which encourages the residents to develop self control, self responsibility, and self direction.
- 8472 Observation, Assessment, and Developmental Planning for Residential Services*** 2-0-2
This course trains students in the techniques of behavior modification. Emphasis will be placed on practical application, rather than theoretical knowledge. Additionally, some time is spent on counseling approaches.
- 8473 Enhancing Psychosocial Functioning Through Group Home Milieu*** 2-0-2
To enhance the skills of direct care workers in working with families of MR/DD clients as related to proper action planning for a residential program; improve skills in using standardized assessment instruments and reporting forms.
- 8474 Health and Safety Management in Residential Facilities*** 2-0-2
To enhance knowledge and skills of direct care workers in assessing common physical complaints, preparing emergency safety plans; better awareness of diet and nutrition needs, common communicable diseases and basic first aid practices.
- 8492 Clinic in Community Mental Health*** 2-12-4
This is one of a three-part series of clinical experiences, designed to give the trainee a broad overview of modalities of delivery of mental health services. To give the trainee an opportunity to observe all service components of a community mental health center and to practice basic skills under close supervision.
- 8493 Clinic in Residential Treatment*** 0-12-4
This is one of a three-part series of clinical experiences designed to give the trainee a broad overview of modalities of delivery of mental health services. To give the trainee an opportunity to observe all the service units of a residential treatment facility and to practice basic skills under close supervision.
- 8494 Clinic in Mental Retardation*** 20-12-4
This is one of a three-part series of clinical experiences designed to give the trainee a broad overview of modalities of delivery of MH/MR services. To give the trainee an opportunity to observe all service components of a facility which gives a range of services to mentally retarded individuals. Provides opportunities to practice basic skills under close supervision.
- 8495 Advanced MH/MR Clinic I** 2-15-5
8496 Advanced MH/MR Clinic II 2-18-6
8497 Advanced MH/MR Clinic III 2-18-6
Three advanced clinical experiences for the second year student which take place in settings that will match the student's interest and training needs. The student has solid grounding in the fundamental skills requisite for being an effective helper and works with a minimal to moderate amount of supervision. The student plans on extended placement of 2 or 3 consecutive quarters in the same agency in order to carry a small caseload and become involved in on-going work with clients. The student acts as part of the agency staff and is responsible for professional conduct and regular work habits.
- 8498 Supplemental Clinical Experience** 0-18-6
A specifically arranged clinical experience for students desiring to a) pursue in-depth training in special areas, b) strengthen areas of clinical performance as recommended by faculty, or c) enhance their program with additional practical experience. Application must be made during the prior quarter. Permission of chairperson is required.

Nursing Technology

- 8541 Introduction to Nursing*** 2-9-5
The student is introduced to the role of the associate degree nurse within the health care system. An overview of the nursing process is presented, as well as the wellness/illness continuum. The human needs focus for all age groups will be safety, activity and rest, sleep, love and belonging. Learning experiences focus on skill used to promote health in the elderly client in the extended care setting.
- 8542 Development Through the Life Span*** 2-0-2
The student is introduced to concepts of growth and development of man as an individual and as a member of society. This will provide a conceptual foundation for nursing practice through an understanding of growth and development as it affects the fulfillment of human needs.
- 8544 Nursing Concepts of Wellness*** 2-16-6
The student is introduced to the role of the associate degree nurse within the acute health care facility. Focus of the nursing process is on utilizing assessment skills to identify client and family needs. Human needs of air, food and fluids are related to psychological, sociological and spiritual aspects of all age groups. Learning experiences focus on skills used to promote wellness in the adult client and the family.
Prerequisite: 8541
- 8545 Concepts of Pharmacology*** 2-0-2
The student is introduced to the general principles of pharmacology as related to the concepts of man, society, health, and nursing. Nursing implications will be emphasized as well as principles of drug administration and calculation.
Prerequisite: 8541
- 8547 Nursing Concepts of Wellness II*** 2-16-6
The student is introduced to the role of the associate degree nurse in providing nursing care for families during the normal or altered reproductive process. The student will continue to utilize the nursing process in promoting wellness during the childbearing years.
Prerequisite: 8544

8549 Nursing Concepts of Health Alterations I* 3-15-8
The students will study nursing related to the child and adult with alterations in needs for food, fluids, and a safe internal environment. Adaptive responses of the client and family will be included. Clinical learning experiences will be provided in pediatric and adult acute care settings.
Prerequisite: 8547

8551 Nursing Concepts of Health Alterations II* 3-15-8
The student will study nursing related to the child and adult with alteration in needs for air, activity, and rest. Adaptive responses of the client and family will be included. Clinical learning experiences will be provided in pediatric and adult care settings.
Prerequisite: 8549

8553 Nursing Concepts of Mental Health* 2-16-6
The student will study nursing related to the child and adult with needs for and alterations in self-esteem, love and belonging. Adaptive responses which promote mental health of the client and family will be included. Clinical learning experiences will be provided in community and in-client mental health facilities.
Prerequisite: 8551

8555 Role and Function of the Associate Degree Nurse* 2-21-9
The student will integrate knowledge from concepts of man, society, health and nursing into the practice of Associate Degree Nursing. Clinical experiences will be provided in a variety of health care agencies.
Prerequisite: 8553

8556 Perspectives In Nursing* 2-0-2
The student will focus on contemporary issues and trends that affect nurses and nursing. Opportunities will be provided for discussion of relevant topics and review of appropriate literature.

Optometric Assisting Technology

8201 Introduction to Optometric Technology* 3-0-3
Overview of the optometric technician program, optometric and vision care terminology, history and development of optometry, the scope of optometric services, education of the optometrist and optometric technician, sources of vision information.

8202 Optometric Technology I* 4-4-6
Course includes properties of light, basic visual optics, eye defects, perception, color and eye movements. The mathematics of optics will also be covered. \$25.00 lab fee.
Prerequisite: 8201

8203 Optometric Technology II* 4-4-6
Techniques for gathering preliminary patient information such as case history, visual acuity, visual fields, tonometry and similar procedures. The laboratory portion will deal with applying these procedures in a clinical setting. \$25.00 lab fee.
Prerequisite: 8202

8204 Ophthalmic Optics I* 4-4-6
Measurement and inspection of ophthalmic lenses with emphasis on use of the lensometer will be presented. Spectacle repair and adjustments will be covered. \$25.00 lab fee.
Prerequisite: 8202

8205 Anatomy and Physiology of the Eye and Orbit* 3-2-4
A study of the anatomy and physiology of the eye and orbit. Related laboratory exercises are included. \$25.00 lab fee.
Prerequisites: 1321, 1322

8206 Ophthalmic Optics II* 4-4-6
Course includes advanced theory and practice in fitting spectacles along with the cosmetic aspects of frame styling. Complete prescription verification is also covered. \$25.00 lab fee.
Prerequisite: 8204

8207 Practice Management* 3-2-4
The study of legal and ethical responsibilities, patient management, office procedures and finances, laboratory control, office supplies, emergency procedures and special techniques. \$25.00 lab fee.
Prerequisite: 8203

8208 Contact Lenses* 3-3-4
Course includes contact lens terminology and instrumentation, verifying and modifying contact lenses, patient instruction on the care and handling of contact lenses, and special contact lens procedures. \$25.00 lab fee.
Prerequisites: 8202, 8203, 8205

8209 Orthoptics* 1-2-2
The study of orthoptics (vision training) including instrumentation and procedures for orthoptics, assisting in the orthoptics evaluation and clinical training procedures.
Prerequisites: 8202, 8203

8211 Clinical Observation* 0-3-1
Laboratory section of 8201. Time is spent observing in the various clinics at the Ohio State University College of Optometry. These clinics include the general clinic, aniseikonia clinic, strabismus clinic, orthoptics clinic, contact lens clinic, low vision clinic and pathology clinic.

8281 Optometric Clinical Experience I* 0-12-4
Clinical experience in the dispensary verifying spectacle lenses, pre-examination screening, and office duties. \$25.00 lab fee.
Prerequisite: 8203

8282 Optometric Clinical Experience II* 0-12-4
Clinical experience in style design of eye wear, verification of eye wear, pre-examination screening, contact lens clinic, pediatric clinic and office duties. \$25.00 lab fee.
Prerequisite: 8281

8283 Optometric Clinical Experience III* 0-16-6
Clinical experience in the contact lens clinic, the orthoptics clinic, general clinic and the office and dispensary. Student duties include teaching patients insertion and removal of contact lenses, orthoptics training, office and dispensary duties and pre-examination screening. \$25.00 lab fee.
Prerequisite: 8282

Public Administration Technology

3501 Public Administration I* 3-0-3
An introductory study of the basic principles of public administration and the relationship between levels of government, national, state, regional, and local.

3502 Public Administration II* 3-0-3
An examination of inter-governmental relations among national, state, and local governments with emphasis on both federal and non-federal systems and centers of various jurisdiction interacting in the government.

3503 Public Personnel Administration* 3-0-3
Methods, practices, and applications of the personnel functions and administration to the personnel affairs of the public enterprise.

3504 Public Law* 3-0-3
Constitutional law as an intricate blend of history and politics. The economic and political climate in which judicial decisions are rendered and examined. Emphasis is placed upon the concepts of due process and the role of the public administrator in that process.

3505 Public Financial Administration* 3-0-3
How political decisions are fed into a public economy which attempts the satisfaction of human wants and the allocation of economic resources.

3506 Political Bureaucracy* 3-0-3
An in depth study of the type of organization that dispenses goods and services (whose policies are made by politicians) of all three levels of government, national, state, and local. The origin of the bureaucracy, types, influence and authority are among the issues studied.

3507 National Administration* 3-0-3
A description and analysis of public administration in the United States from a federal perspective with an emphasis on the Presidency, Congress and the Supreme Court and their relationships.

3508 State and Local Government* 3-0-3
A study of the government of Ohio and local units with emphasis on authority, influence, accountability and power structures. The relationships of the executive, legislative and judicial branches of these governmental units.

3509 Media Politics* 3-0-3
An examination of the uses and effects of the media in the processes of public administration and the effect of the media on the relationship of making and implementing public policy.

3510 Public Safety Planning* 3-0-3
The many considerations required for planning and administration of services that enhances the safety of citizens. These services include fire, police, street lighting, streets and highways, parks and wildlife, etc.

3511 Public Decision Making* 3-0-3
A study and application of the processes of decision making. Emphasis is placed on decision making in the public sector and its many constraints.

3512 Community Planning & Development* 3-0-3
Major considerations required in urban community planning and development. Analysis of how, why, and by whom decisions of such planning are made.

3513 Public Labor Relations* 3-0-3
The interaction of labor and the public sector decision-makers in the process of wage and benefit allocations. The role of participants in this process are examined to show the effects and influence each play.

3514 Social Services Planning* 3-0-3
How societal goals and priorities (social policy) are translated into actions towards the achievement of these goals and the solution of social problems. Emphasis is placed on subsystems such as health, education, welfare, family services, vocational rehabilitation, correction, etc.

3515 Public Administration Seminar* 3-0-3
A seminar approach to learning the present current problems and issues of the discipline. Field trips, class discussion, and guest speakers will be utilized to serve as methods of bringing reality to previously learned theory and to prepare the student for practicums. Also, the course will aid in the student's selection of a practicum assignment. By permission.

3516 Public Administration Practicum I* 3-0-3
Students are placed on the job in an agency under the supervision of a qualified person for four hours a day, three days a week. The on-the-job experience is monitored by the practicum coordinator to aid in the student's growth and development. By permission.

3517 Public Administration Practicum II* 3-0-3
A continuation of 3516. The student is placed on the job in an agency under the supervision of a qualified person for four hours a day, three days a week. The on-the-job experience is monitored by the practicum coordinator to aid in the student's growth and development. By permission.

3518 Public Sector Management* 3-0-3
The analytical, behavioral, and informational techniques required for successful attainment of reaching goals in the public sector.

Real Estate Marketing/ Management Technology

3601 Real Estate Principles and Practices I 3-0-3
An introduction to the language of real estate, the economics of the real estate business and the general practices performed in the listing and selling of real estate. Provides a basic knowledge of the real estate business. Course covers the physical, legal, locational and economic characteristics of real estate, real estate markets, regional and local economic influences on real estate values, evaluation, financing, licensing and professional ethics. Meets all state requirements for licensing and Graduate Realtor's Institute Designation. (See 3621)

3602 Real Estate Law 3-0-3
Real Estate Law includes all of the areas of law commonly concerned with the typical real estate practitioner and investor-consumer. Among topics covered are the law of agency as applied to real estate brokers and salesmen, law of fixtures, estates (including leases), conveyancing of real estate, real estate managers, license laws of Ohio, zoning, cooperatives and condominiums. Meets state requirements for licensing and Graduate Realtor's Institute Designation. (See 3621)

3603 Residential Sales Practices(A,W,SP,SU) 3-0-3
A "how to" course providing a step-by-step approach for success as a real estate professional based on sound principles and acceptable techniques. Course sets forth basic fundamentals which must be mastered by real estate practitioners regardless of their specialization or type of property involved. Underlying theme is communication.
Prerequisites: 3601, 3602.

3604 House Style and Design 3-0-3
An in depth look at communities, neighborhoods and sites, landuse planning and fair housing regulations. Studies house types by structural configuration the fundamentals of good and bad design and discuss design problems. Provides a visual description of nine fundamental or basic styles, 75-100 substyles and the historical influences relating directly to American house styles since the 17th Century. Prerequisites: 3601 and 3603 recommended

3605 Real Estate Advertising* 3-0-3
A look at effective advertising as a necessity especially for real estate profession. Emphasizes the need for strengthening broker-buyer communication lines: covers advertising concepts, objectives whether properties or services are offered, use of specific advertising techniques and media, such as radio, TV, public relations, signs, brochures, billboards, logo's and provides ideas for real estate advertising.
Prerequisites: 3601 recommended

3606 Real Estate Brokerage 3-0-3
Emphasizes the business and management aspects of running a real estate brokerage office or company. Covers relationship between broker and client and broker and salesperson. Views the brokerage as an industry having characteristics that lead to unique business practices. Trends are reviewed and developments in the industry are discussed. Office management, selection and training of personnel. Salesperson-manager relationship, policy and procedure manuals and money management activities are discussed. Meets state requirements for licensing and GRI designation. Prerequisite: 3601.

3607 Real Estate Finance* 3-0-3
Presents 4 major concerns of real estate financing: 1) instruments used are covered in depth; 2) mortgage payment patterns, which include financial concepts, economic characteristics and standards, and financing of single and income-producing properties are introduced; 3) sources and availability of mortgage money and credit and the impact of various factors on the mortgage market are discussed; and 4) special government activities having an impact on real estate financing are presented. Meets requirements for licensing and GRI designation. Should not be taken before sales license exam.
Prerequisite: 3601.

3608 Real Estate Trading and Exchanging* 3-0-3
Describing specific tax benefits resulting from tax deferred exchanging of real property which has become synonymous with creative real estate brokerage; demonstrates creative use of acquisition, financing and negotiation techniques to overcome inevitable barriers that are part of all real estate transactions, and investigates the legal foundation of exchanging real property.
Prerequisites: 3603, 3607, 3611, 3613 recommended

3609 Condominium Communities* 3-0-3
A guide to condominium ownership and legal obligations assumed by purchase into the condominium community. Condominium ownership is defined and responsibilities are discussed in detail from the condominium association that governs the community to management, maintenance problems and costs, rights, restrictions, social interdependence and self government.

3611 Real Estate Appraisal* 3-0-3
Stresses the methodology of appraising urban real property and the theory underlying appraisal techniques. The three basic techniques of appraising: market comparison; penalized cost of replacement; and income capitalization are covered. A term project is assigned to give the student practical experience in applying these techniques. Meets state requirements for licensing and GRI designation. Should not be taken before sales license exam.
Prerequisites: 3632 and 3601.

Respiratory Therapy Technology

3612 Income Property Appraisal* 3-0-3
A selective research into specific income producing property for applying appropriate analytical techniques. The principles of anticipation and use of the capitalization process, and translates income projection into a present capital value indication. Prerequisite: 3611

3613 Essentials of Real Estate Investments* 3-0-3
An overview of the scope and nature of Real Estate Investments; discusses advantages and disadvantages, individual versus group forms of realty ownerships, financing investments, tax ramifications and mathematical analyses. Different types of opportunities are discussed from vacant lots to land, houses, apartments, shopping centers, industrial developments and government sponsored projects.
Prerequisite: 3612 recommended or may be taken concurrent

3614 Marketing Investment for Real Estate 3-0-3
An analysis and guide for investigating real estate opportunities, covering the problems of residential, office and retail properties. Details of conducting market and feasibility studies, analyzing materials and data collected and evaluating the relevancy of the studies are studied. A term project is to prepare a detailed market investment analysis for a user-client.
Prerequisite: 3613

3615 Real Estate Special Topics* 3-0-3
A complex, open-ended course serving as a 'capstone' offering to review, coordinate and synthesize the subject matter of the prerequisite courses. Presents new material not covered in other offerings, or expands some areas not given sufficient depth. Provides exposure to more technical aspects of real estate and advanced subject matter beyond introductory principles addressed in brokerage management, appraisal and finance. The instructor is free to conduct the class as he deems appropriate. Meets requirements for G.R.I. designation.
Prerequisites: 3601, 3602, 3607, and 3611 required if G.R.I. designation is desired, otherwise recommended.

3617 Professional Property Management* 3-0-3
A course studying decision-making as it affects management of commercial property, industrial property and residential property. The emphasis shall be on the practical application of theory to actual management problems. Specific topics include; Ohio Tenant Landlord Act, forcible entry and detainer, typical leases, office management, hiring, merchandising, advertising, collection problems, taxes and insurance. An alternate course for licensing as a Real Estate Broker (see advisor). Prerequisite: 3601 recommended.

3618 Real Estate Leasing 3-0-3
An introduction to the language of office, industrial, and retail real property leasing, the economics of the leasing, general practices performed in listing, advising, and the leasing of available lease space. Provides a basic knowledge of the building owner's goals and the business of characteristics of office, industrial, and retail real property, real estate markets, economic influences on real estate values, evaluation, financing, and professional ethics.

3621 Real Estate Principles & Practices, Real Estate Law* 6-0-6
A combined course which includes material from 3601 and 3602. An introduction to the language of real estate, the economics of the real estate business and the general practices performed in the listing and selling of real estate. The course also covers real estate law commonly associated with the typical real estate practitioner. The course uses team teaching with practicing realtors and attorney. It is designed to meet state requirements for licensing and the Graduate Realtors Institute designation.

3632 Real Estate Mathematics* 3-0-3
A review of arithmetic processes including common fractions, decimal fractions, and percentage. Topics include sale, list, net prices and commissions, unique problems in area and volume, principal, interest, and points computed on mortgages, taxes and transfer tax stamps, prorations of insurance, mortgage interest, and taxes to date of sale and preparation of closing statements.

3681 Real Estate Today Seminar I* 1-0-1
A specially designed course which offers to meet the needs of the constantly changing real estate community, industry and the student population. Creative seminar topics are relative to today's market, and will provide flexibility in meeting a variety of needs.

3682 Real Estate Today Seminar II* 2-0-2
Continuation of 3681.

3683 Real Estate Today Seminar III* 3-0-3
Continuation of 3682.

8602 Introduction to Respiratory Therapy Equipment*(W,SU) 4-4-6
A survey of the apparatus utilized in providing respiratory care, including manufacture, storage and safe handling of medical gas cylinders, regulators, flowmeters, nebulizers, humidifiers and intermittent positive pressure breathing equipment. Also to include the administration of oxygen; aerosol and IPPB therapy. \$25.00 lab fee. Prerequisites: 1181, 1311, 1321, 8621 or permission of Department Chairman.

8603 Respiration Health and Disease*(SU) 4-0-4
This course is a study of the anatomy and physiology of the lungs and the heart. Also a study of cardiopulmonary diseases commonly seen in clinical practice. Prerequisite: 1344

8604 Cardiopulmonary Physiology*(SP) 3-0-3
A study of the anatomy and physiology of the cardiovascular and pulmonary systems. Topics included are pulmonary anatomy, mechanics of breathing, transport of oxygen and carbon dioxide, acid-base balance, heart anatomy, and cardiac mechanics. Prerequisite: 1321, 1322 or permission of Department Chairman

8605 Pharmacology*(SU,A) 3-0-3
A study of the general principle of pharmacology, including drug types, dispensing, dosage, effects including contraindications and regulations. Drug groups relating to respiratory therapy will be emphasized to include bronchodilators, wetting agents, mucolytics, proteolytics, antibiotics, and aerosol solutions.
Prerequisites: 1321, 1322, 1311, 8604

8606 Clinical Specialties*(SU) 3-0-3
This course deals with the evaluation and treatment of pulmonary disease. The etiology, pathophysiology and prognosis of various pulmonary diseases will be covered. Prerequisite: 8604

8608 Pulmonary Function and Blood Gas Analysis*(A) 3-0-3
This course will deal with the evaluation of pulmonary function. Procedures and equipment used in this evaluation will be covered as well as guidelines for interpretation of results. Prerequisite: 8606

8609 Organization and Administration*(SP) 2-0-2
A study of procedures of record keeping, budgeting, cost finding, personnel management, and policies and organization of a respiratory therapy department. Job descriptions and interviews will be discussed.
Prerequisite: 8603

8611 Therapeutic Procedures*I (A) 2-0-2
A study of the goals, indications, contraindications and hazards associated with oxygen, aerosol and IPPB therapy and chest physiotherapy. Other topics include basic EKG's, incentive spirometry, suctioning and airway care.
Prerequisite: 8602, 8603

8612 Therapeutic Procedures II*(W) 3-0-3
The course includes the study of mechanical ventilators and mechanical ventilation. Other topics include Pulmonary Functions, Blood Gas Analysis and the study of Respiratory Therapy applied to the pediatric patient.
Prerequisite: 8611

8621 Patient Care for Respiratory Therapy*(A,SP) 3-4-5
An introduction to respiratory therapy including discussion of the role of respiratory therapy in current medical practice, and duties, responsibilities, and professional liabilities of the therapist. Also a study of the procedures and skills of patient care as they apply to the respiratory patient in a clinical setting. Including approach, rapport, and explanation of treatment to the patients. \$20.00 lab fee.
Prerequisite: Acceptance into the technology

8631 Respiratory Procedures I*(SP) 2-0-2
A discussion of the goals, indications, and hazards of oxygen and aerosol therapy. Other topics include basic EKG's, incentive spirometry, suctioning procedures, and airway care.
Prerequisite: 8602

- 8632 Respiratory Procedures II*(SU)** 2-0-2
A study of the goals, indications, contraindications, and hazards associated with IPPB therapy and chest physiotherapy. Course content also covers electrocardiogram study and artificial airways, including types, hazards, and care of these airways.
Prerequisite: 8631
- 8633 Respiratory Procedures III*(A)** 3-0-3
A study of mechanical ventilatory support including types of ventilators, principles of operation, and indications, and hazards associated with their use. Course content also covers weaning parameters, IMV, cardiovascular monitoring, and fluidics.
Prerequisite: 8632 or permission of Department Chairman.
- 8634 Respiratory Procedures IV*(W)** 3-0-3
This course deals with neonatal and pediatric pulmonary disease and their treatment. A section of the course will be devoted to pulmonary rehabilitation and home care of chronic pulmonary disease.
Prerequisite: 8633
- 8641 Clinical I*(SU)** 0-16-4
An introduction in the clinical setting for the Respiratory Technician. Practical application of oxygen and aerosol therapy and incentive spirometry; also, to include maintenance and sterilization of equipment.
Prerequisite: 8621
- 8642 Clinical II*(A)** 0-24-6
Practical application of IPPB and chest physiotherapy; also, to include airway management and emergency procedures.
Prerequisite: 8641
- 8643 Clinical III*(W)** 0-8-2
Instruction and practical application of mechanical ventilation and pediatric respiratory care.
Prerequisite: 8642
- 8644 Clinical IV*(W)** 0-24-6
During this clinical affiliation, the student will be assigned to various Respiratory Therapy Departments. The student will have the responsibilities of a department member. This clinical will provide rotations through Pulmonary Function Departments.
Prerequisite: 8642
- 8681 Clinical Practice I*(SP)** 0-12-6
An introduction in the clinical setting for the Respiratory Therapist. Practical application of oxygen and aerosol therapy and incentive spirometry, also to include maintenance and sterilization of equipment. Must be taken concurrently with 8631.
Prerequisite: 8602
- 8682 Clinical Practice II*(SU)** 0-12-6
Practical application of IPPB and chest physiotherapy. Also to include airway management and emergency procedures. Must be taken concurrently with 8632. \$20.00 lab fee.
Prerequisite: 8681
- 8683 Clinical Practice III*(A)** 0-12-6
Instruction and practical application of mechanical ventilation. Clinical practice in the operation and maintenance of pulmonary function equipment and the drawing and analysis of blood gases. Must be taken concurrently with 8633. \$20.00 lab fee.
Prerequisite: 8682
- 8684 Clinical Practice IV*(W)** 0-12-6
A continuation of Clinical Practice III, with additional clinical rotations for pediatric respiratory care. Must be taken concurrently with 8634. \$20.00 lab fee.
Prerequisite: 8683
- 8685 Clinical Experience*(SP)** 0-38-6
The clinical experience will allow the student to experience the practical application of the skills presented during the previous six quarters. The student will be assigned to an accredited hospital to work 38 hours per week. During this clinical affiliation the student will have the responsibilities of a department member.
Prerequisite: 8684

Retail Management Technology

- 2901 Introduction to Retailing*(A,W,SP,SU)** 4-0-4
Principles and methods of retail management, including organization policy making, and a survey of the functions of merchandising, sales promotion, finance and control, store operations and personnel.
- 2902 Sales Promotion*(W)** 4-0-4
A study of the various sales promotion activities, including advertising retail display and the coordination of an effective sales promotion program.
Prerequisites: 3801, 3815, 2901
- 2904 Retail Store Operations and Control*(SU)** 4-0-4
The operation and control of retail establishments: Receiving stock, marking, warehousing, repair and alteration, packing, delivery, and customer service. Maintenance, accounts payable and receivable, credit and collection. Inventory control, auditing, cash and payroll and statistical analysis.
Prerequisite: 2913, 3762
- 2913 Retail Buying I*(W)** 5-0-5
A study of the nature, functions, and terminology of merchandising, merchandise information and decisions required in buying.
Prerequisites: 2981, 2985
- 2914 Retail Buying II*(SU)** 4-0-4
Buyer's methods of handling special merchandise and working with the other divisions within a retail organization.
Prerequisite: 2913
- 2981 Retail Internship I*(A,SP,SU)** 0-25-4
Supervised on-the-job application of knowledge and skills acquired in the classroom.
Prerequisite: Successful completion of first year curriculum.
- 2982 Retail Internship II*(A,SP,SU)** 0-25-4
A continuation of 2981.
Prerequisite: 2981
- 2983 Retail Internship III*(A,SP,SU)** 0-25-4
A continuation of 2982.
Prerequisite: 2982
- 2985 Special Problems in Retailing I*(A,SP,SU)** 0-6-2
The first of three courses in which the student applies his practical knowledge of retailing to specific areas on his job and submits reports to his coordinator-supervisor.
Prerequisite: Successful completion of first year curriculum
- 2986 Special Problems in Retailing II*(A,SP,SU)** 0-6-2
A continuation of 2985.
Prerequisite: 2985
- 2987 Special Problems in Retailing III*(A,SP,SU)** 0-6-2
A continuation of 2986.
Prerequisite: 2986

Secretarial Science Technology

- 3303 Machines for Processing Communications*(A)** 3-2-4
This course is designed to develop secretarial proficiency in the use of machine transcription equipment. It provides a continuation of training on the Mag Card I and II and memory and electronic typewriters, using this equipment for machine transcription. Mailable copy is the goal in transcribing machine dictation of business correspondence, technical reports, news releases, drafts, medical reports, and legal documents. Students gain experience composing at the typewriter and dictating for transcription. \$5.00 lab fee.
Prerequisite: 3333

- 3305 Secretarial Internship I*(W)** 0-20-5
A work experience providing application of the theory taught in the secretarial science program. Possible duties would include taking dictation and transcribing, routine composition, duplicating processes, record and file maintenance, telephone service, reception, reservations responsibilities, itinerary maintenance, handling of expense accounts and bank accounts, followup systems, research of special projects, taking minutes, typing, screening and routing mail, and procuring supplies. Four hours daily on the job. Students must enroll concurrently in 3335 Internship Seminar I. Prerequisite: 3324 or 3351
- 3306 Secretarial Internship II*(SP)** 0-20-5
Similar to 3305. Students participate in a work situation four hours daily. Students must enroll concurrently in 3336 Internship Seminar II. Prerequisite: 3305
- 3307 The Office*(W)** 2-8-5
This course is designed to approximate office conditions, standards, and secretarial functions. The student will perform business responsibilities in a simulated office setting. Students learn to work as an office team, set priorities, plan time, apply skills, and understand the office as an operating system. \$16.00 lab fee.
Prerequisite: 3303
- 3308 The Secretarial Service*(SP)** 2-3-3
This is an on-campus work-experience program under simulated office conditions. Course provides development and refinement of office skills. \$12.00 lab fee.
Prerequisite: 3303
- 3314 Records Management*(W, SP)** 2-3-3
This course is designed to provide knowledge of efficient handling of business records, filing methods and systems, and principles for the selection of records equipment and supplies.
- 3315 Executive Shorthand and Transcription*(SP)** 2-3-3
This course provides an opportunity to overcome individual weaknesses in shorthand theory and speed, in transcription from shorthand notes and dictating machines, and in language skills. It concentrates on building speed through shortcuts and increased vocabulary and building transcription skills through office-style dictation of interrelated problems.
\$4.00 lab fee.
Prerequisite: 3344
- 3316 Executive Typing and Procedures*(W)** 2-3-3
This course emphasizes efficient production of a variety of typewritten work from a variety of sources. Students learn to organize their work, make efficient use of time, display initiative and originality and check their work for accuracy. \$4.00 lab fee.
Prerequisite: 3335
- 3317 Legal Typing-Forms and Procedures*(W)** 2-3-3
Study of the court system at federal, state and local levels. Combined emphasis upon developing an understanding of the functions served by various legal documents and papers in the general area of real estate, corporations, probate and litigation, and related court systems, and developing an ability to produce both fill-in and completely typed papers in these areas. Work in building legal terminology, including spelling and correct usage. Proper brief format is studied.
- 3318 Legal Terminology and Transcription*(W)** 2-3-3
To integrate and continue to build students' knowledge and understanding of legal terminology through the practical experience of taking and transcribing dictation, transcribing machine dictation, and developing shorthand rate.
\$4.00 lab fee.
Prerequisite: 3344
- 3322 Personal Development*(A)** 2-2-3
Guidance into an individual program of self-analysis and self-improvement in both personal and vocational settings. Emphasis on establishing priorities and goals, and achieving success and happiness in life.
- 3324 Secretarial Responsibilities*(A)** 3-2-4
A study of the daily responsibilities of a secretary. Discussion of office skills other than machine operation: organizing work and setting priorities, composing business letters, presenting statistical data, assisting with travel and conferences, selecting equipment and supplies, telephone techniques, processing mail, making decisions, and getting along with people. Emphasis on developing understanding through case studies and simulated office situations. \$4.00 lab fee.
Prerequisites: 3333, 3343
- 3327 Legal Office Procedures*(SP)** 2-2-3
This course provides instruction in procedures unique to law offices, including law office design, office management, legal filing, timekeeping and billing, and payroll. The special considerations, problems, and ethics involved in dealing with clients are also discussed. Study of the U.S. Supreme Court is included. \$4.00 lab fee.
Prerequisite: 3324
- 3331 Typing (Beginning)*(A,W)** 2-3-3
Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulations, and reports. \$5.00 lab fee
- 3332 Typing (Intermediate)*(W,SP)** 2-3-3
Emphasis on the development of speed and accuracy and the mastery of correct typing techniques used in producing business correspondence, tabulations, manuscripts, reports, and business forms. Grammar rules and composition skills are also reviewed. \$5.00 lab fee.
Prerequisite: 3331
- 3333 Typing (Advanced)*(SP,SU)** 2-3-3
Emphasis on developing the student's ability to function as an expert typist producing mailable copy. Application of typing ability to produce technical reports, minutes, drafts, and business correspondence. Learning basic operations on Mag Card II, memory, electronic, and Correcting Selectric II typewriters. \$5.00 lab fee. Prerequisite: 3332
- 3335 Internship Seminar I*(W)** 2-0-2
This is the on-campus seminar for students enrolled in 3305 Secretarial Internship I. The course content is related to what is happening on the job to meet the needs of the participants. Students use this time to assess and correct weaknesses.
- 3336 Internship Seminar II*(SP)** 2-0-2
A continuation of 3335. This is the on-campus seminar for students enrolled in 3306 Secretarial Internship II. The course content is related to what is happening on the job to meet the needs of the participants.
- 3341 Shorthand (Beginning)*(A,W)** 3-2-4
A foundation course in shorthand theory with emphasis on phonetics, word families, brief forms and phrases, and penmanship. Practice for speed and accuracy. \$3.00 lab fee.
- 3342 Shorthand (Intermediate)*(W,SP)** 3-2-4
A course designed to perfect basic shorthand theory, with emphasis on phonetics, word families, brief forms and phrases and penmanship. Practice for speed and accuracy. Introduction to typewriter transcription. \$3.00 lab fee.
Prerequisite: 3341
- 3343 Shorthand (Advanced)*(SP,SU)** 3-2-4
A continuation of shorthand (Intermediate) intended to build accuracy and speed. Shorthand theory in several technical areas. Development of typewritten transcription skill. \$3.00 lab fee.
Prerequisite: 3342
- 3344 Shorthand and Transcription*(A)** 3-2-4
A continuation of Shorthand (Advanced) intended to build shorthand speed and accuracy with major emphasis on typewritten transcription of unfamiliar material in mailable form. Experience with office-style dictation. \$3.00 lab fee.
Prerequisite: 3343
- 3345 Grammar Review for Business Students(A,W,SP,SU)** 2-3-3
This course is a structured program of grammar review for stenographers and typists. It is designed to assist the secretarial student to become skillful in word choice, punctuation, vocabulary, capitalization, number expression, and spelling, with particular emphasis on areas pertaining to the business office.
- 3351 Medical Office Procedures*(W)** 3-3-4
This course provides an understanding of the medical secretarial environment and responsibilities. The student is involved in a wide variety of realistic situations where she performs tasks and copes with problems related to the medical office. \$3.00 lab fee. Prerequisite: 3333, 3343

3352 Medical Terminology and Typing*(W) 2-3-3
Presentation of terminology that a beginning medical transcriptionist is most likely to encounter in physical examinations, medical correspondence, and x-ray or pathology reports. Practice in typing medical material found in doctors' offices and hospitals. Stress on accuracy and efficient work habits. \$3.00 lab fee.
Prerequisite: 3333, 3303

3353 Medical Vocabulary and Shorthand*(SP) 2-3-3
Develops employable shorthand facility and transcription competency in working with medical correspondence and professional records. Further increases medical vocabulary and an understanding of medical secretarial responsibilities. \$3.00 lab fee.
Prerequisite: 3344

3354 Medical Machine Transcription*(SP) 2-2-3
Machine transcription of medical correspondence, reports, and documents, and further refinement of medical terminology. Emphasis upon efficient production and accurate copy. \$3.00 lab fee.
Prerequisite: 3303, 3352

3361 Basic Accounting(W,SP) 2-3-3
This course is designed to provide secretarial students with a basic understanding of accounting principles and procedures including journalizing, posting, and statement preparation. Also included are banking, payroll, petty cash, and the typing of reports and financial statements. Application of accounting principles to personal service enterprises in the executive, legal, and medical areas enables students to work through the complete accounting cycle. \$4.00 lab fee. Prerequisite: 3371

3371 Word Processing*(A,W) 2-2-3
This course is designed to introduce the student to word processing concepts and systems, to provide further mastery of word processing equipment, and to review grammar as it relates to word processing applications. Students engage in role play activities. Administrative secretaries compose and dictate business correspondence, edit and approve copy. Correspondence secretaries set priorities, transcribe, revise, keep daily logs and storage media records, and experience time pressures. Students obtain more advanced training on the mag card, memory, and electronic typewriters. \$4.00 lab fee. Prerequisite: 3303

Social Services Technology

7503 Family Planning Services* 3-0-3
Instruction in the broad lines of family planning with special emphasis on development of resource personnel and resource information and the giving of immediate help to families who seem to present immediate problems.

7504 Case Work Practices* 3-0-3
A study of the varying and most appropriate methods by which the social worker investigates problem situations. Case studies and practicums in the areas of personal problems and family maladjustments. Studies of local casework agencies.

7505 Categorical Disabilities* 3-0-3
A study of the many areas of disabilities as they may affect individuals of all ages. Research into the causation of psychological, social, and physical trauma; extent of manifestations within the general population; and examination of available services for those so afflicted.

7506 Mental Hygiene Services* 3-0-3
Recognition and early identification of mental hygiene problems with special emphasis on general counseling aids and ways of transmitting the information to appropriate mental health resources for early intervention.

7508 Family Ecology* 3-0-3
Family Ecology views the family as an ecosystem and examines its interrelationships with the environment (biophysical, psychosocial, and technological) through the decision-making process. Emphasis is placed on family organization, family members, and their roles.

7509 Family Health Care* 3-0-3
An introduction of the family in relation to wellness, illness, and prevailing treatment, the health care delivery system, health care providers, the methods for planning long range preventative care, and the social worker as a member of the health care delivery system.

7512 Concepts of Counseling* 3-0-3
An introduction to the field of counseling. A broad approach which involves how best to advise others to deal with their problems. Areas include health, education, economic, and social approaches.

7513 Family Counseling* 3-0-3
An in-depth approach on how to advise families to deal with specific problems. Students use resource materials to counsel actual families. A special emphasis on how one gains specific information to meet emergent needs; how to put this into action.
Prerequisite: 7512

7515 Case Recording* 3-0-3
Exercise with and study of agency forms currently in use. Practice in the use of recording equipment.
Prerequisite: 7504

7516 Current Issues in Social Services* 2-0-2
A seminar course which includes an introduction on how events become social issues, recognition of these issues, and assessing probable impact upon client system.

7517 Aid-In-Crisis* 3-0-3
Course designed to acquaint the student with practical and innovative strategies of crisis intervention required for the social service occupations. Areas covered are personal trauma, legal jeopardy, property conservation.

7518 Basic Food Facts* 3-0-3
This course is designed to present basic food facts with a consideration of nutritional needs for different age groups. Emphasis is placed on the importance of nutrition to total health. Planning and purchasing techniques to provide nutritionally adequate diets on low to moderate incomes are included.

7519 Family Spending* 3-0-3
A course designed to acquaint students with the problems of budgeting and spending the family income. Areas covered are planning, buying, borrowing, sharing and protecting.

7521 Interview Techniques* 3-0-3
How to interview, how to use a previously prepared check list in gaining specific information, how to ask questions, how to observe, how to gain rapport and confidence in the families being contacted.

7522 Introduction To Social Work and Social Welfare* 3-0-3
A basic orientation course for the total program, designed to introduce students to the field of social welfare, to prepare them for future social work courses, and to provide the framework for working with people and arriving at policy decisions.

7523 Theories and Treatment Methods In Social Work* 3-0-3
A course designed to introduce to the advanced student the basic essentials of theoretical approaches required for the understanding of social work practice and its many treatment modalities.

7524 Basic Gerontology* 3-0-3
This course is designed as a general introduction to the field of aging. Students will acquire knowledge of the aging process and its consequent problems both with respect to their personal concerns as well as to their vocational interests.

7525 Health Needs of the Elderly* 3-0-3
An examination and study of the health needs that arise in connection with the aging process; illnesses and diseases connected with the aging process; programs and facilities available for health care of the aged.
Prerequisite: 7524

7526 Legal, Housing, and Recreation Needs of the Elderly 3-0-3
A course designed to study the laws which are of significance to elderly citizens. A look at the housing situation and recreation facilities and programs available to the aged.

7527 Therapeutic Recreation for the Elderly* 4-0-4
A survey course which includes an introduction to the philosophy of recreation: play and leisure; principles of program planning, assessment and documentation; activity modification; specific disabilities; volunteerism and community resources; budgeting.

7533-34 Field Experience Seminars III, IV,* 1-0-1
Group discussions of experiences arising during Field Experience. Integration of theory and practice. Individual reports. These seminars run concurrently with Social Services Field Experience III, IV. Prerequisite: Third Quarter Standing Concurrent: 7583-86

7541 CDA Overview and Physical Environment* 4-0-4
This course provides an overview of the CDA credentialing procedure and a description of the courses offered by CTI to assist the CDA candidate meet the competencies established by the CDA Consortium. The course also discusses planning, organizing, and arranging the physical environment for optimal use by the children and staff. It also studies health, safety, and nutrition within the child-care center. \$10.00 lab fee. This course requires an internship. Must Have: Access to child-care center for 3 to 5 year-old children in a group setting.

7542 Cognitive, Language, and Motor Activities Development* 4-3-5
Theoretical foundations for child development in cognitive, language, and motor skills will be provided. Various programs, materials, equipment, and instructional approaches to use in facilitating child growth will be examined and experimented within the center setting. Students will be directed in the development of their own materials, equipment, instructional approaches to reach self-selected objectives which will enable them to demonstrate the necessary competence in the center to achieve the CDA competencies identified. The instructor will evaluate the curriculum and instruction in action in the center and provide feedback for improvement. Must Have: Full-Time or Part-Time Work in Day-Care Center.

7543 Fine Arts, Science, Social Studies Activities Development* 5-0-5
The course will build on the foundations of 7546 in terms of cognitive learning and appropriate methods of teaching children aged 3 to 5. Materials will be examined for science and social studies curriculum and development; materials and activities will be developed and demonstrated. Basic musical, artistic, and dramatic play principles will be explored, demonstrated, and practiced in the classroom by the CDA candidates. They will also develop appropriate materials, objectives, and experiences for these areas and will demonstrate them in their day care centers. Must Have: Full or Part-Time Work in a Day-Care Center; 7546 or Demonstrated Competence in Its CDA Competencies.

7544 Self-Concept and the Individual Child* 4-0-4
Instruction, training, and experience in individualizing an early childhood program to meet the needs of the children in a manner which develops a positive self-concept and individual strength. Proficiency in the recognition of the need to make a referral to a community resource to assist with the normal developmental stresses or the development of a program for a special-need child. Recognizing the value of play and play therapy for the young child. Must Have: Access to a Child-Care Center.

7545 Managing Children in Groups* 4-0-4
This course deals with group management and the planning and implementation of the daily schedule in a child-care center. Emphasis is placed on social development, encouraging children and adults to work together, sharing both experiences and responsibilities in a social atmosphere where children may express both positive and negative feelings. The course also discusses the management of the child-care center to facilitate establishment of a system of limits, regulations, and rules for both children and adults. Must Have: Access to a Child-Care Center for Children Aged 3 to 5 in a Group Setting.

7546 Parent Involvement - Child Care* 4-0-4
Instruction, training, and experience in working effectively with parents of children aged 3 to 5. Proficiency in involving parents in the center according to how they view their parenting role, their cultural heritage, and skills they possess from their professional life. Must Have: Access to a Child-Care Center for Children Aged 3 to 5 in a Group Setting.

7547 Child-Care Administration* 0-9-3
Instruction, training, and experience in the supervisory roles required to administer a school for young children. Becoming proficient in planning for the child, the program, the staff, parents and community involvement. The laboratory experience provides the concrete experience to clarify the theoretical concepts discussed in the classroom setting. Must Have: Access to a Child-Care Center for Children Aged 3 to 5 in a Group Setting.

7583-7586 Social Services Field Experience III, IV, V, VI* 0-9-3
These courses involve the student in applying his classroom studies in the field. Students are accepted by local social service agency administrators and supervisors on a part-time volunteer basis. These professionals guide and evaluate the student performance.
Prerequisite: Third Quarter Standing Concurrent: 7333-7536

Welding Technology

4701 Blueprint Reading I 2-2-3
Designed to review such fundamental principles of drawing interpretation as may be required by the lay-out welder and set-up man. To accomplish this objective, basic lines and their functions are studied. Basic views as illustrated by orthographic projection are considered. Other views such as full and half sections, cut away sections, notes, specifications and dimensions are presented with additional supplementary drawings and assembly prints.

4702 Blueprint Reading II 2-2-3
This course presents data used in the drawings of welding symbols which convey information about the various types of welding operations. These "SYMBOLS" include letters, figures and ideographs used in conjunction with reference lines to supply all necessary data.

4703 Welding Fabrication I 2-4-4
Presents the theories and practices in developing and/or interpreting working drawings of steel fabrication and construction design considerations. Presentation and operation of metal fabrication equipment, preparing a bill of material ready for assembly as per specifications, using mild steel sheet and plate. \$10.00 lab fee.

4704 Welding Fabrication II 2-4-4
Directs the theory and understanding in the field of structural steel construction. The course provides typical arc-welded joints such as butt, lap, joint, groove, fillet, gusseting utilizing flat, horizontal and over head welding applications. \$10.00 lab fee.

4721 Oxyacetylene (Gas) Welding 3-6-5
Classroom theory and manipulative welding skills are developed in the use of "open flame" welding concepts. Typical operations such as bead, butt, lap and fillet welds are performed. Instruction is also given in manual and machine oxyacetylene cutting of mild steel. \$10.00 lab fee.

4722 Fundamental Arc Welding 3-6-5
Instruction in the processes of shielded metal arc welding. The student develops fundamental understanding and skill in the safe use of manual arc welding equipment. Typical operations such as bead, butt, lap and fillet welding are performed, using mild steel plate in the flat and horizontal positions. \$10.00 lab fee.

4723 General Arc Welding 3-6-5
Continuing theory and instruction in the shielded metal-arc processes. More emphasis on procedures governing a quality weld in verticals up and down plus introduction to overhead applications.

4724 Advanced Arc Welding 3-6-5
Advanced practical welding instruction is offered to develop skills in welding steel plates in all positions. Additional skills are developed in cutting and preparing steel plates for single vee-groove, butt, fillet and groove welds using Stringer and weave beads. Typical test plates are cut, beveled and welded, then tested in the metals testing lab to meet certification test procedures and standards that apply. \$10.00 lab fee.

4725 Gas Metal Arc Welding (MIG) 1-4-3
Instruction and manipulative welding skill is developed using semi-automatic arc welding gun feeding using coiled wire, and using CO₂ and/or Argon as a gaseous shield. A general coverage of basic service and maintenance concepts are stressed relating to the equipment. \$10.00 lab fee.

4726 Inert Gas Welding (TIG) 3-6-5
Student is introduced to the TUNGSTEN INERT GAS WELDING concept. The student will weld, using ferrous and nonferrous materials utilizing mild steel carbon steel and light aluminum. A general coverage of some of the basic service and maintenance problems peculiar to the equipment is also presented as well as the technical concepts. \$10.00 lab fee.

4731 General Metals	2-2-3	3081 Wholesale Internship I*(A,W,SP,SU)	0-25-4
A review of ferrous and non-ferrous metals normally found in the metal removal and metal joining trades. A study of the various cast iron, cast steel, wrought iron, mild and alloy steels plus common aluminum and stainless steels. Provides a better understanding of the physical properties and classifications.		Supervised on-the-job application of knowledge and skills acquired in the classroom. Prerequisite: Successful completion of first year curriculum.	
4732 Electrical Principles	2-3-3	3082 Wholesale Internship II*(A,W,SP,SU)	0-25-4
A course presenting understanding of the electrical equipment the student is using, covering the interior controlling devices, resistance, capacitance, electromagnetism, AC-DC series and parallel circuit analysis and power distribution. \$3.00 lab fee.		A continuation of 3081. Prerequisite: 3081	
4735 Welding Codes and Specifications	2-2-3	3083 Wholesale Internship III*(A,W,SP,SU)	0-25-4
Classroom instruction in understanding the general specifications and/or standards of most common (AWS) American Welding Society, (API) American Pipe Institute, (ASME) American Society of Mechanical Engineers CODES. Also includes standard welding terms and their definitions - condensed from AWS.		A continuation of 3082. Prerequisite: 3082	
4736 Introduction to Quality Assurance	1-4-3	3085 Special Problems*(A,W,SP,SU)	0-6-2
A study of the basic concepts, principals and terminology of inspection practices as they relate to nondestructive testing procedures. Introduction to codes and standards, visual, ultrasonic, radiographic and other inspections or quality assurance applications used in the field today.		The first of three courses in which the student applies his practical knowledge of wholesaling to specific areas on his job and submits reports to his coordinator-supervisor. Prerequisites: Successful completion of first year curriculum.	
4745 All Purpose Welding Qualification	3-6-5	3086 Special Problems*(A,W,SP,SU)	0-6-2
This is a skill training course consisting of additional welding experiences offering the student the opportunity to become proficient and qualified to pass the (AWS) American Welding Society Minimum Operation Qualification, in accordance with the AWS B3.0-77 test. Welding is directed to beveled butt joints in the flat, vertical, horizontal and overhead positions using 3/8 to 3/4" coupons, using shielded arc processes only. \$10.00 lab fee.		A continuation of 3085. Prerequisite: 3085	
4746 Special Project	1-4-3	3087 Special Problems*(A,W,SP,SU)	0-6-2
A project will be selected by the student and the instructor. Research and understanding of new welding practices, equipment and techniques that are rapidly being developed and expanded will be completed and a term paper presented.		A continuation of 3086. Prerequisite: 3086	

Wholesale Management Technology

3001 Wholesaling Specialties*(SP)	1-2-2
Technical information about the line of goods marketed by the student's employer. Individual study utilizing programmed teaching materials, films, and reference books. \$2.00 lab fee. Prerequisite: 3002	
3002 Wholesaling Principles*(A,W,SP,SU)	3-0-3
An analysis of the historical development of wholesaling. Trade vocabulary, technological changes and their impact upon traditional methods of wholesaling. The economic, social and legal environment within which wholesaling operates.	
3003 Wholesale Case Studies*(W,SP)	3-0-3
This application of scientific methods of case studies for the solution of managerial problems. Decision making at the managerial level. Establishing, evaluation, and recommending plans of action. Prerequisite: 3813	
3004 Wholesale Operation and Control*(A,SP)	5-0-5
A study of the scientific management of a wholesale enterprise. Locating, financing, and organizing a wholesale establishment. Inventory control, warehousing, and sales management. Prerequisites: 3081, 3085	



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