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# AA Administrative Assistant

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## **AA106 Business Communications** **Cr-3**

This course covers the fundamental principles of effective business correspondence, report writing, and oral communications. These principles are applied first to sentences and paragraphs, and then to specific types of business communications. It includes a review of spelling, vocabulary, punctuation, grammar, and composition as necessary.

## **AA107 Keyboarding - Personal** **Cr-1**

This course develops touch control of the computer keyboard, proper techniques, and building speed and accuracy. Not for Administrative Assistant majors.

## **AA111 Keyboarding - Basic** **Cr-3**

This course introduces proper computer keyboarding techniques, builds speed and accuracy, and provides practice in formatting personal and business documents.

## **AA112 Keyboarding - Intermediate** **Cr-3**

This course concentrates on increasing keyboarding speed and accuracy, and providing practice on more advanced word processing and desktop publishing projects. Prerequisite: AA111 Keyboarding - Basic

## **AA203 Machine Transcription** **Cr-3**

This course provides intensive training in the transcription of letters, memoranda, and reports, using various types of equipment and instructional materials. Government, medical, legal, and business documents are keyboarded. Prerequisite: AA112 Keyboarding - Intermediate.

## **AA208 Office Administration** **Cr-3**

This course introduces the scope and responsibilities of administrative office management. Topics include information management as it relates to planning, organizing, operating, and controlling office operations, management leadership and human relations factors, salary administration, labor management relations, and office personnel problems and practices.

## **AA214 Keyboarding-Advanced** **Cr-3**

This course covers advanced word processing and desktop publishing skills. Decision-making, editing, abstracting information, setting priorities, and maintaining a smooth workflow are emphasized. Government, medical, legal, and business documents are keyboarded. Prerequisite: AA112 Keyboarding - Intermediate.

# AC Accounting

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## **AC110 Principles of Accounting** **Cr-3**

This course, intended for non-accounting majors, is an introduction to the fundamental accounting concepts and principles used to analyze and record business transactions. Topics include the accounting cycle, accounting for service and merchandising businesses, special journals, payroll, banking and internal controls, and inventory methods.

## **AC115 Financial Accounting** **Cr-3**

This course is the first of a sequence that explores fundamental accounting principles, concepts, and practices as a basis for the preparation, understanding, and interpretation of accounting information. It covers the complete accounting cycle for service and merchandising businesses through the adjustment and closing of the

books and the preparation of the income statement, the statement of owner equity, and the balance sheet. The details of accounting for cash, receivables, inventory, long-lived assets, and current liabilities are investigated.

## **AC116 Managerial Accounting** **Cr-3**

This course is the second of a sequence that explores fundamental accounting principles, concepts, and practices as a basis for the preparation, understanding, and interpretation of accounting information. It covers corporate equity (including the statement of retained earnings), long-term debt, time-value concepts, capital budgeting, cost-volume-profit analysis, and financial statement analysis. Prerequisite: AC115 Financial Accounting.

## **AC127 Computerized Accounting Systems** **Cr-3**

This course uses a variety of standard computerized business systems such as general ledger, purchasing, accounts payable, inventory, payroll, cash receipts, and accounts receivable to enter, process and store data in operational-level transaction processing. Prerequisites: AC115 Financial Accounting and either IS101 Computers and Society or IS102 Computer Applications & Concepts 2 or IS100 Introduction to Computers and Society.

## **AC131 Business Law 1** **Cr-3**

This basic law course investigates the application of law to societal and business relationships through a study of the concept of commercial law and its sources, the law of contracts, the law of sales, and the law of negotiable instruments. Lecture, class discussion, and case study comprise the primary methods of instruction. In the effort to develop awareness of the logic and application of the law.

## **AC132 Business Law 2** **Cr-3**

This course investigates the consequences of the legal forms of business organization and the acquisition, protection, the law of agency, transfer, and loss of rights in personal and real property. Lecture, discussion, and case study help to develop awareness of the scope and requirements of legislation and common law. Prerequisite: AC131 Business Law 1.

## **AC201 Intermediate Accounting 1** **Cr-3**

This course is a continued study of the accounting process and the application of the conceptual framework for generally accepted accounting principles (GAAP). Topics include the accounting cycle; revenue recognition; financial statement preparation; time value of money applications; and cash, receivables and inventory valuation. Intangibles and plant assets with depreciation, impairments, and depletion are also covered. Prerequisite: AC116 Managerial Accounting.

## **AC203 Government and Not-for-Profit Accounting** **Cr-3**

This course introduces fund accounting concepts and procedures for reporting for government and non-profit entities. Topics include the study of fund and budget accounts if governmental units, revenues, appropriations, disbursements, assessments, and reporting. Emphasis is on various budgetary and reporting procedures in the not-for-profit environment. Prerequisite: AC116 Managerial Accounting.

## **AC230 Financial Management** **Cr-3**

This course develops the role of the finance function and financial decision-making as it relates to the entire business organization. It stresses the financial planning of the requirements for funds, the effective acquisition of these funds (from internal sources and from capital markets), and the control of the use of these funds within the business. Prerequisite: AC116 Managerial Accounting.

## **AC243 Cost Accounting**

This course covers the effective development, presentation, and analysis of data. Topics include job process costing, cost allocation, joint product costing, and standard cost accounting, variance analysis, relevant costing and responsibility accounting. Prerequisite: AC116 Managerial Accounting.

**Cr-3**

# **AL American Sign Language**

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## **AL101 American Sign Language 1**

This course introduces American Sign Language (ASL), a natural and visual-gestural language used by deaf people in the United States and Canada. It covers finger spelling, signs, grammar, syntax, sentence structure, non-manual behaviors, basic communication techniques, and conversational skills as well as receptive and expressive language skill development. It reviews facets of Deaf culture. A minimum of five hours of participation in the Deaf community is required.

**Cr-3**

## **AL102 American Sign Language 2**

This course further develops receptive and expressive finger spelling and signing skills. Functional language strategies are presented to expand conversational skills beyond talking about oneself to talking about other people and activities, giving directions, and making requests. Skills are developed to identify others, exhibit appropriate conversational strategies, and learn to handle interruptions. Study focuses on ASL sentence structures, time, numbers, spatial referencing, temporal aspects, distributional aspects, pluralization, and sign vocabulary. Information about the Deaf community and Deaf culture is covered. A minimum of 15 hours of participation in the Deaf culture is required. Prerequisite: Grade of C or better in AL101 American Sign Language 1.

**Cr-3**

## **AL201 American Sign Language 3**

This course covers an increased number of specialized vocabulary terms and an expansion of grammatical features. The skills of accurately producing finger spelling, numbers, classifiers, and non-manual markers are included during practice and spontaneous conversations. Conversation structure in ASL is taught as a part of ASL discourse. A minimum of twenty-five hours of participation in the Deaf community is required. Prerequisite: Grade of B or better in AL102 American Sign Language 2, and a specific score on the ASL Proficiency Test, Level 2.

**Cr-3**

## **AL202 American Sign Language 4**

This last course in the ASL series for interpreting students builds upon the foundation of the previous courses. Specialized vocabulary and the basic ASL discourse structure for a presentation are covered. Vocabulary, structural principles, and linguistic principles related to narratives of ASL are expanded and applied. Multiple meaning English words and English idioms for expressing concepts in ASL are analyzed. Linguistic principles and discourse features to develop and create ASL narratives are incorporated. Issues related to the Deaf culture are introduced based on topics in each unit. A minimum of forty hours of participation in the Deaf community is required. Prerequisite: Grade of B or better in AL201 American Sign Language 3, and a specific score on the ASL Proficiency Test, Level 3.

**Cr-3**

# **AN Anthropology**

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## **AN101 Biological Anthropology**

This course presents the biological and evolutionary history of humans. Basic concepts of evolutionary theory, human genetics, human biological adaptation and diversity, and the hominid fossil record are explored. It includes the behavior and ecology of living non-human primates.

**Cr-3**

## **AN102 Cultural Anthropology**

This course examines the cultural evolution of humans in a cross-cultural perspective. It includes the study of kinship, marriage, family, political and economic organization, the arts, and the individual in society. It covers the historical background of development of the discipline, research methods, and concepts proposed by various schools of anthropological thought.

**Cr-3**

## **AN104 Archaeology**

This course examines the reconstruction of past human cultures based on the material remains left behind. Archaeological concepts, methods, and theories about the past are explored as they apply to human cultural development.

**Cr-3**

## **AN205 Forensic Anthropology**

This introductory course provides a general understanding of the methods that forensic anthropologists use to identify human skeletal remains. It introduces the human skeleton, anthropological techniques used in forensic investigations, and how to discriminate between human and non-human remains. This course involves actual human skeletal material.

**Cr-3**

# **AS Alcoholism & Substance Abuse**

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## **AS201 Introduction to Alcoholism/Substance Abuse Counseling**

This course provides a foundation in alcoholism/substance abuse counseling knowledge and skills, including practice in basic counseling skills. Prerequisite: A grade of "C" or better in HS241 Chemical Dependencies.

**Cr-3**

## **AS202 Alcoholism/Addictions and Family Systems**

This course provides an in-depth look at the effects of alcoholism and substance abuse on the family system. Topics include a variety of approaches to viewing the family, a general overview of codependency, and aspects of family and codependency treatment, including how counselors can be affected. Prerequisite: A grade of "C" or better in HS241 Chemical Dependencies.

**Cr-3**

## **AS204 Special Topics in Alcoholism and Substance Abuse Treatment Programs**

A survey of issues is covered related to legal aspects of alcohol, drug, and treatment programs, treatment of special populations, child abuse reporting, treatment in correctional institutions, specialized addictive treatment modalities, and employee assistance programs. Poly-addiction and new drugs are included. In addition, issues related to the professional in alcoholism and substance abuse treatment are discussed. Other topical issues are introduced, based on class needs and new trends. Prerequisite: A grade of "C" or better in HS241 Chemical Dependencies.

**Cr-3**

## **AS206 Prevention Principles for Alcohol, Tobacco and Other Drug Problems**

This course covers principles underlying effective alcohol, tobacco, and other drug (ATOD) prevention strategies. A systems approach is used to give an overview of methods, goals, objectives, models, and history of prevention. The risk and protective framework provides the basis for prevention program examples. These programs are evaluated using science-based methods. Prevention ethics are discussed, with the opportunity to observe and demonstrate presentation skills. This course fulfills requirements of the NYS Office of Alcoholism and Substance Abuse Services for credentialing of alcohol and substance abuse

**Cr-3**

prevention professionals and prevention specialists. Prerequisite: A grade of "C" or better in HS241 Chemical Dependencies.

### **AS207 Prevention Practice for Alcohol, Tobacco and Other Drug Problems**

**Cr-3**

This course covers the practice of developing and designing effective Alcohol, Tobacco, and Other Drug (ATOD) prevention education programs. Topics include the performance domains of planning and evaluation, education and skill development, community organization, public organization and policy, and professional growth and development. This course fulfills requirements of the NYS Office of Alcoholism and Substance Abuse Services for credentialing of alcohol and substance abuse prevention professionals and prevention specialists. Prerequisite: A grade of "C" or better in AS206 Prevention Principles for Alcohol, Tobacco & Other Drugs.

### **AS208 Treatment of Pathological Gambling**

**Cr-4**

This course presents a basic understanding of pathological gambling and the treatment of those adversely affected by problem gambling. This impulse control disorder is compared and contrasted with Substance Abuse and Alcoholism. This course fulfills requirements of the NYS Office of Alcoholism and Substance Abuse Services for CASAC credentialing. Prerequisite: A grade of "C" or better in AS201 Introduction to Alcoholism/Substance Abuse Counseling.

## **AT Athletic Training**

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### **AT101 Introduction to Sports Medicine**

**Cr-3**

This course introduces the basic skills involved in the care and prevention of athletic injuries. It covers the recognition of sports-related injuries from head to toe, emergency procedures, training room responsibilities, liability concerns, environmental concerns, nutrition, and eating disorders as well as rehabilitation and training techniques. Laboratory time consists of BLS-CPR certification, stretching and taping techniques, and practicing emergency procedures. Prerequisites: CO232 Health Science Applied to Coaching.

### **AT201 Sports Medicine Practicum 1**

**Cr-1**

This 15-week practicum provides experience in an athletic training room setting. It includes attending home contests, preparing teams for practices and games, taping student-athletes, assisting with rehabilitation programs, and other duties as determined appropriate by the supervising Athletic Trainer. Prerequisites: AT101 Introduction to Sports Medicine.

### **AT202 Sports Medicine Practicum 2**

**Cr-1**

This second 15-week practicum provides further hands-on experience in the athletic training room setting. It includes attending home games and taping student-athletes as well as designing and overseeing rehabilitation programs under the supervision of the Athletic Trainer. The primary responsibility is for one contact sports team. Prerequisite: AT201 Sports Medicine Practicum 1.

## **AV Aviation**

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### **AV170 General Maintenance Practices**

**Cr-5**

This course introduces general aviation maintenance practices, including topics in Mathematics, blueprints/charts, Physics, maintenance forms and publications, human factors, ethics, and aircraft weight and balance. This course also introduces students to airframe material testing procedures. Additional topics include precision measurements, identification and selection of aircraft materials, basic heat-treating processes, penetrant, chemical etching and magnetic

particle inspections, welding inspection, and the identification and selection of non-destructive testing methods.

### **AV171 Materials and Processes**

**Cr-2**

This course introduces methods and procedures needed to maintain cleaning and corrosion controls, fluid lines, and fittings. Aircraft general servicing and ground operations are also included.

### **AV172 Basic Electricity**

**Cr-2**

This course introduces the basic electricity terms and calculations, including voltage, resistance, capacitance, inductance, and power. Reading and interpreting electrical circuit diagrams and the inspection and servicing of batteries are also introduced.

### **AV173 Airframe Systems 1**

**Cr-5**

This course introduces methods and procedures needed to maintain, service and repair airframe electrical and electronic systems.

### **AV174 Airframe Systems 2**

**Cr-3**

This course introduces methods and procedures needed to maintain Ice and Rain control, Fire Protection, and aircraft associated utility systems, including hydraulic and pneumatic power systems. Other topics covered are methods and procedures needed to maintain aircraft landing gear systems, cabin atmosphere control systems, and oxygen systems.

### **AV175 Aircraft Structures 1**

**Cr-3**

This course introduces methods and procedures needed to inspect and repair wood structures, aircraft coverings, and exterior finishes as defined by the Federal Aviation Administration (FAA) publication AC43.13-1B (Acceptable Methods, Techniques and Practices). Topics include identifying, inspection, and repair of wood structures; selection, inspection, testing, and repair of fabric and fiberglass coverings; application of trim and letters; and the identification, selection, application, and inspection of aircraft finishing materials. Proper rigging of a fixed and rotary wing aircraft, checking alignment, of structures, assembling aircraft, balancing and rigging movable surfaces, and properly raising and lowering an airplane are also introduced.

### **AV176 Aircraft Structures 2**

**Cr-3.5**

This course introduces the materials, equipment, tools and procedures needed for the inspection and repairs to aircraft sheet metal structures as defined by the Federal Aviation Administration (FAA) publication AC43.13-1B (Acceptable Methods, Techniques and Practices). Topics also include the inspection and repair of bonded, plastic, honeycomb, and laminated structures, and the inspection and repair of windows doors, and interior furnishings.

### **AV177 Airframe Inspection & Welding**

**Cr-2**

This course introduces methods and procedures needed to understand basic principles of various types of aircraft welding. Students learn inspection, troubleshooting and repair, and operation of aircraft fuel systems, as well as perform airframe conformity and airworthiness inspections.

### **AV178 Introduction to Powerplant**

**Cr-2.5**

This course introduces methods and procedures needed to maintain Engine Fire Protection and Engine Systems. This course also introduces auxiliary power units (APU), unducted fan engines, and reciprocating engines.

### **AV179 Reciprocating Engines**

**Cr-2**

The course introduces the basic skills necessary to overhaul a reciprocating engine.

## **AV180 Turbine Engines & Powerplant Systems**

This course introduces methods and procedures necessary to inspect, service, repair, install, and troubleshoot gas turbine engines and associated engine systems.

**Cr-4**

## **AV181 Powerplant Systems**

This course introduces methods and procedures necessary to inspect, service, repair, install, and troubleshoot engine systems and associated components, and to control for engine fuel, induction, ignition and starting systems, and associated instruments. Other topics include methods and procedures necessary to inspect, service, troubleshoot, and repair exhaust systems, engine reverser systems, and propeller systems.

**Cr-6**

## **AV182 Powerplant Inspection & Electrical Systems**

This course introduces installation and repair of engine electrical systems. Methods and procedures required for airframe and engine airworthiness inspections are introduced.

**Cr-2**

# **BA Business Analytics**

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## **BA101 Introduction to Analytics**

This course introduces students to the science of business analytics and examines how data analytics are used to transform businesses across different industries. The course focuses on identifying ideal analytical techniques for specific business needs. Analytical techniques covered include regression analysis, logistic regression, and decision trees. Analytics software is introduced. Corequisite: MA110 Elementary Statistics

**Cr-3**

## **BA201 Decision Modeling**

This course focuses on utilizing data analytics techniques to make informed business decisions. It includes discussions of mathematical programming, simulation, and optimization. Modeling software will be used to facilitate problem solving and analysis. Prerequisite: BA101 Introduction to Analytics

**Cr-3**

# **BI Biology**

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## **BI103 Human Life Science 1**

This course explores the form and function of human body systems for non-science students. It stresses normal and abnormal life processes as well as the philosophy and history of science including the scientific method. Laboratory exercises complement lecture topics, which include the study of cells and tissues, and the nervous, cardiovascular, respiratory, and reproductive systems. Dissections are required in the laboratory.

**Cr-4**

## **BI105 Environmental Science**

This course increases appreciation and interest in human interaction with other organisms and with the physical environment. Topics include basic ecological concepts as well as human impact on the earth with an emphasis on selected environmental problems (i.e. natural resource use, pollution, wildlife conservation, agriculture, hazardous waste etc.). The laboratory component supplements lecture topics by providing practical experiences. Field experiences are required.

**Cr-4**

## **BI110 Survey of Human Anatomy & Physiology**

This course is a systems overview of human anatomy and physiology. Topics include structure and function of integumentary, skeletal,

**Cr-3**

muscular, nervous/endocrine, immune, digestive, cardiovascular, urogenital, and respiratory systems. This course presents development and integration of these systems as a basis for understanding the anatomical and physiological aspects of humans. This course will not count for credit in the science or clinical health profession programs (Nursing, Radiologic Technologies, Respiratory Care, Surgical Technician).

## **BI141 General Biology 1**

This is the first of a two-semester course covering the central concepts of biology. Topics include the chemical and cellular basis of life, energy transformations, and classical and molecular genetics. Laboratory exercises mirror lecture topics and include opportunities for the student to practice the scientific method, data collection, and lab report writing.

**Cr-4**

## **BI142 General Biology 2**

This course is a continuation of BI141 covering the central concepts of biology. Topics include evolutionary processes, speciation, organismal biology, and ecology. Laboratory exercises mirror lecture topics and include opportunities for the student to practice the scientific method, data collection, and lab report writing. Prerequisite: BI141 General Biology 1 or permission of the Dean.

**Cr-4**

## **BI151 Nutrition & Dietetics 1**

This course provides a general understanding of the science of nutrition. Topics include nutrients, nutrient requirements, food sources, food safety dietary assessments, the role that nutrients play in maintaining health and physical well-being, and physiological functions such as digestion, absorption, and metabolism of nutrients. This course is for Nutrition and Dietetics majors. Prerequisite: High school chemistry or equivalent.

**Cr-3**

## **BI201 Microbiology**

This course introduces the morphology, physiology, and genetics of microorganisms and their impact on health and environment. Organisms studied include bacteria, fungi, virus, and protozoa. Laboratories emphasize safe handling and culturing of live bacteria, as well as identification procedures. Prerequisites: BI141 General Biology 1, or BI217 Human Anatomy & Physiology 2.

**Cr-4**

## **BI202 Ecology**

This course covers classical ecology, with a study of the interrelationships of organisms and their environment. Topics include basic ecological principles, natural selection and speciation, population dynamics, community structure, ecosystem diversity, energy flow, biogeochemical cycling of nutrients, and relevant environmental issues. Fieldtrips may be taken during laboratory exercises. Prerequisite: BI141 General Biology 1. - Spring Semester Only

**Cr-4**

## **BI209 Basic Pathophysiology**

This course examines the physiological consequences of various disease states. Diseases are treated as threats to homeostasis. The effects of pathology on normal bodily processes are discussed at various organizational levels, including biochemical, cellular, histological, and organ systems. This course is designed for allied health students. Prerequisites: BI216 Human Anatomy & Physiology 1.

**Cr-3**

## **BI216 Human Anatomy & Physiology 1**

This course covers the structure and function of the human organism and the regulatory processes that operate within a living system. It introduces general anatomical, physiological, and chemical organization, and includes the integumentary (skin), skeletal, muscular, and nervous systems. Laboratories involve vertebrate dissection, the use of prosected human cadavers and human skeletal materials, microscope work, non-invasive human experimentation, and possibly animal experimentation. Prerequisite: High School Biology or its equivalent is recommended.

**Cr-4**

**BI217 Human Anatomy & Physiology 2****Cr-4**

This course, which is a continuation of BI216 Human Anatomy & Physiology 1, involves the study of structure, function, and regulation in the human organism. Topics include blood, peripheral nerves, the cardiovascular system, lymphatics, the respiratory system, the excretory system, the endocrine system, the reproductive systems, the digestive system, and metabolism. Laboratories involve vertebrate dissection, the use of prosected human cadavers and human skeletal materials, microscope work, non-invasive human experimentation, and possibly animal experimentation. Prerequisite: BI216 Human Anatomy & Physiology 1.

**BI251 Nutrition Across the Lifespan****Cr-3**

This course explores the changing nutritional needs as an individual progresses through the normal life cycle. Topics include physiology and nutritional demands of growth periods, the physiology and nutritional demands of the aging process, and optimal dietary behaviors during pregnancy, lactation, infancy, childhood, adolescence, and late adulthood. Prerequisites: BI151 Nutrition & Dietetics and BI216 Human Anatomy & Physiology 1.

**BI270 Practicum in Human Dissection****Cr-1**

This course provides selected students with hands on experience in directed, supervised human cadaver dissection. Working in small groups, students collaborate to explore, locate, expose, identify, and demonstrate selected organs, structures, anomalies, and pathologies on embalmed specimens. Since different groups may have different dissection tasks, students in each group share their work with those in other groups. Specific dissections and exposures are selected by the instructor to coincide with the prosection requirements of Human Anatomy & Physiology 1 and 2 (BI216 and BI217) and, whenever, feasible, with the interests and backgrounds of the enrolled students. Because every cadaver provides a unique dissection and educational experience, students may enroll in this course more than once for credit. Prerequisites: BI216 Human Anatomy & Physiology 1 or BI217 Human Anatomy & Physiology 2, and written permission of the instructor. All prospective students will be required to submit an essay, not to exceed 500 words, explaining their interest in taking this course and indicating the use to which they intend to put this information and the benefit they expect to derive from it. This essay will be considered carefully by the instructor before any course enrollment decision is made.

## **BM Business Management**

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**BM100 Introduction to Business****Cr-3**

This course presents the relationships among social, political, economic, legal, and environmental forces, and the development and operation of business in a global economy. It includes an overview of the concepts and principles of the various subfields of business accounting, management, finance, marketing, law, ethics, human resources, and general business as well as current topics of interest, and internet research and simulation exercises.

**BM101 Survey of Economics****Cr-3**

This course introduces economic theory and its relevance to daily life in a market economy. Topics include scarcity, supply and demand, choice, economic growth, taxation, and the role of government in the economy. Attention is given to current economic issues and their impact upon everyday life.

**BM108 Personal Finance****Cr-3**

This course teaches the fundamentals of personal finance through the creation of a financial plan, management of personal finances, and reaching personal financial goals. Topics include the establishment of financial objectives (home ownership, education, and retirement), budgeting and savings, personal income tax, investments (stocks,

bonds, and mutual funds), retirement, and estate planning. The effective use of and management of credit is covered.

**BM110 Principles of Microeconomics****Cr-3**

This course studies the behavior of the individual and firm in allocating resources in a market system under various the degrees of competition. Topics include the nature of economics, scarcity choice, market pricing and applications, theory of consumer choice, business cost measurement, forms of competition, antitrust and regulations of business, factor pricing, externalities, and pollution. Poverty-income distribution, labor economics, or agricultural economics may also be discussed.

**BM115 Principles of Macroeconomics****Cr-3**

This course studies the theory and operation of the economy and how government attempts to achieve domestic and international economic goals using monetary and fiscal policies. Topics include the nature of economics, the economizing problem, capitalism and the circular-flow, overview of the public sector, measuring output and income, macroeconomic instability, aggregate demand and supply, Keynesian employment theory, fiscal policy and its applications, money, banking, and monetary policy applications, and international trade and finance.

**BM120 Principles of Marketing****Cr-3**

This course emphasizes the basic practices, concepts, and activities involved in developing a successful marketing program. Topics include buyer behavior, market identification, product development, distribution, promotion, pricing, and the uncontrollable factors (economic, social, political, legal and technological) involved in the changing marketing environment of today.

**BM129 Business Mathematics****Cr-3**

This course reviews basic arithmetic processes to develop speed and accuracy in working with decimals, fractions, and percentages. Calculators are used to solve business problems, including simple and compound interest, discounting promissory notes, present value, installment purchases, and mortgages. Retail mathematics covers the areas of purchase and cash discounts, trade discounts, and markup of merchandise. Topics may also include the mathematics of sales and property taxes and payroll. Problem-solving exercises are completed through applications and exercises.

**BM150 Principles of Entrepreneurship****Cr-3**

This course is designed to provide a basic understanding of entrepreneurship and the challenges of starting and operating a small business. Emphasis is placed on creating and successfully leading a business entity by developing a sustainable competitive advantage. Topics include self-assessment, planning, decision-making, legal forms of business, identifying and leveraging business opportunities, capital formation, start-up issues, the need for social responsibility and ethics, and how to develop long-term relationships with customers, suppliers, and employers. A major course requirement is the presentation of a realistic business plan.

**BM206 Business Ethics****Cr-3**

This course provides an overview of business ethics and ethical management practices, with emphasis on the process of decision making and working through contemporary dilemmas faced by business organizations, managers, and employees. It demonstrates how ethics can be integrated into business decisions and applied to careers. Topics include an overview of business ethics; corporations and social responsibility; business and society; consumers and the environment; ethical issues in the workplace; business ethics in a global and multicultural environment; values, rights, and responsibilities; and frameworks for ethical decision-making in business.

**BM211 Operations Management****Cr-3**

This course examines how analytical tools are utilized in operations and project management. It focuses on managing, critiquing, and improving inventory systems, supply chains, quality control, and other business processes. Prerequisite: MA110

**BM230 Money and Banking****Cr-3**

This course examines the functions of money and credit and their roles in the economy through the variety of financial intermediaries or financial institutions. Topics include the determination of interest rates; the role, functions and forces that shape and change financial institutions; the operation of the money, capital and debt markets; and the role and functions of the Federal Reserve in the financial system. Prerequisites: AC115 Financial Accounting and BM115 Principles of Macroeconomics.

**BM251 Organizational Behavior****Cr-3**

This course is the study of how individuals and groups act in organizations. It explores a systems approach in developing organizational and human resource objectives, as well as a holistic approach in examining relations among groups, individuals, and systems as they relate to the organization.

**BM252 Supervisory Management****Cr-3**

This course provides a working knowledge of supervisory skills necessary for dealing with human problems within the organization. It covers elements such as communications, motivation, discipline, negotiations, and conflict management. Prerequisites: BM251 Organizational Behavior.

**BM254 Human Resources Management****Cr-3**

This course introduces the functions involved with managing the human resources within an organization. Topics include job design and analysis, recruitment and selection, performance appraisals, training, compensation administration, benefits, and employee rights.

**BM262 Marketing Management****Cr-3**

This course presents the marketing management process and the marketing managers' role. Topics include marketing decision-making process, marketing concept, the process of strategic planning, and marketing planning. Prerequisite: BM120 Principles of Marketing.

**BM264 Professional Selling****Cr-3**

This course covers the essential skills to sell a product, service, or idea. Activities include the writing and preparing of a detailed presentation plan as well as the expository delivery of the plan.

**BM275 Capstone in Entrepreneurship****Cr-3**

In this capstone course, students build upon the fundamentals learned in related coursework to research, develop, and write a detailed business plan. Prerequisite: BM150 Principles of Entrepreneurship.

**BM290 Business Internship****Cr-3**

This internship provides realistic training in a student-chosen field of study. It requires 12 hours of work per week in a supervised environment and helps to prepare for entrance into a competitive work environment. It creates a bond among student, the college and the business community, and may lead to employment opportunities. A work experience journal is required along with supervisor evaluation.

# CB Construction & Building

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**CB101 Carpentry 1****Cr-4**

This course introduces description and use of construction materials, tools, safety procedures, and framing techniques for foundations, floors and walls. Hands-on experience and safety are emphasized.

**CB102 Carpentry 2****Cr-4**

This course covers the design and construction of residential roofs, including rafters, trusses, hands-on experience and safety procedures are emphasized. Prerequisite: CB101 Carpentry 1.

**CB103 Carpentry 3****Cr-4**

This course covers the finishing of the interior and exterior of a residential structure. Topics include windows and skylights, interior and exterior doors, frames and walls, thermal barriers, and sound insulation, stairs, and plaster, and drywall Hands-on experience and safety procedures are emphasized. Prerequisite: CB101 Carpentry 1.

**CB104 Basic Woodworking****Cr-5**

This course covers the practical aspects of basic woodworking in a shop. Topics include the use of table saws, planers, jointers, band saws, and lathes; design, layout, and construction of cabinets and countertops. Hands-on experience and safety procedures are emphasized.

**CB121 Masonry 1****Cr-4**

This course introduces the fundamental concepts of concrete construction. Topics include theory of concrete design, construction methods and materials, tools, foundations, walls, and flat work. Hands-on experience and safety procedures are emphasized.

**CB122 Masonry 2****Cr-4**

This course introduces the fundamental concepts of block masonry construction. Topics include the history, development, and manufacturing of mortar and block, mixing mortar, laying block, and the use and care of tools and scaffolding. Hands-on experience and safety procedures are emphasized.

**CB123 Masonry 3****Cr-4**

This course introduces the fundamental concepts of brick masonry construction. Topics include the history, development, and manufacturing of brick, mixing mortar, bonding, corners, laying brick masonry for fireplaces, chimneys and arches, and the use and care of tools and scaffolding. Hands-on experience and safety procedures are emphasized.

**CB126 Blueprint Reading (Construction Trades)****Cr-3**

This course provides an introduction to architectural working drawings. Topics include background principles, residential working drawings, specifications, and reading the working drawing of a small structure.

**CB131 Construction Estimating****Cr-3**

This course covers the organization of a formal estimate for a residential building and the types of estimates used in construction, along with qualifications of an estimator. Each division is broken down for a thorough understanding of the materials and methods used to calculate proper quantities. Actual working drawings and specifications for a small residence are used to compile a systematic estimate of materials and labor. Excavation, concrete work, masonry, and wood and structural steel construction are covered. Topics include builders estimates, quantity take-off process, quantity determination, cost estimating from quantities, cost control system, contracts, bonds and

insurance, overhead and contingency issues, and computer-assisted estimating.

**CB301 Industrial Practicum** **Cr-3**

This course allows for the enhancement of academic skills by gaining work-related experience. Students arrange for the practicum, which must conform to Center guidelines.

## **CF College Foundations**

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**CF100 College Foundations Seminar** **Cr-1**

This course is an opportunity for students to develop the skills necessary to be successful in college. Students learn the importance of the faculty-student and advisor-advisee relationship, develop time management techniques, apply effective study skill techniques, recognize the implications of living in a diverse society, utilize college resources, and explore career and transfer requirements. Collaborative projects are included. Students matriculated in a degree program must take this course in their first term of study.

**CF102 Career Exploration and Planning Skills** **Cr-2**

This course provides a general introduction to the process of self exploration and the exploration of the world of work. It includes discussion of the concepts of values, personality preferences, interests and skills, as well as resources to learn more about potential careers. Students apply these concepts to development of their own educational and career goals.

**CF112 Critical Thinking & Reasoning** **Cr-3**

This course assists in the development of critical thinking and reasoning skills. Topics include the characteristics of critical thinking, the effect of language on critical thinking and reasoning, drawing deductively valid conclusions, hypothesis testing, analysis of arguments, decision-making, and problem-solving methods. Prerequisite: An appropriate placement test result. Mandatory Corequisite: EN002: CF112: ILS

## **CG Computer Graphics**

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**CG133 Introduction to Animation** **Cr-3**

This course provides the foundation of traditional animation techniques. These techniques are mastered before moving on to digital animation. Techniques in portfolio projects are used in the second year.

**CG134 Digital Applications for the Animator** **Cr-3**

This course introduces digital imaging and digital illustration techniques, and software used by the animator. It explores the aesthetic and technological potential of digital imaging and digital illustration software. The use of digital media and the creation of computer-based imagery are emphasized. It includes advanced technical instruction in the use of software and peripheral devices (scanners, printers, file storage, and other technologies).

**CG144 Digital Animation 1** **Cr-3**

This course covers the developmental elements of computer animation. Topics include user interface, various 3D modeling techniques, texture mapping, and timing. The course builds on the basic principles of traditional animation with the techniques of computer animation and production processes. Prerequisites: CG133 Introduction to Animation.

**CG145 Digital Animation 2** **Cr-3**

This course further develops digital animation skills and techniques. Topics include character modeling, mapping, materials, animation, and production techniques. Prerequisites: CG144 Digital Animation 1

**CG146 Storyboarding** **Cr-3**

This course introduces the principles and techniques used in the creation, practice, and production of storyboards for animation, multimedia, and filmmaking. It covers scriptwriting, along with the fundamental principles of storyboarding through traditional techniques and practice. Drawing skills and composition are applied to set location, cinematography, sound, special effects, and character actions along with fluid storylines in a variety of genres. The results are more proficient visual communicators in industry applications, including animated films, cartoons, commercials, documentaries, live-action feature films, industrial and institutional films, and video gaming. Prerequisite: FA101 General Drawing

**CG147 Sculptural Procedures for the Animator** **Cr-3**

This course introduces current sculpting techniques used by the animation industry for character creation and design. Work is done with traditional 3D media, digitized models, and 3D animation software. Earth clays, polymer clays, and foam sculpture are used. Armatures are used to study stop-motion, maquettes, and the digitizing process. Character types range from realistic to imaginary. Prerequisites: FA101 General Drawing.

**CG213 Graphic Design for the World Wide Web** **Cr-3**

This course explores design concepts for the World Wide Web (WWW) while developing expertise in web-based typography, image file formats and sizes, hexadecimal color, frames, cascading style sheets, tables, and site interactivity. Emphasis is placed on the understanding of browser constraints, hypertext markup language (HTML), site planning, and site structure. Prerequisite: GD110 Digital Design.

**CG214 Motion Graphics** **Cr-3**

This course introduces students to methods of producing motion graphics. Students use problem solving to explore and produce design. Production timeline and graphical requirements of a multimedia project are demonstrated through the manipulation of digital images in a studio environment. Topics include planning, storyboarding, sequencing, compositioning, and designing still images integrated with the aesthetic issues of 2-D, 3-D, and 4-D design.

**CG231 Advanced Animation Techniques** **Cr-3**

This course incorporates full production animation techniques. It expects advanced exploration of storyboarding, set design, cinematography, sound, and finished character development. Contemporary digital recording and editing systems are synthesized with traditional animation techniques. Prerequisites: CG133 Introduction to Animation.

**CG233 Animation Production Workshop** **Cr-3**

This course uses a production animation environment in which students are expected to work in groups to produce animations specific to an assigned topic. Projects may include animation for advertising, entertainment, educational, and scientific applications. Corequisite: CG234 Professional Practices for the Animator.

**CG234 Professional Practices for the Animator** **Cr-3**

This course emphasizes the completion of a professional demo reel, which demonstrates a student's strength within 3D animation. Students complete a three-minute animation. Prerequisite: CG145 Digital Animation 2. Corequisite: CG233 Animation Production Workshop.

### **CG235 Applied 3D Technologies**

**Cr-3**

This course covers the theory, role, scope, and practice of emerging 3D technologies for digital animation students. Emphasis is placed on creating projects using 3D printing, photogrammetry, virtual reality, and other technologies relevant to 3D content creation. This course investigates approaches to tool and material use, utilization of software, interfacing with 3D printers, and finishing techniques for 3D prints.

## **CH Chemistry**

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### **CH101 Physical Science**

**Cr-4**

This course introduces the principles and methods of physical science. It stresses the structure and properties of materials and their interactions. Careful measurement, observation, and the scientific method are covered in lecture and laboratory to develop quantitative reasoning ability. Prerequisite: Appropriate high school GPA or placement test score.

### **CH111 Introduction to Chemistry 1**

**Cr-4**

This course introduces chemistry for those who have had no prior chemistry study or who need chemistry review. Topics include matter, measurement, atomic structure and the periodic table, chemical bonding and reactions, and the three phases of matter. This course does not meet graduation requirements for Chemistry, Biology, or Engineering majors. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **CH112 Introduction to Chemistry 2**

**Cr-4**

This is the second introductory level chemistry course. Topics include solutions, colligative properties, concentrations, acids and bases, salts, solution equilibrium, pH buffers, electrolytes, and an introduction to organic molecules of biological importance. This course does not meet graduation requirements for Chemistry, Biology, or Engineering majors. Prerequisite: CH111 Introduction to Chemistry 1.

### **CH115 Introduction to Metallurgical Chemistry**

**Cr-4**

This course introduces basic theory and practice as applied to the industrial setting. It emphasizes the practical aspects of working with chemicals and materials and covers the common forms of analytical chemistry, including instrumentation. Topics include problem-solving, the nature of matter, atomic structure and bonding, nomenclature, stoichiometry, gases, solution chemistry, electrochemistry, and organic chemistry. Prerequisite: MA121 Fundamentals of College Mathematics 1 or equivalent.

### **CH120 Demystifying Science: Scientific Literacy in the Physical Sciences**

**Cr-4**

This course introduces students to physical science and emphasizes the attainment of scientific literacy. Students develop scientific literacy skills through the exploration of various physical science current issues including atmospheric ozone, ozone as a pollutant, transportation fuels, medicinal chemistry, nuclear energy, climate change, and water resources and pollutants.

### **CH131 College Chemistry**

**Cr-5**

This is a one-semester introductory chemistry course for students in health professions. The course examines the history of chemistry, its impact on society and its connection to other disciplines. Topics include scientific method, atomic theory, bonding and reactions, introduction to oxidation-reduction, acid-base concepts, equilibrium, properties of solutions, and introduction to organic chemistry and its biochemical applications. The laboratory sequence supports the above topics and emphasizes careful observation and analysis of data to develop both qualitative and quantitative reasoning ability. This course does not meet

graduation requirements for Chemistry, Biology, Computer Science, or Engineering majors. Co-requisite MA110 Elementary Statistics or higher.

### **CH135 Introduction to Organic Chemistry**

**Cr-4.5**

This course is for students in the allied science and allied health professions. Topics include bonding, physical properties, chemical properties, nomenclature, and analysis of the common organic compounds. The laboratory segment introduces basic organic laboratory techniques such as recrystallization, distillation, extraction, chromatography, and instrumentation. Prerequisite: CH131 College Chemistry or equivalent.

### **CH141 General Chemistry 1**

**Cr-4**

This course introduces to the field of chemistry for science and engineering students. Topics include dimensional analysis, stoichiometry, periodicity, atomic structure and bonding, the states of matter, solutions, and acid and base concepts. The laboratory exercises exemplify chemical principles and develop individual problem-solving abilities. The laboratory experience includes preparation of the laboratory report and notebook. Prerequisites: High School Chemistry; and appropriate high school GPA or placement test score, or MA121 Fundamentals of College Mathematics 1, or MA139 College Algebra, or a corequisite of MA125 College Algebra and Trigonometry.

### **CH142 General Chemistry 2**

**Cr-4**

This course is a continuation of CH141 General Chemistry 1. Topics include chemical thermodynamics, electrochemistry, chemical kinetics, chemical and solution equilibrium, descriptive organic chemistry, nuclear chemistry, and descriptive chemistry of elements. Prerequisite: CH141 General Chemistry 1.

### **CH200 Industrial Practicum**

**Cr-3**

This course provides hands-on experience in chemical or environmental technology in an industrial or regulatory environment. It is offered on demand and may be taken at any time after completion of college chemistry, with appropriate placement arranged. A minimum of four weeks (135 hours) on site is required. Students may be paid by the industry involved. Prerequisite: One year of college chemistry and instructor permission.

### **CH229 Chemical Instrumentation**

**Cr-5**

This course in applied instrumentation stresses the analytical solution of environmental/chemical problems by application of instrumental methods. Emphasis is placed on sampling, solution preparation, hands-on instrument operation, records keeping, data processing, and interpretation. Samples are taken to illustrate problems of air and water pollution, and solid and hazardous waste. Analysis methods include spectroscopy, electrochemistry, chromatography, thermal, and industrial hygiene. As time allows, field trips supplement the campus experience. Prerequisites: CH141 General Chemistry 1 and CH142 General Chemistry 2.

### **CH246 Quantitative Analysis**

**Cr-5**

This course introduces analytical chemistry and develops the skills and perspectives necessary to solve problems. Topics include sampling, gravimetry, titrimetry, stoichiometry, equilibria, redox, potentiometry, and spectrophotometry. Samples are chosen to illustrate typical industrial and environmental problems. As time allows, field trips supplement the campus experience. Prerequisite: CH141 General Chemistry 1 and CH142 General Chemistry 2.

### **CH247 Organic Chemistry 1**

**Cr-5**

This course introduces organic chemistry for science and engineering students. It includes a systematic study of classes of carbon compounds. It stresses reaction mechanisms, methods of synthesis, structured optical activity, chemical physical properties, and

nomenclature. Topics included alkanes, alkenes, alkynes, aromatic compounds, stereochemistry, and spectroscopy. Prerequisites: CH141 General Chemistry 1 and CH142 General Chemistry 2.

### **CH248 Organic Chemistry 2** **Cr-5**

This course is a continuation of CH247 Organic Chemistry 1 in developing the topics of: spectroscopy, alkyl halides, alcohols, ethers, carboxylic acids and their functional derivatives, aldehydes and ketones, carbanions, amines, and phenols. The laboratory exercises introduce multi-step synthesis and the analysis of organic compounds. Prerequisite: CH247 Organic Chemistry 1.

### **CH300 Independent Study in Chemistry** **Cr-4**

## **CI Computer & Information Science**

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### **CI104 Introduction to Cybersecurity** **Cr-3**

This course provides students with a broad understanding of the concepts and interdisciplinary applications of cybersecurity and its impact on society. It examines the historical development of security in technology as it relates to governance, personal information and assets, and major commerce sectors such as finance, healthcare, retail, and manufacturing. It also introduces basic networking, assessing and handling of security risks, hardware components, and basic computer troubleshooting.

### **CI110 Principles of Programming** **Cr-3**

This course introduces computer programming methods and techniques of problem-solving using structured programming. Students analyze problems and organize effective solutions. Techniques of problem-solving include defining the problem, specifying required input and output, developing the algorithm, and testing the solution. Students also translate the algorithms to a high-level programming language.

### **CI112 Networking Fundamentals** **Cr-3**

This course introduces the basics of computer networking from concepts and terminology to materials and equipment. Topics form the foundation for further networking courses, with a solid grasp of fundamentals that lead to experience with equipment. The majority of this course deals with theory, with equipment used for demonstration. Prerequisite: IS101 Computers and Society, or CI104 Introduction to Cybersecurity or CI121 Microcomputer Techniques for Science.

### **CI121 Microcomputer Techniques for Science** **Cr-3**

This course provides hands-on training and experience involving scientific word processing, computer-based data analysis, graphical analysis techniques, interfacing hardware and software, data management concepts, scientific simulation methods, imaging technology, and presentation software. It uses a variety of hardware and software currently in the scientific community. Prerequisite: One year of college preparatory mathematics.

### **CI130 Programming in C++** **Cr-3**

This course provides a comprehensive study of C++ with an emphasis on sound structured programming principles, good style, and top-down method of program design. It covers the designing, coding, executing, and debugging of C++ programs to solve problems in a variety of fields. Corequisite: CI110 Principles of Programming or ES151 Introduction to Engineering.

### **CI132 UNIX Operating System and Security** **Cr-3**

This course provides an understanding of the UNIX operating system, covering commands, utilities, and scripts. It focuses on the skill development needed to administer a UNIX system, emphasizing file management, security issues, upgrades, and backups. The installation and maintenance of UNIX systems are addressed. Prerequisite: IS101 Computers and Society, or CI121 Microcomputer Techniques for Science or CI104 Introduction to Cybersecurity.

### **CI140 Computer Programming for Engineers and Scientists** **Cr-3**

This is an introductory course designed to meet the needs of Engineering and Physical science students. The course provides an introduction to a variety of computational and data analysis skills necessary for a scientific and/or engineering career. Topics include computer organization, structured engineering and scientific programming, scientific word processing, spreadsheet and graphical analysis, and presentation techniques. Prerequisite: Three years of college preparatory mathematics including trigonometry.

### **CI142 Computer Forensics** **Cr-3**

This course covers the acquisition and analysis of data recovery from computer networks to identify potential security or legal evidence. Topics include data recovery after deletion, and the roles and methods of discovering inappropriate data use. It covers operating systems and their vulnerabilities, and techniques about data recovery for use in litigation and future protection. It examines forensic cases. Prerequisite: IS101 Computers and Society, or CI104 Introduction to Cybersecurity or CI121 Microcomputer Techniques for Science.

### **CI212 Internet Security** **Cr-3**

The course provides an overview of computers and network security, addressing the balance of access and security in standard practices and performance issues. It covers the effective design, implementation, and support of security policies for large-scale enterprise networks. It deals with preventive and post-event recovery tools. Prerequisite: CI104 Introduction to Cybersecurity or CI112 Networking Fundamentals or CI130 Programming in C++.

### **CI224 Windows Systems Security II** **Cr-3**

This course helps to develop a comprehensive understanding of Microsoft Windows 2000 Server, or its current version. Topics include server and client hardware selection, server installation and configuration, network printing services, remote access services, network inter-operation, Internet set up, server monitoring and tuning, and problem troubleshooting. Prerequisite: IS101 Computers & Society, or CI121 Microcomputer Techniques for Science.

### **CI230 Data Structures** **Cr-3**

This course introduces advanced programming concepts. It emphasizes data encapsulation and abstraction through development of static and dynamic data structures. It covers stacks, queues, linked lists, trees, and graphs along with recursion as a programming tool as well as searching and sorting techniques. Prerequisite: CI130 Programming in C++.

### **CI232 Security Policies** **Cr-3**

This course covers the design, implementation, and support of security policies for large-scale enterprise networks. It addresses security analysis/defensive tools, including implementation and circumvention. Prerequisite: IS101 Computers and Society, or CI104 Introduction to Cybersecurity, or CI121 Microcomputer Techniques for Science.

### **CI233 UNIX Administration & Security** **Cr-3**

This course provides students with an understanding of installation, management, and security of the UNIX operating system in a server-based environment. System automation, shell scripting, and disaster

recovery are also covered. Prerequisite: CI132 UNIX Operating System and Security.

### **CI242 CISCO Networking** **Cr-3**

This course addresses LAN and WAN setup and configuration. It covers specific routing protocols and their application to physical networks. It builds upon the vocabulary and theory of networking fundamentals through hands-on experience.

### **CI245 JAVA Programming** **Cr-3**

This course introduces the concepts of object-oriented programming (OOP) and the general purpose JAVA programming language. Topics include data abstraction, data encapsulation, inheritance, polymorphism, class structures, software design with design patterns, application programming, data types, selection and loop structures, graphical user interface programming, exception handling, data streams, and cryptographic techniques. Prerequisites: CI130 Programming in C++, or permission of the Instructor.

### **CI246 Critical Infrastructure Security** **Cr-3**

This course provides students with an understanding of the basics of critical infrastructure and its relationship to cybersecurity. Topics include what critical infrastructures are, where they are likely to be found, and their vulnerabilities. Students explore historical trends and known breaches as well as current security challenges facing the industry. Prerequisites: CI132 UNIX OS & Security and CI112 Networking Fundamentals

### **CI256 Introduction to Programming for the Internet** **Cr-3**

This course introduces the tools needed to create and manage a web site. Topics include history of the Internet and the World Wide Web (WWW), how to access the WWW, goals needed to create a successful web site, page layout programs, and an introduction to Hypertext Markup Language (HTML). It discusses Common Gateway Interface (CGI) scripts and legal issues of copyright on the web. Prerequisite: CI130 Programming in C++ or IS180 Internet for Business

### **CI260 Microcomputer Programming** **Cr-3**

This course focuses on assembler language programming of the 8086 microprocessors. It reviews of the binary number system and arithmetic operations and signed binary numbers, and studies the architecture of the 8086 and its associated family of chips. It covers addressing modes and their applications with respect to the instruction set. It introduces interfacing techniques in preparation or advanced courses. Prerequisite: CI130 Programming in C++.

### **CI271 Database Design & Implementation** **Cr-3**

This course covers database management systems and query languages, including relational database and procedural query languages. It includes projects using database file organization, data structures, and development techniques to design application databases. It emphasizes the role of database in system development and information system design. Prerequisite: Any three-credit programming language.

### **CI272 Graphical User Interface Programming** **Cr-3**

This course introduces object-oriented programming techniques and covers the fundamentals of event driven programming by using an integrated development environment (IDE). Emphasis is placed on planning, programming, and debugging Graphic User Interface (GUI) applications using modern programming techniques and practicing good layout design. Prerequisite: CI130 Programming in C++.

### **CI280 Computer Graphics 1** **Cr-3**

This course introduces the field of 3D computer graphics. Topics include 2D vector algebra, 3D model creation, 3D transformation theory,

texture and shader techniques, lighting effects, camera basics, mesh creation of model resources, user interactivity, animation techniques, and methods for achieving physically realistic behaviors. It uses a professional graphics package and 3D design package to complete programming and laboratory assignments. Prerequisites: CI245 JAVA Programming and MA121 Fundamentals of College Mathematics 1.

### **CI285 Systems Operations & Management** **Cr-3**

This course introduces operating system concepts, including history, multi-tasking, management of processes, devices, memory and files, scheduling, security, virtual, real-time, and distributed systems. Prerequisite: Any three-credit programming language.

## **CJ Criminal Justice**

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### **CJ101 Introduction to Criminal Justice** **Cr-3**

This course introduces the basic elements of the American criminal justice system, from its legal roots and history to its most current concerns. It analyzes the criminal justice process - from arrest to trial and disposition - emphasizing the function and structure of each component. It provides an understanding of how each component responds to crime and how the key question of individual rights and public safety is addressed. Attention is given to the elements of crime, the role of the police, courts, and corrections, and to the challenges facing this system in an increasingly diverse democratic society.

### **CJ102 Introduction to Forensic Science** **Cr-3**

This course introduces students to forensic science topics, including crime-scene processing, evidence collection, analysis and admissibility, fingerprints, firearms and tool marks, questioned documents, fire and explosives, blood splatter, forensic photography, trace evidence, entomology, anthropology, the law, pathology, and instrument analysis.

### **CJ106 Ethics in Criminal Justice** **Cr-3**

The goal of this course is two-fold: first, to recognize the ethical implications of the daily decisions made by justice system personnel; and, second, to evaluate individual ethical frameworks. It addresses key analytical concepts including utilitarianism, deontology, peacemaking, codes of ethics, and tests of moral reasoning to resolve ethical dilemmas commonly found in the administration of justice, including policing, courts, and corrections. It addresses the relationship of criminal justice to social justice, along with issues of cultural competence and diversity, especially as they illustrate the existence of dilemmas in applied ethics. Scenarios are used to raise moral dilemmas in the administration of justice, with resolution of these dilemmas and analysis of the issues.

### **CJ107 Juvenile Delinquency** **Cr-3**

This course provides comprehensive explanations of delinquent behavior, an overview of the juvenile justice system, and a discussion of programs designed to prevent and address delinquency. It explores issues related to delinquency in an increasingly diverse environment. It addresses social class, racial, and gender differences in delinquency, the significance of the invention of childhood, and the transformation of juvenile court from a social to a legalistic entity.

### **CJ108 Criminal Law** **Cr-3**

This course examines the nature and functions of the criminal law. It uses controversial and landmark cases as a framework for an intensive examination of the classification of crimes and the assignment of penalties. It addresses recent court decisions involving the administration of the penal law, jurisdictional questions, and Constitutional protections. It uses the New York Penal Code as an exemplar.

- CJ111 Policing in American Society** **Cr-3**  
 This course explores the role of police in American society, both from an historical framework, as well as a contemporary point of view. Topics include the background of policing, the major types of police work, the role of police discretion, and legal and ethical questions of policing in society. Relationships among federal, state, and local agencies will be discussed as well as their relationship and interaction with the community.
- CJ201 Laws of Evidence** **Cr-3**  
 This course addresses the presentation of evidence at the time of trial, which is of paramount importance in the criminal justice system. It covers the history and philosophy of the rules and laws of evidence, including current rulings, the mechanics of admissibility, and definitions of crimes, as well as the attitudes of the court toward witnesses and the admissibility of evidence. Prerequisite: CJ101 Introduction to Criminal Justice.
- CJ202 American Constitutional Law** **Cr-3**  
 This course addresses the impact of the United States Constitution on the criminal justice system. It emphasizes the fundamental concepts on which the Constitution is based and stresses the Supreme Court decision-making process and schools of interpretation. It analyzes the relationship of the Bill of Rights, especially the Fourth and Fourteenth Amendments, to the criminal justice system. Prerequisites: PS101 American National Government, and either CJ101 Introduction to Criminal Justice or PS102 Introduction to Public Policy.
- CJ204 Criminology** **Cr-3**  
 This course focuses on the social construction of deviance and crime. It addresses major theoretical perspectives that explain crime in America. It investigates societal responses to crime and current issues facing the criminal justice system. It emphasizes public policy implications of the theoretical perspectives. Prerequisite: SO101 Introduction to Sociology.
- CJ205 Principles of Investigation** **Cr-3**  
 This course details the basic procedures followed by law enforcement officers as they investigate crimes. Topics include questioning complainants and eyewitnesses, interrogating suspects, preparing statements, investigating crime scenes, and applicable search and seizure laws. Techniques of crime scene investigation are studied, including photography, charting, note-taking, and the handling of evidence. These techniques are applied to specific property and personal crimes. Prerequisite: CJ101 Introduction to Criminal Justice.
- CJ206 Introduction to Economic Crime Investigation** **Cr-3**  
 This course defines and analyzes illegal acts which provide an economic return to the offender or for which victims bear an economic cost. It details the basic procedures followed by law enforcement officers as they investigate crimes. Topics include the physical and social costs of economic crime, as well as the investigation of securities and corporate fraud, fiduciary fraud, corruption of public officials, medical crimes, and cybercrimes. Prerequisite: CJ101 Introduction to Criminal Justice.
- CJ207 Corrections** **Cr-3**  
 This courses addresses the history and philosophy of punishment systems and the background of corrections in America. It covers the impact of changing public opinion and criminal justice policies on corrections. The correctional system is examined from the perspectives of the inmate, the correctional officer, and the correctional administration. Prerequisites: CJ101 Introduction to Criminal Justice and CJ106 Ethics in Criminal Justice.
- CJ208 Community-Based Corrections** **Cr-3**  
 This course examines the history and philosophy of alternatives to incarceration. It analyzes the range of current alternatives, including probation, parole, and restorative and community justice programs designed to maintain offenders ties to their communities. It covers the philosophy and practice of probation, parole, mediation, circle conferencing, victim-offender reconciliation programs, victim impact panels, and other programs. In each community-based system, the roles of victim, offender, criminal justice system workers, and community members are discussed. At least three hours per week in related community agencies and two hours per week in seminar are required.
- CJ209 Homeland Security** **Cr-3**  
 This course provides an overview of the key challenges associated with defending American society from potential threats. It reviews attacks on American security from internal and external sources, the transformation of security issues in light of the 9/11 attacks, and the creation of a federal Department of Homeland Security. Topics include critical infrastructure protection, legal issues in homeland security, constitutional rights and legal protections, civil liberties, community and private industry involvement, as well as homeland security strategies and initiatives. Prerequisites: CJ101 Introduction to Criminal Justice.
- CJ210 Juvenile Delinquency: Field Experience in Diversion and Corrections** **Cr-3**  
 This course addresses the ways in which American communities respond to juvenile delinquency. Theories upon which juvenile diversion and corrections are based and the history of juvenile detention, diversion, and incarceration since the founding of the first juvenile court are studied. Community-based diversion programs, waiver and related “get-tough” approaches as well as broad-based prevention programs are discussed. At least three hours per week in supervised experiences in delinquency-related community agencies and two hours per week in seminar are required. Prerequisite: CJ107 Juvenile Delinquency.
- CJ212 Street Gangs and Youth Violence** **Cr-3**  
 This course provides both a comprehensive historical analysis of street gangs and an analysis of their modern development. Students examine major theories and socio-economic explanations for the existence of gangs; descriptions of the type of gangs, including small, regional, national, and female gangs; law enforcement techniques to deter gang development; and diversion efforts to keep youths out of gangs. Prerequisite: CJ101 Introduction to Criminal Justice or CJ107 Juvenile Delinquency.
- CJ213 Animal Law** **Cr-3**  
 This course acquaints students with the fundamental principles of animal law and their relationship to the criminal justice system. Topics include the history of animal law, the protection of animals by anti-cruelty laws, animal fighting, and agricultural animals, the social movement of animals in the legal system, and constitutional issues raised in cases involving animals.
- CJ214 Criminal Justice Communications** **Cr-3**  
 This course examines the nature and importance of communication within the criminal justice system. Students develop report writing skills and an understanding of the impact report writing has on the investigation and prosecution of crime, as well as on the administration of justice. Students refine communication skills within criminal justice contexts. Observational skills, interview techniques, and field note-taking skills are developed. Applications to the Civil Service exam are used where appropriate. Prerequisites: CJ101 Introduction to Criminal Justice, and either EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

**CJ215 Principles of Fraud Examination****Cr-3**

This course provides students with an overview of economic/white collar crime in the United States. Topics include methods for detecting and investigating fraud, theoretical concepts, typical illicit schemes, information gathering techniques, methods of organizing and analyzing complex data, and case studies. The course involves an exploration of key characteristics of economic/white collar crime including the extent of seriousness, types of offenses and offenders, victim concerns, and organized efforts to control and prevent these crimes. Course Prerequisites: CJ101 Introduction to Criminal Justice or AC115 Financial Accounting

**CJ216 Selected Topics in Criminal Justice****Cr-3**

This course provides the opportunity to investigate different aspects of the criminal justice system in greater depth. Topics considered vary each semester; see Dean of Public and Human Services for specific offerings.

**CJ217 Restorative Justice****Cr-3**

This course introduces the theory and practice of resolving interpersonal and group conflict through nonviolent means. Religious, humanist, and feminist peacemaking traditions are among the theoretical perspectives addressed. Critical criminology, as it identifies problems in conventional criminal justice problem solving, is stressed. Arbitration, mediation, conflict intervention, and community-based initiatives for resolving disputes are studied. It considers ways in which employees of the criminal justice system can use the principles of restorative justice in their work.

**CJ219 Restorative Practices: Mediation****Cr-3**

This course presents the history and philosophy of mediation, an informal dispute resolution practice. It analyzes key concepts, including conflict, language, power, diversity, equity, justice, communication styles, and creative problem-solving techniques. It addresses the role of mediation in civil and criminal justice disputes, and discusses current controversies. Through role-plays and mediations supervised by certified mediators, it applies principles to the solution of hypothetical and real civil, juvenile, family, and other disputes. Supervised and independent mediation experiences are made available as students qualify for them. Successful completion may result in eligibility to apprentice in certified mediation programs.

**CJ290 Criminal Justice Internship****Cr-3**

This course promotes an interest in criminal justice for students pursuing a related course of study. It reinforces academic concepts through practical work experience, assists in making career choices, and provides familiarity with the work of criminal justice agencies. Students participate on the staffs of local public or private criminal justice agencies. A minimum of 90 hours of field experience is required. Attendance and participation in seminar discussions are mandatory. Permissions of Internship Director and Dean are required. Prerequisites: CJ101 Introduction to Criminal Justice and CJ106 Ethics in Criminal Justice.

## **CO Coaching**

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**CO231 Principles of Coaching****Cr-3**

This course introduces the basic philosophy and principles of coaching as integral parts of physical education and general education. Topics include the function and organization of leagues and athletic associations in New York State; state, local, and national policies as related to athletics; standards for the responsibilities and duties of the coach as an educational leader; legal considerations; team management; athletic facilities; budget and record keeping; and, interacting with supervisors and officials. This is one of three mandatory

courses required by the New York State Education Department to become permanently certified to coach high school athletics.

**CO232 Health Science Applied to Coaching****Cr-3**

Topics in this course include first aid, CPR, and athletic training/conditioning principles. Upon completion, students are eligible for National Safety Council First Aid and American Heart Association CPR certification. This is one of three mandatory courses required by the New York State Education Department to become permanently certified to coach high school athletics.

**CO233 Theory & Techniques of Coaching****Cr-2**

This course provides basic knowledge and skills in the use and development of sport-specific coaching methods and skills. New York State high school rules and regulations, teaching methods, performance skills, organization and management of practice sessions, and conditioning are explored. An internship in a specific sport under the supervision of a master coach or athletic trainer and seminar sessions in interschool athletic history are required. This is one of three mandatory courses required by the New York State Education Department to become permanently certified to coach high school athletics. Prerequisite: CO231 Principles of Coaching

## **CT Civil Engineering Technology**

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**CT102 Engineering Drawing and Microstation CAD****Cr-3**

This course includes both basic technical drawing techniques and MicroStation CAD to support engineering design. Topics include line types, dimensioning, scaling, auxiliary views, sectioning, and notations. This course also introduces the use of MicroStation software. Topics include operational concepts; main palette use; projecting elements; entity construction and editing; entity manipulations; and text and dimensioning parameters.

**CT121 Statics****Cr-3**

This course is a study of force systems and their actions on bodies at rest. Topics include force systems, equilibrium, distributed forces, centroid, moment of inertia, and friction. Prerequisite: MA125 College Algebra and Trigonometry. (Spring, Summer semester)

**CT141 Introduction to Civil Engineering Technology****Cr-2**

This course introduces the many aspects of Civil Engineering to students who are interested in pursuing a career in either the Civil Engineering and/or Surveying Technology field. It also introduces students to the various tools required for use in these fields as well as the fields of engineering or engineering technology program. The use of personal computers is introduced as engineering tools for work enhancement. Experience is provided with a variety of microcomputer software applications, including word processing, electronic spreadsheets, presentations, file management, and database software. Engineering and surveying ethics are also introduced.

**CT151 Surveying 1****Cr-4**

This course introduces surveying, and includes the topics in the care and use of surveying instruments, field note procedures, land surveying, topographic surveying, construction surveying, and mapping from field notes. Fieldwork includes the use of measurement equipment, levels, transits, the odolites, total stations, and Global Positioning System (GPS). Corequisite: MA121 Fundamentals of College Mathematics 1.

**CT153 Introduction to Global Positioning Systems (GPS)**

Introduction to the data collection methods, applied concepts, and interdisciplinary applications of Global Positioning Systems (GPS) and its operations.

**Cr-3****CT251 Elementary Surveying**

This course introduces surveying methods and theory relative to civil engineering and construction. Topics include proper note-keeping, setup and handling of equipment, leveling, and horizontal distance measurement. Fieldwork includes the use of measurement equipment, differential leveling, total stations, and the Global Positioning System (GPS). Prerequisite: CT141 Introduction to Civil Engineering Technology

**Cr-3****CT221 Strength of Materials: Civil**

This course introduces the fundamental concepts used to design structural members. Topics include the relationship between stress and strain, design of beams, shear and moment diagrams, deflection of beams, and columns. Practicums include computational work, related to problem analysis, and the performance of tests on various construction materials such as steel, concrete, and asphalt. Prerequisite: CT121 Statics. (Fall Semester)

**Cr-4****CT253 Global Positioning and High Order Controls**

This course introduces engineering field surveys, equipment, and methods. Topics include azimuth determination, control and level nets, surveying with data recording total stations, and position determination with Global Positioning Systems (GPS), including computer exposure for data reductions. Prerequisite: CT151 Surveying 1.

**Cr-4****CT222 Soil Mechanics and Foundations**

This course introduces soil mechanics and its application to problems encountered in civil engineering. Topics include the flow of water through soils, soil strength and compressibility, the effect of water on these properties, and geo-synthetics. The theories of soil mechanics are applied to the design of foundations and retaining walls. This course explores the methods of performing field explorations. Laboratory tests commonly used to evaluate the engineering properties of soils are studied and performed. Corequisite: CT221 Strength of Materials: Civil. (Fall Semester)

**Cr-4****CT263 Digital Mapping**

This course covers remote sensing along with metric analysis and interpretation of digital images. Photo interpretations and digital image analysis include satellite and aerial platforms. Topics include concepts and theories of geographic information systems and traditional photogrammetry. Prerequisite: CT151 Surveying 1 or CT265 Introduction to Geographic Information Systems.

**Cr-3****CT225 Structural Steel Design**

This course explores the design of structural members and connections using structural steel. Prerequisite: CT221 Strength of Materials: Civil. (Spring semester)

**Cr-3****CT265 Introduction to Geographic Information Systems**

This course introduces the techniques and concepts of GIS. The mapping software package ArcGIS is used to display, analyze, and query spatial data sets. Topics include coordinate systems/datums, symbology, classifications, digital imagery, and global positioning systems. (Fall semester)

**Cr-3****CT226 Reinforced Concrete Design**

This course explores reinforced concrete beams, slabs, columns, footings, and walls. Prerequisite: CT221 Strength of Materials: Civil. (Spring semester)

**Cr-3****CT266 Capstone Geographic Information Systems**

This independent study capstone course involves the creation of a project using GIS. Proposals must have instructor approval. Projects incorporate collecting GPS data, building an attribute geo-database, and are completed using ArcGIS software. Final presentations are required, which explain data collection techniques, analysis, and project success. Prerequisite: CT265 Introduction to Geographic Information Systems (GIS). (Spring semester)

**Cr-3****CT231 Transportation Engineering**

This course covers transportation modes, including the interlocking relationships among transportation, economics, community, and the environment. Emphasis is placed on the process behind a transportation project including planning, design, construction and maintenance especially on highway design. Prerequisite: MA125 College Algebra and Trigonometry

**Cr-3****CT267 Advanced Geographic Information Systems**

This course focuses on advanced topics and applications in analyzing and visualizing geospatial data. Topics include spatial modeling, advanced editing, geodatabase creation, and three-dimensional modeling. Prerequisite: CT265 Introduction to Geographic Information Systems.

**Cr-3****CT232 Environmental Engineering**

This course covers basic practices in hydraulics and hydrology, as well as environmental topics encountered in the civil engineering field. Prerequisites: MA125 College Algebra and Trigonometry and CT251 Elementary Surveying

**Cr-3****CT242 Mechanical & Electrical Systems for Buildings**

This course explores the features of mechanical and electrical systems typically included as part of the utility of service grouping in modern buildings, including design principles, materials and equipment, installation, operation, and maintenance. All mechanical aspects of supporting a building are covered, including air handling, HVAC, heat loads and losses, electricity, plumbing, and water delivery.

**Cr-3****CT299 Capstone Design Project - Civil**

In this course students collaboratively design and present a project that integrates program course knowledge with long-range planning and economic, budgetary, environmental, scheduling, and public concerns. Students present the final design to a group of professionals formally. Prerequisites: CT102 Engineering Drawing and MicroStation CAD, CT251 Elementary Surveying, CT222 Soil Mechanics and Foundations, and CT231 Transportation Engineering. Corequisite: CT232 Environmental Engineering.

**Cr-3****CT243 Construction Management**

This course covers the legal problems, building codes, specifications and efficient construction methods relating to construction projects. Topics include estimating costs of construction projects and construction scheduling.

**Cr-3****CT300 Independent Study in Civil Engineering Technology**

This course allows for the definition of a new product or service; the development of the design and prototype, a marketing plan and strategy, and a production/implementation system to provide a successful technology business. Start-up community/business

**Cr-1**

resources are identified to help provide the needs of the new business. Additional fees may be assessed to reflect additional costs associated with the usage of equipment and materials. Prerequisite: Program Committee approval for the project. (Students must provide the Committee with project description.)

## DS Developmental Studies

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### **DS051 Essential Reading & Study Skills** **Cr-0**

This course improves reading and study skills. It stresses improvement of reading comprehension, vocabulary, and study skills in preparation for college-level coursework. Prerequisite: Appropriate placement test result. Mandatory Corequisite: CF112 Critical Thinking and Reasoning.

### **DS060 Personal and Academic Survival Skills** **Cr-0**

This course develops the academic skills that are essential for college success. Topics include goal-setting, time management, memory improvement, note-taking, SQ3R, vocabulary development, and test-taking. Prerequisite: Appropriate placement test result.

### **DS090 Academic Reading** **Cr-0**

This course develops reading and study skills necessary for success in college courses. Topics include time management, note taking, review techniques, and test-taking skills. Reading instruction includes a systematic reading plan for textbooks, strategies for vocabulary acquisition, skimming and scanning techniques, and textbook notations. Prerequisite: An appropriate placement test result. Mandatory Corequisite: SO101 Introduction to Sociology or PY101 Introduction to Psychology.

## ED Education

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### **ED110 Speed Reading for College** **Cr-3**

This course emphasizes techniques for reading college-level material more effectively and efficiently. It includes rate improvement, flexibility, skimming, and scanning. Techniques for acquiring academic vocabulary are presented, and varied textbook materials are analyzed to maximize student use. Prerequisite: An appropriate placement test result.

### **ED150 Social & Philosophical Foundations of Education** **Cr-3**

This course provides a study of the philosophical, historical, sociological, ethical, and political bases of the N-12 American educational system. It includes a comprehensive introduction to the issues, laws, policies, and practices affecting the education system, teaching, learning, and assessment. It explains ways that teachers and schools can work with students and families to provide a meaningful and equitable education. Topics include diversity in student populations, school funding, high-stakes testing, school desegregation and re-segregation, technology, standardized tests, and learning standards. The history of the American educational system is discussed in relation to current issues and topics in education, teaching, and learning. A 15-hour observation in a general education classroom must be completed.

### **ED151 Prevention & Safety Issues for the Classroom Teacher** **Cr-1**

This course focuses on prevention, intervention, and safety issues facing professionals working with children. Topics include identification, intervention, and prevention of child abuse and neglect, adverse child experiences (ACEs) and trauma in all settings, school violence, harassment, bullying, cyberbullying and the importance of recognizing

and identifying the impact of implicit bias on decision making. Successful completion results in NYS certification in Identification & Reporting of Child Abuse and Neglect, School Violence Prevention & Intervention (SAVE), and harassment, bullying, cyberbullying, and discrimination in schools; prevention and intervention (DASA).

### **ED201 Introduction to Early Childhood Education** **Cr-3**

This course aids in understanding and providing for the needs and education of young children in care/educational settings. Methods and materials used to plan, implement, and assess integrated learning experiences that consider the inter-relatedness of physical, social/emotional, and cognitive development are explored. The importance of planning experiences for young children to develop intellectual curiosity and demonstrate a respect for diversity of backgrounds is emphasized. This course includes a minimum of eight hours of observation in a preschool classroom. Prerequisites: ED150 Social & Philosophical Foundations of Education and ED205 Child Development. Prerequisites must be met with a minimum grade of "C".

### **ED203 Early Childhood Methods and Materials** **Cr-3**

This course introduces early childhood curriculum development including planning, implementing, and assessment based on the New York State Learning Standards. It covers developmentally appropriate practice, methods, and materials for preschool through primary grade children. Emphasis is placed on curriculum that meets the needs of the whole child: cognitive, social, emotional, language, and physical. Knowledge is gained of early childhood curriculum that is respectful to the backgrounds of all children and families. Early childhood best practices are learned, grounded in early childhood educational theories, including Vygotsky and Piaget, and using play as the vehicle for planning, implementation, learning, assessment, and emphasizing Constructivist practice. Best practice techniques, including lesson plan and thematic unit planning, are demonstrated. This course includes a minimum of eight hours of observation in a preschool classroom. Prerequisites: ED150 Social & Philosophical Foundations of Education and ED205 Child Development. Prerequisites must be met with a minimum grade of "C".

### **ED204 Infant & Toddler Development** **Cr-3**

This course helps to synergize knowledge of total development from the neonatal stage to age three. These concepts are applied to develop appropriate strategies and care programs that are responsive and supportive of the young child and family. Information gained through observation of infants and toddlers, and through interviews with parents is collected and evaluated in terms of the impact of adult-child interactions and on activity planning. Programming problems and services to families are included. This course includes a minimum of fifteen hours of observation in an 8-week-old to 3-year-old classroom/daycare setting. Prerequisites: ED150 Social & Philosophical Foundations of Education and ED205 Child Development. Prerequisites must be met with a minimum grade of "C".

### **ED205 Child Development** **Cr-3**

This course examines children's physical, social, emotional, language, and cognitive development from pre-natal to age twelve. Topics include childhood development theories and research, the recognition and understanding of significant child behaviors, the role of parenting and culture, the role of the teacher, influence of peers, and play. Students must complete a 15-hour child observation in a daycare setting, observing both infants/toddlers and preschool children.

### **ED206 Language and Literacy in Childhood** **Cr-3**

This course studies acquisition of language and literacy from birth through age 8, including theories of acquisition, the components of language, development milestones, atypical development, and ESL. Methods are covered for teaching literacy to children from infants

through intermediate grades, including learning to read and write, phonics, whole language other techniques, and integrating literacy into the whole curriculum. Topics include children's literature and how it can be used in the classroom and curriculum. A minimum of 10 hours of observation is required, five in a Universal Pre-Kindergarten (UPK) classroom and five hours in a primary grade classroom. Prerequisites: ED150 Social & Philosophical Foundations of Education and ED205 Child Development. Prerequisites must be met with a minimum grade of "C".

### **ED207 Observation and Assessment in Early Childhood Environments** **Cr-3**

This course explores the guidelines for appropriate observation and assessment of young children, as well as how to apply numerous developmentally appropriate observation and assessment techniques commonly used in group care and educational settings. It examines the early childhood professional's role in sharing information gathered and in implementing practices that promote physically healthy/safe and emotionally secure environments. This course requires the student to complete a minimum of 30 hours of observation in early child care settings. Students concurrently enrolled in ED251 Educational Internship, will have the ED207 observation hours waived. Prerequisites: ED150 Social & Philosophical Foundations of Education; ED205 Child Development, ED201 Introduction to Early Childhood Education and ED203 Early Childhood Methods & Materials. Prerequisites must be met with a minimum grade of "C".

### **ED211 Introduction to Exceptionalities** **Cr-3**

This course provides an overview of the education of children and adolescents with exceptionalities, focusing on those with disabilities and those with giftedness. Topics include the historical, philosophical and legal foundations of special education and other exceptionalities and their prevalence, causes, and characteristics. Educational modifications, accommodations, and teaching strategies for general and specific classrooms are addressed. Current issues and trends educating children with exceptionalities are explored. A minimum of fifteen hours of observations in a special education setting must be completed. Prerequisites: ED150 Social & Philosophical Foundations of Education and ED205 Child Development or PY212 Adolescent Psychology. Prerequisites must be met with a minimum grade of "C".

### **ED251 Education Internship** **Cr-3**

This course provides the student with a field experience in an early childhood or primary grade classroom. Emphasis is placed on the special needs of young children in all-day care, including planning the daily program; promoting nutrition, health, and safety; involving parents; child guidance; observing and recording children's behavior; and meeting licensing regulations. The weekly seminar is used to discuss fieldwork experiences and teaching concepts and skills. A medical exam, fingerprinting, and Child Abuse Central Register clearance are usually required. Students must complete a minimum of 90 clock hours in a classroom setting in addition to a weekly seminar class. Prerequisites: A grade of C or better in the following courses: ED150 Social & Philosophical Foundations of Education; ED205 Child Development, ED201 Introduction to Early Childhood, and ED203 Early Childhood Methods & Materials. Corequisite: ED207 Observation and Assessment in Early Childhood Environments.

## **EI Educational Interpretation**

### **EI101 Introduction to Education and Educational Interpreting** **Cr-5**

This course provides an overview of the history and current status of education and educational interpreting throughout the United States. Content includes the role, practices, and skills of educators and educational interpreters in K-12 settings; philosophies of teaching,

learning and assessment; communication systems; pertinent laws and regulations; resources, information, and strategies for consumer awareness and education; administrative practices and personnel structure of school systems; assessment and management of educators and educational interpreters; and topics that concern educators and educational interpreters.

### **EI120 Processing Skills and Discourse Analysis** **Cr-4**

This course introduces the mental processing skills (pre-interpreting skills) of consecutive and simultaneous interpretation and an in-depth look at the interpreter as a bicultural/bilingual mediator. It includes an overview of the theoretical models of interpretation, skill development activities, and practice activities. Interpreting theory, visualization, listening and comprehension, shadowing, paraphrasing, abstracting, dual task training, text analysis, cloze skills, and translation are included. A focus is presented on the interpreters communicative competence. It includes a study of conversational exchanges in English and ASL. Prerequisite: EI101 Introduction to Education and Educational Interpreting with a grade of "C" or better. Corequisite: AL202 American Sign Language 4.

### **EI201 Introduction to Interpreting 1** **Cr-4**

This course develops the ability to produce equivalent messages from English into ASL and ASL into spoken English. It focuses on text and communication analysis, as well as an introduction to process models in both consecutive and simultaneous interpretation. Content includes development of the skill sets needed while interpreting, along with management strategies. Prerequisites: EI120 Processing Skills and Discourse Analysis with a grade of "C" or higher and AL202 American Sign Language 4.

### **EI205 Transliteration** **Cr-3**

This course introduces the task of sign language transliteration. It covers the ability to translate simultaneous from a spoken English message into an equivalent signed message while retaining English features. The focus is on transliterating in Pre-K-12th grade educational settings. Topics include analysis and interpretation of the macrostructure and microstructure of academic texts, transliteration of frozen texts, an introduction to team interpreting, and production of transliterations appropriate for contact language situations. Corequisite: EI250 Practical & Ethical Applications of Interpretation.

### **EI250 Practical and Ethical Applications of Interpretation** **Cr-3**

This course covers the underlying principles of the Registry of Interpreters for the Deaf (RID) Code of Ethics and application of the Code of Ethics to the various situations and settings in which sign language interpreters work. It explores how professional interpreters apply these principles in their daily work and how deaf consumers perceive the ethical role and function of interpreters. In addition to ethical considerations, etiquette and protocol for each setting are discussed. Settings include K-12, post-secondary, religious, medical, mental health, deaf-blind, performing arts, business and industry, and vocational rehabilitation.

### **EI251 Interpreting Practicum** **Cr-3**

EI251 Interpreting Practicum C-1 P-6 Cr-3 This course comprises a practicum placement under the immediate supervision of a professional interpreter who functions as the mentor, and the general supervision of the instructor. It involves activities such as observing the mentor and a variety of interpreters at work; preparing videotapes for mentor critique; interpreting under mentor supervision; interpreting independently and meeting weekly with the mentor to discuss the practicum experience. Weekly meetings share observations and experiences gained from the practicum placement. class discussions focus on linguistic issues in interpretation, ethical dilemmas, situational concerns, and problem-solving. This field experience requires a minimum of 90 hours.

Prerequisite: The following courses with a grade of C or better and with a GPA of 2.5: EI201 Introduction to Consecutive Interpreting; EI250 Practical and Ethical Applications of Interpretation; SO210 Deaf Culture and Community. Corequisite: EI205 Transliteration.

## EM Emergency Medical

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### **EM200 Emergency Medical Services/ Paramedic 1** **Cr-12**

Paramedic students will participate in classroom lecture, skills lab(s), and clinical training and education that prepares them to provide medically competent and correct advanced life support treatment of the critically ill and injured, using good medical judgment. Prerequisite: Current NYS Emergency Medicine Technician-Basic Certification.

### **EM201 Emergency Medical Services/ Paramedic Clinical & Field Internship 1** **Cr-6**

The paramedic student will participate in supervised field internship where continued instruction and on the job practical application of knowledge and skills attained in Emergency Medical Services/Paramedic 1 are practiced and evaluated under the guidance of Mohawk Valley Health System EMS Education Program field preceptors. Candidates will also participate in various clinical rotations such as the emergency department, IV team, morgue, and pre-hospital experience. Corequisite: EM200 Emergency Medical Services/Paramedic 1.

### **EM202 Emergency Medical Services/ Paramedic 2** **Cr-12**

Paramedic students will participate in classroom lecture, skills lab(s), and clinical training and education that prepares them to provide medically competent and correct advanced life support treatment of the critically ill and injured, using good medical judgment. This course includes ACLS, PALS, and PHTLS certifications. Prerequisites: EM200 Emergency Medical Services/Paramedic 1 EM201 Emergency Medical Services/Paramedic Clinical & Field Internship 1 Corequisite: EM203 Emergency Medical Services/Paramedic Clinical & Field Internship 2.

### **EM203 Emergency Medical Services/ Paramedic Clinical & Field Internship 2** **Cr-6**

The paramedic student will participate in supervised field internship where continued instruction and on the job practical application of knowledge and skills attained in Emergency Medical Services/Paramedic 1 and 2 and Emergency Medical Services/Paramedic Clinical & Field Internship 1 are practiced and evaluated under the guidance of Mohawk Valley Health System EMS Education Program field preceptors. Candidates will also participate in various clinical rotations such as the emergency department, medical surgical intensive care, pediatrics, labor and delivery, psychiatric, and pre-hospital experience. Prerequisites: EM200 Emergency Medical Services/Paramedic 1 and EM201 Emergency Medical Services/Paramedic Clinical & Field Internship 1. Corequisite: EM202 Emergency Medical Services/Paramedic 2.

## EN English

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### **EN001 EN101: ILS** **Cr-0**

Recitation supplements English: Composition lecture by reinforcing content in reading and writing, provides practical experiences, and introduces learning strategies.

### **EN002 CF112: ILS** **Cr-0**

This integrated learning support course stresses improvement of reading comprehension and vocabulary for college-level coursework. Prerequisite: Appropriate placement test result. Corequisite: CF 112: Critical Thinking and Reasoning

### **EN090 Basic Writing Skills** **Cr-0**

This composition course focuses on the organization and development of ideas, the subordination and coordination of sentences, and the practice of standard usage. Students develop skills in writing, revising, and editing paragraphs and short essays. Prerequisite: Appropriate score on placement test writing sample.

### **EN099 Introduction to College English** **Cr-0**

This composition course focuses on the organization and development of ideas, the subordination and coordination of sentences, and the practice of standard usage. Students develop skills in writing, revising, and editing paragraphs and short essays. Prerequisite: Appropriate score on placement test writing sample.

### **EN101 English 1: Composition** **Cr-3**

This course focuses on several kinds of writing-self-expressive, informative, and argumentative/persuasive, and others. A minimum of five essay compositions are required. The course emphasizes the composition of clear, correct, and effective prose required in a variety of professions and occupations. Prerequisites: Appropriate high school GPA or placement test score or EN090 Basic Writing Skills or SL116 ESL4: Advanced Composition or SL145 ESOL Advanced Composition

### **EN102 English 2: Ideas and Values in Literature** **Cr-3**

This course encourages a deeper understanding of human nature and the human condition through the study of ideas and values expressed in imaginative literature. Emphasis is placed on the use and development of critical thinking and language skills. Library-oriented research is required. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

### **EN105 English Composition for Speakers of Other Languages** **Cr-4**

This course is equivalent to EN101 English 1: Composition requirement for non-native English speakers. It focuses on self-expressive, informative, and argumentative/persuasive writing. Emphasis is placed on the composition of clear, correct, and effective prose required both in academic settings and in a variety of professions and occupations in American culture. Patterns of organization and development, communicative grammar and syntax, and the significant acquisition of vocabulary and idiom are stressed. Prerequisite: An appropriate placement test result, or successful completion of SL116 ESL4: Advanced Composition or SL145 ESOL Advanced Composition

### **EN110 Oral and Written Communication** **Cr-3**

This course covers the effective oral and written contexts of occupational communications. It includes practice in oral presentations, business letters, resumes, memos, instructional materials and reports, and visual aids. It is designed specifically for A.O.S. degree programs. Prerequisite: Appropriate high school GPA or placement test score or EN090 Basic Writing Skills or SL116 ESL4: Advanced Composition or SL145 ESOL Advanced Composition.

### **EN147 Report Writing** **Cr-3**

This course emphasizes the preparation of written reports, focusing on organization, format, language, and purpose. Reports based on the types written in the fields of business, industry, and sciences are prepared. Prerequisite: EN110 Oral & Written Communication.

**EN148 Modern Short Story****Cr-3**

This course traces the development of the modern short story from its origins in other story forms to the present. Emphasis is placed on recent and contemporary writers, with attention given to content, form, and style.

**EN149 Introduction to Poetry****Cr-3**

This course investigates the basic elements of poetry. It features poets from diverse backgrounds and focuses on form, imagery, figurative language, symbolism, allusion, and myths. Emphasis is on historical, philosophical, social, and psychological themes. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN150 Effective Speech****Cr-3**

This course is an introduction to public speaking. It emphasizes the fundamentals of preparing, organizing, supporting, and delivering the speech based on factual material. It includes topic selection, audience analysis, fact vs. opinion, outlining, supporting material, and visual support. Informative, demonstrative, and persuasive speeches are presented. Elements of interpersonal communication, logic, and persuasion are discussed. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

**EN151 Practical and Professional Oral Communication****Cr-3**

This course provides guidance and practice in types of oral presentations commonly used in business, industrial, and academic settings. It involves making and presenting of oral and visual material for participation in small conference and large audience situations. It emphasizes group dynamics and the importance of interpersonal communication techniques in the conference or meeting situation. Prerequisite: EN150 Effective Speech.

**EN152 Oral Interpretation****Cr-3**

This course involves the use of public speaking skills and techniques as an art form. It emphasizes the use of voice and body to interpret poems, passages from fiction, etc. in a public reading situation. Group readings of short plays or scenes from plays are included. This is highly recommended for students considering teaching, broadcasting, acting and/or interpretive arts. Prerequisite: EN150 Effective Speech or permission of the instructor.

**EN153 Practical and Professional Written Communications****Cr-3**

This course covers the skills required to communicate in the industrial, business, and technical settings. Emphasis is placed on the objective presentation of ideas and information. It includes the preparation of formal and informal reports, abstracts, summaries, and proposals. It covers practice in the coherent organization of ideas, stylistic conventions, standard language usage, and the design and decisions necessary for successful written communication. Prerequisites: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages and EN102 English 2: Ideas & Values of Literature.

**EN154 Persuasive Writing****Cr-3**

This course deals with the techniques of changing attitudes and opinions. It analyzes and provides practice in presentation of issues and evidence, methods of argumentation, and uses of emotion and other mechanisms. It examines research in influence factors, persuasibility, credibility, and the components of attitudes and opinions. Prerequisites: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages, and EN102 English 2: Ideas & Values of Literature.

**EN160 English Grammar and Usage****Cr-3**

This course improves the knowledge of basic English grammar, punctuation, vocabulary usage, and spelling. It is intended for those

who wish to apply this knowledge to their studies or work, to review material learned in earlier years, to prepare for a professional exam, or to understand the English language better.

**EN196 Journalism****Cr-3**

This course introduces American journalism, including electronic media. Lectures cover historical and operational aspects, while readings and discussions explore controversial issues surrounding the news media. Written assignments provide practice in news gathering and journalistic writing: news reporting, live coverage, headline and caption writing, sports writing, feature writing, and reviewing. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN197 Creative Writing****Cr-3**

This course introduces the techniques of fiction and poetry writing through a series of discussions, readings, and writing activities. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN198 Contemporary Poetry****Cr-3**

This course focuses on the poetry written in recent years, with emphasis on living poets. Topics include the basic elements of prosody, prominent poetic forms, and current trends such as language poetry and rap, slam, and other performance-based modes. Prerequisites: EN102 English 2: Ideas and Values in Literature

**EN240 Children's Literature****Cr-3**

This course is a survey of traditional and contemporary literature for children from birth through Grade 6. Literary models include picture books, traditional literature, poetry, fantasy, juvenile fiction and nonfiction, biography, and informational books. Prerequisite: EN102 English 2: Ideas & Values of Literature.

**EN241 Nineteenth-Century American Women's Fiction****Cr-3**

This course examines works of fiction by Nineteenth-Century American women, which have been traditionally excluded from the canon. It exercises a range of critical approaches to analyze novels and short stories. Topics include domesticity and the sphere of women, the voice of the mother and wife, political action and suffrage, the economics of writing and publishing, sentimentalism, and the link to contemporary society. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN248 American Literature 1****Cr-3**

This course is a survey of representative American writers from the Columbian Exchange to 1914, including the Colonial, Revolutionary, and Federal periods, as well as Romanticism and Realism. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN249 American Literature 2****Cr-3**

This course is a survey of representative American writers from 1914 to the present. The focus is on Modern, Post-Modern, and Contemporary movements in American Literature. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN255 World Literature 1****Cr-3**

This course is a survey of the world literature masterpieces in English translation from the ancient times through the Renaissance. Among the major writers and texts studied are Homer, Sophocles, Socrates, Plato, Aristotle, Dante, the Bhagwad Gita, the Jataka, Machiavelli, Rabelais, Cervantes, and Shakespeare. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN256 World Literature 2****Cr-3**

This course is a survey of world literature masterpieces in English translation from the Enlightenment through the Twentieth Century. Among the major writers studied are Swift, Pope, Voltaire, Rousseau,

Dostoevsky, Tolstoy, Kafka, Ibsen, Camus, Garcia Marquez, Achebe, Mishima, and Mann. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN265 African-American Literature: A Survey Cr-3**

This course provides an historical survey of the literature written by Americans of African descent from colonial times to the present. Emphasis is given to slave narratives, autobiographical writings, the Harlem Renaissance, and the development of the African- American novel. Prerequisites: EN102 English 2: Ideas & Values of Literature.

**EN271 British Literature 1 Cr-3**

This course is a survey of the British literary tradition through a study of selected masterworks in poetry and prose through the Eighteenth Century. Among the major writers studied are Chaucer, Spenser, Shakespeare, Donne, Milton, Dryden, Pope, Swift, and Johnson. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN272 British Literature 2 Cr-3**

This course is a survey of the British literary tradition through a study of selected masterworks in poetry and prose from the Romantic period through the Twentieth Century. Among the major writers studied are Wordsworth, Coleridge, Byron, Shelley, Keats, Tennyson, Browning, Arnold, Hardy, Shaw, Joyce, Yeats, and Eliot. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN275 Shakespeare Cr-3**

This course examines the life and work of William Shakespeare, the context in which Shakespeare was writing, and the importance of the theater during the English Renaissance. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN280 Dramatic Literature: The Classic Theatre Cr-3**

This course covers the classic period of drama from the ancient Greek theater of 400 B.C.E. to the neo-classic French theater of the Eighteenth Century. Major plays and playwrights from world theaters are discussed. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN281 Dramatic Literature: Modern Drama Cr-3**

This course explores the period of drama beginning in the Nineteenth Century and running to the mid-Twentieth Century. Major plays and playwrights from world theaters are discussed. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN282 Contemporary Drama Cr-3**

This course explores the period of drama beginning in the middle of the 20th century and introduces major plays and playwrights from world theaters since World War II. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**EN295 Mass Communications Cr-3**

This course introduces the history, theory, processes, effects, and issues of mass media in American Society. It explains how emerging technologies shape the way we communicate and affect us as individuals and societies. Topics include electronic, print, radio, television, film and digital media. Course Prerequisite: EN102: Ideas and Values in Literature

**EN297 Creative Writing 2 Cr-3**

This course helps to develop skills in writing short fiction, poetry, and creative non-fiction. A series of well-crafted exercises are completed with situations that focus on the same characters. Models for writing are the works of published authors and fellow course participants. Other activities may include conferences and collaborative evaluations. Prerequisites: EN197 Creative Writing.

# ES Engineering Science

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**ES151 Introduction to Engineering Cr-2**

This is an introductory course designed to meet the needs of Engineering Science students. The course provides a look at the various fields of engineering. Topics include, engineering majors and professions, computer literacy for engineers, working in a team setting, use of practical engineering tools, and engineering ethics.

**ES171 Engineering Graphics Cr-3.5**

The course introduces the basics of engineering drawing, descriptive geometry and graphical mathematics. Topics include freehand and instrumental techniques; orthographic projection of points, lines, planes and solids; auxiliary views and sectional views, working drawings; graphs and graphical calculus; functional and alignment charts; and, vector geometry.

**ES175 Engineering Science Design Cr-3**

This course covers project proposal writing, project costing, drawing preparation and project specification, group dynamics, and making a product. The course practicum may include assignment to a practicing engineer. Required for Engineering Science students after completing the equivalent of one full-time semester. Prerequisite: ES151 Introduction to Engineering.

**ES261 Mechanics of Materials Cr-3**

This calculus-based course covers normal and shear stress, materials properties and testing, torsional stress, normal and shear strains, stress concentration, bending stress, point stress, columns, failure theories, combined stresses, beam deflection, and strain gauge application and techniques. Prerequisites: PH261 Engineering Physics 1 and ES271 Engineering Statics.

**ES271 Engineering Statics Cr-3**

This calculus-based course uses the vector approach to deal with the three-dimensional resolution of forces and moments on rigid bodies in equilibrium, centroids, moments of inertia, and virtual work. Prerequisites: MA152 Calculus 2, and PH261 Engineering Physics 1.

**ES272 Engineering Dynamics Cr-3**

This calculus-based course uses the vector approach to deal with kinematics and kinetics of particles and rigid bodies. Prerequisites: MA253 Calculus 3 and ES271 Engineering Statics.

**ES281 Thermodynamics Cr-3**

This course addresses these topics: the zeroth, first and second laws of thermodynamics, thermodynamic equilibrium, thermodynamic properties, cycles, and applications to physical and chemical systems. Prerequisites: MA253 Calculus 3 and PH262 Engineering Physics 2.

**ES291 Electrical Circuits 1 Cr-4**

This course presents a calculus-based introduction to linear circuit analysis. Topics include electrical laws, quantities, and DC and AC circuits. Analysis techniques include mesh and nodal approaches, Thevenin, Norton, superposition, and source transformation, as well as phasor analysis. Balanced three-phase and transformer circuits are presented, analysis techniques are discussed, and computer-based circuit simulation tools are introduced. Corequisites: MA253 Calculus 3 and PH262 Engineering Physics 2.

**ES292 Electrical Circuits 2 Cr-3**

This course covers the complete response of first and second order electrical circuits using the classical solution of differential equations and the Laplace Transform methods. It analyzes circuits containing operational amplifiers. Diodes and their applications in rectifiers

and wave shaping circuits are studied. Simple transistor biasing is learned. Prerequisites: ES291 Electrical Circuits 1. Corequisite: MA260 Differential Equations.

## ET Electrical Technology

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### **ET101 Technical Electricity 1** **Cr-3**

This introductory course provides the basic knowledge and skills necessary within any electrical service technician program. It includes an in-depth study of electron theory, Ohm's Law, series and parallel circuits, as well as electrical energy and power relationships. Also included are methods of generation of electromotive force, electromagnetism, and motor principles and capacitance as these apply to DC circuits. Uses, construction, and calibration of voltmeters and ammeters are investigated. Corequisite: MA105 Technical Mathematics 1.

### **ET102 Technical Electricity 2** **Cr-3**

This course is a continuation of ET101 Technical Electricity 1. It reinforces previously acquired information and applies it to alternating current (AC) circuits. It investigates AC sine wave generation, mutual inductance inductive and capacitive reactance, and instantaneous values of voltage and current as well as real and apparent power. Uses, construction, and calibration of AC metering equipment are an integral part of this course. Practical application of each topic in both introductory courses are included in all laboratory experiments. Prerequisite: ET101 Technical Electricity 1.

### **ET103 Technical Electronics** **Cr-3.5**

This course investigates the fundamental properties of semiconductor materials and the utilization of these materials in devices such as diodes, bi-polar transistors, field effect transistors, thyristors, and common substrated integrated circuits. Experiments pertain to various rectifiers, voltage regulators and elementary amplifier circuits. Emphasis is placed on constructing, troubleshooting, modifying, and repairing those circuits considered fundamental to the operation of electronic equipment. Prerequisites: ET101 Technical Electricity 1 OR ET111 Electrical Systems and MA105 Technical Mathematics 1.

### **ET104 Systems Diagrams** **Cr-3**

This course covers the types, application, and use of electrical/electronic drawings. It includes schematic diagrams and symbols as well as the operation of electro-mechanical devices. The course differentiates between schematics and wiring diagrams. It develops the use of block diagrams, schematics, ladder-logic diagrams, wiring diagrams, assembly drawings, and bills of material. Topics include Programmable Logic Controllers (PLCs), Basic Relay PLC Instructions, PLC Timers and Counters, and PLC programs in the form of PLC ladder diagrams. Corequisite: ET102 Technical Electricity 2.

### **ET105 Computer Control Fundamentals** **Cr-2**

This introductory course covers the personal computer and its software for electrical service technicians. It includes a survey of fundamental personal computer hardware: the keyboard, microprocessor, mouse, disk drives, and printers. It introduces DOS and Windows operating systems and hands-on experience with software packages such as word processing and spreadsheets. It concludes with an introduction to BASIC, which is used to solve practical problems in the electrical/electronic field. (Fall Semester)

### **ET108 Refrigeration 1** **Cr-4**

This course covers basic physics as applied to refrigeration and air conditioning. Topics include flaring and soldering techniques, compressor construction, domestic refrigeration, and characteristics of automatic controls.

### **ET111 Electrical Systems** **Cr-4**

This course provides the basic knowledge and skills necessary within any electrical service technician program. Topics include electrical units and metric prefixes; Ohm's Law; series and parallel DC resistive circuits; electrical energy and power relationships in DC circuits; AC sine wave generation; mutual inductance; inductive and capacitive reactance; instantaneous values of voltage and current; and real and apparent power. Troubleshooting techniques and strategies to identify, localize, and correct malfunctions are examined. Co-requisite: MA105 Technical Mathematics 1

### **ET112 Electronics of Remotely Piloted Aircraft Systems** **Cr-3**

This course provides the student with basic knowledge of electrical theory. Topics include electron theory, Ohm's Law, series and parallel circuits, electrical energy and power relationships, electromagnetism, and DC & AC circuit theory as applied to remotely piloted aircraft vehicles.

### **ET115 Basic Electricity 1** **Cr-3**

This web-based course introduces basic electrical theory. The course is a study of electron theory, Ohm's Law, series and parallel circuits, electrical energy, power relationships, and electromagnetism. DC circuit theory is emphasized. This course does not satisfy the requirements for any courses in the Electrical Service Technician programs.

### **ET116 Basic Electricity 2** **Cr-3**

This web-based course is a continuation of ET115 Basic Electricity 1. It covers topics in AC electrical theory and investigates sine wave generation, mutual inductance, inductive and capacitive resistance, and instantaneous values of voltage and current as well as real and apparent power. This course does not satisfy the requirements for any courses in the Electrical Service Technician programs. Prerequisite: ET115 Basic Electricity 1.

### **ET123 Proper Refrigerant Usage** **Cr-3**

This course covers the impact of refrigerant on the global environment. Topics include ozone destruction, climate change, and EPA standards for the safe usage and handling of refrigerants. Additional topics include the Montreal Protocol and Clean Air Act of 1990.

### **ET127 Modern Industrial Practice** **Cr-3**

This course presents a broad introduction of topics related to industrial and manufacturing environments. Topics include safety and workplace hazard awareness, quality practices and measurement methods, modern manufacturing processes and production methods, and an awareness of maintenance procedures in manufacturing environments.

### **ET131 Electrical Machinery and Controls 1** **Cr-4**

This introductory course investigates the construction, operation, and control of electrical equipment installed and maintained by the various electrical trades. Topics pertain to direct current equipment and include shunt, series, and compound motors and generators, manual and automatic DC controllers, stepping motors, and DC meters. It emphasizes the practical aspects of magnetic flux, counter-electromotive force, armature and field currents, motor and generator loading conditions, and the relationship of these electrical characteristics to specific types of mechanical, electrical, and electronic controllers. Corequisite: ET102 Technical Electricity 2.

### **ET137 Sustainable Energy in the Developing World** **Cr-3**

This course provides a study abroad experience for students interested in sustainable energy system use in the developing world. Travel sites vary depending on site availability and projects. Renewable energy systems in the local region are studied in relation environmental, social, economic, and technological factors. Instructional lecture and

practicum sessions, site visits, and service learning activities during the study abroad period by local experts and other faculty are included. Periodic classroom and online seminar sessions during the semester are required for student presentations and further project development activities. Additional Study Abroad fees apply. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **ET141 Programmable Logic Controllers Cr-3**

This course is a study of the types, applications, and use of Programmable Logic Controllers (PLCs). It includes methods for developing PLC ladder programs, PLC installation, wiring, operation, maintenance, and troubleshooting. Experience is provided using Allen Bradley MicroLogix, SLC500, and Compactlogix PLCs, as well as the Logixpro PLC Simulator. Prerequisites: ET151 Circuits 1 and ET153 Introduction to Electronics or ET104 Systems Diagrams.

### **ET151 Circuits 1 Cr-4**

This course introduces the fundamentals of DC circuit analysis including the definition of various electrical quantities and their relationships. Topics include series and parallel circuits, Kirchhoff's Laws, Thevenin's Theorem, Norton, super positioning, maximum power transfer, and nodal and mesh analysis. Proper usage of laboratory equipment is stressed. Corequisites: ET153 Introduction to Electronics and MA121 Fundamentals of College Mathematics 1 or MA122 Fundamentals of College Mathematics 2, or MA125 College Algebra & Trigonometry, or MA150 Pre-calculus, or MA151 Calculus 1.

### **ET152 Circuits 2 Cr-4**

This course covers AC circuit analysis. Topics include Phasor representation of sinusoidal voltage, currents, impedance, power solution of RLC circuits, frequency response, and series and parallel resonance. Three phase power transformers and Fourier analysis of complex waveforms are introduced. The use of computer solutions in problem solving is included. Prerequisites: ET151 Circuits 1, or ET153 Introduction to Electronics, or ET154 Computer Programming. Corequisite: MA122 Fundamentals of College Mathematics 2, or MA150 Pre-calculus, or MA151 Calculus 1.

### **ET153 Introduction to Electronics Cr-2**

This course provides the basic theory of electrical and electronic devices with elementary applications, familiarization with laboratory test equipment, and construction of an electronic power supply project. It covers the practical aspects of resistors, capacitors, inductors, transformers and voltage regulators. Both AC and DC theory is discussed as well as the use of power supplies, function generators, digital multi-meters and the oscilloscope. The course concludes with the assembly and testing of a DC power supply. (Fall semester) Corequisites: ET151 Circuits or ET101 Technical Electricity 1.

### **ET154 Computer Programming Cr-2**

This course uses a high-level programming language and examines the available structure on a typical personal computer platform. Programming techniques and algorithm development are presented with real-world examples from the electrical field. The programming techniques may be used to solve practical problems in other EET courses. The course introduces the use of schematic capture and electrical circuit simulation software. This is a foundation course in computer programming for students in the Electrical Engineering Technology program. No previous programming knowledge is assumed. Corequisites: ET151 Circuits or ET101 Technical Electricity 1.

### **ET161 Linear Electronics Cr-3**

The theory and applications of modern transistors are introduced; both the bipolar junction transistor and the field effect transistor are examined. Applications include usage in small and large signal class A amplifiers, as well as in class B power amplifiers. Voltage control FET

applications are studied. Problem solving techniques involving digital computers are discussed. Corequisites: ET152 Circuits 2.

### **ET163 Audio Technology Cr-3**

Modern audio technology is introduced. Topics include basic acoustics, transducers such as microphones and loudspeakers, signal processing, and amplification systems. An introduction to digital audio is included as well as software/Internet applications. Corequisites: ET152 Circuits 2 or ET102 Technical Electricity 2 or ET111 Electrical Systems.

### **ET167 Introduction to Photovoltaics Cr-3**

This course introduces fundamental concepts in photovoltaics in applications related to electrical power generation. Topics include types of photovoltaic systems and applications, solar radiation and resource determination, site assessment, and units of measurement common to solar systems. Measurement and instrumentation equipment as well as related tools, including safety and personal protective equipment (PPE), are discussed. Solar electrical systems including solar panels, inverters, charge controllers, batteries, and balance of system components are presented, with relevant aspects of electrical and mechanical discussed. Fundamental concepts of system sizing, cost, and economic analysis are presented. Prerequisite: ET101 Technical Electricity 1 or ET151 Circuits 1 or ET111 Electrical Systems.

### **ET181 Digital Electronics 1 Cr-3**

This introductory course presents fundamental topics in digital systems. Topics include numbering systems and coding schemes used in digital logic; combinational logic devices at a functional level; concepts of Boolean algebra and logic analysis and methods for logic circuit simplification; and arithmetic circuits. Sequential circuits including latches and flip-flops are analyzed and their applications in basic counters and registers are presented. Corequisite: ET152 Circuits 2.

### **ET209 Refrigeration 2 Cr-5**

This course covers the components of refrigeration for commercial and industrial systems. It includes systems requirements and the application of components to develop built-up systems. Prerequisite: ET108 Refrigeration 1. (Fall semester)

### **ET220 Air Conditioning Principles Cr-4**

This course covers calculations of heat loss and gain based on residential and commercial levels. Topics include humidification; dehumidification; air mixture problems; and determination of U factors to enhance calculation accuracy. Additional topics include ventilation, exhaust loads and standards, and a working background in psychometrics. The course starts with simple heat properties of air and will progress to complex air mixture properties.

### **ET221 Air Conditioning Systems Cr-5**

This course introduces combustion techniques in oil and gas furnaces. It covers coil cells, stack controls, oil primary controls plus safety devices. Basic principles are applied to problem-solving in heat transfer. Types of systems involving residential and small commercial heating and air conditioning are covered. Split systems, hydronic systems, electric heat, heating and air conditioning controls, and package equipment are discussed along with heat pumps. Corequisites: ET108 Refrigeration 1.

### **ET222 Systems Design Cr-3**

This course covers refrigerant piping techniques and designs for commercial and industrial use. Refrigeration load calculating and equipment selection for commercial and industrial applications and proper air handling techniques are studied. Prerequisites: ET209 Refrigeration 2 and ET220 Air Conditioning Principles. (Spring semester)

**ET223 Transport Refrigeration****Cr-4**

This course covers the refrigerant and electrical controls used in transport refrigeration. Topics include problems unique to the industry and fundamental approaches to gasoline and diesel engine principles. Prerequisite: ET209 Refrigeration 2.

**ET224 Modern Hydronic Systems****Cr-3**

This course covers the design and installation of modern hydronic (water-based) heating and cooling systems in residential and small commercial buildings. Topics include hydronic heat sources, fluid flow-in pipes, circulators, terminal units, system sizing, distribution piping layout, controls, valve selection, expansion tanks, freeze proofing, and balancing. Co-requisite: ET220 Air Conditioning Principles

**ET226 HVAC Diagnostics****Cr-3**

This course covers diagnostic techniques for HVAC/R systems. Topics include commercial refrigeration and supermarket equipment. Students utilize computers and simulations to analyze, test, and repair gas, oil, and heat pump systems. Prerequisite: ET209 Refrigeration 2.

**ET230 AC Motors & Controls****Cr-5**

This course is intended for the heating, refrigeration, and air condition technicians. It provides HVAC students with theory and practicum in motors and controls, networking protocols, and automated building systems. The course has a blend of theory and practice suitable for vocational-technical students or industry practitioners who wish to upgrade their backgrounds. Electrical principles, components, meters, schematics, and systems are discussed and applied to modern small and large scale installations. Prerequisite: ET102 Technical Electricity 2.

**ET232 Electrical Machinery and Controls 2****Cr-4**

This course is designed to combine related information pertaining to AC machinery, electromechanical controllers, transducers, and electronic controls with the practical skills of equipment selection, installation, wiring, troubleshooting, and maintaining the machinery control systems currently used by industry. Topics include single and multiphase alternators, motors, transformers, and meters. Methods of machinery control include across-the-line starters, control relays, voltage and current transformers, limit switches, electronic switching, and speed or rotation sensors. Prerequisite: ET131 Electrical Machinery and Controls 1.

**ET233 Industrial Electronics****Cr-4**

This course is a study of electromechanical and electronic devices in the operation of industrial equipment and manufacturing processes. Emphasis is placed on the operating characteristics and applications of discrete components such as solid-state devices, thyristors, trigger devices, relays, timers, amplifiers, and transducers. Laboratory experiments use skills and knowledge to diagnose and repair malfunctions in moderately complicated automated equipment. Prerequisite: ET104 System Diagrams.

**ET234 Electrical Wiring and Codes 1****Cr-3**

This course is an introduction to the art of electrical wiring. Installation of electrical equipment provides the student with the opportunity to combine related information and manipulative skills with the practical aspects of wiring methods for complete electrical installations and systems. All temporary laboratory wiring is installed in compliance with the current National Electrical Code and provides experience in cable, conduit, surface raceway, and service entrance installations. Corequisite: ET111 Electrical Systems.

**ET235 Digital Logic****Cr-4**

This course provides an overview of the basic logic circuits inherent in all digital electronics applications. Topics include the various numbering systems, encoders and decoders used in digital systems, binary logic gates, flip-flops, counters, and shift registers with arithmetic circuits.

Memories and interfacing of digital and analog devices are also investigated. Experiments supporting related information are designed to provide maximum hands-on experience for students with no prior training in electronics. Corequisite: ET102 Technical Electricity 2.

**ET236 Commercial - Industrial Wiring and Codes****Cr-4**

This course provides an introduction to electrical wiring techniques with emphasis on design and layout of single and polyphase systems. Topics include diagnosis and repair of equipment malfunctions, interpretation of the National Electrical Code (NEC), estimation of project costs and progress, and installation techniques. Electrical systems studied include lighting, heating, ventilation, interior and exterior power distribution, and emergency energy conservation. Activities are focused on commercial and industrial electrical systems. Prerequisite: ET102 Technical Electricity 2.

**ET241 Programmable Logic Controllers II****Cr-3**

This course is a continuation of Programmable Logic Controllers (PLC). The nature of the PLC programming framework, as specified by the IEC 61131-3, is explored as well as other PLC systems and Advanced Programming Interfaces (API). Student design and build PLC motor control circuits and discuss troubleshooting techniques for PLC based systems. Topics include Proportional Integral Derivative (PID) controls, analog based circuits, motor controls circuits with Variable Frequency Drives (VFD), and Human Machine Interface (HMI). Prerequisite: ET141 Programmable Logic Controllers

**ET244 Electrical Wiring and Codes 2****Cr-4**

This course includes continuation of electrical techniques with emphasis on design and layout of single and polyphase systems. Skills to be developed include diagnosis and repair of equipment malfunctions, interpretation of the National Electrical Code, and estimates of project costs and progress coupled with installation techniques. Electrical systems studied include lighting, heating, ventilation, interior and exterior power distribution, and emergency energy conservation. Activities are focused on electrical systems. Prerequisite: ET111 Electrical Systems and ET234 Electrical Wiring and Codes 1.

**ET245 Microprocessor Technology****Cr-4**

This course applies knowledge of binary logic and circuits to elements, diagnostic procedures, and methods of operating and repairing microprocessor-based home and automated industrial equipment. Laboratory components include using personal computers and development systems to create microcontroller applications. An introduction to the architecture of the IBM 80x86 architecture is provided, and methods of assembly upgrading and maintaining PCs are presented. Prerequisites: ET235 Digital Logic.

**ET246 Industrial Computer Applications****Cr-5**

This course introduces hardware and software applications of the personal computer. It covers applications involving interfacing, digital Input/Output, analog Input/Output, data acquisition, and computer control of external electrical devices. Hardware components are studied for an understanding of computer systems, and BASIC is used to write input/output instructions. Experiments include wiring, testing, and debugging of a digital/analog circuit board and trainer. Prerequisite: ET233 Industrial Electronics (Spring semester)

**ET251 Mechatronics Systems****Cr-3**

This course provides hands-on experience in the control, maintenance, and simulation of a mechatronics system in a team environment to promote learning a broad array of job-ready troubleshooting skills in integrated technologies. Topics include system level programming/troubleshooting, application and calibration of hall-effect sensors, vacuum grippers, pneumatic robots, material feeding system, magnetic

sensors, photoelectric sensors, magnetic reed switches, limit switches, inductive sensor, capacitive sensors, ultrasonic sensor, synchronous belt drive, ball screw drives, part rejection/transfer, stepper motors, homing sensors, GMR (Giant Magnetoresistive) sensors, pneumatic screw feeders, pick and place assembly, gravity feeders, servo robotics, and parts transfer.

### **ET254 C Programming for Technology Cr-3**

This course details C programming language and how it is applied to problems in the technology field. A complete examination of the language is presented. Laboratory exercises are concerned with typical problems encountered in the electrical field. The focus is on desktop and embedded system development. Prerequisites: ET154 Computer Programming or equivalent. Corequisite: ET181 Digital Electronics 1.

### **ET262 Operational Amplifiers Cr-4**

This course includes further study of linear transistor circuits. Examination of frequency response and negative feedback are of prime importance. Operational amplifiers are discussed in great depth, including applications in summing, precision rectifying, voltage regulation, filtering, and other popular circuit applications. Usage of digital computers for analysis and design is discussed. Prerequisites: ET161 Linear Electronics.

### **ET265 Fiber Optics 1 Cr-3**

This introductory course in fiber optics covers the theory of light transmission and its limiting factors. It includes Modal and Chromatic Dispersion and signal attenuation along with how they impact on signal bandwidth. The various types of fiber optic cable are explored while noting their application characteristics. The course also covers the techniques for applying fiber optic connectors and splices as well as the use of light sources, light meters, fusion splicers and Optical Time Domain Reflectometers (OTDRs). Prerequisite: ET111 Electrical Systems.

### **ET274 Telecommunications Concepts Cr-4**

This course presents concepts related to the components, circuitry, and components of telecommunication systems. Topics include radio frequency amplifiers, filters, oscillators, measurement methods, modulation methods, coding and network models, transmission lines, antennas, and wave propagation. Prerequisite: ET161 Linear Electronics.

### **ET282 Digital Electronics 2 Cr-3**

This course covers the characteristics and applications of MSI circuits and devices such as decoders, encoders, multiplexers, and demultiplexers. The IC logic families are introduced at a circuit level. It emphasizes TTL devices along with ECL, I<sup>2</sup>L, MOS, and CMOS device characteristics. It includes semiconductor memory along with bipolar and MOS, static and dynamic, and ROM and RAM devices. Prerequisites: ET181 Digital Electronics 1 and ET161 Linear Electronics. (Fall semester)

### **ET283 Microprocessor Fundamentals Cr-4**

This course presents the microprocessor/microcontroller as the principal component of embedded systems, providing information on the architecture and programming model using the C language. C programming techniques for arithmetic and logic operations along with flow control are introduced. The use of functions, I/O instructions, and timers are presented with laboratory experiments. Corequisite: ET282 Digital Electronics 2.

### **ET284 Design & Layout Cr-3**

This capstone course provides for the application of electronic principles learned throughout the program. The course involves the steps necessary to take an electronic project from the design stage through to a final working project. Topics include typical company

structure, specification and schedule development, proper prototyping and troubleshooting procedures, and the method for designing printed circuit boards. These topics are applied to an actual electronic project that results in a functioning circuit board - a working prototype. A final formal report is completed, submitted and presented to the class. Prerequisites: ET283 Microprocessor Fundamentals.

### **ET285 Motors and Controls Cr-4**

This course introduces the theory, operation, applications, adjustment, and control of AC/DC motors using single & three phase electrical power. It covers a variety of discrete devices, transformers, DC and AC motors, AC motor frequency drives, industrial networking, and motion control using PLCs. The components and characteristics of control systems are studied. Prerequisite: ET152 Circuits 2.

### **ET289 Introduction to Semiconductor Manufacturing Cr-4**

This course introduces the processes, materials, and equipment used in the manufacture of semiconductor devices. Topics include atomic theory, crystal structure, and properties of semiconductor materials, and manufacturing processes. It covers wafer preparation, thermal oxidation, doping, lithography, thin film deposition, metrology, testing, and packaging. Cleanroom safety and protocol are discussed. Prerequisites: ET161 Linear Electronics, and ET181 Digital Electronics 1. Corequisites: CH141 General Chemistry 1, and MT129 Statistical Quality Control. (Fall semester)

### **ET290 Fundamentals of High Vacuum Technology Cr-3**

This course introduces vacuum fundamentals, units, and terminology commonly found in low pressure environments. Topics include pumps, gauges, hardware components, vacuum systems, leak detection methods, thin film deposition, and etch processes, including sputtering and evaporative deposition. Additional topics include aspects of current practice in RF and plasma systems. Prerequisite: ET161 Linear Electronics. Corequisite: CH141 General Chemistry 1.

### **ET291 Fundamentals of Highly Automated Manufacturing Systems Cr-3.5**

This course introduces basic principles of systems encountered by technicians employed in highly automated manufacturing environments. Topics include manufacturing sequences, remote access, cycle time, and production flow analysis. Gant charts and other planning tools, troubleshooting, and routine/preventative maintenance procedures are presented. Manufacturing execution systems and applications of statistical process control are discussed. Prerequisites: MA106 Technical Mathematics 2 or MA121 Fundamentals of College Mathematics 1.

## **EV Environmental Analysis**

### **EV100 General Industrial Safety Cr-3**

This introductory survey course covers a range of safety topics that address workplace needs. It provides training in safety responsibility and a basic understanding of the safety profession along with refreshers and updates. It presents the required topics of the 30-hours OSHA overview course in addition to topics reflective of industry standards. Areas covered include the OSHA Act and its related standards and clauses.

### **EV231 Water Analysis Cr-3**

This course is about water, including the quality of the natural water supply and the presence of pollutants. It stresses water chemistry and methods of analysis. A discussion of resources and needs is followed by data collection and evaluation. Analytical methods covered include

acidity/alkalinity, oxygen tests, nutrient analysis, and metal ion analysis.  
Prerequisite: CH246 Quantitative Analysis.

## FA Fine Arts

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### **FA100 Creativity in Art** **Cr-3**

This course introduces students to the fundamental principles of creativity with an emphasis on understanding historically significant art styles. Students explore various types of visual expression and apply creative problem-solving principles to both two-dimensional and three-dimensional projects in a variety of media. Students are introduced to the masters, practices, and careers of painting, sculpture, graphic arts, graphic design, animation, film, digital media, illustration, and photography.

### **FA101 General Drawing** **Cr-3**

This course introduces the tools, media, and theory used in the creation of a drawing. It includes the fundamentals of perspective, the theory of light and shade, and a survey of graphic representation. Projects are executed focusing on proportion and placement, volume and structure, and value with tone. Studio laboratory fee: \$20

### **FA103 Figure Drawing 1** **Cr-3**

This is an introductory course in drawing the human figure, focusing on the body's geometric and anatomical structure. Classroom work consists of drawing from the live model and plaster sculpture casts. A hierarchy of form, working from general to specific, is emphasized. Studio work is supplemented by lectures and critiques on the principles of accurate representation of the human form in pictorial space, including gesture, proportion, anatomy, and light on form. Studio laboratory fee: \$20

### **FA104 Figure Drawing 2** **Cr-3**

This intermediate course expands upon the technical skills and aesthetic concepts of FA103 Figure Drawing 1. More complex problems are addressed, including the foreshortened figure, the figure in space, multiple figure composition, extended poses, and large format drawing. Projects explore various drawing media, settings, lighting situations, and approaches to the figure. Classroom work consists of drawing from the live model, supplemented by lectures and critiques. Prerequisite: FA103 Figure Drawing 1. Studio laboratory fee: \$20

### **FA105 Foundation Design** **Cr-3**

This course introduces the visual elements and principles of design. Emphasis is placed on compositional concepts and the mastery of a visual language. Course projects explore a variety of media, processes, and techniques to provide a broad view of visual problem solving.

### **FA106 Color Theory** **Cr-3**

This course investigates the role of color in the organization of the two-dimensional surface, as well as its practical use in our visual environment. Emphasis is placed on understanding the mastery of value, hue, and temperature in physical and digital media. Students apply design composition principles, processes, and techniques to engage in creative problem solving.

### **FA108 Three-Dimensional Design** **Cr-3**

This course incorporates an examination of design principles and organization of willed form in space. Studio work focuses on the study of natural, fabricated, and architectonic forms, emphasizing construction, scale, and proportion. These principles are fundamental to architecture, industrial design, and sculpture. Studio laboratory fee: \$20

### **FA113 Figure Sculpture 1** **Cr-3**

This course introduces sculpture through the figure, using a variety of traditional and modern techniques. Topics include the elements of structure, mass, volume, anatomy, and proportion, as they combine to give form and meaning. These principles are fundamental to improving form conception in drawing, painting, and sculpture. This course provides an introduction to armature building, water clay techniques, and mold-making. Prerequisite: FA108 Three-Dimensional Design. Studio laboratory fee: \$20

### **FA201 Figure Sculpture 2** **Cr-3**

This course advances the study of sculpture through the figure, using a variety of traditional and modern techniques. Topics include the elements of scale, anatomy, proportion, gesture, and content as they combine to give form and meaning. This course provides instruction in advanced armature building, reclining and seated figure studies, and multi-piece and multi-material mold-making. Prerequisite: FA113 Figure Sculpture 1. Studio laboratory fee: \$20

### **FA202 Intermediate Drawing** **Cr-3**

This course further develops the visual vocabulary of general drawing. Emphasis is on the use of the basic elements of design such as composition, space, scale, and form resolution in various narrative and serial conceptual modes. Relying less on formal solutions to problems, classroom work focuses on the development of a relationship between form and content. A variety of materials and techniques are explored through projects that reference historical and contemporary approaches. Studio laboratory fee: \$20

### **FA209 Painting 1** **Cr-3**

This course provides an introduction to the technique of the oil painting medium and approaches to color mixing. Emphasis is given to the painting from the observed subject. A variety of subjects and techniques are explored through projects that reference historical and contemporary approaches. Studio laboratory fee: \$20

### **FA210 Digital Painting** **Cr-3**

This course focuses on introducing students to the concepts and tools of digital painting. Through a series of course exercises and projects students will study the foundations of design and illustration principles. Topics include digital sketching, flattening local color, lasso and gradient painting, principles of lighting and blend modes, textures, tool and brush settings. Course projects are designed to build software mastery and technical competency.

### **FA211 Printmaking 1** **Cr-3**

This course introduces traditional relief printmaking techniques such as wood cut, linoleum color reduction, and multiple plate relief printing. Other printmaking processes such as intaglio and screen-printing may also be investigated. Emphasis is placed on techniques, and then expanded to subject matter and content. Studio laboratory fee: \$20

### **FA212 Ceramics: Throwing Techniques** **Cr-3**

This course explores the basic principles of Wheel Thrown Pottery: centering clay, fundamentals of clay bodies, hand building skills, kiln firing, and glazing. Studio projects approach these principles through the study and practice of proportion, scale, pattern, texture, and color, as well as exploration of the expressive qualities of clay and throwing technique. Slide lectures relate these concepts to historical and contemporary ceramic form making. Prerequisite: FA108 Three-Dimensional Design. Studio laboratory fee: \$20

### **FA216 Sculpture: Metal Welding** **Cr-3**

This course is welded steel sculpture covers volumetric linear, spatial, kinetic, biomorphic, and geometric issues. Basic cutting and joining of oxyacetylene and electric arc techniques are used. Classroom work

focuses initially on techniques, and then derived meaning of subject matter as it relates to materials and content. Studio laboratory fee: \$20

**FA218 Painting 2** **Cr-3**  
This course expands on the concepts introduced in FA209 Painting 1. Oil painting techniques are further explored through course projects. Emphasis is given to the painting from the observed subject and then expanded to content and technique. Prerequisite: FA209 Painting 1. Studio laboratory fee: \$20

**FA220 Ceramics: Ceramic Sculpture and Design** **Cr-3**  
This course is an exploration of space, mass, volume, and surface, using clay as a medium and employing various firing techniques. It pursues development of expressive ideas through the use of formal elements. Slide lectures connect these concepts to historical and contemporary ceramic form making. Prerequisite: FA108 Three-Dimensional Design. Studio laboratory fee: \$20

**FA226 Printmaking 2** **Cr-3**  
This course introduces a selection of intaglio processes such as etching, dry point, mezzotint, and aquatint. In addition, the principles of some other printmaking techniques and practices are covered. The traditional approach of making multiple originals is investigated. Studio laboratory fee: \$20

**FA230 Jewelry Making** **Cr-3**  
This course introduces the techniques and materials used in jewelry making. Five specific projects involving forging, filing, sawing, lost wax casing, and basic stone setting develop appreciation of the three-dimensional aspects of jewelry design and fabrication. Prerequisite: FA108 Three-Dimensional Design. Studio laboratory fee: \$20

**FA240 Expressive Arts in America 1940-60s** **Cr-3**  
This course is an exploration of the Expressive Art movement as a reaction to global issues from 1940s through the 1960s. Topics include the integration of traditional fine arts, literature, music, and philosophy. Art is examined as a reaction to society and as societal voice through cross-discipline discovery. Students analyze artists and their craft through the examination of historical, biographical, psychological, social, and contemporary art. In addition, the influence of music, photography, and literature is examined. Prerequisite: Prerequisites: EN101 English 1: Composition.

## **FB Fabrication**

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**FB101 Introduction to Modeling and Fabrication** **Cr-3**  
This course introduces basic knowledge design and fabrication techniques used in industry. Techniques include solid modeling, CNC machining, laser engraving, routing and 3D printing. Students design and manufacture parts to be used in subsequent courses.

## **FD Fashion Design**

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**FD101 Apparel 1: Illustration** **Cr-3**  
This course covers the theory, role, scope, and practice of apparel illustration. Emphasis is placed on the ideation process of fashion illustration, understanding of the figure in relation to fashion, and accurately depicting draping regarding texture, color, and pattern. It further investigates approaches to design process and principles, layout method, flats, color theory, fabric selection, and conceptual ideation.

**FD102 Apparel 2: Construction** **Cr-3**  
This course covers the theory, role, scope, and practice of fashion construction. Emphasis is placed on cutting, sewing, and finishing techniques; fitting and alterations; assembly methods; and fabric selection. It further investigates approaches to apparel design principles, materials and textiles, patterns, and construction methods. Prerequisite: FD101 Apparel 1: Illustration

**FD103 Drapery and Fabrics** **Cr-3**  
This course covers the theory, role, scope, and practice of draping. Emphasis is placed on understanding fabric choices, advanced color theory, marking, pinning, placing and fitting, proportion, and textiles. It further investigates approaches to three-dimensional design prototyping for garment creation. Prerequisite: FD101 Apparel 1: Illustration

**FD201 Pattern Making** **Cr-3**  
This course covers the theory, role, scope, and practice of pattern making. Emphasis is placed on the design principles utilized in pattern making, the utilization of computer-aided design, understanding measurement, alterations, and contouring. It further investigates approaches to design interpretation for prototypes. Prerequisite: FD101 Apparel 1: Illustration

**FD202 Apparel 3: Design and Production** **Cr-3**  
This course covers the theory, role, scope, and practice of apparel design. Emphasis is placed on the development of design to production, researching fashion, and prototyping techniques. It further investigates advanced approaches to draping, concepting, and completing finished garments. Prerequisite: FD101 Apparel 1: Illustration

**FD203 Fashion Design Seminar** **Cr-3**  
This course covers the theory, role, scope, and practice of professional practices in the fashion industry. Emphasis is placed on fashion portfolio development, advanced fashion illustration, product development, apparel manufacturing, and entrepreneurship techniques. It further investigates approaches to production, distribution, and sales. Prerequisite: FD101 Apparel 1: Illustration

## **FL Foreign Language**

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**FL101 Elementary Arabic 1** **Cr-3**  
These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous instruction, or fewer than three years of instruction more than two years ago.

**FL102 Elementary Arabic 2** **Cr-3**  
These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: FL 101 or its equivalent, or permission from instructor

**FL111 Elementary Chinese 1** **Cr-3**  
These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous instruction, or fewer than three years of instruction more than two years ago.

**FL112 Elementary Chinese 2** **Cr-3**  
These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: FL111 or its equivalent, or permission from instructor

**FL141 Elementary Japanese 1****Cr-3**

These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous instruction, or fewer than three years of instruction more than two years ago.

**FL142 Elementary Japanese 2****Cr-3**

These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: FL141 or its equivalent, or permission from instructor

**FL151 Elementary Latin 1****Cr-3**

These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous instruction, or fewer than three years of instruction more than two years ago.

**FL152 Elementary Latin 2****Cr-3**

These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: FL 151 or its equivalent, or permission from instructor

**FL173 Elementary Russian 1****Cr-3**

These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous instruction, or fewer than three years of instruction more than two years ago.

**FL174 Elementary Russian 2****Cr-3**

These courses teach the fundamentals of the language, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: FL173 or its equivalent, or permission from instructor

**FL211 Intermediate Chinese 1****Cr-3**

These courses review selected grammatical features, with emphasis on oral and written competency at the intermediate level, supported by a study of cultural materials and further use of Chinese characters. Prerequisite: Successful completion of the elementary or review sequence, or three years of Chinese instruction fewer than two years ago with a grade of B or better.

**FL212 Intermediate Chinese 2****Cr-3**

These courses review selected grammatical features, with emphasis on oral and written competency at the intermediate level, supported by a study of cultural materials and further use of Chinese characters. Prerequisites: FL211 or its equivalent, or permission from instructor

**FL300 Advanced Study in Language****Cr-1**

These courses expand the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of instruction in which one year was Advanced Placement level.

## FM Facilities Management

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**FM101 New York State Public School Budgeting & Accounting****Cr-3**

This web-based course provides a basic understanding of NYS public school budgeting and accounting fundamentals, including financial

statements and cost and managerial relationships. An introduction to the regulatory authorities of public school accounting is included.

**FM105 Education Law for Facilities Management****Cr-3**

This web-based course emphasizes the understanding, analysis, and application of law to school districts and the management of their facilities. A broad conceptual basis is supplemented by an examination of case law, current articles, Federal and State statutes, and regulations and school district policy.

**FM161 Facility Blueprints****Cr-3**

This web-based course introduces construction and facility plans and blueprints necessary for a construction or maintenance project, including how to interpret information from plans and blueprints.

**FM180 Public Health & Safety in Schools****Cr-3**

This web-based course provides the rationale for an occupationally safe and healthy work environment in an educational facility. Skills include working effectively with school emergencies, safe internal and external facility environments, and safety inspections.

**FM244 Introduction to Green Building Technology****Cr-3**

This web-based course focuses on the principles of commercial construction using a sustainable methodology. Green building principles such as energy efficiency, environmental impacts, resource conservation, indoor air quality, renewable energy sources, and community issues are studied. National and International programs for design as well as building rating systems are investigated. Codes and building standards are reviewed with emphasis on the LEEDS standards. Current building ratings and standards are reviewed.

**FM246 Introduction to Alternative Energy Systems****Cr-3**

This course provides both professional engineers as well as engineering students interested in energy systems with essential knowledge of major energy technologies, including function, quantitative evaluation cost, and impact on the natural environment. Topics covered include fossil fuel combustion, carbon sequestration, nuclear energy, wind energy, and biofuels.

**FM247 Introduction to Geothermal Heating & Cooling****Cr-3**

This course addresses the theory of operation of residential and commercial geothermal systems. Topics include the science and principles of heat transfer, convection and infrared, and identification of the best system for application and budget. Market values, tax incentives, and rebates for these systems are discussed as well as system configurations, system sizing, and design.

**FM248 Introduction to Solar Voltaic Systems****Cr-3**

This course addresses the installation of residential and commercial photovoltaic (PV) systems. It covers the principles of PV electricity and its effective incorporation into stand alone or utility-connected electrical systems. Topics include solar radiation; array orientation; components and system configurations; system sizing and design; and mechanical and electrical installation.

## FP Fire Protection

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**FP101 Firefighter 1****Cr-5**

This course provides initial entry level training for firefighting personnel. It covers instruction and skill activity in these areas: fire department organization, firefighter safety, fire behavior, personal protective

equipment, self-contained breathing apparatus, fire extinguishers, ropes and knots, building searches, forcible entry, ground ladders, ventilation, hose practices, fire streams, loss control, tactics, vehicle suppression, water supply, fire cause determination, fire department communications, fire suppression systems, and fire prevention practices.

**FP102 Firefighter 2** **Cr-1.5**

This course completes the initial training for the entry level firefighter. It covers instruction and skill activity in these areas: incident command implementation, building materials, building collapse, special rescue, hydrant flow, hydrant operability, hose tools, foam operations, flammable liquid and gas emergencies, alarm and detection systems, pre-fire planning, and strategy and tactics.

**FP103 Incident Command System** **Cr-1.5**

This course provides training in the organization, terminology, and common responsibilities for personnel operating in the Incident Command System. It describes the principal features that constitute the Incident Command System (ICS). It also provides information for personnel who will operate at an emergency incident in a functional capacity.

**FP105 Hazardous Materials** **Cr-3.5**

This course prepares emergency responders to respond effectively and safely to stabilize a hazardous materials incident from both a defensive and offensive position. It includes information on recognizing and identifying potential hazardous materials and the classification of such material. It also includes material and skill sessions in these areas: chemistry and toxicology of materials, dangerous properties of materials, detection equipment, protective equipment, confinement and mitigation concepts, and decontamination procedures.

**FP107 Rescue Technician - Basic** **Cr-1.5**

This course provides a basic education and awareness of technical rope rescue operations, specifically low-angle rescue. Material includes instruction and skill sessions in ropes and knots, technical rescue management, understanding the risks associated, establishing rescue systems, and helicopter landing areas.

**FP108 Firefighter Assist and Search Operations** **Cr-1**

This course provides training in FAST operations. The material covered involves the following knowledge and skills: proper equipment and make-up of a FAST company. Rescue planning for a missing, lost or trapped firefighter, and removal techniques for rescuing trapped firefighters.

**FP109 Firefighter Survival** **Cr-0.5**

This course enables firefighters to recognize the type of events on the fire ground that contribute to firefighter disorientation and entrapment. The material covers the following knowledge and skills: techniques to stay oriented during the interior operations, and skills that will enable the firefighter to perform self-rescue should they become disoriented.

**FP110 Accident Victim Extrication** **Cr-0.5**

This course provides instruction and skill sessions in the safe technique of auto extrication. Material includes instruction and skills in these areas: scene safety, vehicle stabilization, rescue theory, rescue life cycle, and automotive design and technology.

**FP111 Truck Company Operations** **Cr-1.5**

This course provides instruction on using ladder company equipment. Material includes knowledge and skills in these areas: duties and responsibility of a ladder company, operating and maintaining tools and equipment, ventilation skills, forcible entry skills, search and rescue skills, and placement and operation of ground ladders.

**FP112 Apparatus Operations - Emergency Vehicle** **Cr-4**

This course provides vehicle operators with the understanding of the seriousness of vehicle operations. It also provides the necessary knowledge of the operation of aerial devices used in the fire service and in the operation of fire department pump apparatus. It includes information on the potential for tragedy, understanding of the responsibilities of emergency response vehicles, and skills in the operation and handling of emergency vehicles, as well as information and skills in classification and typing of aerial devices, plus their proper placement, setup, and stabilization. It also includes knowledge and skills concerning the responsibilities of pump operators, hydraulics and friction loss, pump controls and accessories, fire streams, pump operation from draft, and pump operation from fire hydrant.

**FP115 Code Enforcement Practices - Regulations, Administration, Enforcement** **Cr-4.5**

This course provides training for code enforcement officials and the practices necessary to carry out the jobs for local government. It also provides knowledge of basic principles of buildings that will endure the effect of fire and enable occupants to safely escape. Materials covered include issuing permits, inspection practices, record keeping, enforcement actions, and legal recourses as well as minimum construction standards, fire resistant construction techniques, notification and suppression systems, and proper planning. Historical aspect is covered to help show how codes are developed.

**FP116 Fire & Emergency Service Leadership & Safety** **Cr-3**

This course introduces the principles of fire safety and emergency service organizational leadership and safety emergency procedures. It also focuses on cultural changes with regard to fire and emergency services.

**FP119 Physical Training** **Cr-2**

This course prepares the fire recruit for passing the Candidate Physical Ability Test (CPAT). Recruits are required to attend physical training daily for one and a half hours. Training consists of muscular strength training, muscular endurance training, aerobic capacity training, and functional training specific to firefighting.

**FP120 Live Fire Training** **Cr-1**

This course exercises the culmination of knowledge gained during the entire training program. Students are given a firefighting assignment, and expected to accomplish it safely and effectively. This training is conducted at the department's live burn training tower in a safe environment following all guidelines set Fourth in NFPA 1403 and all applicable NYS standards.

**FP125 Basic Exterior Firefighting** **Cr-3**

This course provides initial entry level training for basic exterior firefighting operations. Topics include fire department organization, firefighter safety and health, firefighting skills and equipment, fire development and behavior, and building construction. In addition, this course prepares students to develop fire and life safety programs and to earn First Aid and CPR certification.

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## FR French

**FR101 Elementary French 1** **Cr-3**

This sequence teaches the fundamentals of French, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous French instruction, or fewer than three years of French instruction more than two years ago.

**FR102 Elementary French 2**

This sequence teaches the fundamentals of French, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: FR 101 or its equivalent, or permission from instructor.

**Cr-3****FR181 French for Business Personnel**

This course serves a vocational or professional language needs and provides insight into the ways another culture communicates and lives. It includes an introduction to pronunciation, grammatical structures, vocabulary, and culture. These elements are practiced by communicating in the language through listening and speaking. The use of the language lab may be required.

**Cr-3****FR191 Review French 1**

This sequence continues the development of grammar, cultural understanding, reading, writing, and conversation skills, and is presented at an accelerated pace. Prerequisite: Three years of French instruction more than two years ago with a grade of B or better.

**Cr-3****FR192 Review French 2**

This sequence continues the development of grammar, cultural understanding, reading, writing, and conversation skills, and is presented at an accelerated pace. Prerequisite: Three years of French instruction more than two years ago with a grade of B or better.

**Cr-3****FR201 Intermediate French 1**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of French instruction fewer than two years ago with a grade of B or better.

**Cr-3****FR202 Intermediate French 2**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of French instruction fewer than two years ago with a grade of B or better.

**Cr-3****FR301 Advanced French 1**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of French instruction in which one year was Advanced Placement level.

**Cr-3****FR302 Advanced French 2**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of French instruction in which one year was Advanced Placement level.

**Cr-3****FS Food Service****FS103 Culinary Fundamentals 1**

This course introduces the fundamentals of commercial food preparation, with an emphasis on the use and care of tools and equipment, basic knife skills, and mise en place. Topics include areas of food preparation such as weights, measures, portions, and conversions as well as an introduction to commercial kitchen cleaning. Emphasis is placed on operating in a safe and sanitary manner. Corequisite: FS150 Safety and Sanitation

**Cr-4****FS111 Food Preparation 1**

This course introduces the fundamentals of commercial food preparation, with an emphasis on the use and care of tools and equipment. Proper cooking methods including sautéing, frying, roasting, grilling, braising, broiling, poaching, stir frying and simmering are covered. Preparations include stocks, soups, sauces, vegetables, salads, starches, garnishes, sandwiches and pasta. Applied problems from the areas of food preparation, including weights, measures, portions and conversions are incorporated. Corequisite: FS150 Safety & Sanitation.

**Cr-4****FS112 Food Preparation 2**

This course introduces the terminology and techniques of commercial food preparation, including identification, selection and preparation of additional foods, such as eggs, poultry, fish, shellfish, beef, pork, lamb, veal, and smoked foods. Laboratories employ a variety of cooking methods using professional kitchen equipment. Emphasis is placed on operating in a safe and sanitary manner. Prerequisite: FS111 Food Preparation 1.

**Cr-3****FS121 Baking 1**

This course introduces the bakery shop preparation of cakes, cookies, muffins, sweet rolls, and breads, including the mixing of ingredients and shaping of dough. It covers the ingredients used in the preparation of baked goods, and the tools and equipment used in the bakery shop. Corequisite: FS150 Safety & Sanitation.

**Cr-4****FS131 Food, Beverage and Labor Cost Control**

This course introduces the methods, tools, and procedures used to control food, beverage, and labor costs in a food service organization. Emphasis is placed on each step in the flow of costs: purchasing, receiving, storage, issuing, preparation, portioning, service, and accounting for sales. Labor costs as they relate to the operation are discussed. Active problem solving and practical application are used to relate the principles learned to the food service industry. - Spring Semester Only.

**Cr-3****FS141 Purchasing for the Hospitality Industry**

This course introduces the purchasing function in food service organizations. Emphasis is placed on the methods of controlling costs while maintaining strict quality and quantity standards through the effective purchasing of goods and services. Included is the concept of specification development as it applies to the products and services used in the hospitality industry. Purchasing requirements for equipment, furniture, supplies, perishable foods, groceries, and convenience foods are covered.

**Cr-3****FS150 Safety and Sanitation**

This course is an introduction to the correct and hygienic procedures for food handling. General kitchen and bakery safety, pest management, and crisis management are discussed. Proper clothing, personal hygiene and fire safety regulations, as well as state and federal laws pertaining to the hospitality industry are stressed. This course includes a certification exam provided by the Educational Foundation of the National Restaurant Association.

**Cr-2****FS151 Culinary Math**

This course reviews the fundamental computation skills required for accurate food service preparation, operation and management. Topics covered include operations with whole numbers, fractions, decimals, percents, weights and measures, recipe menu pricing, inventories, food costs, basic break-even analysis, financial statement content, and employee related expenses.

**Cr-2**

<b>FS152 Culinary Nutrition</b>	<b>Cr-2</b>	cooperatively and collaboratively in a team environment to provide guests with an exemplary food service experience. This course covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite: FS153 Culinary Fundamentals 2
In this course, students study the needs of the human body and how nutrients and vitamins affect it. They research how food choices influence physical health and mood and how these choices in the food service and related industries can be used to promote a healthy lifestyle. Students learn information about nutrients (proteins, carbohydrates, fat, vitamins, water, and minerals) and their role in various diseases such as heart disease, diabetes, cancer, and osteoporosis.		
<b>FS153 Culinary Fundamentals 2</b>	<b>Cr-4</b>	<b>FS208 Classical Cakes and Tortes</b> <b>Cr-3</b>
This course builds upon the techniques in Culinary Fundamentals 1. Topics include proper cooking methods such as sautéing, frying, roasting, grilling, braising, broiling, poaching, and stir frying. Emphasis is placed on operating in a safe and sanitary manner. Laboratories employ a variety of cooking methods using professional kitchen equipment, commercial kitchen cleaning, and builds understanding for clean facilities. Prerequisite - FS103 Culinary Fundamentals 1		This course emphasizes the preparation of simple to complex filled and unfilled cakes and classical tortes. Topics include developing flavors, mixing methods, fillings, icings, custards, decorating, mousses, and glazing techniques. This course also covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite: FS121 Baking 1
<b>FS154 Garde Manger</b>	<b>Cr-3</b>	<b>FS209 Bakeshop Operations 1</b> <b>Cr-4</b>
The basics of garde manger production are learned through preparation of appetizers, condiments, and hors d'oeuvres. This course presents the basic principles of garde manger for hotel, restaurant, and catering establishments. Topics covered include charcuterie, hors d'oeuvre, canapes, egg cookery, salad, and cheese production. Prerequisite - FS103 Culinary Fundamentals 1		Students continue to develop their knowledge in a bakeshop setting where they participate in back-of-house operational responsibilities. Students develop more of their practical baking skills with a focus on preparation and service of a la carte menu items with an emphasis on menu costing, cost controls, proper food storage and creating daily specials. Emphasis is placed on working cooperatively and collaboratively in a team environment to provide guests with an exemplary experience. This course also covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite – FS205 Baking 2
<b>FS160 Dining Room Service</b>	<b>Cr-3</b>	<b>FS210 Food Preparation 3</b> <b>Cr-4</b>
This course introduces principles and techniques of table service. Emphasis is placed on table setting, buffet services, the various job categories in the dining room, different styles of service, and dining room arrangement and supplies. Students have an opportunity to work in each dining room position.		This course integrates knowledge of food and food preparation, equipment, techniques, methods, and practices learned in prerequisite courses. Acting as chef/managers, students plan menus, edit recipes, order food, assign tasks, analyze food cost, and offer multi-course meals to the public. Emphasis is placed on collaboration, food variety and presentation, and timeliness of presentation with strict adherence to safety and sanitation principles. Proper uniform is required. Prerequisite: FS112 Food Preparation 2.
<b>FS202 Menu &amp; Facilities Planning</b>	<b>Cr-3</b>	<b>FS213 Cake Decorating</b> <b>Cr-3</b>
This course provides the knowledge to design and organize a food service facility. Typical furniture and equipment organization with respect to space allocation in the facility are addressed. Topics include equipment purchasing, facilities engineering, and energy practices.		This course presents the use of decorating tools, icing, and spray guns. Emphasis is placed on the preparation of cakes for decorating, types of icings, and the art of flower making. Proper uniform is required.
<b>FS204 Banquet &amp; Catering Management</b>	<b>Cr-4</b>	<b>FS225 Advanced Bread Baking</b> <b>Cr-3</b>
This course emphasizes industry standards, practices, and terminology as they apply to off-premises and banquet catering. Menu planning, pricing, selling, food preparation, dining room service, staffing, and personnel management are practiced. Personnel management and collaborative techniques are used to offer multicourse meals to the public. Prerequisites: FS112 Food Preparation 2.		This course provides practical experience in the science of advanced bread baking. Use of different flours, ingredients, and dough processing using technical evaluation of the results is emphasized. Traditional approaches from around the world including artisan, whole grain, rye, sourdough, and laminated breads, as well as American and European baking practices are included. Proper uniform is required. Prerequisite: FS121 Baking 1 and FS150 Safety & Sanitation.
<b>FS205 Baking 2</b>	<b>Cr-4</b>	<b>FS230 Food Service Practicum</b> <b>Cr-3</b>
This course emphasizes commercial baking skills as they are developed and practiced. Danish pastry, puff pastry, sponge dough, yeast breads, tarts, choux pastry, and holiday specialties are prepared. Proper uniform is required. Prerequisite: FS121 Baking 1.		This course provides the student with on-the-job experience in a variety of food service settings. In addition to the minimum of 6 hours a week of field experience, participation in a weekly seminar is required as a forum to discuss work-
<b>FS206 American Regional Cuisine</b>	<b>Cr-3</b>	<b>FS233 Principles of Food Marketing</b> <b>Cr-3</b>
This course covers classical cooking skills associated with the preparation and service of American, international, and ethnic cuisines. Topics include classic and modern cooking trends and technologies. Cuisines revolving around American regional cuisines and ingredients are incorporated into lecture and lab. This course covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite: FS153 Culinary Fundamentals 2		This course provides a foundation in marketing, planning, segmentation, and positioning food items within a specific demographic. Food marketing tools such as menu pricing, advertising, sales promotion, merchandising, personal selling, and external advertising media are explored.
<b>FS207 Restaurant Operations 1</b>	<b>Cr-4</b>	<b>FS242 Beverage &amp; Bartending Management</b> <b>Cr-3</b>
In this course, students learn back-of-house operational responsibilities in a restaurant environment. Students continue the development of their practical culinary skills with a focus on preparation and service of a la carte menu items. Emphasis is placed on working		This course provides an overview of the alcoholic beverage industry, focusing on history and classification according to the characteristics of spirits, wines, and beer. Topics include mixology, lounge service, beverage control, and legal issues.

**FS245 Pastry Techniques and Practices** **Cr-4**  
This course covers commonly used pastry techniques and practices from the hotel and restaurant industries. Topics include spun sugar, chocolate tempering, mousse and Bavarian cream, petit four sec, pastillage, French pastry makeup, meringues and macaroons, ornamental sugar, and display work. Emphasis is placed on the development of merchandising practices. Proper uniform is required  
Prerequisite: FS121 Baking I.

**FS256 International Cuisine** **Cr-3**  
This course covers the study of classical cooking skills associated with the preparation and service of American, international, and ethnic cuisines. Topics include classic and modern cooking trends and technologies. Cuisines revolving around American regional, Old World, and New World are to be incorporated into lecture and lab. This course covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite - FS153 Culinary Fundamentals 2

**FS257 Restaurant Operations 2** **Cr-4**  
In this course, students continue to develop their knowledge in a restaurant setting where they participate in back-of-house operational responsibilities. Students develop more of their practical culinary skills with a focus on preparation and service of a la carte menu items with an emphasis on menu costing, cost controls, proper food storage and creating daily specials. Emphasis is placed on working cooperatively and collaboratively in a team environment to provide guests with an exemplary food service experience. This course covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite: FS207 Restaurant Operations 1

**FS258 Advanced Bakeshop** **Cr-3**  
This course is a continuation of FS205 Baking 2, covering preparation and presentation of individual hot and cold plated desserts, using a variety of traditional and modern plating techniques. Plate design, station organization, flavor, textural components, and portion control are emphasized. This course covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite: FS205 Baking 2

**FS259 Bakeshop Operations 2** **Cr-4**  
Students continue to develop their knowledge in a bakeshop setting where they participate in back-of-house operational responsibilities. Students develop more of their practical baking skills with a focus on preparation and service of a la carte menu items with an emphasis on menu costing, cost controls, proper food storage and creating daily specials. Emphasis is placed on working cooperatively and collaboratively in a team environment to provide guests with an exemplary experience. This course also covers commercial kitchen cleaning and builds understanding for clean facilities. Prerequisite: FS209 Bakeshop Operations 1

**FS260 Topics in Culinary Arts** **Cr-3**  
This course allows students to study future trends in the hospitality industry. Topics may include food trucks, Ghost Kitchens, farm to table, technology in food service, and sustainable agriculture or others based on trends in the culinary industry. Students work with local businesses to see these in practice. This course gives students the information they need to succeed in the ever-changing world of food service. Prerequisite: FS153 Culinary Fundamentals 2

**FS290 Food Service Internship** **Cr-3**  
Food Service Internship is a course designed to provide the student with on-the-job food service experience. The course allows the student to gain supervised practical experience working in a food service setting relating to the students' area of interest. In addition to the minimum of 150 hours of field experience for this course, participation in a weekly seminar is required as a forum to discuss work related situations and problems. Prerequisite: Matriculated in a Hospitality-related program,

2.5 grade point average, and 42 semester hours of earned credit OR permission of the Instructor

## FT Fitness Training

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**FT101 Personal Training 1** **Cr-3**  
This course introduces the basics behind the exercise physiology, kinesiology, biomechanics, psychology, demographics, and training program structure needed to implement a safe and effective personal training program. Group exercise includes yoga, Pilates, and aerobics.

**FT102 Personal Training 2** **Cr-3**  
Students learn techniques in motivation, communication, and behavioral modification related to the varying demographics in fitness training. Also students are profession abilities, responsibilities, and ethics of personal trainers. Successful students will be eligible to sit for the American Council of Exercise Certification of Personal Trainers. Prerequisite: FT101 Personal Training 1.

**FT202 Personal Training Practicum** **Cr-1**  
This practicum provides supervised, hands-on experience in MVCC's fitness center. Students will assess, design, and implement a personalized fitness plan for each client based on the client's goals.

## GA Game Art

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**GA101 Animation 1: Principles of Animation** **Cr-3**  
This course explores the principles of animation for 3D artists. Students demonstrate their understanding of the 12 principles of animation by animating a variety of 3D objects.

**GA102 Digital Sculpting** **Cr-3**  
This course introduces digital sculpting techniques for creating characters. Emphasis is placed on human anatomy as well as stylized character design. In addition to digital sculpture, this course investigates approaches to the creation of 2D art for anatomy and character design. Students develop the knowledge and technical skills necessary to translate 2D concept art into 3D digital sculpture.

**GA103 Texturing** **Cr-3**  
This course introduces the concepts of UV Unwrapping and Texturing to the polygonal modeling production pipeline. Students learn about model UVs, proper unwrapping techniques, texel density, repeating textures, and the creation of materials for use in a variety of contemporary 3D platforms.

**GA104 Modeling 1: Introduction to Modeling** **Cr-3**  
This course explores the principal techniques and methodologies involved with polygonal model creation utilized in industries such as 3D game art and animation. Topics include polygon modeling, working with references, proper project and file organization, and introductory rendering and lighting techniques. Projects focus on low-poly modeling, proper edge flow, creating dynamic silhouette and form, and the interpretation and construction of 3D models based off of 2D references.

**GA201 Modeling 2: Game Asset Creation** **Cr-3**  
This course explores the creation of complex 3D models for use as props in real-time 3D game engines. Students learn and demonstrate techniques and skill sets employed in current game art production pipelines. Projects focus on the representation of complex objects to stylized and simplified forms, realistic material creations, and the construction of game assets utilizing predetermined polycounts and

texture resolutions. Prerequisite: GA104 Modeling 1: Introduction to Modeling

### **GA202 Lighting and Rendering** **Cr-3**

This course introduces techniques and concepts in lighting and rendering for 3D content creation. Students learn how to set up and edit virtual cameras, create natural and artificial lighting solutions, and construct model turntables and environment walkthroughs. This course also covers ways to apply post processing effects to achieve enhanced pre-rendered and real-time output.

### **GA203 Character Creation** **Cr-3**

This course introduces modeling and character setup for 3D characters. Various modeling and character setup techniques are used to prepare animation production-ready characters. Emphasis is placed on constructing characters that include proper mesh topology, UVs, textures, and rigging. Prerequisites: GA103 Digital Sculpting and GA104 Modeling 1

### **GA204 Modeling 3: Game Environment Creation** **Cr-3**

This course explores the creation of interactive 3D game environments using real-time game engines. Students design, model, texture, and assemble custom game levels utilizing current industry leading game engine software. Prerequisites: GA201 Game Asset Production

### **GA205 Game Art Seminar** **Cr-3**

This course prepares students for entry into the field of Game Art as practicing professionals through the creation of capstone projects that encompass the skills inherent in the curriculum. Projects are customized by preference and requirements, and additional works may be introduced through direction or proposal. Career materials such as a resume, cover letter, and portfolio are developed. Prerequisites: GA201 Game Asset Production, and GA203 Character Creation

### **GA206 Applied 3D Technologies** **Cr-3**

This course covers the theory, role, scope, and practice of emerging 3D technologies for digital animation students. Emphasis is placed on creating projects using 3D printing, photogrammetry, virtual reality, and other technologies relevant to 3D content creation. This course investigates approaches to tool and material use, utilization of software, interfacing with 3D printers, and finishing techniques for 3D prints. Prerequisites: GA203 Character Creation

## **GC Graphic Communication**

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### **GC244 Topics in Art History** **Cr-3**

This course is a discussion and exposition of specific areas and subjects in art history. It presents information on the cultural impact, artistic value, and historic significance of art movements and developments. Prerequisite: EN101 English 1: Composition.

## **GD Graphic Design**

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### **GD110 Digital Design** **Cr-3**

This course introduces the principles, techniques, and technologies used to produce graphic design on the computer. The visual elements and language of graphic design are taught through the demonstration and mastery of programs and problem-solving methods. It includes becoming technically proficient in the use of software, learning the methodology of graphic design, and demonstrating problem-solving ability.

### **GD121 Digital Typography** **Cr-3**

This course covers the fundamentals of typesetting and typography. It includes a study of the development of type designs, typesetting methods, type measurement, and page layout. Computers are used to prepare multi-color mechanicals while becoming familiar with one or more software programs appropriate for typesetting and page construction.

### **GD145 Digital Applications 1** **Cr-3**

This course introduces contemporary text manipulation, digital imaging, and digital illustration software. Students produce projects demonstrating their knowledge of both the software and the interfaces between page layout, raster graphics, and vector graphics. No previous software knowledge is required.

### **GD146 Digital Applications 2** **Cr-3**

This advanced course integrates contemporary text manipulation, digital imaging, and digital illustration software. Students complete industry standard projects demonstrating mastery of software. Prerequisite: GD 145 Digital Applications 1.

### **GD198 Graphic Design 1: Fundamentals** **Cr-3**

This course covers the fundamentals of combining typography and image. It includes a study in the development of methods and practices that leads to solid visual solutions. Problem solving methodologies are implemented to explore the marriage of typography and image. Terminology and creative standards are discussed and put into practice. Several creative methods, both traditional and digital, are explored to develop a strong understanding of the creative process and its impact on effective communication.

### **GD199 Graphic Design 2: Advanced Design Studio** **Cr-3**

This course expands on the practices and theories of the creative design practice. Students build on the topics discussed and implemented in GD198. Understanding and application of current software is expected in this intermediate course to achieve professional results. Traditional and digital problem-solving techniques will be explored within the creative studio environment. Prerequisite: GD198 Graphic Design 1: Fundamentals

### **GD218 Graphic Design Seminar** **Cr-3**

This course prepares for entry into graphic design as a practicing professional. Emphasis is placed on the preparation of resumes and portfolios for professional presentation. It augments the ability to solve advanced graphic design problems in corporate identity.

### **GD221 Typography 1** **Cr-3**

This course explores visual problem solving as it relates to publication design. Students apply design principles and practice to various formats using the printed page. Students are introduced to the typographic grid and practice its application in the design process.

### **GD222 Typography 2** **Cr-3**

This course explores advanced visual typographic problem solving as it relates to print design. Students apply advanced design principles and practice as they prepare to create a professional portfolio. Advanced understanding and application of the typographic grid is applied to problems in the design process. Prerequisite: GD221 Typography 1.

### **GD297 Graphic Design 3: Design Systems** **Cr-3**

This is an advanced course in the use of digital software to generate professional-level and advanced graphic designs. Research and critical thinking are applied to various subject matter to help the student establish a uniform problem-solving method for creative success. Students are expected to apply knowledge and skills from Fundamental

and Advanced Design Studio. Prerequisite: GD199 Graphic Design 2: Advanced Design Studio

**GD298 Graphic Design 4: Social Media and Web** **Cr-3**

This course is an introduction to visual communication within today's digital platforms. Students are introduced to the application of graphic design principles in a variety of web and social media platforms. Prerequisite: GD297 Graphic Design 3: Design Systems

**GD299 Graphic Design Portfolio Workshop** **Cr-3**

This course prepares students for entry into the graphic design profession utilizing the breadth of work created within the Graphic Design curriculum. Emphasis is placed on the preparation of multiple portfolios (traditional and digital) for academic advancement or a lifelong career as a Graphic Designer. Prerequisite: GD298 Graphic Design 4: Social Media and Web

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## GE Geography

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**GE101 Essentials of World Geography** **Cr-3**

This course introduces the geographical and demographic attributes of the world, such as environment, cultural differences, ethnic make-up, and diversity. Emphasis is placed on developing a more global outlook on the emerging world community.

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## GL Geology

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**GL100 Introduction to Earth Science** **Cr-4**

This course is intended for non-science major students. It provides an introduction to the primary components of Earth science: oceanography, meteorology, geology, and astronomy.

**GL101 Physical Geology** **Cr-4**

This course explores the composition and formation of minerals and rocks that make up the Earth. Additionally, the primary surface and subsurface properties that continually shape the Earth are discussed. In the laboratory, the common rock-forming minerals as well as igneous, sedimentary, and metamorphic rocks are examined. Additionally, the concepts of surface and groundwater flow are discussed as well as topographic map interpretation and construction. Field trips may be taken during laboratory periods.

**GL102 Historical Geology** **Cr-4**

This course explores the physical and biological aspects of the Earth's dynamic past over the last 4.6 billion years of its existence. Emphasis is placed on the geologic time scale, the concepts of physical and biological evolution, and plate tectonics. Laboratory topics include fossilization and taphonomy as well as the biological evolution and diversity of the Earth's organisms through identification and examination of fossil specimens. Field trips may be taken during laboratory periods. An end-of-semester visit to the American Museum of Natural History in Manhattan is encouraged. Prerequisite: GL101 Physical Geology.

**GL201 Introduction to Field Geology** **Cr-2**

This course provides students the opportunity to experience various aspects of field geology. It consists of two full weeks of geology immersion with an additional week of travel to and from Colorado and New Mexico. Students work in the field with topographic maps for navigation and observation purposes. Geologic features are identified and background knowledge is applied to explain the development and formation of said geologic features. Full days are spent in the field as

the students hike through changing geology constantly applying their knowledge along the way. Prerequisite: GL101 Physical Geology

**GL202 Earth Science for Childhood Education Majors** **Cr-4**

This course is an exploration of Earth Science for students enrolled in the SUNY Oneonta Childhood Education transfer program. Instruction emphasizes learning through inquiry. Content is consistent with the core ideas and learning outcomes prescribed by the Earth and Space Sciences (ESS) core standards, grades 1-6, of the Next Generation Science Standards (NGSS), and the National Science Teachers' Association (NSTA). Lecture along with individual and collaborative laboratory activities illustrate various Earth and planetary science phenomena and topics. (Spring only offering).

**GL203 Topics in Geology: A Tectonic History of North America** **Cr-4**

This course explores the orogenic history of the earth and the tectonic events that shaped the planet, North America, and a selected focus locality in the United States. The laboratory portion of this course includes an embedded, post-semester 18 day field work experience at selected sites. The laboratory portion of this course involves rigorous physical activity. Please see the "course policies" for further discussion of this activity and accessibility. Topics include orogenic uplift, subduction mechanics, island arc formation, tectonism, primary sedimentary features, deformation processes, erosional features, and depositional environments. This course has a lab fee to cover the costs associated with travel. Prerequisite: GL 101 Physical Geology Corequisite: PE 151 Personal Fitness.

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## GR German

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**GR101 Elementary German 1** **Cr-3**

This sequence teaches the fundamentals of German, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous German instruction, or fewer than three years of German instruction more than two years ago.

**GR102 Elementary German 2** **Cr-3**

This sequence teaches the fundamentals of German, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: GR 101 or its equivalent, or permission from instruction

**GR201 Intermediate German 1** **Cr-3**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of German instruction fewer than two years ago with a grade of B or better.

**GR202 Intermediate German 2** **Cr-3**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of German instruction fewer than two years ago with a grade of B or better.

**GR301 Advanced German 1** **Cr-3**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of German instruction in which one year was Advanced Placement level.

### **GR302 Advanced German 2**

**Cr-3**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of German instruction in which one year was Advanced Placement level.

## **GT Graphic Technology**

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### **GT122 Digital Prepress**

**Cr-3**

This course introduces prepress procedures that include document layout on the desktop computer, digital image assembly, planning and preparation for production, and printing output procedures. It provides practical, hands-on experience with equipment, materials and knowledge used in the industry and in subsequent courses. Prerequisite: GD121 Digital Typography.

### **GT123 Introduction to Offset Presswork**

**Cr-3**

This course provides the opportunity to learn basic skills of offset presswork sufficient for entry-level jobs. It covers the general capabilities and characteristics of the offset press. Essential press components such as cylinders, inks, dampeners, feeders and delivery systems are stressed. It includes the fundamentals of negative stripping and platemaking using additive and subtractive plates. Prerequisite: GD121 Digital Typography.

### **GT124 Commercial Screen Printing**

**Cr-3**

This course covers screen printing production, including the selection and preparation of materials, printer set up, printer operation, and troubleshooting as well as other materials, information, and equipment necessary to produce jobs. A desktop system is used to prepare artwork for production.

### **GT125 Dye Sublimation and Vinyl Graphics**

**Cr-3**

In this course, students utilize computer software to design and produce graphic images, typesetting, and color separation. Finished projects represent the type of work produced in the graphic arts industry, including multi-color projects containing a wide variety of graphic images both photographic and computer-generated.

### **GT221 Prepress Procedures**

**Cr-3**

This course covers the design and production of projects using computer software for the creation of graphic images, typesetting, and color separation. Corequisite: GT122 Digital Prepress.

### **GT222 Printing Production**

**Cr-3**

This course concentrates on production procedures pertaining to offset lithography. It provides experience in the operation of printing presses and the creation and reproduction of projects through hands-on experience with available laboratory equipment. Professional practices are discussed and emphasized. The student portfolio is examined, discussed, and strengthened throughout the course. Prerequisite: GT221 Prepress Procedures.

## **HC Health Care**

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### **HC100 Introduction to Health Care**

**Cr-3**

This course introduces the field of healthcare for people interested in the field. Topics include an introduction to the healthcare delivery system, a brief historical overview of U.S. healthcare, healthcare settings and programs, members of the healthcare delivery team, roles of healthcare professionals, legal and professional ethics, healthcare organizations and agencies, medical record content, risk management, continuous

quality improvement, epidemiology (morbidity and mortality), and interpersonal communication skills.

## **HI History**

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### **HI101 History of Civilization 1**

**Cr-3**

This course introduces the nature and study of history, and covers the emergence and development of Eurasian civilization to about 1500 A.D. in the Near East, India, China, Europe, the Western Hemisphere, and Africa. Attention is given to religion in these civilizations and on the rise of the West to a position of world power during the Middle Ages.

### **HI102 History of Civilization 2**

**Cr-3**

This course is concerned with civilizations and their influences on each other in the modern world. It traces the rise of the West to a position of world dominance and its impact on non-Western societies. Emphasis is placed on the major forces that have shaped the contemporary world - industrialization, urbanization, nationalism, militarism, imperialism, democracy, and communism.

### **HI103 History of Western Civilization: Early Civilization to 1453**

**Cr-3**

The course traces development of Western Civilization from its Greek beginnings to the fall of Constantinople in 1453. Beginning with the Greek experience, Western Civilization developed in uniquely different ways from the rest of the civilized world. Patterns of Western thought led to the emergence of ideals such as the dignity and rights of man, free expression, social inclusion, and equal opportunity. The influence of Western forms of political and economic organizations on the modern world is examined.

### **HI104 History of Western Civilization: 1453 to Present**

**Cr-3**

This course is a continuation of the history of Western Civilization, beginning with the Renaissance and continuing to the present. It investigates the philosophical, international, political, economic, and social movements that dominated events leading up to the present time. It examines the reasons and motivations behind the events and perspectives of modern Western Civilization.

### **HI111 American History to 1865**

**Cr-3**

This survey course provides an introduction to American history as well as a deeper understanding of how its geography, people, institutions, and culture interact to define the American experience. It begins with Pre-Contact Societies and concludes with the end of the Civil War.

### **HI112 American History 1865-Present**

**Cr-3**

This course continues to survey the development of the American story from an agricultural, frontier society to an urban, industrial nation. Emphasis is placed on the economic revolution of the post-Civil War era, its social, political, and military aspects, and the emergence of America as a world leader. It begins with Reconstruction and concludes with the present.

### **HI113 The United States in Vietnam**

**Cr-3**

This survey course traces the American involvement in Vietnam from the end of World War II through the defeat of the Republic of South Vietnam. It develops an understanding of the events, conditions, and policies that moved the United States from a position of little involvement and interest in 1945 to a national commitment to the survival of an independent South Vietnam.

### **HI214 New York State History**

**Cr-3**

This course provides a survey of significant political, social, economic trends, and institutions in New York State from early settlement to the

present. It gives a geographical and historical understanding of the State as well as how New York became the Empire State, molding its own unique identity while playing a major role in shaping and influencing the nation and the world. Attention to the changing pattern of land holding, the development of a democratic commonwealth, urbanism, immigration, industrialism, political feuds, and political factions are addressed along with local history.

## HM Health Information Management

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### HM100 Medical Terminology for Health Professionals Cr-3

This course includes a study of the language of medicine, including roots, prefixes and suffixes and the proper pronunciation and spelling of medical terms. All body systems and functions, including the structure, meaning, and use of medical terms related to diseases and operations of the human body are covered. An introduction to pharmacology (medications) is included. (Online Only)

### HM101 Health Information Management Introductory Concepts Cr-3

This course includes a study of the health information management profession, functions, technologies, and purposes; health care delivery systems; health record content and documentation; data management, governance, privacy, and security; health law, including release of information processing; health information technologies; and healthcare information, including the health information exchange. (Online Only)

### HM120 Pathophysiology and Pharmacology Cr-3

This course covers pathophysiological, pharmacological, therapeutic, and diagnostic aspects of medicine. It includes concepts and medical word components for body systems and disorders encountered in health care. Pathophysiology of the normal body systems is covered. Topics include pharmacological agents, diagnostic tests and interventions, pharmacological intervention selection, and value of laboratory tests. (Online Only) Prerequisites: BI110 Survey of Anatomy and Physiology and HM100 Medical Terminology for Health Professionals.

### HM121 ICD-10-CM and ICD-10-PCS Coding Cr-4

This course includes a study of the ICD-10-CM and ICD-10-PCS clinical classification systems and the inpatient prospective payment system (IPPS), which utilizes Medicare-severity diagnosis-related groups (MS-DRGs). Topics covered include the assignment of ICD-10-CM and ICD-10-PCS codes according to the Centers for Medicare and Medicaid Services (CMS) official coding guidelines, assignment of DRGs and MS-DRGs, encoder software and references (e.g., AHA Coding Clinic), accuracy of coding and DRG assignment, and physician query process. (Online Only) Prerequisites: HM100 Medical Terminology for Health Professionals, and HM101 Health Information Management Introductory Concepts. Corequisites: HM120 Pathophysiology and Pharmacology.

### HM122 Legal and Ethical Aspects of Health Information Management Cr-3

This course introduces the legal and ethical aspects of health information management with an emphasis on civil law and how health care settings are affected by law and non-governmental rulemaking bodies. Topics include the general study of law and an overview of ethics. (Online Only) Prerequisite: HM101 Health Information Management Introductory Concepts.

### HM201 CPT and HCPCS Level II Coding Cr-3

This course is a study of the CPT and HCPCS level II coding systems and outpatient and physician office payment methodologies. Topics covered include assignment of CPT codes according to coding guidelines, HCPCS level II coding, ambulatory payment classifications, accuracy of coding and APC assignment, use of encoders and references, accuracy of computer-assisted coding assignment, and physician query process. (Online Only) Prerequisites: BI110 Survey of Human Anatomy and Physiology, and HM121 ICD-10-CM and ICD-10-PCS Coding.

### HM202 Health Data and Quality Management Cr-3

This course includes a study of health care information requirements and standards, hospital and vital statistics, data quality and integrity, data analytics, quality management, and performance improvement. (Online Only) Prerequisites: HM121 ICD-10-CM and ICD-10-PCS Coding, HM122 Legal and Ethical Aspects of Health Information Management.

### HM203 Electronic Health Record Management Cr-3

This course includes a study of health information technologies, information management strategic planning, analytics and decision support, consumer informatics, health information exchange, information integrity and data quality, and enterprise information management. (Online Only) Prerequisite: HM101 Health Information Management Introductory Concepts.

### HM204 Alternate Care Health Information Management Cr-3

This course provides a comparative analysis of HIM practices and information management across the spectrum of health care settings. (Online Only) Prerequisite: HM121 ICD-10-CM and ICD-10-PCS Coding. Corequisite: HM201 CPT and HCPCS Level II Coding.

### HM220 Health Information Management Leadership Cr-3

This course includes a study of health information management leadership. Topics include leadership roles, change management, work design and process improvement, human resources management, training and development, strategic and organizational management, financial management, ethics, project management, vendor/contract management, and enterprise information management. (Online Only) Prerequisites: HM202 Health Data and Quality Management and HM203 Electronic Health Record Management.

### HM221 Reimbursement Methodologies Cr-3

This course includes a study of classification and coding systems, health information technologies, the revenue cycle and reimbursement, coding compliance, and clinical documentation improvement. (Online Only) Prerequisite: HM201 CPT and HCPCS Level II Coding.

### HM230 HIT Professional Practice Experience Cr-3

This professional practice experience includes online laboratory assignments and projects and the completion of externally supervised activities in the health information department of a health care agency with adequate facilities to provide varied work opportunities. Students complete externally supervised activities under the supervision of a qualified Registered Health Information Administrator, Registered Health Information Technician, or other qualified personnel to whom they are assigned. The professional practice experience is designed to enable students to obtain actual work experience in health care agencies. Students will complete a minimum of 100 hours externally supervised activities, which can be completed on a full-time basis or part-time basis. Prerequisites: HM201 CPT and HCPCS Level II Coding, HM202 Health Data and Quality Management, HM203 Electronic Health Record Management, and HM204 Alternate Care Health Information

Management. Corequisites: HM220 Health Information Management Leadership and HM221 Reimbursement Methodologies.

### **HM231 Health Informatics & Data Analytics** **Cr-3**

This course provides a comprehensive understanding of how informatics and data management relate to the healthcare industry. (Online Only). Prerequisites: HM202 Health Data and Quality Management

## **HP Honors Program**

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### **HP101 Introduction to Honors** **Cr-1**

This course is the first step in completing the Honors Program and earning Honors distinction. Through a series of readings and exercises, students gain a whole-brain approach to learning – the foundation for making original discoveries. They also develop personal, academic, and professional goals. Students draft a formal proposal for their independent research project by the end of the course. In the process of completing these tasks, students develop an Honors community. The CF100 program requirement is waived for students who complete this course. Prerequisite: Admittance into Honors Program and/or award of Presidential Scholarship.

### **HP200 Honors Seminar** **Cr-3**

This course is the second step toward completing the Honors program and earning the Honors distinction. Honors Seminar topics vary, but all seminars are interdisciplinary and reading and writing-intensive. This course emphasizes the development of critical and creative thought through class discussions, readings, and written assignments. Prerequisites: A minimum G.P.A. of 3.25 and completion of HP101 Introduction to Honors with a grade of “B” or higher.

### **HP201 Honors Capstone Project** **Cr-1**

This course is the final requirement toward completing the Honors Program and earning Honors distinction. Students will carry out the independent capstone project that they proposed in HP101. This project will be completed with the guidance of the student's faculty mentor and the course instructor. Students will be required to complete a research based paper as well as give an oral presentation of their findings at the bi-annual Honors Symposium. Capstone projects can include, but are not limited to, the following project types: qualitative experiments, quantitative experiments, literature reviews, one-act plays, novellas, and service or applied learning experiences. Prerequisites: A minimum G.P.A. of 3.25 and completion of HP101 Introduction to Honors with a grade of “B” or higher.

## **HS Human Services**

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### **HS101 Introduction to Human Services** **Cr-3**

This course provides an exploration of the broad field of human services, introduces theoretical systems for understanding human behavior, and examines professional ethics and standards. Communication techniques and procedures are stressed. A continual theme throughout is the need for self-awareness. Students complete NY State certification as a mandated reporter.

### **HS216 Introduction to Disabilities** **Cr-3**

This course introduces disability as an aspect of the human experience and in relationship to a changing society. Topics include a global perspective of the prevalence and incidence of disability through historical and cultural concepts, as well as political and economic factors that help define disability and shape society's response to it. The course examines the self-determination movement and its impact on disability services. Prerequisite: HS101 Introduction to Human Services.

### **HS222 Theories of Counseling** **Cr-3**

This course explores the theoretical frameworks of counseling, with emphasis on the ideas that form the structure of these theories. Consideration is given to their history, current status, and application. Prerequisite: PY101 Introduction to General Psychology, and a grade of "C" or better in HS101 Introduction to Human Services.

### **HS231 Ethics, Policy and Law** **Cr-3**

This course introduces the field of social services with emphasis on ethical and policy considerations faced by human service practitioners, chemical dependency counselors, and educators. Ethical decision making, professional competence, self-disclosure, confidentiality, and related topics are covered as they apply to working in counseling and educational settings. It examines legislation affecting the role of the practitioner and the economic security of the client.

### **HS232 Counseling Techniques** **Cr-3**

This course focuses on the acquisition and refinement of social work and counseling skills appropriate for the A.A.S. practitioner. Methods used with diverse client systems within a variety of settings and problem areas are covered. Prerequisite: A grade of "C" or better in HS101 Introduction to Human Services.

### **HS233 Group Counseling Skills** **Cr-3**

This course focuses on the acquisition of group counseling skills and techniques applicable for work within human service consumer populations and age groups. Issues include substance abuse, mental health, conflict resolution skills, and trauma. Group techniques and skills are practiced. Prerequisite: A grade of "C" or better in HS101 Introduction to Human Services.

### **HS241 Chemical Dependencies** **Cr-3**

This course provides an overview of drug abuse and alcoholism including pharmacology, causes and legal aspects of drug abuse, intervention and prevention, physiology, and psychological aspects of alcoholism. The role of the professional and non-professional in counseling and intervention is examined. Emphasis is placed on alternatives to chemical substance abuse and the self-destructing behaviors that produce them.

### **HS245 Case Management 1** **Cr-3**

This course uses a systems perspective to introduce the field of case management. Emphasis is on understanding and accessing the variety of service systems available to the client-consumer.

### **HS251 Internship 1** **Cr-3**

This course provides supervised, practical experience in a human service setting. In addition to a minimum of 90 hours of field experience, participation in a weekly seminar is required. Prerequisite: Matriculation in Human Services or Chemical Dependency Practitioner program, 25 credits completed towards the degree, G.P.A. of at least 2.0, and a minimum grade of "C" in HS101 Introduction to Human Services. Corequisites: (Depending on Matriculation) HS222 Theories of Counseling or HS232 Counseling Techniques and one program elective, or AS201 Introduction to Alcoholism/Substance Abuse Counseling and HS231 Ethics, Policy & Law.

### **HS252 Internship 2** **Cr-3**

This course is a continuation of the supervised experience in a human service setting, with greater initiative and responsibility for the provision of services. In addition to the minimum of 90 hours of field experience, participation in a weekly seminar is required. Corequisite: HS251 Internship 1.

# HT Hotel Technology

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## **HT101 Introduction to the Hospitality Industry** **Cr-3**

This course provides an overview of the organizational structure of hotels, restaurants, and clubs from a management perspective. Topics include analysis of the hospitality industry, career opportunities, management theory, practical management techniques, and social responsibility of the industry.

## **HT105 Front Office Procedures** **Cr-3**

This course provides an overview of hotel operations beginning with the front office guest cycle. Information on front office computer technology, yield management, and reservation systems are presented. Emphasis is placed on the responsibilities and tasks of front office personnel.

## **HT201 Internship/Co-op** **Cr-3**

This internship provides a variety of practical experiences such as hotel front office procedures, telecommunications, guest reception, cash handling and control, housekeeping, and convention sales and services. Field supervisors and MVCC program coordinators evaluate student performance. A minimum of six hours per week over fifteen weeks, or a total of 90 hours is required for successful completion.

## **HT205 Housekeeping/Property Management** **Cr-3**

This course provides an overview of the phases of staffing, planning, and organizing the technical details of each area of a hotel

## **HT210 Hospitality/Human Resources Management** **Cr-3**

This course provides an overview of the role of human resources in the food service and lodging industries. Topics include employee job description, recruitment, orientation, training, performance appraisal, and compensation. Current federal legislation and labor relations are presented with emphasis on EEO laws, OSHA standards, and union negotiation and grievance processes.

## **HT211 Convention Services Management** **Cr-3**

This course introduces convention sales and marketing techniques. Topics include convention promotion, planning, and post convention evaluation.

## **HT215 Supervisory Leadership in Hospitality** **Cr-3**

This course provides an overview of supervisory management skills for the hospitality industry. Topics include planning, organizing, coordinating, staffing, directing, controlling, evaluating, and leading. The development of technical, human relations, and conceptual skills is emphasized.

# HU Humanities

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## **HU183 Fundamentals of Music Theory 1** **Cr-3**

This introduction to the fundamentals of music theory emphasizes rhythmic, melodic, and harmonic expressions. It is an introduction to music theory for those wishing to pursue more advanced music study and for those who want to know more about the elements of music. Previous musical experience is helpful but not required.

## **HU184 Fundamentals of Music Theory 2** **Cr-3**

This course is a continuation of HU183 Fundamentals of Music Theory 1 with increasing emphasis on traditional harmony with the addition of the

study of seventh chords. Prerequisite: HU183 Fundamentals of Theory 1.

## **HU186 Music Appreciation** **Cr-3**

This course develops musical perception, understanding, and appreciation. It features direct listening and live performances, and demonstrations in a variety of musical styles. It is appropriate for those with no formal musical training.

## **HU187 Art Appreciation** **Cr-3**

This course develops perception, understanding, and appreciation of the visual arts through an examination of the role of the artist in a diverse society. The artist is considered within cultural context through an introduction to Western and non-Western art history. Materials and techniques of art are studied with emphasis on the fundamental elements of artistic expression. A field trip to a gallery exhibit is required. Skill in art is not necessary.

## **HU188 Film Appreciation** **Cr-3**

This course examines the development of film as a medium of artistic expression. Topics include cinematic vocabulary, camera techniques, editing, sound, auteur theory, and personalities. Feature films are analyzed during the laboratory component.

## **HU195 Chorus 1** **Cr-1**

This course involves participation in a performing group devoted to the standard repertory of serious and light choral music. An audition is required.

## **HU204 History of Art 1** **Cr-3**

This course introduces the history of art from prehistoric times through the Sixteenth Century. Topics include Classical, Medieval, Renaissance, and non-Western examples of painting, sculpture, and architecture. Art is studied within its cultural context with a focus on the interrelationship among the Arts. A field trip to an art exhibit is required. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

## **HU205 History of Art 2** **Cr-3**

This course introduces the history of art from the Seventeenth Century to the present. Topics include Baroque, Rococo, Neoclassicisms, Romanticism, Impressionism, Post-Impressionism, Twentieth-Century, and non-Western examples of painting, sculpture, and architecture. Art is studied within its cultural context with a focus on the interrelationship among the Arts. A field trip to an art exhibit is required. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

## **HU210 The Arts and the Human Condition** **Cr-3**

This course examines the interrelationships between health and the Arts, including the visual arts, music, literature, and film. The formal elements of each of the Arts are introduced, examined and compared. The course proceeds thematically through selected topics, such as the Cycle of Life, and Human Reactions to Disease and Disability.

## **HU220 Studies in Mexican Art and Culture** **Cr-3**

This international course enhances cross-cultural skills, language skills, and an understanding of Mexican culture. Topics include indigenous and modern Mexican art and culture, and conversational Spanish.

## **HU224 Italian Art** **Cr-3**

This course provides an historical survey of Italian art from Roman times to the present. It examines the major stylistic trends in painting, sculpture, and architecture along with their influences. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

**HU225 Modern Art**

This course provides an historical survey of modern art from the late Nineteenth Century through the 1960s. It examines the major stylistic trends in painting, sculpture, and architecture along with their influences. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

**Cr-3****HU226 North American Art**

This course provides an introduction to the arts of North America from the Sixteenth Century to the Modern Era. It explores major American visual trends and their influences in painting, sculpture, and architecture. Prerequisite: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

**Cr-3****HU227 World Art**

This course examines the global arts across time and cultures, including those of Africa, Asia, and the Americas. It considers the arts in the context of religious, social, economic, and political forces. It is appropriate for students interested in broadening their knowledge of arts with a focus on the global view. A field trip to an art exhibit is required. Prerequisites: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages.

**Cr-3****HU228 World Architecture**

This course introduces the history of World Architecture through an analysis of the built environment in terms of function, structure, form, and cultural and historical context. Topics include key architectural structures and styles that comprise the global community. Critical skills are used to compare and analyze architecture through reading, viewing images, writing, and discussion. Prerequisites: EN101 English 1: Composition or EN105 English Composition for Speakers of Other Languages or EN106 English 1: Composition and Reading.

**Cr-3****HU280 An Introduction to Ethics**

This interdisciplinary course is both theoretical and practical. The theoretical aspect entails exploring the basic concepts and principles of moral philosophy, and the general thinking process for making moral judgments. The practical aspect involves the application of principles and strategies to specific cases derived from the humanities, such as imaginative literature, and from other disciplines, such as science and business. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3****HU289 Interdisciplinary Studies in the Humanities: The Greek World**

This course examines the values and ideas of classical Greece as expressed in sculpture, architecture, literature, philosophy, and mythology. Selected major art, literary, and philosophic works from the period are studied. Links to current thought are examined. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3****HU290 Interdisciplinary Studies in the Humanities: Medieval and Early Renaissance**

This course examines the values and ideas of Medieval and Early Renaissance Europe as expressed in art, literature, philosophy, and music. Selected major art, literary, and philosophic works from these periods are studied. Links to current thought are examined. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3****HU291 Interdisciplinary Studies in the Humanities: The Modern Age**

This course examines the major philosophical positions of the Modern Age in an effort to understand how these ideas came into being. Topics include Darwinism, Marxism, Freudian psychology, and Existentialism. The recent past is studied and shown to be the root of current thought. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3****HU292 Topics in the Humanities**

This course explores a specific area or topic in the Humanities. Flexibility regarding traditional boundaries of disciplines, genre, time periods, and media give fresh perspectives and knowledge that relate to and illuminate the topic. See the Dean for Humanities for the current offerings. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3****HU295 Survey of Western Philosophy**

This course provides an historical survey of Western thought from the Pre-Socratics to contemporary Philosophers. Metaphysics, epistemology, social and political philosophies, and their leading practitioners are examined. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3****HU296 Topics in Philosophy**

This course provides a topical examination of ethics and morality, religion, and social and political philosophies and their impact on contemporary thought. Conflicts between differing schools of thought and their societal implications are stressed. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**Cr-3**

## HV

**HV110 HVACR Principles**

This course covers calculations of heat loss and gain based on residential and commercial levels. Topics include humidification; dehumidification; air mixture problems; and determination of U factors to enhance calculation accuracy. Additional topics include ventilation, exhaust loads and standards, and a working background in psychometrics. The course starts with simple heat properties of air and will progress to complex air mixture properties.

**Cr-4****HV201 Refrigeration 2**

This course covers the components of refrigeration for commercial and industrial systems. It includes systems requirements and the application of components to develop built-up systems. Prerequisite: ET108 Refrigeration 1

**Cr-4****HV210 HVACR & Building Automation Systems Design**

This course covers refrigerant piping techniques and designs for commercial and industrial use. Refrigeration load calculating and equipment selection for commercial and industrial applications and proper air handling techniques are also studied. Principles of building automation control theory, component identification and operations will also be covered. Prerequisites: HV201 Refrigeration 2 and HV110 HVACR Principles

**Cr-3****HV252 Modern Hydronic Systems**

This course covers the design and installation of modern hydronic (water-based) heating and cooling systems in residential and light commercial buildings. Topics include hydronic heat sources, fluid flow in pipes, circulators, terminal units, system sizing, distribution piping layout, controls, valve selection, expansion tanks, freeze proofing, and balancing. Prerequisites: HV110 HVACR Principles

**Cr-3**

## IL Illustration

**IL105 Illustration Methods and Materials**

This course includes experimental work with techniques and media most commonly used in preparing illustrations for reproduction. Finished artwork is rendered and prepared in black and white, and in color.

**Cr-3**

**IL106 Sequential Art 1: Figure Illustration** **Cr-3**

This course introduces the narrative use of the human figure in illustration. Conceptual and visual communication skills are challenged in producing a series of two-dimensional illustrations in black-and-white and color media. Emphasis is placed on the correct use of reference material, drapery and costuming of the figure, settings, and staging of the complete visual image. Prerequisite: FA103 Figure Drawing 1

**IL201 Conceptual Illustration** **Cr-3**

This course includes experimental work with techniques and media most commonly used in preparing illustrations for reproduction. Finished artwork is rendered and prepared in black and white and in color. Prerequisite: IL106 Sequential Art 1: Figure Illustration.

**IL203 Painting for Illustrators** **Cr-3**

This course provides the opportunity for experimental work with contemporary illustration techniques and media. It balances emphasis on creative problem-solving and individual expression with development of skill in drawing and techniques for rendering finished work. Prerequisite: IL106 Sequential Art 1: Figure Illustration.

**IL204 Professional Practices for Illustrators** **Cr-4**

This course prepares for entry into the illustration field as a practicing professional. Illustration portfolios are prepared and analyzed for content. A portfolio of quality work is created for professional presentation. Prerequisites: IL201 Conceptual Illustration and IL203 Painting for Illustrators.

**IL205 Cartooning** **Cr-3**

This course explores the art of cartooning. It builds upon understanding of the human form in illustration. It explores action effects, backgrounds, caricatures, strips, panels, layouts and inking, greeting cards, and history of the cartoon. Prerequisites: FA101 General Drawing and FA103 Figure Drawing 1.

**IL206 Wildlife Drawing and Painting** **Cr-3**

This course introduces the construction, delineation, and rendering of wild and domestic animals in art. The history of animals in the oldest school of art, sporting, is covered as well as an overview of the artistic avenues available to the animal artist.

**IL207 Fantasy Illustration** **Cr-3**

This course covers fantasy art commonly used in contemporary children's book illustration, comic book art, and the science fiction illustration. Emphasis is placed on the importance of research, character development, problem-solving, and the aesthetic quality of the illustration.

**IL208 Sequential Art 2: Book Illustration** **Cr-3**

This course provides an introduction to the styles and techniques used by the illustrator in the contemporary children's market. It covers the development of fiction and non-fiction illustrations for the preschool and elementary school audience. Emphasis is placed on the importance of research, character development, problem solving, and the aesthetic quality of the illustration. Students complete illustrations designed to reinforce subject areas covered.

**IL209 Sequential Art 3: Graphic Novel** **Cr-3**

This course introduces students to the process of writing, editing, and creating graphic novels. Topics include history of graphic novels, brainstorming, quick sketching the use of composition, image sequencing and layout, elements of storytelling, producing high quality finished images, and both digital and physical publishing.

# IS Information Systems

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**IS101 Computers and Society** **Cr-3**

This course provides knowledge of relevant computer skills and a solid foundation in the terminology and concepts of computer technology. Experience is provided with a variety of microcomputer software applications, including word processing, electronic spreadsheets, graphics, file management, and integrated software. Concepts and terms focus on preparing for a technologically oriented society and using the computer as a tool for productivity, research, and communication.

**IS102 Computer Applications & Concepts 2** **Cr-3**

This course increases knowledge and productivity with the personal computer. Students gain knowledge of hardware and software and, by working with popular business applications software packages, increase their overall computer competency. The course emphasizes the use of the computer in the management of information. Areas of study include the MS DOS operating system, WINDOWS operating environment, sharing files among applications, incorporating graphics, report generation, and communications. Current computing issues such as computer ethics, computer crime and security are discussed. Prerequisite: IS101 Computers and Society

**IS120 Computer Operating Systems and Environments** **Cr-3**

This course covers the role of computer operating systems. It emphasizes operating systems and environments used with Intel-compatible equipment and discusses additional platforms. Command-line, menu-driven, and graphical user interface (GUI) systems are covered. Topics include storage devices, operating environment, system startup, menus, memory management, software package installation, and multitasking.

**IS125 Introduction to Multimedia Applications for Business** **Cr-3**

This course covers graphic tools used in business environments, including multimedia programs such as graphic, animation, and web design software. Multimedia files are imported and exported into documents and presentations. Topics include web design theory; color and composition; and graphic, animation and presentation software. It culminates with the integration of multimedia concepts incorporated into an integrated business project/presentation. Prerequisite: IS101 Computers and Society

**IS130 Desktop Publishing for Business** **Cr-3**

This course introduces the principles of desktop publishing in a business environment. Professional quality business documents are designed and produced that combine text, graphics, illustrations, and photographs in documents such as letterheads, business cards, flyers, brochures, promotional documents, and newsletters.

**IS200 Spreadsheet Concepts and Applications** **Cr-3**

This course expands the knowledge of those already familiar with the basic elements of electronic spreadsheets. It examines the various uses for a spreadsheet in business. Intermediate and advanced spreadsheet techniques are examined, including the power of functions, formatting, analytical graphics, and macros. Prerequisites: IS101 Computers and Society

**IS201 Principles of Computer Security** **Cr-3**

This course provides a comprehensive view of the field of computer and network security. Topics include the types of threats to computer hardware and software, public key infrastructure (PKI), certificate

authorities, the protocols and standards involved in establishing PKIs, intrusion detection systems, and the laws which govern aspects of computer security. Prerequisite: IS101 Computers and Society is recommended but not required.

### **IS210 Database Design and Management** **Cr-3**

This course will introduce students to basic database concepts. The course will focus on designing and structuring databases to meet the objectives of management. Students will use a database management system to complete an in-depth exploration of query capabilities and report generation. The student will learn the creation and management of a working database from the ground up. When the student completes this course, they will have the ability to create tables, queries, forms, and reports within database software and understand the role of a database within a business setting.

### **IS220 Visual Basic with Business Applications** **Cr-3**

This course introduces event-driven programming for a better appreciation of Windows applications used in the business world. Controls, properties, and code are used to develop applications to solve business problems. Topics include decision-making statements, loops, multiple forms, and graphical displays. Prerequisites: IS200 Spreadsheet Concepts & Applications, and IS210 Database Design & Management.

### **IS240 Networking Essentials** **Cr-3**

This course provides an overview of networking concepts. Topics include LAN topologies, transmission media, protocols, network operating systems, and the OSI Model. Network security issues and network-to-network connections are also discussed. Through lecture and classroom demonstrations, students are exposed to the procedures involved in administering a LAN.

### **IS250 Web Development 1** **Cr-3**

This course focuses on the Internet and World Wide Web as valuable resources in gathering and disseminating business information. Information is gathered with various techniques and evaluated as to its quality. Internet and World Wide Web (WWW) protocols and search engines are explored, and the techniques involved in creating a basic Web page are covered. Prerequisite: IS125 Introduction to Multimedia Applications for Business.

### **IS280 Web Development 2** **Cr-3**

This course emphasizes the development of effective and interactive Websites on the World Wide Web. Students create and code interactions to transform static Websites into dynamic Web applications. Focus is on hand-coded languages, such as PHP, ASP, VBS Script, and ColdFusion Markup Language. Students familiarize themselves with Website and database interaction using MySQL as a driving source behind the site. Specifically, students are exposed to web development programs that use features such as cascading style sheets, templates, frames, and behaviors, as well as the many other features common in web development programs, such as inserting and editing HTML. Students also study database elements and utilize coding in order to manipulate and display data on a web page. Prerequisite: IS250 Web Development 1 or CI110 Principles of Programming.

## **IT Italian**

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### **IT101 Elementary Italian 1** **Cr-3**

This sequence teaches the fundamentals of Italian, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous Italian instruction, or fewer than three years of Italian instruction more than two years ago.

### **IT102 Elementary Italian 2** **Cr-3**

This sequence teaches the fundamentals of Italian, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: IT 101 or its equivalent, or permission from instructor

### **IT191 Review Italian 1** **Cr-3**

This sequence continues the development of grammar, cultural understanding, reading, writing, and conversation skills, and is presented at an accelerated pace. Prerequisite: Three years of Italian instruction more than two years ago with a grade of B or better.

### **IT192 Review Italian 2** **Cr-3**

This sequence continues the development of grammar, cultural understanding, reading, writing, and conversation skills, and is presented at an accelerated pace. Prerequisite: Three years of Italian instruction more than two years ago with a grade of B or better.

### **IT201 Intermediate Italian 1** **Cr-3**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of Italian instruction fewer than two years ago with a grade of B or better.

### **IT202 Intermediate Italian 2** **Cr-3**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of Italian instruction fewer than two years ago with a grade of B or better.

### **IT301 Advanced Italian 1** **Cr-3**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of Italian instruction in which one year was Advanced Placement level.

### **IT302 Advanced Italian 2** **Cr-3**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of Italian instruction in which one year was Advanced Placement level.

## **LE Law Enforcement**

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### **LE118 Police Procedures - Basic** **Cr-5**

This course examines the history and contemporary aspects of law enforcement. It introduces students to fundamental police processes, particularly the role that discretion plays in policing. The bodies of law that are relevant to law enforcement are practically applied and critical thinking skills are developed and assessed through exercises both inside and outside the classroom. The use of force continuum is explained, practiced and evaluated. Students begin to develop the physical skills and defense tactics necessary to transition into a law enforcement career.

### **LE119 Police Procedures - Intermediate** **Cr-4**

This course introduces students to the intermediate skills required of police officers. Building on the foundation received through the successful completion of LE118 Police Procedures - Basic, students begin to learn more advanced techniques of police observation and patrol. Application of the scientific method in both accident and criminal

investigation is developed. Ancillary New York State law is discussed and practically applied.

**LE120 Police Procedures - Advanced** **Cr-5**  
Building on the foundations of the LE118 Police Procedures-Basic and LE 119 Police Procedures-Intermediate, this course immerses the students in the more advanced techniques of American policing. Students employ the laws, techniques, and methodologies required of the modern law enforcement officer. Essential proficiencies are applied through continued hands-on development. Students display competencies in advanced areas including crowd control techniques, responding to incidents of domestic violence, detecting and apprehending intoxicated drivers, and responding to unusual incidents.

**LE121 Principles of Law for Police Officers** **Cr-6**  
In this course, students examine the operations of the criminal justice system with a specific emphasis on the role and responsibilities of police officers. There is a particular focus on the legal basis for law enforcement operations derived from the United States Constitution. In addition, students explore New York State Penal Law, Civil Procedure law, Vehicle and Traffic Law, and Juvenile Procedures. Routine patrol responsibilities are also explained.

**LE122 Techniques of Investigation** **Cr-7**  
In this course, students study various topics, actions, and procedures required to investigate a crime. It provides students with proven techniques that assist in obtaining information critical to any investigation. This includes street traffic stops, as well as violation, misdemeanor, and felony investigations.

**LE123 Policing in the Community** **Cr-3**  
This course covers community relations issues as well as the skills needed to address them. Topics include cultural diversity and special needs of the community. Emphasis is placed on ethical issues and the limitations of community resources and services, and crime prevention. The course also addresses effective and compassionate approaches to child abuse cases.

## MA Mathematics

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**MA001 MA121: ILS** **Cr-0**  
This course includes intermediate and college algebra and trigonometry. Algebraic manipulations, graphing skills and problem solving are emphasized. Topics include variables, equations, graphs, systems of linear equations including Cramer's Rule, quadratic equations, radicals, variation, factoring and rational expressions, vectors and oblique triangles, and an introduction to trigonometry and applications.

**MA005 MA125: ILS** **Cr-0**  
Learning Support for College Algebra and Trigonometry is a corequisite for students needing MA125 who do not meet the prerequisite of MA125. This course includes mathematical skills necessary to succeed in MA125.

**MA010 MA110 ILS** **Cr-0**  
Learning Support for Elementary Statistics is a corequisite for students needing MA110 who do not meet the prerequisite of MA110. This course includes mathematical skills necessary to succeed in MA110.

**MA039 MA139: ILS** **Cr-0**  
Learning Support for College Algebra is a corequisite for students needing MA139 who do not meet the prerequisite of MA139. This course includes mathematical skills necessary to succeed in MA139.

**MA071 MA171: ILS** **Cr-0**  
Learning Support for Foundations of Mathematics 1 is a corequisite for students needing MA 171 who do not meet the prerequisite of MA 171. This course will include mathematical skills necessary to succeed in MA 171.

**MA089 Arithmetic** **Cr-0**  
This course is for students who, according to placement test results, need preparation for subsequent mathematics courses. It develops basic skills by focusing on language and concepts. Topics include whole numbers, integers, rational numbers, and decimals.

**MA105 Technical Mathematics 1** **Cr-4**  
This course covers the four fundamental operations on integers, rational numbers, and real numbers. It includes the study of weights and measures, exponents and radicals, factoring, and linear equations, with an emphasis on technical applications.

**MA106 Technical Mathematics 2** **Cr-3**  
This course is a continuation of MA105 Technical Mathematics 1, with further topics from algebra as well as from geometry and trigonometry, and an emphasis on technical applications. Prerequisite: MA105 Technical Mathematics 1.

**MA108 Concepts in Mathematics** **Cr-3**  
This course is a survey of mathematics for students in those programs that do not require a mathematics sequence. It provides an appreciation of mathematical ideas in historical and modern settings. Topics include problem solving, logic, geometry, statistics, and consumer mathematics. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

**MA110 Elementary Statistics** **Cr-3**  
This course introduces probability and statistics. Topics include graphs, tables, frequency distributions, measures of central tendency and dispersion, normal distribution, correlation and regression, probability, and inferential statistics. This course is available in two formats: lecture only, or lecture plus laboratory using technology. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

**MA111 Intermediate Statistics** **Cr-3**  
This course is a continuation of Elementary Statistics (MA110) emphasizing confidence intervals and hypothesis testing. Topics include single and two-sample analysis, single and multiple regression, chi-square testing, testing and estimating standard deviation and variance, one-way and two-way ANOVA. Emphasis is placed on selecting the proper technique, satisfying its requirements and correctly reporting the results. Prerequisites: Satisfactory completion of MA110 Elementary Statistics or an equivalent course.

**MA115 Intermediate Mathematics** **Cr-4**  
This course introduces intermediate algebra-level knowledge and skills. Topics include exponents and radicals, polynomial and rational expressions, functions and relations and their graphs, inequalities, and systems of linear equations. Linear, quadratic, rational, and radical equations are solved. Applications are included. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

**MA121 Fundamentals of College Mathematics 1** **Cr-4**  
This is the first of a two-course sequence for students in programs that require mathematics through polynomial calculus. Algebraic manipulations, graphing skills and problem solving are emphasized. Topics include systems of linear equations including Cramer's Rule, quadratic equations, variation, factoring and fractions, vectors and

oblique triangles, and an introduction to trigonometry and applications. Prerequisite: Appropriate high school GPA or placement test score or MA115 Intermediate Mathematics.

**MA122 Fundamentals of College Mathematics 2** **Cr-4**

This is the second of a two-course sequence for students in programs that require mathematics through polynomial calculus. Topics include complex numbers, exponential and logarithmic functions, analytic geometry, limits, derivatives and integrals of polynomial functions, applications of the derivative, and area under a curve. Prerequisite: MA121 Fundamentals of College Mathematics 1.

**MA125 College Algebra and Trigonometry** **Cr-4**

This course prepares students for MA150 Precalculus. Topics include linear and quadratic equations; inequalities; rational expressions; trigonometric functions; graphs of linear, quadratic, piecewise, and trigonometric functions; and, systems of equations. Algebraic and trigonometric manipulations and problem-solving are emphasized. Prerequisite: Appropriate high school GPA or placement test score or MA115 Intermediate Mathematics.

**MA131 Finite Mathematics** **Cr-3**

This course emphasizes conceptual understanding and practical applications of logic, sets, probability, matrices, and linear programming. Prerequisite: An appropriate placement test result or MA108 Concepts in Mathematics.

**MA139 College Algebra** **Cr-4**

This course emphasizes algebraic manipulations and problem solving. Topics include equations and inequalities; systems of equations; factoring; radical and rational expressions; linear, quadratic, rational, exponential, and logarithmic functions; and, their graphs. Applications are selected from business, economics, and the natural sciences. Prerequisite: Appropriate high school GPA or placement test score or MA115 Intermediate Mathematics.

**MA140 Calculus for Business and Social Science** **Cr-4**

This course is for those whose programs do not require the Calculus sequence. Topics include an intuitive study of limits, and the analytic geometry, differentiation and integration of polynomial, rational, exponential, logarithmic, and power functions. Applications are selected from business, economics, and the social sciences. Prerequisite: MA139 College Algebra.

**MA150 Precalculus** **Cr-4**

This course prepares students for calculus through a study of the properties and graphs of polynomial, rational, trigonometric, inverse trigonometric, exponential, and logarithmic functions. Topics include an introduction to mathematical argument and conic sections. Emphasis is placed on the function concept and the appropriate use of the language of mathematics. Prerequisite: Appropriate placement test score or MA125 College Algebra and Trigonometry.

**MA151 Calculus 1** **Cr-4**

This is the first in a sequence of three courses in calculus. Topics include limits and continuity, differentiation of algebraic, trigonometric, exponential, and logarithmic functions, and indefinite and definite integration. Applications are included. Prerequisite: An appropriate placement test score or MA150 Precalculus.

**MA152 Calculus 2** **Cr-4**

This is the second in a sequence of three courses in calculus. Topics include the integration of trigonometric functions, the differentiation and integration of the inverse trigonometric functions, further techniques

in integration, L'Hopital's Rule, improper integrals, and infinite series. Applications are included. Prerequisite: MA151 Calculus 1.

**MA171 Foundations of Mathematics 1** **Cr-3**

This is the first of a two-course sequence for students preparing to teach at the elementary school level. Topics include the study of real numbers through a development of natural numbers, whole numbers, integers, rational numbers, decimals, and irrational numbers, together with operations on them. Number theory is presented, along with a discussion of numeration systems including bases other than 10. The language and nature of reasoning, together with basic elements of set theory, are introduced. Problem-solving is emphasized. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

**MA172 Foundations of Mathematics 2** **Cr-3**

This is the second of a two-course sequence for students preparing to teach at the elementary school level. Topics include elementary geometry of two and three dimensions, measurement, coordinate geometry and transformations, probability, and statistics. Prerequisite: MA171 Foundations of Mathematics 1.

**MA253 Calculus 3** **Cr-4**

This is the third in a sequence of three courses in calculus. Topics include polar and space coordinates, parametric equations, the algebra and calculus of vectors, partial differentiation, and multiple integration. Applications are included. Prerequisite: MA152 Calculus 2.

**MA260 Differential Equations** **Cr-3**

This course introduces the concepts and theory of ordinary differential equations. Topics include existence and uniqueness of solutions, and separable, homogenous, exact, and linear differential equations. Methods involving integrating factors, undetermined coefficients, and variation of parameters, power series, numerical approximation, and systems of differential equations using differential operators are covered. Applications are drawn from geometry, chemistry, biology, and physics. Prerequisite: MA152 Calculus 2. (Spring Semester only)

**MA275 Discrete Algebraic Structures** **Cr-4**

This course introduces mathematical systems. Topics include methods of proof, sets, logic, functions, relations, graphs, trees, and algebraic systems. Prerequisite: MA151 Calculus 1. (Fall Semester only)

**MA280 Linear Algebra** **Cr-3**

This course begins with geometric concepts and transitions to more abstract reasoning. Topics include systems of linear equations, matrix algebra, determinants, vector spaces, bases, linear transformations, Eigen values, and inner products. Prerequisite: MA152 Calculus 2. (Spring Semester only)

## **MD Media Marketing & Management**

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**MD140 Principles of Advertising** **Cr-3**

This course covers the theory, role, scope, and practice of modern advertising. It investigates how and why consumers respond to advertising and how persuasion motivates action. It explores consumer and advertising research techniques.

**MD141 Digital Video and Copywriting** **Cr-3**

This course introduces the field of broadcast advertising. It explores the artistic and technical potential of commercial production and covers the production of 30-second radio and 30-second television commercials. It includes hands-on experience with camcorders, non-linear video and

audio editing systems, and state-of-the-art digital animation programs used by the television commercial industry.

### **MD151 Fundamentals of Media** **Cr-3**

This course covers the theory, role, scope, and practice of modern advertising and introduces the types and characteristics of vehicles that carry advertisements. Topics include advertising media, such as newspaper, magazines, television, radio, and their advantages and limitations.

### **MD152 Print Media and Production** **Cr-3**

This course examines publications, direct mail, outdoor, and other print advertising vehicles. Reproduction processes, utilization, and the preparation for each process are discussed. It includes field trips to printing plants and the creation of print layouts.

### **MD161 Visual Communication** **Cr-3**

This course introduces students to the fundamental principles of visual communication and creativity with an emphasis on understanding historically significant art styles. Students explore various types of visual expression and apply creative problem-solving principles to both two-dimensional and three-dimensional projects in a variety of media. Emphasis is placed on formulating basic design and layout principles, with particular stress on application. Students are introduced to the masters, practices, and careers of painting, sculpture, graphic design, animation, film, digital media, illustration, and photography.

### **MD240 Advertising Management** **Cr-3**

This course considers the function of the advertising manager and art director in developing an integrated communications campaign. It emphasizes individual and team solutions, and cases and problems. Prerequisites: MD140 Principles of Advertising, and MD141 Digital Video & Copywriting.

### **MD253 Broadcast Media and Production** **Cr-3**

This course introduces television and radio programming and audiences, media rate structures, and related material. Reproduction processes in broadcasting are discussed. It involves the creation of broadcast commercials along with field trips to radio and TV stations.

### **MD254 Media Planning** **Cr-3**

This course analyzes media costs, media buying problems, inter-media comparisons, and overall media strategy. Media problems are solved based upon marketing, advertising, and budget considerations. Prerequisite: MD151 Fundamentals of Media.

### **MD256 Digital Media Applications** **Cr-3**

This course introduces digital imaging, word processing, and digital video editing techniques used by the media professional. The aesthetic and technological potential of the software is explored. The use of digital media and editing of computer-based imagery are emphasized. Advanced instruction is included in software and peripheral devices, including scanners, printers, file storage media, and video editing equipment. Prerequisite: MD141 Digital Video & Copywriting.

## **MM Motion Media**

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### **MM101 Motion Media 1: Fundamentals** **Cr-3**

This course covers the theory, role, scope, and practice of fundamental multimedia technologies and introduces the ways and means to produce motion media to communicate effectively with an audience. Traditional and digitally animated content creation is explored with emphasis placed on animated media.

### **MM201 Motion Media 2: 4D Design** **Cr-3**

This course covers the theory, role, scope, and practice of 4D design and introduces the ways and means to create time-based artwork. Approaches to UV unwrapping, modeling, lighting, and animation are explored with emphasis on animated graphics. Prerequisite: MM101 Motion Media 1: Fundamentals

### **MM202 Motion Media 3: Animation Design** **Cr-3**

This course covers the theory, role, scope, and practice of animatics and introduces the ways and means to produce animated cinematics to communicate effectively with an audience. Approaches to cut scenes, rotoscoping, and environmental settings are explored with emphasis on 2D animation foundations. Prerequisite: MM101 Motion Media 1: Fundamentals

### **MM203 Motion Media 4: Character Animation Seminar** **Cr-3**

This course covers the theory, role, scope, and practice of professionalism in the motion media and 2D animation industry, presentation techniques, and further techniques for computer graphics animated production. Emphasis is placed on the completion of a major capstone computer graphics production, as well as a demo reel. This course explores approaches to portfolio and demo reel development, practices for motion media production, and individual style and approach to motion media. Prerequisites: MM201 Motion Media 2: 4D Design and MM202 Motion Media 3: Animation Design

## **MR Medical Records**

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### **MR104 CPT Procedural Coding** **Cr-2**

This course introduces indexing conditions and procedures using the Current Procedural Terminology. It covers how to code from actual medical records and introduces the current prospective payment system(s). (Spring semester) Prerequisite: MR103 Medical Terminology.

### **MR105 International Classification Systems** **Cr-4**

This course introduces indexing diseases and operations using the International Classification of Disease. It covers how to code from actual medical records and introduces DRGs and the Prospective Payment System. (Spring semester) Prerequisite: MR103 Medical Terminology.

## **MT Mechanical Engineering Technology**

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### **MT107 Basic Machine Shop Practice** **Cr-3**

This course introduces the theory and practices of metal removal, as practiced in industry. The set-up and safe operation of conventional machine tools are stressed, along with their capabilities and limitations. Common processes such as drilling, grinding, milling, threading, and turning are used. Topics include speeds and feeds, metal cutting theory, cutting fluids, selection of tooling, fixturing, precision measurement, and layout procedures, along with basic blueprint reading and sketching.

### **MT112 Architectural Drafting** **Cr-3**

This course is an introduction to the standard drawing techniques and design concepts used for residential and light commercial buildings. Topics include foundations, framing, windows and doors, structural sections, floor plans, elevations, specifications, building codes, and perspectives. Prerequisite: MT140 Drafting and Design Using AutoCAD.

**MT114 Manufacturing Processes****Cr-3**

This course introduces traditional processes used in manufacturing and methods of processing raw materials into manufactured components. Materials such as plastics, metals, composites, and elements of micro-fabrication and nano-fabrication are covered. Assembly methods include plastics joining, fasteners, and automation.

**MT121 Mechanical Drafting****Cr-5**

This course covers the fundamentals of engineering drawing with an emphasis on the development of drawing skills. Topics include lettering, sketching, geometric construction, orthographic projections, dimensioning, sectioning, auxiliary views, screw threads, graphs-charts, pictorial drawings, and developments.

**MT126 Statics: Mechanical****Cr-3**

This course is a study of force systems and their actions on bodies at rest. Topics include force systems, equilibrium of force systems, distributed forces, friction, moments of inertia, centroids, and bending and shear diagrams. The Laboratory component emphasizes computer analysis. Prerequisite: MA125 College Algebra and Trigonometry or a higher level mathematics course which includes trigonometry.

**MT129 Statistical Quality Control****Cr-2**

This applied statistics course provides measuring tools for quality control and process control in manufacturing. Topics include frequency distributions; measures of central tendency and of dispersion; natural tolerances, control charts for variables and for attributes; probability theory and applications to sampling and to operational characteristic (O-C) curves; acceptable quality level (AQL) sampling plans; Pareto charts; and, random number tables.

**MT139 Mechanical Systems****Cr-4**

This course is a study of the basic mechanical components in a complex mechatronics system. Topics include basic functions and physical properties of mechanical components and the roles they play in the system such as materials, lubrication requirements and surface properties, as well as troubleshooting techniques and strategies used to identify, localize and correct malfunctions. Concepts in systemic preventative maintenance and mechanical component safety are presented along with technical documentation such as data sheets and specifications of mechanical elements.

**MT140 Drafting and Design Using AutoCAD****Cr-3**

This course provides the foundation and problem-solving skills necessary to develop and interpret engineering drawings using the computer-aided drafting software (AutoCAD). Topics include assembly and detail drawing composition; design for assembly/manufacturing (DFA/DFM); geometric dimensioning and tolerancing; tolerance control and standard fits; fasteners; gearing; sheet metal developments; weldments; functional drafting techniques; and the development of 2-D and 3-D CAD generated drawings and system operations.

**MT141 Machining Fundamentals****Cr-4**

This course introduces the theory and practices of metal removal as applied in industry. The set-up and safe operation of conventional machine tools is stressed, along with their capabilities and limitations. Common processes such as drilling, grinding, milling, threading, and turning are utilized. Topics include speeds and feeds, metal cutting theory, cutting fluids, selection of tooling, fixturing, precision measurement, and layout procedures. Prerequisites: MT140 Drafting and Design Using AutoCAD, and either MA105 Technical Mathematics 1 or MA125 College Algebra and Trigonometry (Spring semester)

**MT149 Pneumatic and Hydraulic Systems****Cr-3**

This course presents a study of fluid power technology using fluids or compressed air as the transfer media. Complete hydraulic and pneumatic systems, including power sources, reservoirs, pumps,

compressors, lines, valves, and actuators. Additional topics include troubleshooting strategies used to identify, localize and correct malfunctions in pneumatic and hydraulic systems, preventative maintenance, and safety issues.

**MT155 Introduction to Solid Modeling****Cr-3**

This course is an introduction into the use of three-dimensional solid modeling CAD software. Topics include creating models using features such as protrusions, cuts, rounds, blends, revolutions, and sweeps. Model planning and design intent are stressed. Assemblies, drawings, documentation, and detailing are also covered, as well as output and interfaces with common software such as spreadsheets and word processing.

**MT170 Oxy-Acetylene Welding Procedures****Cr-4**

This course covers the theory, methods, and use of acetylene equipment to oxy-weld and cut in all positions. Welding supply fee required.

**MT174 Electric Arc Welding****Cr-4**

This course provides proficiency in oxy-acetylene welding procedures, including the theory and use of electric arc welding. Topics include welding ferrous and nonferrous metals in all positions, and the theory of pipe design and cutting. Welding supply fee required.

**MT203 Design of Machine Elements****Cr-3**

This course addresses the methods and theory of practical machine design. Topics include stress analysis, shaft design, kinematics of linkages, springs, gears, chains, belts, bearings and welding joints. The application of computer aided design software to some of the analysis problems are covered. An introduction to finite element analysis software are presented. Prerequisites: MT140 Drafting and Design Using AutoCAD and MT230 Strength of Materials: Mechanical.

**MT204 Automatic Controls****Cr-3**

This course includes the theory and use of hydraulic, pneumatic, and electrical devices to activate and regulate the displacement and position of machine components, basic energy principles applied to mechanical and electrical systems, relay ladder logic, and motor circuits. Prerequisite: MA106 Technical Mathematics 2 or higher level mathematics course containing algebra.

**MT207 Computer Aided Manufacturing****Cr-3**

This advanced processes course covers the fundamental theory and application of CAM (computer-aided manufacturing) technology. Programming methods include conversational, G-M Code, and Symbolic FANUC Automatically Programmed Tools. Tool selection and calibrations, part zero, tool offsets, program editing, troubleshooting, and fixturing are also stressed. Rapid prototyping, Computer Integrated Manufacturing (CIM), Flexible Manufacturing Systems (FMS), group technology, robotics, and CAD/CAM systems are also discussed. (Fall semester) Prerequisites: MT141 Machining Fundamentals.

**MT209 Materials Science****Cr-3**

This course covers the processing and performance of engineering materials as well as their physical and chemical properties. Topics include the chemistry of metals, plastics, and ceramics. Phase diagrams, heat treatment of metals, and micrographs are studied in the laboratory. Prerequisite: MA125 College Algebra and Trigonometry AND either CH131 College Chemistry or CH141 General Chemistry 1 or PH151 General Physics 1, AND MT230 Strength of Materials: Mechanical or ES261 Mechanics of Materials.

**MT210 Introduction to Vacuum System Maintenance****Cr-3**

This course prepares students to install, maintain, operate, troubleshoot, and repair vacuum and high vacuum systems and

demonstrate vacuum and cryogenic safety practices. Students are introduced to the fundamentals of vacuum and pressure, pressure measurement, vacuum technology components, and vacuum system configurations. They demonstrate familiarity with the vacuum generation, measurement and gas flow utilized in modern manufacturing based on hands-on assembly and testing of a basic vacuum system. This course provides knowledge and skills in basic vacuum system operation and troubleshooting, including identification of operational issues, acquisition of operational data, and formulation of possible solutions. Prerequisite: MT149 Pneumatic and Hydraulic Systems, or permission by the instructor.

**MT221 Tolerance Assembly Drafting Cr-4**

This course integrates previous and current course work and applies it to the design of manufactured parts. Designing for easier and more economical manufacturing is emphasized. Topics include assigning tolerances based upon how the part is to function, common manufacturing process tolerances, limit dimensions, avoiding tolerance accumulation, datums, introduction to geometric dimensioning and tolerancing, ASME Y-14.5M-1994, and functional gaging. Prerequisite: MT140 Drafting and Design Using AutoCAD.

**MT222 Tool and Design Drafting Cr-4**

This course introduces the fundamentals of tool design. Topics include break-even charts, tool materials, workholding principles, 3-2-1 basis of location, jig and fixture design for different processes, presswork tooling, punch and die set, gaging and assembly tooling. Prerequisites: MT221 Tolerance and Assembly Drafting. (Spring Semester)

**MT223 Electrical-Electronic Drafting Cr-3**

This course covers basic electrical principles and electronic components, and several types of drawings to support design and documentation of electrical circuits. Topics include device symbols, schematics, ladder diagrams, logic diagrams, architectural electrical drawings, and basic electrical circuit principles such as voltage, current, resistance, Ohms law, and power. Prerequisites: MT140 Drafting and Design Using AutoCAD or CT102 Engineering Drawing and MicroStation CAD.

**MT225 Applied Mechanics and Strength of Materials Cr-4**

This course introduces the statics and strength of materials while emphasizing their uses in practical design situations. Topics include unit conversions, force vectors, moment of a force, and equilibrium of concurrent and coplanar force systems, stress, strain, shear and bending moment diagrams, and bending and deflection of beams. Prerequisites: MA106 Technical Mathematics 2 or higher level mathematics course which includes trigonometry.

**MT226 Industrial Materials Cr-3.5**

This course introduces the properties of commonly used materials. Topics include the method used to evaluate material that will be used in the manufacturing of a part. Prerequisites: MA105 Technical Mathematics 1 and MT114 Manufacturing Processes.

**MT229 Building Systems Drafting Cr-3**

This course covers the various types of service system drawings, such as heating, ventilation and air conditioning (HVAC), water supply, drainage distribution, fire protection, and control systems. Both residential and commercial applications are emphasized, along with CAD drawing methods. Prerequisite: MT112 Architectural Drafting.

**MT230 Strength of Materials: Mechanical Cr-4**

The course introduces the fundamentals of strength of materials. Topics in stress analysis are included. Laboratory activities focus on testing procedures, reporting, and computer analysis. Prerequisites: MT126 Statics Mechanical, CT121 Statics Civil, or ES271 Engineering Science.

**MT231 Lean Six Sigma Cr-4**

This course covers basic functions and challenges of managers in the manufacturing and business environment, focusing on lean manufacturing, small businesses, and entrepreneurship. Topics include: Total Quality Management, continuous improvement, value-added activities and analysis, waste analysis, Just-In-Time, applications of Statistical Quality Control, and other current management methods and techniques. Lab activities may include off-site projects. Prerequisites: MT114 Manufacturing Processes or MA125 College Algebra and Trigonometry.

**MT242 Advanced MicroStation CAD Cr-3**

This is an advanced level course using MicroStation. Topics include theory and operational concepts for three-dimensional CAD drawings and models, solid modeling, rendering, display, and editing techniques. Prerequisites: CT102 Engineering Drawing and MicroStation CAD

**MT247 Introduction to Robotics Cr-4**

This course introduces the application of automated material handling devices in the manufacturing environment. Topics include classification of robots and their work envelopes, system components, programming methods, sensors and applications, economic justification, safety consideration, and industrial applications. Automatic guided vehicles and automatic storage/retrieval systems are discussed.

**MT251 Advanced AutoCAD Cr-3**

This is an advanced course using AutoCAD. Topics include menu customization, theory and operational concepts for three-dimensional CAD drawings and models, solid modeling, rendering and editing techniques. Prerequisites: MT140 Drafting and Design Using AutoCAD

**MT252 Fluid Mechanics Cr-4**

This course covers the fundamental topics and applications of fluid mechanics. Topics include fluid properties, fluid statics, conservation of energy and mass, pipe and duct flow, pumps, and measurement of fluid properties and states. An introduction to heat transfer is included, applying theory to thermal and hydraulic systems. Prerequisite: MA125 College Algebra and Trigonometry or a higher level mathematics course which includes trigonometry

**MT256 Advanced Solid Modeling Cr-3**

This course covers advanced solid modeling concepts and techniques. Topics include creating complex parametric models and assemblies using all feature types; creating detail and assembly drawings with various sectioning and view techniques; measurements; surfaces; and motion and analysis models. Model and assembly pre-planning are emphasized. Prerequisites: MT155 Introduction to Solid Modeling

**MT270 Welding Procedures for MIG and TIG Cr-4**

This course covers the theory and use of TIG (Tungsten Inert Gas) and MIG (Gas Metallic Arc) welding, including non-ferrous and ferrous metals in all positions. Topics include plasma welding, cutting, and safety procedures. Prerequisite: MT170 Oxy-Acetylene Welding Procedures. Welding supply fee required.

**MT271 Metallurgy for Welders Cr-3**

This course provides a fundamental knowledge and understanding of metallurgy as applied to welding. Topics include heat treating, physical testing, and metallography.

**MT272 Advanced Electric Arc Welding Procedures Cr-4**

This course continues with instruction of the principles and practices of gas arc (TIG) and gas metallic arc (MIG) welding on ferrous and non-ferrous metals and pipe. Topics include special arc cutting techniques such as air carbon arc, oxygen arc, underwater cutting, plasma cutting,

along with theory and safety. Welding supply fee required. Prerequisite: MT174 Electric Arc Welding Procedures.

### **MT273 Welding Certification**

**Cr-5**

This course discusses welding codes. Topics include set regulations covering permissible materials, service limitations, fabrication, inspection, testing procedures, and qualifications of welding operations. Emphasis is placed on preparation for the New York State Welding Certificate Exam. Welding supply fee required. Prerequisite: MT272 Advanced Electric Arc Welding Procedures.

### **MT276 Welders Ornamental Iron and Blacksmithing**

**Cr-4**

This course covers the design and fabrication of wrought iron and sculpture. Topics include the theory of blacksmithing and the use of the forge on various metals. Safety is stressed. Welding supply fee required.

### **MT277 Welders Blueprint Reading and Metal Fabrication**

**Cr-4**

This course covers weldment design factors. Topics include the interpretation of trade drawings, as well as the specification and use of welding symbols. Welding supply fee required.

### **MT278 Welding Inspection and Quality Control Testing**

**Cr-4**

This course presents the American Welding Society standards. Topics include the standards of testing of welds, preparation of test samples, methods of inspection and quality control, and fundamentals and interpretations of the American Welding Society, the American Society of Mechanical Engineers, and the American National Standards Institute welding codes. Welding supply fee required.

### **MT279 Sheet Metal Fabrication**

**Cr-3**

This course introduces students to the knowledge and skills required for the fabrication of sheet metal products, with special attention paid to the needs of regional industry. Gas metal arc welding (GMAW) or "MIG" and gas tungsten arc welding (GTAW) or "TIG" welding processes will be used as well as specialized sheet metal fabrication equipment, to include shear, brake, English wheel, and pin roller. Welding supply fee required.

### **MT291 Introduction to Machining**

**Cr-4**

This course introduces fundamental concepts of machining. Topics include safety, blueprint reading, precision measurement tools, machining a work piece to drawing specification, use of manual machines (milling, lathe, etc.), proper tooling and work-holding methods, and how to determine sequential machining operations of complex parts.

### **MT292 Introduction to CNC Milling**

**Cr-4**

This course introduces fundamental concepts of CNC milling centers. Topics include safety, blueprint reading, shop math, machining a work piece to drawing specification, introduction to CNC programming, set-up for milling machines, use of CNC milling machines, proper tooling and work-holding methods, and how to determine sequential machining operations of complex parts. Corequisite: MT291 Introduction to Machining.

### **MT294 Introduction to CNC Turning Centers**

**Cr-4**

This course introduces fundamental concepts of CNC Turning centers. Topics include safety, blueprint reading, Geometric Dimensioning and Tolerancing (GD&T), machining a work piece to drawing specification, introduction to CAM programming software, use of CAD to create drawings, introduction to CNC programming for lathes, use of CNC lathe, proper tooling and work-holding methods, and how to determine

sequential machining operations of complex parts. Corequisite: MT292 Introduction to CNC Milling.

### **MT295 Advanced CNC Turning Centers**

**Cr-4**

This course introduces advanced concepts of CNC Turning centers. Topics include safety, blueprint reading, live tools, C & Y axis programming, soft Jaws, machining a work piece to drawing specifications, CAM programming software, use of CAD to create drawings, manual programming for lathes, set-up of CNC lathe, proper tooling and work-holding methods and how to determine sequential machining operations of complex parts. Corequisite: MT294 Introduction to CNC Turning Centers.

### **MT296 Multi-Axis CNC Machining**

**Cr-4**

This course introduces fundamental concepts of Multi-Axis CNC Turning and Milling centers. Topics include safety, blueprint reading, machining a work piece to drawing specification, CAM programming software, CNC programming for Multi-Axis lathes, CNC programming for 4 and 5 axis machining centers, use of CNC milling machines and lathes, proper tooling and work-holding methods, advanced machining setups and tooling for milling machines and lathes, and topics on CNC wire EDM machining. Corequisite: MT295 Advanced CNC Turning Centers.

### **MT297 CNC Capstone**

**Cr-4**

In this capstone course students utilize and demonstrate the skills learned in the CNC/Machinist program. Students design, program, manufacture, and inspect the part they design, CAM and CAD software are utilized for design and programming purposes. The final project is manufactured and inspected to design specifications. Corequisite: MT296 Multi-Axis CNC Machining.

## **NU Nursing**

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### **NU101 Nursing 1 (Fundamentals of Nursing)**

**Cr-5**

This course explores the art and science of nursing and provides the foundation for all subsequent nursing courses. The physical, physiological, psychological, sociocultural, and spiritual needs of the client are emphasized in the promotion of health and wellness. The roles and responsibilities of nursing practice in contemporary society are explored. Basic concepts of Maslow's Hierarchy of Needs Theory, the nursing process, communication, critical thinking, leadership and management principles, ethical and legal aspects, and scientific principles of nursing and nursing skills are introduced. Clinical practicums are provided in a variety of health care facilities. Prerequisite: An appropriate High School GPA or Placement test score or MA089 Arithmetic. Corequisite: BI216 Human Anatomy & Physiology 1. Mandatory Corequisite: NU111 Nursing Pharmacotherapeutics 1. (Fall semester.)

### **NU102 Nursing 2A (Family Centered Nursing during the Pregnancy Cycle)**

**Cr-4**

This course focuses on the physical, physiological, cultural, spiritual, and psychological needs experienced by the expanding family during pregnancy, labor, delivery, and postpartum periods. The nursing process, Maslows Hierarchy of Needs theory, and critical thinking are integrated to meet the needs of the family in the perinatal cycle. Clinical experiences are provided in general hospital units and community agencies. Prerequisites: NU101 Nursing 1 with a minimum grade of 75 or advanced standing; NU111 Nursing Pharmacotherapeutics 1 with a minimum grade of 75 or advanced standing; Corequisite: BI217 Human Anatomy & Physiology 2. Mandatory Corequisite: NU103 Nursing 2B (Mental Health and Psychiatric Nursing Throughout the Life Cycle). (Spring semester)

### **NU103 Nursing 2B (Mental Health and Psychiatric Nursing Throughout the Life Cycle)**

This course addresses the foundations of mental health and psychiatric nursing. It examines threats to the basic psychological needs of security, love and belonging, self-esteem, and self-actualization throughout the life cycle. The nursing process, Maslows Hierarchy of Needs theory, and critical thinking are integrated to meet the needs of the client experiencing a disruption in mental health. Interpersonal relationships between the nurse and client are emphasized as a therapeutic modality. Clinical practicums are provided in mental health and psychiatric settings. Prerequisites: NU101 Nursing 1 with a minimum grade of 75 or advanced standing; NU111 Nursing Pharmacotherapeutics 1 with a minimum grade of 75 or advanced standing. Corequisite: BI217 Human Anatomy & Physiology 2. Mandatory Corequisite: NU102 Nursing 2A (Family-Centered Nursing during the Pregnancy Cycle). (Spring semester)

### **NU111 Nursing Pharmacotherapeutics 1**

This course introduces the concepts pertaining to the pharmacodynamics and pharmacokinetics of medications and dosage calculation for medication administration. Mandatory Corequisite: NU101 Nursing 1. (Fall Semester only)

### **NU201 Nursing 3 (Threats to Basic Human Needs Throughout the Life Cycle: Part 1)**

This course focuses on the pathophysiologic and psychosocial responses in clients experiencing disruptions in oxygenation, nutrition, and metabolic function. It analyzes the role of the professional registered nurse in assisting clients to adapt to these stressors. The nursing process, Maslows Hierarchy of Needs theory and critical thinking are integrated to meet the needs of the client experiencing a disruption in a medical/surgical setting. Concepts of nursing leadership and management are applied in providing care for a group of clients. A clinical practicum in a medical/surgical setting provides opportunities to assess and meet the needs of selected clients throughout the life cycle. Prerequisites: NU101 Nursing 1, NU111 Nursing Pharmacotherapeutics 1, NU102 Nursing 2A, NU103 Nursing 2B, all with a minimum grade of 75 or advanced standing; and BI217 Human Anatomy & Physiology 2 with a minimum grade of 70; Corequisite: BI201 Microbiology. (Fall semester)

### **NU202 Nursing 4 (Threats to Basic Human Needs Throughout the Life Cycle: Part 2)**

This course focuses on the pathophysiologic and psychosocial responses in clients experiencing disruptions in elimination, cognition and sensation, musculoskeletal function, protection, and cellular aberration. The nursing process, Maslows Hierarchy of Needs theory and critical thinking are integrated to meet the needs of the client experiencing a disruption in a medical/surgical setting. It explores the political, economic, social, and cultural influences on nursing practice and healthcare. It assists the second-year student to become a contributing member within the discipline of nursing. A clinical practicum in a medical/surgical setting provides opportunities to assess and meet the needs of selected clients throughout the life cycle. A 64-hour capstone experience assists in the transition to entry level graduate nurse. Prerequisite: NU201 Nursing 3 with a minimum grade of 75. (Spring semester)

## **OP Photonics**

### **OP161 Introduction to Photonics**

This course, the first of three optical courses in the Photonics program, covers properties of light, reflection, refraction, thin lenses, interference, diffraction, optical instruments, lasers, fiber optic components, fiber optic systems, optical information processing, and holography.

### **Cr-4 OP261 Geometrical Optics**

This course introduces the design and evaluation of optical systems using geometrical optics. Topics include: Gaussian optics and first-order system design, photometric theory applied to optical systems, matrix techniques in optics, optical instruments, exact-ray tracing methods, nature of Seidel aberrations, and optical system design software. Prerequisite: MA152 Calculus 2. Corequisite: PH262 Engineering Physics 2.

### **OP262 Physical Optics**

This course covers topics in the complex representation of waves, interaction of light with matter, interference, polarization, Fresnel and Fraunhofer diffraction, Fourier optics, coherent optical systems, optical data processing, and holography. Prerequisite: OP261 Geometrical Optics.

### **Cr-1**

## **PE Physical Education**

### **PE101 Bowling**

This course is for any skill level from beginner to advanced. It focuses on learning and improving proper form, scoring, appropriate etiquette, and general rules for the sport. Additional fees charged.

### **PE102 Golf**

This course presents the rules, playing etiquette, and skills necessary for playing golf. Instructional classes occur on campus and at a local golf course. (Additional fees charged.)

### **PE103 Tennis**

This skills-development course includes instruction in equipment selection and fundamentals of serving, strokes, and scoring. Rules and their application during singles and doubles play are addressed. Emphasis is placed on leisure and fitness benefits.

### **PE104 Badminton**

This course introduces the fundamental and advanced skills in badminton. Instruction in playing skills, rules, and strategies is provided. Focus is placed on the leisure as well as fitness benefits.

### **PE110 Racquet Sports**

This course introduces the fundamental and advanced skills in badminton and racquetball. Instruction is provided in playing skills, rules, and strategies. Focus is placed on the leisure and fitness benefits.

### **PE111 Strength Training 1**

This course provides proper free-weight training techniques for implementing a personal weight program. It develops individualized and strength training routines that can become lifetime commitments.

### **PE112 Speed Training**

This course provides proper speed training techniques for improving fitness and athletic ability. Emphasis is placed on dynamic stretching, core strength, and sport specific speed/direction change.

### **PE130 Swimming for Beginners**

This course helps non-swimmers and beginners to develop confidence in, on, or about the water. It includes adjustment and safety skills, floating, front and back kicks, arm strokes, entries, and conditioning skills. Emphasis is placed on leisure and fitness benefits.

### **PE131 Basic Swimming**

This course provides those with basic swimming abilities the opportunity to develop more efficient skills and conditioning levels. It covers the improvement of the front crawl, backstroke,

elementary backstroke, sidestroke, and breaststroke. Prerequisite: PE130 Swimming for Beginners or equivalent abilities, determined by instructor.

**PE133 Aerobic Swimming** **Cr-0.5**

This course presents a variety of aquatic activities encouraging fitness development. It introduces concepts of conditioning swims, water exercise, and tube training. It presumes basic confidence and comfort being in the water.

**PE134 SCUBA Diving** **Cr-1**

This course introduces students to the basic concepts of safe SCUBA diving. Students learn elementary SCUBA techniques and safety practices. Instructional classes will be in the MVCC swimming pool. Upon completion of this course, students will have an option to pursue certification by participating in open water dives. (Additional fees charged.)

**PE140 Introduction to Sports Officiating** **Cr-2**

This course provides students with an in-depth study of sports officiating and allows students to learn and develop the skills necessary to become a certified sports official. Topics include proper fitness and health; professional communication; creating a positive rapport with coaches, players, and game personnel; handling conflicts that arise; proper game management and safety/health protocols; rules and application of the sport games; and how to connect/join with local community agencies to become a certified official. The following sports will be included: soccer, basketball, baseball/softball, men's lacrosse and women's lacrosse.

**PE143 Basketball** **Cr-0.5**

This course is an introduction to the sport of basketball, including basic skills and techniques. An opportunity to experience a positive leisure activity is provided.

**PE151 Personal Fitness** **Cr-0.5**

This course introduces general fitness concepts with focus on the five health-related components of fitness: aerobic capacity, body composition, flexibility, muscular endurance, and muscular strength. Participation in laboratory activities develops these components.

**PE152 Jogging** **Cr-0.5**

This course helps participants understand the value of jogging as a personal fitness activity at any level of ability or experience. It includes information about training methods, the training effects of progressive exercise, shoe and clothing selection, and safety in training, dealing with aches and pains, and preparing for competition. Workouts demonstrate program progression and show examples of training methods.

**PE153 Aerobic Fitness** **Cr-0.5**

This course provides an understanding of the five health-related components of fitness (aerobic capacity, body composition, flexibility, muscular endurance, and muscular strength) and how aerobic exercise contributes to their development. Exercise sessions are dedicated to developing total fitness.

**PE154 Fitness Center** **Cr-1**

This course introduces students to a comprehensive fitness program, including strength training, cardiovascular endurance, and flexibility enhancement. Students develop the basic knowledge to pursue fitness as a lifetime endeavor.

**PE155 Police Fitness Training** **Cr-0.5**

This course covers the physiological capacity for successful completion of the fitness requirement for an entry-level police officer as prescribed

by the Municipal Police Training Council of the State of New York. The NYS Police Officer minimum fitness requirements are incorporated.

**PE156 Total Body Fitness** **Cr-0.5**

This course introduces the students to the basic fundamental Total Body Fitness exercises, which are Yoga and Pilates-inspired positions. Many of the poses and exercises strengthen one or more muscle groups, while simultaneously stretching others. Many of the exercises also will challenge balance. The focus will be on the essential foundations of the primary poses to encourage the student to practice safely with ease and stability. There also will be a focus on managing stress through mindfulness and breath.

**PE157 Walking for Fitness** **Cr-0.5**

This course introduces the low-impact, cardiovascular endurance activity of walking. Proper techniques of walking, warm-up, and cool-down are introduced and practiced. Instruction is provided in injury prevention, weight management, and goal setting as vital components of a fitness program.

**PE158 Basic Yoga** **Cr-0.5**

This course introduces basic yoga principles. Emphasis is placed on increasing flexibility, body awareness, and focusing the breath. Activities include major poses and routines designed to increase knowledge of yoga and its role in lifetime fitness.

**PE162 Self Defense** **Cr-0.5**

This course introduces basic self-defense moves, escapes from grabs, using restraining holds, kicking techniques and punching. Escaping and restraining will be done with partners. Punching and kicking will be done against targets and pads held by partners. This is not formal Martial Arts training; this is an introduction only. Emphasis is placed on preventative measures for personal protection.

**PE164 Tai Chi** **Cr-0.5**

This course introduces the skills and principles of Tai Chi. Students learn and practice Tai Chi postures of a Yang style form. Partner exchanges called sensing hands are included later in the practice.

**PE170 First Aid** **Cr-1**

This course provides knowledge and skills for handling most situations that require emergency first-aid care. It provides the opportunity to work toward National Safety Council First Aid/CPR certifications as well as automated external defibrillation (AED) skills.

**PE171 CPR** **Cr-0.5**

This course teaches rescue breathing, CPR, two-rescuer CPR, and automated external defibrillation (AED) skills. Students may complete certification from the American Heart Association basic life support (BLS) for healthcare providers.

**PE172 Health and Wellness** **Cr-2**

This course assists in making intelligent health-conscious decisions through topics such as wellness, aging, sexuality, drugs and alcohol, and communicable diseases. It introduces activities and skills for leading healthy lifestyles including fitness assessment, weight management, and exercise.

**PE178 Varsity Lacrosse - Women** **Cr-1**

These courses are designed for competition at the intercollegiate athletic level. Organization, conditioning, and practice sessions prepare students for competition as members of an MVCC intercollegiate team. Team rosters may be determined according to program limitations, with players selected on ability and availability. NJCAA athletic eligibility must be met prior to competition and all students must pass a physical exam administered by a qualified health care professional.



groups to maximize muscle strength and development. Prerequisite: PE111 Strength Training 1.

### **PE230 Lifeguard Training** **Cr-2**

This course is for those who have an interest in developing a high degree of proficiency in swimming, water safety, and lifeguard skills. It provides the opportunity to work on requirements to become a certified lifeguard per NYS Health Department standards.

### **PE234 SCUBA Diving 2** **Cr-1**

This course, a Specialty (Level 2) Open-Water Diver program, teaches advanced diving skills in underwater navigation, deep diving, and dry-suit diving. Successful completion of classroom, pool, and open-water work leads to internationally recognized Specialty (Level 2) Diver Certification. Prerequisite: PE134 SCUBA Diving or Level 1 Certification or instructor permission. Additional fees charged.

## **PH Physics**

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### **PH106 Science of Sound** **Cr-4**

This course introduces basic concepts of sound and human hearing. Topics include the history and development of basic acoustics and electricity, microphones, loudspeakers, signal processing, monitoring and recording systems, and an introduction to current digital audio. This course is not applicable as an electrical elective for Electrical majors. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **PH112 Science of Light 1** **Cr-4**

This course introduces the concepts of light and optics. Topics include the historical development of optical instruments, electromagnetic spectrum, lenses and image formation, light-sensitive materials and processes, color filters, Kirlean imaging, and holography. Examples are chosen from a variety of fields, including photography, human vision, and nature. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **PH113 Science of Light 2** **Cr-4**

This course is a continuation of PH112 Science of Light 1 and applies scientific principles to the analysis of the materials and processes of imaging. Topics include the historical development of color theory, color emulsions and their processing, physics of light sources, diffraction, interference, sensitometry, image evaluation, and digital image processing. Prerequisite: PH112 Science of Light 1.

### **PH114 Science of Digital Imaging** **Cr-4**

This course provides an overview of the science underlying the field of digital imaging. Topics include the historical development of digital imaging technology, introduction to computers, color theory and color calibration, how image input and output devices work, the science of digital image manipulation, computer generation and display of 3-D images, and real-world applications and their impact upon the individual and society. Image manipulation software is used to demonstrate and explore concepts. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **PH115 Science of Multimedia** **Cr-4**

This course examines the scientific principles behind various branches of multimedia including text, audio, animation, and video. Students learn the physics involved in multimedia techniques such as color mixing and viewing, sound manipulation, and replicating real-life movements in digital animation and video. Students use the scientific method to explore and create multimedia projects that apply these basic scientific concepts.

### **PH116 Science of Multimedia 2** **Cr-4**

This course extends the scientific and computer concepts developed in PH115 to 3-D multimedia. It provides hands-on experience using a professional 3-D graphics engine. Topics include vectors and vector operations, transformation theory, design of 3-D Graphical User Interfaces, 3-D lighting, 3-D cameras, multi-texturing, 3-D optimization techniques, mesh generation, third-party model generation, 3-D node hierarchy, using a 2-D mouse in a 3-D world, generation of physically accurate simulations, and 3-D game development. Hardware and software packages are used to explore and demonstrate concepts. Prerequisites: PH115 Science of Multimedia; and Appropriate high school GPA or placement test score or MA121 Fundamentals of College Mathematics 1, or MA125 College Algebra and Trigonometry.

### **PH131 Physics Fundamentals** **Cr-4**

This conceptual survey of physics emphasizes verbal reasoning and understanding in a classroom and laboratory format. It covers mechanical energy, sound, electricity, optics, thermal energy, and atomic nuclear energy. This course does not satisfy the graduation requirements for science and technology majors. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **PH141 Astronomy: The Solar System** **Cr-4**

This course covers the history of astronomy, the tools of the astronomer, the earth as an astronomical body, and the solar system. Laboratory sessions may be scheduled in the evening. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **PH142 Astronomy: Stars, Galaxies, & the Universe** **Cr-4**

This course covers these topics: the sun and other stars, multiple star systems, the Milky Way and other galaxies, nebulae, intergalactic material, cosmology and the evolution of stars, pulsars, and black holes. Laboratory sessions may be scheduled in the evening. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

### **PH151 General Physics 1** **Cr-4**

This non-calculus Physics course for technology, business administration, computer science, and liberal arts and sciences students covers topics in mechanics, wave motion, and heat. Prerequisite: Appropriate high school GPA or placement test score or MA121 Fundamentals of College Mathematics 1, or MA125 College Algebra and Trigonometry.

### **PH152 General Physics 2** **Cr-4**

This course is a continuation of PH151 General Physics 1 and includes topics in electricity and magnetism, geometrical and physical optics, and modern physics. Prerequisite: PH151 General Physics 1.

### **PH261 Engineering Physics 1** **Cr-4**

This is a calculus-based physics course for mathematics, physics, and engineering students. Topics include translational motion, particle dynamics, work and energy, momentum and impulse, rotational kinematics, rigid body motion, gravitation, vibrational motion, wave motion, and acoustics. Prerequisites: MA151 Calculus 1.

### **PH262 Engineering Physics 2** **Cr-4**

This calculus-based physics course in electricity, magnetism, geometrical optics, and physics optics is for mathematics, physics, and engineering students. Topics include Coulomb's Law, the electric field, potential, capacitance, Ohm's Law, DC circuits, the magnetic field, charged particle ballistics, induced EMF, inductance, Maxwell's Equations, alternating current circuits, geometrical optics, and physical optics. Prerequisites: MA152 Calculus 2; PH261 Engineering Physics 1.

### **PH265 Modern Physics and Thermodynamics**

This calculus based course provides an introduction to thermodynamics as well as an overview of major developments in physics from the early 20th century through today. Topics include heat, kinetic theory, thermodynamics, Einstein's special theory of relativity, quantum nature of light, wave nature of particles, atomic structure, molecular physics, nuclear physics, particle physics, and cosmology. Prerequisite: MA253 Calculus 3 and PH262 Engineering Physics 2.

**Cr-4**

### **PH270 Waves and Oscillations**

This course introduces the physical description of waves and oscillatory motion and the mathematical techniques used in analyzing such phenomena. Topics include harmonic oscillators, wave packets, normal modes, electromagnetic waves, interference, diffraction, Fourier analysis, and eigenvectors. Co-requisites: MA260 Differential equations and MA280 Linear Algebra.

**Cr-3**

## **PM Physical Education Emphasis**

### **PM101 Soccer-PE Majors**

This course covers fundamental to advanced individual and team skills as well as concepts related to the game of soccer. It develops an understanding of how to present skills to players in an individual or team setting. For Physical Education emphasis students.

**Cr-1**

### **PM102 Volleyball-PE Majors**

This course covers the concepts of volleyball skills and tactics, with attention to skill analysis and application to the game. Opportunities for practice teaching, analysis of team and individual performance, and class competitions are offered. For Physical Education emphasis students.

**Cr-1**

### **PM103 Basketball-PE Majors**

This course covers the concepts and skills in the playing of basketball. It develops an ability to demonstrate fundamentals in teaching basketball skills. Developing drills for practice and understanding of game situations are provided. For Physical Education emphasis students.

**Cr-1**

### **PM105 Tennis-PE Majors**

This course covers skills and rules of the sport of tennis, proper etiquette, how to teach skills with drills appropriate for skill levels, and how to administer skill tests. It involves participation in singles and doubles class competition. For Physical Education emphasis students.

**Cr-1**

### **PM106 Golf-PE Majors**

This course covers concepts and skills in the playing of golf. It includes the fundamentals of the golf swing as applied to a variety of golf clubs and course contours. Class sessions are held on campus and at an area golf course. For Physical Education emphasis students.

**Cr-1**

### **PM109 Swimming-PE Majors**

This course covers concepts of aquatic skills and safety. It includes study and practice in five basic swimming strokes, physical laws as applied to swimming, physical effects of swimming, personal safety, and elementary rescue forms. Concepts of teaching skill and aquatic games are studied. For Physical Education emphasis students.

**Cr-1**

### **PM110 Racquet Sports-PE Majors**

This course covers fundamental and more advanced individual skills and strategy necessary for playing the games of badminton and racquetball. It includes how to present skills to the beginner in an organized manner. For Physical Education emphasis students.

**Cr-1**

### **PM111 Total Fitness Training-PE Majors**

This course provides students with proper training techniques for development of muscular strength, cardiovascular endurance, and flexibility programs. Emphasis is placed on teaching students the physiological principles and proper safety mechanics of fitness components. For Physical Education emphasis students.

**Cr-1**

## **PS Political Science**

### **PS101 American National Government**

This course introduces the discipline of political science through the study of American government. Topics include the concept of the political system, democracy in theory and practice, the historical background and content of the Constitution, Federalism, and the role of the Supreme Court in civil rights. It stresses these aspects of the American political system: public opinion, voting behavior, the electoral system, political parties, and modern campaigning techniques.

**Cr-3**

### **PS102 Introduction to Public Policy**

This course introduces public policy, a field of study that integrates political, social, and economic theories and insights, and addresses the general question, "Who gets what, when, and how in society?" To answer this question, the history of public policy in the United States is studied, and how public policy is defined, developed, and applied within the federalist system of government. The role of governmental and non-governmental institutions in policy making is examined from several theoretical perspectives. Contemporary issues in public policy are studied through the application of these theories to key substantive areas, including crime and justice, healthcare, social welfare, education, and the environment.

**Cr-3**

### **PS202 Comparative Politics**

This course covers the convergence of theories, methods, and concepts associated with political science and comparative politics. It introduces knowledge about politics and political science in a comparative perspective and develops a framework of classifications or typologies to deal with the complexity of political life. A specific effort is made to survey major ideological strains, from communism to fascism, and to link them to recent and current regimes and movements.

**Cr-3**

### **PS203 State and Local Government**

This course covers the organization, operation, and issues of state, county, and city government. Emphasis is placed on comparative politics in the 50 states and the current problems of federalism. Local governmental units and issues are considered in the study of developments on that level.

**Cr-3**

### **PS204 American Foreign Policy**

This course examines post-World War II American foreign policy. It focuses upon the nature and shaping of foreign policy, the foreign policy process, and the improvements needed in that process. Prerequisite: PS101 American National Government or PS202 Comparative Politics.

**Cr-3**

### **PS205 International Politics**

This course covers the skills necessary to analyze contemporary international politics. It focuses upon international politics as a political system, examines the types of actors (individuals, groups, or institutions) who make decisions determining the course of international politics, and discusses how nations deal with one another in international interactions. Prerequisite: PS101 American National Government or PS202 Comparative Politics.

**Cr-3**

### **PS206 Grant Writing**

This course focuses on the preparation of written reports, grants, correspondences, proposals, and research in the public, private,

**Cr-3**

and non-profit sectors. Analytical, theoretical, and practical writing techniques are explored, as is writing in a comprehensive, well-organized, and convincing manner. Legal and ethical issues that face government are explored and critiqued. Emphasis is placed on contemporary information and technologies. Prerequisites: EN101 English 1: Composition, PS101 American National Government, PS102 Introduction to Public Policy, and IS101 Computers and Society.

**PS209 Introduction to Peace Studies Cr-3**

This course examines the ways in which groups use nonviolent techniques to resolve common inter- and intra-group conflicts. Historical and cross-cultural examples of nonviolent conflict resolution are analyzed. The context in which conflicts are created and resolved is discussed, including the significance of the values of society, power relations, systems of stratification, and social institutions.

## **PT Photography**

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**PT101 Traditional Black and White Photography Cr-3**

This course provides an understanding of principles as applied to all phases of traditional wet-process darkroom photography. Primary instruction will be in the utilization of a manual 35mm film camera. It covers instruction in photo optics, camera equipment, film and paper emulsion, photographic chemicals, filters and lens attachments, lighting, composition, and exposure control.

**PT102 Photography 2 Cr-3**

This course provides advanced technical skills in photography. Topics include advertising, portrait, and industrial photography. It includes the use of 35mm, 2 1/4, and view cameras. Laboratory procedures such as densitometry, studio lighting, sheet and roll film processing and enlarging are covered. Prerequisite: PT101 Photography 1.

**PT103 Video and Narrative Cr-3**

This course allows students to develop a body of video work that addresses both linear and non-linear narrative structures and explores the creation of meaning through the combination of sound, movement, and narrative progression. Students incorporate both DSLR video and smartphone video in the development of course work. Discussions and readings include historical and theoretical explorations of video as an art form and means of visual communication. Students further hone their technical skills using current video software and applications while gaining practical experience with a variety of equipment options and techniques for video capture. Prerequisites PT106: Multimedia Photography.

**PT104 Studio Techniques Cr-3**

This course covers the concepts and techniques of advertising and illustrative photography. It emphasizes studio work using view cameras. Topics include the advanced uses of the view camera, lighting techniques and applications, color correction, and studio techniques.

**PT105 Publishing Techniques for Photography Cr-3**

This course covers the techniques used to reproduce photographs for print production. Reproduction for newspaper, magazine, and bookwork is discussed. Halftones, duotones, and posterizations are produced using the vertical and horizontal process cameras. Darkroom processing and offset prepress procedures are included.

**PT106 Multimedia Photography Cr-3**

This course introduces the techniques of multimedia production. The techniques of DSLR video production are explored and students shoot and edit video captured from HD DSLR cameras. Students produce

videos focusing on technical skills and storytelling through multimedia elements. Prerequisite: PT207 Digital Photography 1: Camera and Editing

**PT111 Art Sources Cr-3**

This course introduces the fundamental aspects of creativity, design, and the exploration of art forms as applied to the creation and enhancement of photographic applications. It covers the sources of creativity, design principles, and the understanding and practice of art movements.

**PT126 Basic Photography Cr-3**

This course introduces photography and the photograph as a medium of the graphic communicator. It covers photographic principles and procedures, including how to operate a 35mm adjustable camera, develop black-and-white film, make contact prints, and enlargements. The aesthetics of the photograph, and its use as a medium of graphic communications, is emphasized.

**PT201 Photojournalism Cr-3**

This course covers newspaper and magazine photography through realistic assignments, critiques, and reference to accepted practices. The work of prominent photojournalists is viewed and discussed. Photographic projects are required, including a photo essay, to demonstrate skill in documenting a subject through photography. Prerequisites: PT101 Photography 1.

**PT202 Alternative Processes Cr-3**

This course encourages work with experimental photography by exploring and exploiting photographic materials and techniques for creative ends. The mixing of photography with other media is encouraged. Printing processes once popular and now regaining interest are explored. Prerequisites: PT101 Photography 1 or PT126 Basic Photography or PT214 Fine Art Photography 1.

**PT203 Topics in Photography Cr-3**

This course provides opportunity to expand on the course offerings of the Photography program. Topics change each semester to reflect trends within the medium. Prerequisites: PT102 Photography 2 and PT103 Video and Narrative

**PT204 Photography Seminar Cr-3**

This course is focused on helping students develop a professional approach to the industry. Projects are customized by inclination and requirements, and a personal direction is encouraged. Key aspects of entering the field, such as portfolio presentation and personal marketing are addressed. Emphasis is placed on refining the student's portfolio and credentials so that they can confidently take the next step in their personal plans for joining the professional photography industry. Prerequisites: PT104 Studio Techniques and PT202 Advanced Darkroom Techniques.

**PT205 History of Photography 1 Cr-3**

This course surveys the history of photography, beginning with the camera obscura of the Middle Ages through the beginning of the 20th Century. It emphasizes the artistic intent and purpose of the photographer.

**PT206 History of Photography 2 Cr-3**

This course focuses on the development of photography in the 20th Century. It explores technological innovations throughout the 20th Century and their impact on photography. It reinforces the premise that photography is a vital means of communication in the field of visual communications. It covers the interdisciplinary nature of 20th Century photography, and how it lends itself well to science, art, and communications.

**PT207 Digital Photography 1: Camera and Editing****Cr-3**

This course introduces techniques used to create, edit, and manipulate photographs through digital processes. Topics include image capture and input methods, workflow, editing in the digital darkroom, and output techniques for black and white as well as color images. Students operate a DSLR camera, and are introduced to Adobe Lightroom and Adobe Photoshop. Photographic composition and aesthetics, and their use as a form of visual communication, are emphasized.

**PT208 Digital Photography 2: Compositing****Cr-3**

This course covers the theory, role, scope, and practice of compositing digital photographic images and introduces the ways and means to utilize image editing software to communicate effectively with an audience. Emphasis is placed on masking, blending modes, painting techniques, and advanced compositing. It investigates approaches to manipulate raster-based graphics and utilizes design to communicate conceptual elements to an audience. Prerequisite: PT207 Digital Photography 1: Camera and Editing

**PT209 Advanced Darkroom Procedures 2****Cr-3**

This course is intended to build upon the skills and techniques learned in Advanced Darkroom Procedures 1. Students receive instruction in additional alternative techniques and methods, develop projects involving advanced applications of alternative photographic processes, and explore new methods of aesthetic and conceptual visual communication including the creation of hand-made art books and multi-dimensional photographic works.

**PT210 Portrait and Fashion Photography****Cr-3**

Portrait and fashion photography equips students with the skills necessary for portraiture. Emphasis is placed on lighting and posing arrangements and combinations. The influences and techniques of notable figures within the genre of portrait and fashion photography are explored. The course incorporates DSLR video components and current professional practices.

**PT211 Digital Photography 3: Printing****Cr-3**

This course covers advanced imaging techniques to create digital images for printing purposes. It emphasizes working with software programs, and develops advanced skills in the use of computer-based imagery and digital media. It strikes a balance between the stimulation of creativity and the acquisition of technical knowledge. Prerequisite: PT208 Digital Photography 2: Compositing

**PT214 Fine Art Photography 1****Cr-3**

This course introduces black and white photography as a fine art medium. It covers basic camera operation, film processing, and printing. Emphasis is given to individual expression and personal vision. A brief history of fine art photography is included. Students also study basic principles of slide production as it relates to creating a portfolio for transfer. The aesthetics of the photograph and its use as a medium of visual communication are emphasized. Studio lab fee: \$30

**PT222 Fine Art Photography 2****Cr-3**

This course is intended to move beyond basic black and white processes and techniques to expand the range of creative possibilities and personal expression. Color printing, experimental techniques, alternative photographic processes, and image manipulation are emphasized. The course will include a survey of contemporary fine art photography. Prerequisite: PT214 Fine Art Photography 1. Studio laboratory fee: \$60

# PY Psychology

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**PY101 Introduction to General Psychology****Cr-3**

This course introduces the many and varied facets of psychology. Emphasis is on interactions of individuals in their cultural, social, and economic environments as determined by their cognitive, behavioral, and emotional experiences and training.

**PY201 Learning: Behavior Analysis****Cr-3**

This course explores the mechanisms that underlie human learning. Emphasis is placed on the examination of the behavioral approach to the study of human learning. Prerequisite: PY101 Introduction to General Psychology.

**PY202 Childhood and Adolescence****Cr-3**

This course examines the psychological changes that take place between birth and adolescence. Emphasis is placed on the cognitive, social, emotional, language, and physical dimensions of developmental change. The psychological pathologies unique to this segment of the lifespan are discussed. Prerequisite: PY101 Introduction to General Psychology.

**PY203 Abnormal Psychology****Cr-3**

This course covers the historical views of abnormality as well as current classification of abnormal behavior. It emphasizes the comparison of perspectives on causes and treatments of abnormal behavior. Prerequisite: PY101 Introduction to General Psychology.

**PY204 Social Psychology****Cr-3**

This course deals with theoretical and applied aspects of the individual in social contexts. Attention is given to interpersonal relations and group dynamics, for better understanding of functioning in social situations. Topics include conformity, aggression, interpersonal attraction, and communication. Prerequisite: PY101 Introduction to General Psychology.

**PY205 Adulthood and Aging****Cr-3**

This course examines the adjustments faced by the individual from midlife through old age. Emphasis is placed on the effect of role changes on the individual's view of self and their ability to function. Methods to ease role transitions are covered. Prerequisite: PY101 Introduction to General Psychology.

**PY206 Theories of Personality****Cr-3**

This course investigates a variety of personality theories, including biological factors, psychoanalysis, humanism, existentialism, and behaviorism. Emphasis is placed on the contribution of each theory to the field. Prerequisite: PY101 Introduction to General Psychology.

**PY207 Life-Span Development Psychology****Cr-3**

This course explores the changes that take place in human development from conception to death. Cognitive, emotional, social, and physical developments are covered at each chronological stage. Emphasis is placed on biological and environmental influences across the life-span. Prerequisite: PY101 Introduction to General Psychology. Students who have successfully completed PY202 Childhood and Adolescence and/or PY205 Adulthood and Aging may not take PY207 Life-Span Developmental Psychology.

**PY208 Death, Dying and Bereavement****Cr-3**

This course increases personal knowledge about death as an aspect of the life process and assesses the impact of dying and bereavement from psychosocial, cultural, and historical as well as developmental, medical, and legal perspectives. Human roles relating to the distinct needs of

dying persons and their friends and families are examined. Prerequisite: PY101 Introduction to General Psychology.

**PY209 Forensic Psychology Cr-3**

This course examines the relationship between psychopathology and criminality, and describes the legal context in which forensic psychology is practiced. Unlike other disciplines of psychology, which are therapeutic or habilitative in nature, it is concerned with the prevention, detection, and reduction of crime. Corequisite: PY203 Abnormal Psychology.

**PY210 Research Design for the Behavioral Sciences Cr-3**

This course examines research methodology in the behavioral sciences including observational and recording methods, the evaluation of performance (psychometrics), and quasi-experimental research. Emphasis is placed upon the application of the methodologies to research designs and the interpretation of psychological reports. Prerequisite: PY101 Introduction to General Psychology.

**PY212 Adolescent Psychology Cr-3**

This course explores physical, social, emotional, moral, and cognitive development during adolescence. It examines theories and research about adolescent development. Topics include the changing role of relationships with peers and parents, gender and identity development, problem behaviors, and appropriate interventions to reduce risky behavior and promote successful development. The influence of the social and cultural context on development is considered. Fifteen hours of observation of adolescents in a 7th - 12th grade school setting must be completed. Prerequisite: PY101 Introduction to General Psychology and CO231 Philosophy, Principles, and Organization of Athletics in Education or, ED150 Social & Philosophical Foundations of Education. .

**PY213 Human Sexuality Cr-3**

This course provides an overview of the biopsychosocial perspectives of human sexuality. It covers the personal and biological aspects of human sexuality, and its historical and cultural perspectives. Topics include sexuality across the lifespan, sexual identity development, and variation of the human sexual experience. Prerequisite: PY101 Introduction to General Psychology.

**PY215 Health Psychology Cr-3**

This course explores the psychological and behavioral processes in health, illness, and health care. Emphasis is placed on psychological, behavioral, and cultural factors that contribute to physical health and illness. Topics include health research, stress and pain management, and behavioral health. Prerequisite: PY101 Introduction to General Psychology.

## **RC Respiratory Care**

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**RC101 Basic Science for Respiratory Care Cr-2**

This course addresses topics in mathematics, physics, chemistry and microbiology related to respiratory care practice. Mathematical areas include graphing, nomograms and basic statistics. Physics and chemistry topics include the states of matter, humidity, gas pressure, gas laws, acids, bases, buffers, fluid dynamics, compliance, resistance, elastance and surface tension. A four-week module provides an introduction to microbiology at the end of the semester. Emphasis is placed on microbes that commonly involve the respiratory system. The course delivery mode is a hybrid on-line/on-site combination requiring attendance at microbiology lab sessions on the Utica Campus the last two weeks of class. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. A minimum grade of "C" is required. (Fall semester)

**RC103 Cardiopulmonary Pharmacology Cr-3**

This course presents the principles of pharmacology, drug actions, dosage calculations, and agents administered in cardiopulmonary care. It covers indications, side effects, hazards, and mechanisms of action, general categories, and classification of drugs. Respiratory, cardiovascular, neuromuscular, sedative-narcotic, and anti-infective agents are reviewed. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. A minimum grade of "C" is required. (Fall semester)

**RC111 Principles of Respiratory Care 1 Cr-4**

This is the first course in the curriculum sequence to study the theory and practice of respiratory care. Topics include cardiopulmonary anatomy and physiology (including lung and cardiac function, mechanics of breathing, oxygen and carbon dioxide exchange, and control of ventilation), gas administration therapies, humidity and aerosol therapies and bronchial hygiene techniques. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. A minimum grade of "C" is required. (Fall semester)

**RC112 Principles of Respiratory Care 2 Cr-4**

This is the second course in the curriculum sequence to study the theory and practice of respiratory care. Topics include lung expansion therapies, airway management, acid-base balance, and the interpretation of arterial blood gas results. Detailed information required to initiate, maintain, monitor, and wean patients from mechanical ventilation is provided. Prerequisites: A full year of high school general chemistry with laboratory (with a minimum grade of 70) within ten years or equivalent course with a minimum grade of C, RC101 Basic Science for Respiratory Care, RC103 Cardiopulmonary Pharmacology, and RC111 Principles of Respiratory Care 1. Corequisites: BI216 Human Anatomy & Physiology 1, RC115 Cardiopulmonary Diseases, and RC131 Clinical Practicum 1 or Program Coordinator consent. Minimum grade of "C" required. (Spring semester)

**RC115 Cardiopulmonary Diseases Cr-3**

The initial portion of this course stresses the integral components of data collection, assessment, and evaluation necessary for the development of an effective care plan for patients with cardiopulmonary disorders. The remainder emphasizes the etiology, manifestations, and treatment of a variety of cardiopulmonary diseases. Case study presentations use critical thinking skills. Prerequisites: A full year of high school general chemistry with laboratory (with a minimum grade of 70) within seven years or equivalent courses with a minimum grade of C, RC101 Basic Science for Respiratory Care, RC103 Cardiopulmonary Pharmacology, and RC111 Principles of Respiratory Care 1. Corequisites: BI216 Human Anatomy & Physiology 1, RC112 Principles of Respiratory Care 2, and RC131 Clinical Practicum 1, or Program Coordinator consent. Minimum grade of C required. (Spring semester)

**RC131 Clinical Practicum 1 Cr-3**

This initial 135-hour hospital experience provides the supervised practice of routine respiratory therapies in a community clinical setting. Theories and skills learned in the classroom and laboratory are applied in actual patient care situations. The safe administration of therapies, maintenance of records, and infection control procedures are stressed. Prerequisites: Documented health physical examination within three months, including specific test results, liability insurance coverage, and current CPR for Healthcare Providers Certification are required for all students before the start of this course. A full year of high school general chemistry with laboratory (with a minimum grade of 70) within ten years or equivalent course with a minimum grade of C, RC101 Basic Science for Respiratory Care, RC103 Cardiopulmonary Pharmacology, RC111 Principles of Respiratory Care 1. Corequisites: BI216 Human Anatomy & Physiology 1 and RC115 Cardiopulmonary Diseases, or Program Coordinator consent. Minimum grade of "C" required. (Spring semester)

**RC213 Principles of Respiratory Care 3 Cr-2**

This is the third course in the curriculum sequence to study the theory and practice of respiratory care. Topics include cardiopulmonary diagnostics and monitoring, special procedures (i.e., bronchoscopy and thoracentesis), critical care pharmacology, home care, and advanced management for the patient requiring mechanical ventilation. Prerequisites: BI217 Human Anatomy & Physiology 2, RC112 Principles of Respiratory Care 2, RC115 Cardiopulmonary Diseases, RC131 Clinical Practicum 1. Corequisites: RC232 Clinical Practicum 2, or Program Coordinator consent. Minimum grade of C required.

**RC214 Acid Base Physiology Cr-2**

This course covers the concepts of fluid and electrolyte balance, and the implications of the cardiopulmonary/ renal systems on acid-base homeostasis in the body. Focus is placed on the application of acid-base physiology in the clinical arena and its impact on patient management. Emphasis is placed on interpretation of fluid and electrolyte imbalance, and their interrelationships. Prerequisite: BI217 Human Anatomy & Physiology 2 or instructor consent. Minimum grade of "C" required. (Spring semester)

**RC215 Principles of Respiratory Care 4 Cr-1**

This is the fourth course in the curriculum sequence to study the theory and practice of respiratory care. This concentrated offering presents topics related to neonatal and pediatric respiratory care. Content areas include neonatal and pediatric diseases, pharmacology, airway management, mechanical ventilation, high-frequency oscillation, and extracorporeal membrane oxygenation (ECMO). Prerequisites: RC233 Clinical Practicum 3, RC214 Acid Base Physiology, and BI209 Basic Pathophysiology. Corequisite: RC234 Clinical Practicum 4 or Program Coordinator consent. Minimum grade of C required. (Summer session)

**RC232 Clinical Practicum 2 Cr-6**

This course provides opportunities to practice routine procedures and adult critical care during 270 hours of experience in a variety of clinical sites. Specialty rotations include pulmonary function testing, cardiac catheterization, cardiac diagnostics, respiratory homecare, polysomnography, radiology, and cardiothoracic surgery. Safe practice, critical thinking and problem solving are key components. Prerequisites: BI217 Human Anatomy and Physiology 2, RC112 Principles of Respiratory Care 2, RC115 Cardiopulmonary Diseases, and RC131 Clinical Practicum 1. Corequisites: RC213 Principles of Respiratory Care 3, or Program Coordinator consent. Minimum grade of C required. (Fall semester)

**RC233 Clinical Practicum 3 Cr-6**

This course involves 270 hours of experience in at least four clinical affiliates. Emphasis is placed on adult critical care experiences. Specialty rotations include a physician preceptorship, routine pediatric care, and Advanced Cardiac Life Support (ACLS) completion. Prerequisites: RC213 Principles of Respiratory Care 3, and RC232 Clinical Practicum 2 or Program Coordinator consent. Minimum grade of C required. (Spring semester)

**RC234 Clinical Practicum 4 Cr-5**

This course provides opportunities to perform all aspects of respiratory care with emphasis on neonatal, pediatric and adult critical care during 225 hours of experience in a variety of clinical sites. Requirements are completed for American Heart Association (AHA) Neonatal Resuscitation Protocol (NRP) and Pediatric Advanced Life Support (PALS). Specialty rotations include extended ventilator care, critical care monitoring and patient assessment. Adult rotations provide a capstone experience to facilitate the transition from student to entry-level practitioner. Safe practice, critical thinking, problem solving and time management are key components. Prerequisite: RC233 Clinical Practicum 3. Corequisite: RC215 Principles of Respiratory Care 4. Minimum grade of C required. (Summer session)

# RE Recreation & Leisure Services

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**RE100 Introduction to Recreation Cr-3**

This course introduces the history, theory, and philosophy of the recreation movement and its relation to individuals and the groups in our changing society. Emphasis is placed on an orientation to recreation as a vocation within the structure of community recreation (governmental, public, and commercial).

**RE102 Recreation Safety and Liability Cr-3**

This course provides an understanding of the risk management process in recreation programming and facility management. Emphasis is placed on the concepts of liability and negligence as related to the leisure delivery services system, with a focus on risk reduction and increased safety. Studies culminate in completion of group-assigned risk management plans.

**RE105 Recreation Leadership and Activity Development Cr-3**

This course develops skills and techniques used in leading individual and group activities for all ages. The 11 program areas in the field of Recreation and Leisure are covered. Emphasis is placed on developing lesson plans and presenting activities. Field trips are included. Corequisite: RE100 Introduction to Recreation.

**RE106 Outdoor Recreation and Leisure Activities Cr-3**

This course investigates the field of outdoor recreation and leisure. Outdoor activities develop knowledge of group dynamics and leadership skills. Federal, state, and private programs are studied through field trips and speakers. There is a strong focus on today's environment and its effect on outdoor activity. Prerequisite: RE105 Recreation Leadership and Activity Development. Corequisite: RE100 Introduction to Recreation.

**RE204 Fitness Programming and Management Cr-3**

This course provides an in-depth look at aspects of physical fitness and methods of measuring. It covers management techniques as they apply to fitness center facilities. Laboratory sessions offer hands-on experience leading and participating in fitness activities.

**RE205 Recreation Internship 1 Cr-3**

This course provides the opportunity to gain supervised practical experience in a recreation setting related to an area of professional interest. In addition to 90 hours of field experience, participation in a weekly seminar is required. Corequisite: RE100 Introduction to Recreation.

**RE207 Recreation Internship 2 Cr-3**

This course provides a continuation of the supervised experience in recreational settings. Greater initiative and responsibility are assumed at the internship site. In addition to 90 hours of field experience, participation in a weekly seminar is required. Corequisite: RE205 Recreation Internship 1

**RE210 Recreation Program and Facility Management Cr-3**

This course applies activity, leadership, and risk management skills to leisure programming and facility management. Emphasis is placed on current programming and management concepts. Topics include personnel management; budgeting and purchasing practices; maintenance and repairs related to equipment, supplies, and facilities;

program formats and scheduling techniques; and the evaluation process. Prerequisites: RE105 Recreation Activity and Leadership Development and RE106 Outdoor Recreation and Leisure Activities

### **RE214 Therapeutic Recreation** **Cr-3**

This course explores leisure delivery services designed to meet the needs of special populations in unique structured settings and community placements. Emphasis is placed on understanding the five functional domains in relation to the individuals need for recreation and leisure services. Community involvement, lesson planning, and leading activities are required.

## **RT Radiologic Technology**

### **RT100 Patient Care I / Ethics** **Cr-1**

This course prepares the radiologic technology student to evaluate and meet the physical, cultural, and emotional needs of the patient. Topics include basic arrhythmia and basic life support. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. Corequisites: RT101 Fundamentals of Radiography, RT 102 Radiographic Procedures/Pathology 1, RT 103 Clinical Education Fundamentals, BI 216 Human Anatomy & Physiology 1.

### **RT101 Fundamentals of Radiology** **Cr-2**

This course provides an introduction to the basic concepts of radiographic physics and exposure. Topics include detailed history of x-ray, radiographic tube construction, process of x-ray production, x-ray beam characteristics, and the photographic and geometric properties of the radiographic image. The foundations of radiography and the practitioners' role in the health care delivery system are discussed. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. Corequisites: RT100 Patient Care I/ Ethics, RT102 Radiographic Procedures/Pathology I, RT103 Clinical Education Fundamentals, and BI216 Human Anatomy & Physiology 1.

### **RT102 Radiographic Procedures / Pathology** **Cr-3**

I  
This course introduces basic terminology, principles of radiographic procedures, and directional terms in relation to the human body. Students practice under simulated conditions in a laboratory setting before actually performing on patients in a clinical setting. Topics include proper use of radiographic equipment and patient safety issues. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. Corequisites: RT100 Patient Care I/Ethics, RT101 Fundamentals of Radiography, RT103 Clinical Education Fundamentals and BI216 Human Anatomy & Physiology 1.

### **RT103 Clinical Education Fundamentals** **Cr-3**

This course introduces basic terminology, principles of radiographic procedures, and directional terms in relation to the human body. Students practice under simulated conditions in a laboratory setting before actually performing on patients in a clinical setting. Topics include proper use of radiographic equipment and patient safety issues. Prerequisites: Appropriate high school GPA or placement test score or MA089 Arithmetic. Corequisites: RT100 Patient Care I/Ethics, RT101 Fundamentals of Radiography , RT102 Radiographic Procedures / Pathology I and BI216 Human Anatomy & Physiology 1.

### **RT104 Patient Care II / Pharmacology & IV Therapy** **Cr-1**

This course provides students with basic pharmacologic principles and practices, knowledge of the administration or radiopaque contrast media, and related emergency medications. IV Therapy instruction component provides basic knowledge and theory related to IV therapy with regard to fluids, fluid administration, anatomy and physiology,

venipuncture, infection prevention, and complications. Prerequisite: RT 100 Patient Care I/Ethics. Corequisites: RT 105 Image Production & Evaluation 1, RT 106 Radiographic Procedure / Pathology 2, RT 107 Clinical Education Intermediate I, BI 217 Human Anatomy & Physiology 2.

### **RT105 Image Production & Evaluation I** **Cr-2**

This course provides students with a knowledge base in factors that govern the image production process. Film-screen imaging with related accessories, including radiographic grids, is emphasized. The components, principles, and operation of digital imaging systems found in diagnostic radiology are discussed. Prerequisite: RT100 Patient Care I/Ethics, RT101 Fundamentals of Radiography, RT102 Radiographic Procedures/Pathology, RT103 Clinical Education Fundamentals. Corequisites: RT104 Patient Care II/Pharmacology & IV Therapy, RT106 Radiographic Procedures/Pathology 2, RT107 Clinical Education Intermediate.

### **RT106 Radiographic Procedures / Pathology** **Cr-3**

II  
This course introduces students to the skills necessary to perform the routine radiographic procedures with confidence. Through laboratory demonstration, supervised lab practice, and image evaluation, students receive instruction on the proper positioning of the patient to achieve a finished radiographic image displaying specific structures on particular body parts. The course also includes pathologic indications for each projection and appropriate adjustments for certain pathologic conditions that may affect the patient's ability to assume certain positions. Proper equipment manipulation and patient safety issues are discussed throughout the course. Prerequisite: RT101 Fundamentals of Radiography, RT102 Radiographic Procedures/Pathology I, RT103 Clinical Education Fundamentals. Corequisites: RT104 Patient Care II/ Pharmacology & IV Therapy, RT107 Clinical Education Intermediate I.

### **RT107 Clinical Education Intermediate I** **Cr-5**

In this course, students experience day-to-day real life situations in health care which are essential to foster a professional demeanor, compassionate behavior, desirable work ethic, and the skills necessary to perform radiographic procedures and produce radiographic images for the diagnosis. This clinical component complements the clinical competencies learned. Prerequisite: RT103 Clinical Education Fundamentals. Corequisites: RT104 Patient Care 2/Pharmacology & IV Therapy, RT105 Image Production & Evaluation I, RT106 Radiographic Procedures/Pathology II.

### **RT108 Clinical Education Intermediate II** **Cr-8**

In this course, students obtain clinical expertise in an actual radiology department setting and experience day-to-day real life situations in health care. Professional demeanor, compassionate behavior, desirable work ethic, and the skills necessary to perform radiographic procedures and produce radiographic images for diagnosis are practices. Students develop clinical skills which complement the clinical competencies learned. Prerequisite: RT107 Clinical Education Intermediate I.

### **RT109 Radiation Biology I** **Cr-2**

This course is the first in a two semester sequence in Radiation Biology. Topics include an introduction to basic concepts of physics that relate to radiation absorption and scatter, analysis of ionizing and nonionizing radiation, the electromagnetic spectrum, the process of interaction between radiation and matter, sources of radiation both natural and artificial, and units of measure. Basic concepts of molecular and cell biology in the context of the sequence of events that occur after absorption of energy from ionizing radiation and consequences on living systems are discussed. Prerequisite: RT101 Fundamentals of Radiography. Corequisites: RT200 Advanced Procedures/Sectional Anatomy, RT201 Image Production & Evaluation II, and RT202 Clinical Education Advanced.

### **RT200 Advanced Procedures / Sectional Anatomy**

This course introduces advanced procedures that require the use of contrast media and the pathologies indicated for these exams. Topics include general and specialized procedures involving the use of contrast agents of the reproductive tracts as well as the spinal column; basic anatomy of the brain, chest, abdomen, and pelvis as viewed in a cross section of the anatomy. Patient and equipment safety, proper room set-up, supervised lab practices, and film evaluation sessions are demonstrated and practiced. Phantoms are used to help assess the student's ability to perform proper positioning of the skull and facial bones. Prerequisite: RT101 Fundamentals of Radiography. Corequisites: RT109 Radiation Biology I, RT201 Image Production & Evaluation II, RT202 Clinical Education Advanced.

**Cr-1**

### **RT207 Clinical Education Mastery**

This course provides capstone clinical experience in day-to-day real life situations in health care that are essential to foster a professional demeanor, compassionate behavior, desirable work ethic and skill necessary to perform radiographic procedures and produce radiographic images for diagnosis. Students develop clinical skills to complement the clinical competencies learned. Prerequisite: RT103 Clinical Education Fundamentals, RT107 Clinical Education Intermediate I, RT108 Clinical Education Intermediate II, RT202 Clinical Education Advanced. Corequisites: RT203 Radiographic Physics, RT204 Radiation Biology II, and RT205 Advanced Imaging Procedures/Pathology.

**Cr-7**

### **RT201 Image Production & Evaluation II**

This course provides a knowledge base in factors that govern and influence producing and recording radiological images. Digital imaging with related accessories are emphasized. Theory application and accessory/equipment quality measurements are demonstrated. Prerequisite: RT105 Image Production & Evaluation I. Corequisites: RT109 Radiation Biology I, RT200 Advanced Procedures/Sectional Anatomy, RT202 Clinical Education Advanced.

**Cr-2**

### **RT202 Clinical Education Advanced**

This course provides advanced clinical experience in day-to-day real life situations in health care which are essential to foster a professional demeanor, compassionate behavior, desirable work ethic, and the skills necessary to perform radiographic procedures and produce radiographic images for diagnosis. Students develop clinical skills which complement the clinical competencies learned. Prerequisite: RT108 Clinical Education Intermediate II. Corequisites: RT109 Radiation Biology I, RT200 Advanced Procedures/Sectional Anatomy, RT201 Image Production & Evaluation II.

**Cr-6**

### **RT203 Radiographic Physics**

This course explores the basic concepts of the science and technology of x-ray imaging. Topics include the study of matter, energy, the electromagnetic spectrum, and ionizing radiation. Prerequisite: RT101 Fundamentals of Radiography. Corequisites: RT204 Radiation Biology 2, RT205 Advanced Imaging Procedures/Pathology, and RT207 Clinical Education Mastery.

**Cr-2**

### **RT204 Radiation Biology II**

This course is the second in a two semester sequence in Radiation Biology. Topics include radiation effects on organ systems, somatic and genetic damage factors, mutagens responsible for genetic mutations, the doubling dose concept, acute radiation syndromes, embryologic effects during pregnancy, and occupational and non-occupational dose limits. Additional instruction is provided on safety and regulation issues. Prerequisite: RT109 Radiation Biology I. Corequisites: RT203 Radiographic Physics, RT205 Advanced Imaging Procedures/Pathology, and RT207 Clinical Education Mastery.

**Cr-2**

### **RT205 Advanced Imaging Procedures / Pathology**

This course provides an overview of advanced imaging topics including equipment; computers in imaging; basic principles of the various health science professions; career planning; forensic radiography; and the principles, practices and policies of healthcare organizations. Theories of disease causation and the pathophysiologic disorders that compromise healthy systems are introduced. Prerequisite: RT102 Radiographic Procedures/Pathology I, RT106 Radiographic Procedures/Pathology II, RT200 Advanced Procedures/Sectional Anatomy. Corequisites: RT203 Radiographic Physics, RT204 Radiation Biology II, and RT207 Clinical Education Mastery.

**Cr-1**

## **SA Study Abroad**

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### **SA300 Study Abroad**

Students who participate in the MVCC semester abroad register for this course before they leave. Prerequisite: Permission of the Associate Dean of Humanities.

**Cr-1**

## **SL English as a Second Language**

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### **SL055 ESL Skills Workshop 1**

This course assists beginner-level, non-native English speakers in improving their English skills, including reading, writing, and listening. Skills are evaluated at the beginning of the course, and a prescriptive program is designed to meet the individual needs. Mandatory Corequisite: SL101 ESL 1: Beginning English Skills 1.

**Cr-0**

### **SL101 ESL 1: Beginning English Skills 1**

This thematically-based course provides non-native English speakers with English sufficient to fulfill the basic functions of their lives in an American community. Basic listening and speaking, reading, writing, and grammar are practiced with the goal of preparing students for further English language instruction. Prerequisite: An appropriate placement test result. Corequisite: SL055 English Skills workshop 1.

**Cr-15**

### **SL102 ESL 2: Beginning English Skills 2**

This course expands on non-native English speakers' abilities in all language skill areas. Building on the basic language skills of SL101, this course further develops students' abilities to read and write, speak, and understand English. Students further their exposure to and understanding of the fundamental skills that prepare them to move on to more academically-oriented ESL courses. Prerequisites: A minimum grade of 'C' in SL101 Beginning English Skills1, or an appropriate placement test result.

**Cr-15**

### **SL105 ESL 3: Intermediate Reading**

This course prepares non-native English speakers for basic academic reading. Emphasis is placed on finding main ideas, recognizing supporting details, understanding vocabulary in context, skimming and scanning, and interpreting and analyzing texts. Prerequisite: A minimum grade of "C" in SL102 ESL 2: Beginning English Skills 2, or an appropriate placement test result.

**Cr-4**

### **SL106 ESL 3: Intermediate Composition**

This course introduces non-native English speakers to academic writing. Students learn to write focused, unified paragraphs and short compositions through the process of idea generation and development, paragraph organization, and revision. Students use grammar appropriate for specific purposes and develop self-editing

**Cr-4**

skills. Prerequisite: A minimum grade of "C" in SL102 ESL2: Beginning English Skills 2, or an appropriate placement test result.

**SL107 ESL 3: Intermediate Grammar Cr-4**

This course introduces the non-native English speaker to the grammar necessary to speak and write academic English effectively. Topics include verb tenses, varied sentence structures, and modals at the intermediate level. Prerequisite: A minimum grade of "C" in SL 102 ESL 2: Beginning English Skills 2, or an appropriate placement test result.

**SL108 ESL 3: Intermediate Listening and Speaking Cr-4**

This course introduces non-native English speakers to the idiomatic usage and listening and speaking skills necessary for academic settings. Main ideas and supporting points are listened for, summarized, and discussed in distinguishing between literal and idiomatic meanings. Prerequisite: A minimum grade of "C" in SL102 ESL 2: Beginning English Skills 2, or an appropriate placement test result.

**SL115 ESL 4: Advanced Reading Cr-4**

This course prepares advanced non-native English-speaking students for academic reading at the level necessary for college coursework. It focuses on developing vocabulary and strengthening interpretive reading and critical thinking skills as well as also introducing library search strategies. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" in SL105 ESL 3: Intermediate Reading, or an appropriate placement test result.

**SL116 ESL 4: Advanced Composition Cr-4**

This courses introduces non-native English speakers to the writing of well-organized and well-developed essays. It focuses on form and content, improving the clarity and sophistication of written expression in English. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" in SL106 ESL 3: Intermediate Composition, or appropriate placement test result.

**SL117 ESL 4: Advanced Grammar Cr-4**

This course prepares non-native English speakers to use grammar for effective written and oral communication in academic settings. Topics include advanced verb tenses, relative clauses, and conditionals. Students apply grammar concepts in speaking and writing activities. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" in SL107 ESL 3: Intermediate Grammar or an appropriate placement test result

**SL118 ESL 4: Advanced Listening and Speaking Cr-4**

This course prepares students to understand, benefit from, and succeed in college level coursework requiring advanced English comprehension, speaking and note-taking skills. The course focuses on live, audio-taped and/or video-taped lectures on content area topics from which the students practice note-taking skills, oral and written summaries and paraphrases, and discussions of content. The course also includes oral reports and group discussions. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" SL108 ESL 3: Intermediate Listening and Speaking, or an appropriate placement test result.

**SL120 Pronunciation in Practice Cr-4**

This course teaches non-native English speakers the fundamentals of American English pronunciation. Emphasis is placed on the pronunciation of language in real speaking contexts to improve oral comprehensibility of speech through intensive practice of stress, rhythm, and intonation. Prerequisite: A grade of "C" or higher in SL108 ESL 3: Intermediate Listening and Speaking or SL136 ESOL Intermediate Listening & Speaking, or appropriate placement test result.

**SL123 ESOL Beginning Reading Cr-4**

This course provides non-native English speakers with academic English reading skills practice sufficient to fulfill the basic functions of their lives in an American community and in an academic setting. Skills are practiced with the goal of preparing students for further English language instruction. Prerequisites: A minimum grade of "C" in SL101 Beginning English Skills 1, or an appropriate placement test result.

**SL124 Applied Grammar Cr-4**

This course provides non-native English speakers instruction and practice in the use of advanced academic English grammar structures. Coursework helps students to assess their own knowledge of English grammar, improve accuracy, and acquire editing and refining skills. Emphasis is placed on methods needed to identify and apply complex grammar structures and write fluid, cohesive ideas on academic topics using advanced grammar. Prerequisite: a grade of "C" or higher in SL117 ESL4: Advanced Grammar or SL144 ESOL Advanced Grammar, or appropriate placement test result.

**SL125 ESOL Beginning Grammar & Composition Cr-4**

This course provides non-native English speakers with academic English grammar and composition skills practice sufficient to fulfill the basic functions of their lives in an American community and in an academic setting. Skills are practiced with the goal of preparing students for further English language instruction. Prerequisites: A minimum grade of "C" in SL101 Beginning English Skills 1, or an appropriate placement test result.

**SL126 ESOL Beginning Listening & Speaking Cr-4**

This course provides non-native English speakers with academic English listening and speaking skills practice sufficient to fulfill the basic functions of their lives in an American community and in an academic setting. Basic listening and speaking skills are practiced with the goal of preparing students for further English language instruction. Prerequisites: A minimum grade of "C" in SL101 Beginning English Skills 1, or an appropriate placement test result.

**SL133 ESOL Intermediate Reading Cr-3**

This course prepares non-native English speakers for basic academic reading. Emphasis is placed on finding main ideas, recognizing supporting details, understanding vocabulary in context, skimming and scanning, and interpreting and analyzing texts. Prerequisite: A minimum grade of "C" in SL102 ESL 2: Beginning English Skills 2, or SL123 ESOL Beginning Reading, or an appropriate placement test result.

**SL134 ESOL Intermediate Grammar Cr-3**

This course introduces the non-native English speaker to the grammar necessary to speak and write academic English effectively. Topics include verb tenses, varied sentence structures, and modals at the intermediate level. Prerequisite: A minimum grade of "C" in SL 102 ESL 2: Beginning English Skills 2, or SL125 ESOL Beginning Grammar & Composition, or an appropriate placement test result.

**SL135 ESOL Intermediate Composition Cr-3**

This course introduces non-native English speakers to academic writing. Students learn to write focused, unified paragraphs and short compositions through the process of idea generation and development, paragraph organization, and revision. Students use grammar appropriate for specific purposes and develop self-editing skills. Prerequisite: A minimum grade of "C" in SL102 ESL2: Beginning English Skills 2 or SL125 Beginning Grammar & Composition, or an appropriate placement test result.

### **SL136 ESOL Intermediate Listening & Speaking**

This course introduces non-native English speakers to the idiomatic usage and listening and speaking skills necessary for academic settings. Main ideas and supporting points are listened for, summarized, and discussed in distinguishing between literal and idiomatic meanings. Prerequisite: A minimum grade of "C" in SL102 ESL 2: Beginning English Skills 2, or SL126 ESOL Beginning Listening & Speaking, or an appropriate placement test result.

**Cr-3**

### **SL143 ESOL Advanced Reading**

This course prepares advanced non-native English-speaking students for academic reading at the level necessary for college coursework. It focuses on developing vocabulary and strengthening interpretive reading and critical thinking skills as well as also introducing library search strategies. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" in SL105 ESL 3: Intermediate Reading or SL133 ESOL Intermediate Reading, or an appropriate placement test result.

**Cr-3**

### **SL144 ESOL Advanced Grammar**

This course prepares non-native English speakers to use grammar for effective written and oral communication in academic settings. Topics include advanced verb tenses, relative clauses, and conditionals. Students apply grammar concepts in speaking and writing activities. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" in SL107 ESL 3: Intermediate Grammar or SL134 Intermediate Grammar, or an appropriate placement test result

**Cr-3**

### **SL145 ESOL Advanced Composition**

This course introduces non-native English speakers to the writing of well-organized and well-developed essays. It focuses on form and content, improving the clarity and sophistication of written expression in English. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" in SL106 ESL 3: Intermediate Composition or SL135 ESOL Intermediate Composition, or appropriate placement test result.

**Cr-3**

### **SL146 ESOL Advanced Listening & Speaking**

This course prepares students to understand, benefit from, and succeed in college level coursework requiring advanced English comprehension, speaking and note-taking skills. The course focuses on live, audio-taped and/or video-taped lectures on content area topics from which the students practice note-taking skills, oral and written summaries and paraphrases, and discussions of content. The course also includes oral reports and group discussions. Students must earn a minimum grade of "C" or better to pass the course. Prerequisite: A minimum grade of "C" SL108 ESL 3: Intermediate Listening and Speaking or SL136: ESOL Intermediate Listening and Speaking, or an appropriate placement test result.

**Cr-3**

## **SM Sports Management**

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### **SM101 Foundations of Sport Management**

This course provides an overview of sports management in terms of its scope, principles, issues, future trends, and career opportunities. It also examines the job responsibilities and competencies required of sport managers in a variety of sports or sports-related organizations. The course also provides students with an overview of the different facets and career opportunities that are available in the field of sport management.

**Cr-3**

### **SM102 Sport and Society**

This course examines the social dimensions of sport in a modern industrialized society. Topics include sexism and racism in sport; sport and the mass media; deviance in sport; sport and social mobility; and the relationship of sport with religious, political, and economic structures.

**Cr-3**

### **SM111 Sport Event Practicum 1**

This course focuses on the use and development of basic knowledge and skills necessary for work in college athletics. This course is offered in the Spring sport season (baseball, lacrosse, softball, track, and tennis). A 45-hour practicum in a specific sport under the supervision of a coach or athletic liaison reinforces of professionalism, organization, leadership, and sport specific duties within the world of college athletics. Prerequisite: SM101 Foundations of Sports Management.

**Cr-1**

### **SM112 Sport Event Practicum 2**

This course focuses on the use and development of basic knowledge and skills necessary for work in college athletics. This course is offered in the Fall sport season (soccer, crosscountry, basketball). A 45-hour practicum in a specific sport under the supervision of a coach or athletic liaison reinforces professionalism, organization, leadership, and sport specific duties within the world of college athletics. Prerequisite; SM101 Foundations of Sport Management.

**Cr-1**

### **SM201 Leadership for Sport Professionals**

This course introduces students to theories, approaches, and styles of leadership, as well as the role that ethics and ethical decision making play in shaping leader behavior. Students analyze leadership practices within different sport settings. Case studies of sport leaders from multiple sport levels and structures are used to examine best practices in sport leadership. Critical issues in sport leadership such as gender and ethnicity are examined as well. Students begin to explore their own leadership thoughts and tendencies and emphasis is placed on the promotion of personal leadership development with a focus towards successful sports leadership.

**Cr-3**

## **SO Sociology**

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### **SO101 Introduction to Sociology**

This course gives an understanding of and a feeling for the society in which we live. The concepts and theories discussed relate to humanity, its culture and society, and to those forces that contribute to the smooth operation of this society as well as those forces that contribute to conflict and social problems. Topics include culture, socialization, stratification, population, and patterns of social organization.

**Cr-3**

### **SO202 Marriage and Family Living**

This course explores two of the major social institutions, marriage and family. Sociological theory provides an understanding of the interconnection between these institutions and other social institutions, such as the economy, religion, education, and government. Changing forms and functions of marriage and family are examined in historical and cross-cultural perspectives, while aspects and issues confronting contemporary families are topics of importance. Prerequisite: SO101 Introduction to Sociology.

**Cr-3**

### **SO203 Urban Sociology**

This course traces the history of cities and urban development. It examines urban areas as dynamic centers of opportunity and social change on macro and micro levels. Incorporating insights and theories drawn from sociology and related disciplines, it looks at the impact of the global environment on cities of today. Prerequisite: SO101 Introduction to Sociology.

**Cr-3**

**SO204 Contemporary Issues in Society****Cr-3**

This course examines current and persistent social issues confronting human society. Emphasis is placed on analysis of the history, causes, and dimensions of social issues such as population, the urban environment, consumer concerns, poverty, crime and criminal justice, racism, sexism, and drug and alcohol abuse. Prerequisite: SO101 Introduction to Sociology.

**SO205 Racial and Ethnic Minorities****Cr-3**

This course explores racial and ethnic subcultures that exist in American society. The emphasis is on those values and behaviors that contribute to the social boundaries of the group, provide a structure for interaction with outside groups, and maintain the group's integrity as a minority subculture. The adaptive strategies employed by minorities as well as dimensions of disadvantage experienced by minorities within American society are explored. Prerequisite: SO101 Introduction to Sociology.

**SO206 The Social Significance of Gender****Cr-3**

This course assumes that human life is gendered and that gendered social expectations limit and enrich individuals and groups. Theories of sex and gender development, the history of social movements related to gender equity, and the impact of intersecting systems of stratification are emphasized. The influence of social forces including biology, religion, family, sexuality, education, the polity, economics, media, law, medicine, social sciences, social policy, and systems of stratification are examined. Prerequisite: SO101 Introduction to Sociology.

**SO207 Sociology: Comparative Religion****Cr-3**

This course utilizes a socio-historical and comparative approach to study the development of world religions, their basic beliefs, and the relationship between religion and society. As one of the oldest of all social institutions, religion has been and continues to be a major force within society and thus this course looks at the impact these belief systems have on our world. No one religion is emphasized; rather the sociological functions of religion and how religions serve these functions within their historical and cultural context are compared and contrasted. Prerequisite: SO101 Introduction to Sociology.

**SO208 Sociology of Aging****Cr-3**

Societies throughout the world address issues associated with the aging in a variety of ways, including how societies define the role of the elderly and how social institutions adapt to changes in the elderly population. This course explores historical developments, cross-cultural adaptations, societal problems, and issues related to health and well-being of aging populations. Prerequisite: SO101 Introduction to Sociology.

**SO210 Deaf Culture and Community****Cr-3**

This course introduces aspects of deaf culture and the deaf community. The distinctions between the two are reviewed and characteristics of both are identified. The language, norms of behavior, values, traditions and possessions (materials) of the deaf are covered. The evolution of a pathological view of the deaf to a cultural one is analyzed from a historical and sociological perspective. Intercultural issues relating to the role of hearing people within the deaf community are covered.

**SP Spanish****SP101 Elementary Spanish 1****Cr-3**

This sequence teaches the fundamentals of Spanish, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: No previous Spanish instruction, or fewer than three years of Spanish instruction more than two years ago. This course is closed to native speakers of Spanish. Native speakers should consult their advisor for guidance in appropriate course placement.

**SP102 Elementary Spanish 2****Cr-3**

This sequence teaches the fundamentals of Spanish, including the essentials of reading, writing, speaking, and listening within a cultural context. Prerequisites: SP 101 or its equivalent, or permission from instructor.

**SP191 Review Spanish 1****Cr-3**

This sequence continues the development of grammar, cultural understanding, reading, writing, and conversation skills, and is presented at an accelerated pace. Prerequisite: Three years of Spanish instruction more than two years ago with a grade of B or better.

**SP192 Review Spanish 2****Cr-3**

This sequence continues the development of grammar, cultural understanding, reading, writing, and conversation skills, and is presented at an accelerated pace. Prerequisite: Three years of Spanish instruction more than two years ago with a grade of B or better.

**SP201 Intermediate Spanish 1****Cr-3**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of Spanish instruction fewer than two years ago with a grade of B or better.

**SP202 Intermediate Spanish 2****Cr-3**

This sequence reviews selected grammatical features, with emphasis on oral and written competency at the intermediate level supported by a study of cultural and literary materials. Prerequisite: Successful completion of the elementary or review sequence, or three years of Spanish instruction fewer than two years ago with a grade of B or better.

**SP301 Advanced Spanish 1****Cr-3**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of Spanish instruction in which one year was Advanced Placement level.

**SP302 Advanced Spanish 2****Cr-3**

This sequence expands the development of grammar, cultural understanding, conversation skills, writing, and reading through the study of literature. Prerequisite: Successful completion of the intermediate sequence, or four years of Spanish instruction in which one year was Advanced Placement level.

**SP303 Modernism to Feminism in Spanish Classical Literature****Cr-3**

This course, taught in Spanish, provides an opportunity for students who wish to gain a deeper and more complex understanding of the modern literacy movements of Spanish literature. The authors and works studied in this course complement and solidify the students' knowledge of the literary movements introduced in previous courses. This course also develops critical thinking and all major linguistic skills. Prerequisites: SP301 Advanced Spanish 1 or SP302 Advanced Spanish 2.

**SS Social Sciences****SS218 Methods of Research****Cr-3**

This course focuses on understanding and applying scientific methodology to an area of inquiry within the social sciences. It covers quantitative and qualitative methods of research including survey research, interviewing, archival analysis, experimentation, and participant observation. Using data-gathering techniques, a number

of mini-research projects are conducted. The application of statistical techniques to data analysis is stressed. Computer software applications are used to analyze data from a variety of sources. Research teams are formed to design and implement final research projects. Prerequisites: SO101 Introduction to Sociology or CJ101 Introduction to Criminal Justice or PS102 Introduction to Public Policy.

## ST Surgical Technology

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### **ST109 Pharmacology for the Surgical Technologist** **Cr-2**

This course covers general principles of pharmacology related to the surgical technologist in the perioperative environment. Topics include drug sources, classifications, and regulatory issues, indications for use, complications, adverse reactions, and routes of administration, calculation, and medication handling. Emphasis on the relationship of drugs to the surgical patient. Anesthesia and emergency situations are stressed. Prerequisite: HM100 Medical Terminology for Health Professionals

### **ST120 Surgical Instrumentation** **Cr-2**

This course introduces students to common surgical instrumentation. Topics include instrument identification, function and grades, and proper instrumentation handling and usage in various surgical services. Suture material and needles by type and function are also covered.

### **ST121 Surgical Technology Seminar** **Cr-2**

This course introduces students to the procedures used to prepare surgical technologists for surgery. Topics include aseptic technique, infection control and case planning. Students gain hands-on experience learning the skills of gowning and gloving, hand scrubbing, and basic tasks performed by a surgical technologist. Corequisite: ST120 Surgical Instrumentation

### **ST130 Sterile Processing and Surgical Technology** **Cr-3**

This course introduces students to the functions and responsibilities of surgical technologists and sterile processing technicians. Topics include supply and equipment preparation for surgery and the safe usage, care, decontamination and sterilization of surgical instruments. Students are familiarized with the structure and design of the operating room as well as operating room safety precautions, infection control standards, healthcare law, and professional ethics. Corequisite: ST131 Fundamentals of Surgical Technology

### **ST131 Fundamentals of Surgical Technology** **Cr-3**

This course introduces students to the procedures used to prepare patients for surgery. Topics include preparation of the surgical site, draping, wound management, vacuums, catheters, drains, and hemostatic agents. Students gain hands-on experience with the various machines and equipment used for surgery and are introduced to the precautions taken during electro-surgery and laser surgery. Prerequisite: ST121 Surgical Technology Seminar and Corequisite: ST130 Sterile Processing and Surgical Technology

### **ST140 Surgical Technology Skills & Procedures 1** **Cr-3**

This course provides an introduction to general, laparoscopic, and robotic surgical procedures. Course emphasizes proper surgical procedures for various anatomical regions. Students are provided hands-on experiences preparing surgical trays and performing the steps taken by surgical technologists during surgery. Prerequisite: ST131 Fundamentals of Surgical Technology

### **ST141 Surgical Technology Skills & Procedures 2** **Cr-3**

This course provides the student with basic knowledge of surgical procedures. Topics include orthopedic, neurosurgery, plastic surgery, ophthalmic, cardiac, pediatric, thoracic, and vascular surgery. Previously learned and mastered skills will be integrated in this course. The student will be provided with hand-on experience in preparing the necessary surgical trays for these procedures and then practice following the steps involved in the surgical procedures from beginning to end. Prerequisite: ST140 Surgical Technology Skills & Procedures 1

### **ST220 Sterile Processing Clinical Practice** **Cr-6**

This course partners students with experienced sterile processing technicians. As students transition to a more active role, they will concentrate in the cleaning and sterilization of surgical instruments and other medical equipment. Students are expected to interact with personnel from all areas of the hospital and be involved in distribution of medical supplies throughout the healthcare facility. Prerequisite: ST120 Surgical Instrumentation

### **ST230 Surgical Technology Clinical Practice 1** **Cr-6**

This course partners students with Surgical Technicians in a clinical setting. Primary surgical specialties are general surgery, OB/GYN, orthopedic, otorhinolaryngology, and genitourinary. As students transition to a more active role, surgical interventions include special patient care considerations, room set ups, anesthesia, positioning, skin prep, draping, incision and approach, supplies, equipment instrumentation, procedural steps, counts, dressing materials, specimen care, and postoperative destination and care. Prerequisite: ST220 Sterile Processing Clinical Practice

### **ST240 Surgical Technology Clinical Practice 2** **Cr-7**

This course is the continuation of ST230 Surgical Technician Clinical Practice 1. This course partners students with experienced Surgical Technicians. Primary surgical specialties are general surgery, OB/GYN, orthopedic, otorhinolaryngologic, and genitourinary. As students transition to a more active role, surgical interventions include special patient care considerations, room set ups, anesthesia, positioning, skin prep, draping, incision and approach, supplies, equipment instrumentation, procedural steps, counts, dressing materials, specimen care, and postoperative destination and care. Prerequisite: ST230 Surgical Technology Clinical Practice 1

## TC Telecommunications

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### **TC110 Introduction to Public Safety Telecommunications** **Cr-3**

This is an introductory course designed to establish the basic skills needed to be a public safety telecommunicator. Students will learn the various topics, knowledge, and actions that will ultimately provide the foundation for employing sound telecommunicator procedures and techniques. Upon successful completion of this course, students will receive certification for APCO institutes public safety telecommunicator course which meets industry accepted national basic training standards for public safety telecommunicator's.

### **TC112 Customer Service in Public Safety Telecommunications** **Cr-3**

This course builds on skills learned in TC110 Introduction to Public Safety Telecommunications. This course addresses all aspects of customer service in the field of public safety telecommunications. The course focuses on delivering quality customer service to the variety of individuals that receive services. Additionally, the course will focus on

active listening and working as part of a team. Prerequisites: TC110 Introduction to Public Safety Telecommunications.

**TC290 Public Safety Telecommunications Internship** **Cr-3**

This course promotes an interest in public safety telecommunications for students pursuing a related course of study. It reinforces academic concepts through practical work experience, assists in making career choices, and provides familiarity with the work of public safety telecommunications. Students participate in a minimum of 90 hours of field experience at an agency(s) with telecommunication operations. Attendance and participation in seminar discussion are mandatory. Permission of the Internship Director is required. Prerequisites: TC110 Introduction to Public Safety Telecommunications and CJ106 Ethics in Criminal Justice.

## TH Theater

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**TH191 Acting 1: Principles of Acting** **Cr-3**

This course introduces the principles of acting for the stage. Topics include relaxation, energizing, stage sense, and improvisation. Physical, emotional, and imaginative exercises help to prepare the beginning actor for the performance situation.

**TH192 Acting 2: Characterization and Scene Study** **Cr-3**

This course emphasizes the development of character within specific textual situations. Roles from written texts are analyzed, rehearsed, and performed. Emphasis is placed on the actors' physical and emotional work. Collaborative projects are required. Prerequisite: TH191 Acting 1: Principles of Acting.

**TH193 Introduction to Theater** **Cr-3**

This course introduces the foundations of theater art. Emphasis is placed on the theatrical production process. Topics include theater spaces, directing, acting, scene design, and professional work opportunities. Theater experiences from the Greek festival theater to the present are discussed.

**TH194 Technical Theater** **Cr-3**

This course provides an introduction to the theory and practice of stage craft. Topics include construction, costumes, scene painting, and the mounting and rigging of scenery. Other learning opportunities are incorporated depending on individual production requirements.

**TH195 Musical Theater** **Cr-3**

This course is a survey of the musical theater from the late Nineteenth Century to the present. Emphasis is placed on the American musical, its historical antecedents, and recent production trends.

**TH196 Theater Practicum** **Cr-3**

This course requires hands-on participation in a variety of theater activities, including set construction, stage management, running crew work, performance, and others. Placement is made by the program advisor and technical director. Prerequisites: Instructional faculty approval, TH191 Acting 1: Principles of Acting or TH192 Acting 2: Characterization and Scene Study.

**TH197 Playwriting** **Cr-3**

This course teaches the fundamental of playwriting while stressing the role of the text in theatrical production. Prerequisite: EN102 English 2: Ideas & Values in Literature.

**TH201 Writing for Performance** **Cr-3**

This course is designed to teach the fundamentals of writing for performance while stressing the role of the text in theatrical and cinematic production. Prerequisite: EN 102 English 2: Ideas and Values in Literature or permission of the instructor.

**TH202 History of Theater 1** **Cr-3**

This course emphasizes and examines the elements of theater to include the origin and development of theater, production techniques, acting styles, stagecraft, architecture, and significant plays from the ancient Greeks through the Renaissance. The course also addresses the contributions of notable actors, directors, designers, architects, and dramatists to theater and beyond.

**TH203 Script Analysis** **Cr-3**

This course introduces the theory and practice of script analysis. Emphasis is placed on close readings and research of historically relevant dramatic texts, performances, and the evolution of theatre. Topics include setting, character motivation, and a variety of historical, socioeconomic, and political contexts with respect to playwriting.

**TH204 Theatrical Design** **Cr-3**

This course introduces the theory and practice of theater production design. Emphasis is placed on lighting, set and sound design.

**TH283 Topics in Theater** **Cr-3**

This course provides the opportunity to explore a specific area or topic in the theater. Flexibility regarding traditional boundaries of disciplines, genre, time periods, and media give fresh perspectives and knowledge of theater. Prerequisite: TH193 Introduction to the Theater.

## TM Transportation Management

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**TM101 Supervisor Operations 1** **Cr-3**

This course develops the ability to carry out policy and program directions. Supervisory courses teach leadership, administration programs, and engage in the development of programs and materials within limitations established by management.

**TM102 Supervisor Operations 2** **Cr-3**

This course covers the challenges in pupil transportation systems. It explores risk management techniques, student passenger management, personal skills to improve the ability to succeed as a manager, and legal issues surrounding public school transportation. Prerequisite: TM101 Supervisor Operations 1.

## UA Remotely Piloted (Unmanned Aerial)

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**UA101 Introduction to Remotely Piloted Aircraft Systems** **Cr-3**

This course presents the history of Remotely Piloted Aircraft Systems and their current and future use in civil industry. Topics include aircraft, ground communications, and launch and recovery systems emphasizing human integration into the overall system.

**UA102 Introduction to Remote Sensing** **Cr-3**

This course introduces students to the concepts and interdisciplinary applications of remote sensing. The basic principles of theory and practice are presented using photographic and non-photographic imagery acquired utilizing remotely piloted platforms. Visual and digital

image analysis techniques, including feature extraction, are practiced using industry standard imaging analysis software. Prerequisite: None

**UA120 Remotely Piloted Aircraft Systems Operational and Industrial Operations** **Cr-3**

This course explores the core technologies of Remotely Piloted Aircraft Systems (RPAS) as applied to commercial applications. It examines the integration of payload and programming with operational best practices and flight planning as they relate to mission application.

**UA121 Mechanics of Remotely Piloted Aircraft Systems** **Cr-3**

This course will provide the student an understanding of the component systems common to most Remotely Piloted Aircraft Systems with an emphasis on effective integration and operations. The course focuses on the core technologies and includes examinations of the control systems, autopilots, data links, power plants (motors), servos/actuators, power sources, sensors and communication technologies utilized in remotely piloted aircraft systems. Students will design, build, test, program and fly a remotely piloted aircraft vehicle. Prerequisite: ET112 Electronics of Remotely Piloted Aircraft Systems.

**UA215 Remotely Piloted Aircraft Systems Mission Planning and Operations** **Cr-3**

This course explores the core procedures of remotely piloted aircraft systems as applied to commercial applications. Topics include preflight planning and post flight debriefing and assessment.

**UA217 Remotely Piloted Aircraft Systems Operations 1** **Cr-3**

This course provides a systems approach to piloting multi-rotor Remotely Piloted Aircraft Systems (RPAS). Payload and sensor operations will be covered along with datalinks and autonomous systems. Students develop operational skillsets to determine which RPAS to utilize and the appropriate role. This course also introduces RPAS Crew Resource Management (CRM) concepts, mission planning, and pertinent RPAS regulations. Prerequisite: UA215 Remotely Piloted Aircraft Systems Mission Planning and Operations.

**UA218 Remotely Piloted Aircraft Systems Operations 2** **Cr-3**

This course provides a systems approach to piloting fixed-wing Remotely Piloted Aircraft Systems (RPAS). Payload and sensor operations will be covered along with datalinks and autonomous systems. Students develop operational skillsets to determine which RPAS to utilize and the appropriate role. This course also introduces RPAS Crew Resource Management (CRM) concepts, mission planning, and pertinent RPAS regulations. Prerequisite: UA215 Remotely Piloted Aircraft Systems Mission Planning and Operations.

**UA221 Special Topics in Remotely Piloted Aircraft Systems Operations** **Cr-3**

In this capstone course students research, develop, and execute a mission plan(s) of their choice. Some students may elect to work on a separate project, based on instructor guidance. Students may work with an industry professional to co-sponsor and secure a mission objective for that industry. A portfolio of specific benchmarks and results will be required. Corequisite: UA218 Remotely Piloted Aircraft Systems Operations 2.

## **VP Video Production**

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**VP101 Introduction to Video Production** **Cr-3**

This course covers the theory, role, scope, and practice of video editing and introduces the ways and means to edit video to communicate

effectively with an audience. Emphasis is placed on formulating basic editing procedures with particular stress on understanding software abilities and limitations. It investigates approaches to shaping and formatting video content and communicating conceptual elements to an audience.

**VP102 Cinematography** **Cr-3**

This course covers the theory, role, scope, and practice of utilizing video as a means to tell stories and relay information to an audience. Emphasis is placed on advanced video editing procedures with particular stress advanced sound capture techniques. Emphasis is also placed on utilizing story boards as a means for ideation and revision. It further investigates approaches to shaping and formatting video and audio content and communicating conceptual elements to an audience. Prerequisite: VP101 Introduction to Video Production

**VP201 Visual Effects in Video** **Cr-3**

This course introduces the process of image creation and manipulation for live-action film making utilized within current industry practices. Emphasis is placed on the use of visual and special effects as a means of enhancing live-action storytelling through the utilization of industry-leading software found in contemporary film making. It further investigates approaches to incorporating visual effects to communicate conceptual elements to an audience.

**VP202 Video Production Seminar** **Cr-3**

This course prepares students for entry into the field of video production as practicing professionals through the creation of capstone projects that encompass the skills inherent in the curriculum. Emphasis will be placed upon the completion of a professional portfolio that will be screened to the entire class and possible guests. Prerequisite: VP102 Cinematography

## **WE Weather Studies**

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**WE101 Introduction to Weather Studies** **Cr-4**

This course introduces the science of weather while highlighting the important concepts of that science. It provides the opportunity to work with current weather data and graphic products which have been specifically designed for the course by atmospheric scientists and educators at the American Meteorological Society. Fundamental scientific principles are studied through their application to everyday weather events. Meteorology and the dynamic atmosphere are observed by following weather as it happens, in near real-time and/or by using recent real-world data and case studies. There is an emphasis on using the analysis and decision-making skills employed by meteorologists to diagnose weather patterns, understand air motions, and predict future atmospheric conditions. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

## **WS Workplace Success**

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**WS101 Gateway to Business Success** **Cr-3**

This course explores the relationship between the development of academic proficiency skills and their relationship to communication within the business environment. Topics include self assessment, international relations, technology and online learning skills, service learning, campus and community support resources, research skills, career planning and the development of transferable skills, and academic integrity.

**WS102 Workplace Literacy** **Cr-3**

This course provides a range of success in the workplace, including successful interviewing techniques and communication skills. Other

skills include decision making, problem solving, team management, and listening and speaking. Leadership styles and cultural diversity in the workplace are also discussed.

**WS103 Gateway to Customer  
Communication**

**Cr-3**

This course covers essential concepts and skills needed for communication in customer service. Critical skills include listening techniques, verbal, and nonverbal communication, and use of technology. Topics include customer information, customer surveys and suggestions, the handling of complaints and adjustments, techniques for dealing with difficult and angry customers, credit services, maintenance, technical service, and the development of new programs.