

Course Descriptions

‡ The courses noted with this symbol qualify for guaranteed transfer. Visit www.kansasregents.org/transfer_articulation for more information.

AGRICULTURE

*AG101 CROP SCIENCE.....4

Is a transfer course designed to acquaint students with the botanical principles underlying plant growth, development and reproduction. Three hours lecture and one hour laboratory each week.

AG102 INTRODUCTION TO PLANT PEST CONTROL3

This course emphasizes the importance of pest control. Topics covered include the techniques of preventing damage to agriculture crops due to weeds, insects, diseases or nematodes, pesticide use, weed ecology, insects/entomology, and specific pest problems for individual crops.

AG103 PLANT AND SOILS FOR CROP PRODUCTION.....3

Covers the biological factors governing crop yield and the culture of major crops in the area. Prerequisite: Plant Science and Soils.

*AG104 SOILS4

Covers fundamental principles underlying the formation, fertility and management of soils. Three hours lecture and one extended laboratory per week are required. Prerequisite: Chemistry I or General Chemistry.

AG105 RANGE MANAGEMENT3

An in-depth look at the management of grazing resources including ecology, economics, burning, brush and weed control, grazing systems and complementary grazing crops.

AG106 SOIL CLASSIFICATION AND EVALUATION1

An exercise in classifying and evaluating soils according to criteria recognized by USDA soil scientists. Soils are evaluated for their usefulness for agriculture and engineering purposes.

*AG107 AGRONOMY IDENTIFICATION AND.....1 EXPERIMENTATION

This course is designed to develop in students an ability to quickly and accurately identify plants by seed and vegetative characteristics and analyze seed samples for impurities. Students will prepare for national competition in agronomy.

AG108 ENVIRONMENTAL QUALITY.....3

Is designed to acquaint land managers with the impact of various practices on such environmental parameters as groundwater, fish and wildlife, as well as to introduce methods of improving the environment on a local scale. Means of utilizing under-used natural resources in a profitable and ecologically sound manner will be stressed. Prerequisite: Chemistry I

*AG109 ENVIRONMENTAL QUALITY LAB.....1

Is designed to allow students to experience concepts discussed in Environmental Quality lecture class. One extended laboratory per week, with frequent field trips. Prerequisite: concurrent enrollment in Environmental Quality.

AG111 ANIMAL MANAGEMENT3

Animal Management helps to acquaint agricultural students with production aspects of the livestock industry. It introduces the basic concepts of inheritance, breeding systems, nutrition and physiology of reproduction; concepts of lactation, growth, health, and muscular work; and acquaints students with marketing procedures.

*AG112 AGRONOMY IDENTIFICATION AND.....1 EXPERIMENTATION II

This course is designed to guide students to quickly and accurately identify crops and weed species (both plant and seed) identification, identify pests of crops including insects and diseases, and distinguish common farming implements. All of these aspects are directed toward competition in the year-end national contests.

AG114 DOMESTIC ANIMAL PRODUCTION3

Is designed to acquaint students with the basic concepts and issues of the livestock, dairy, and poultry industries. The class will cover aspects in the areas of genetics, feeding, health, reproduction, and production systems for the major domestic species.

AG115 ANIMAL SCIENCE3

Helps to acquaint agricultural students with the scope of the livestock, dairy, and poultry industries. It introduces the basic concepts of inheritance, breeding systems, nutrition and physiology of reproduction; concepts of lactation, growth, egg laying and muscular work; and acquaints students with marketing procedures, carcass and slaughter grades, principles of carcass grading and aids in the evaluation of live animals.

AG118 PRINCIPLES OF LIVESTOCK SELECTION I.....2

This course will consist of the evaluation and appraisal of market livestock and their carcasses and breeding livestock based on visual appraisal and performance records in an effort to organize and justify comparative decisions by presenting oral reasons. This class is designed to make each student more adept at evaluating differences in animals of the same species.

AG119 PRINCIPLES OF LIVESTOCK SELECTION II1

This course will consist of the advanced evaluation and appraisal of market livestock and their carcasses and breeding livestock based on visual appraisal and performance records in an effort to organize and justify comparative decisions by presenting oral reasons. Prerequisite: Principles of Livestock Selection I.

*AG122 INTRODUCTION TO HORSEMANSHIP.....2

Introduction to Horsemanship helps to acquaint students with

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basic concepts involved in working with horses. This class will stress safety when working with equines for both the human and the horse. Students will study horse psychology including inherited and learned behavior, methods of communicating, and training. This course includes hands on practice and observation.

AG123 BEEF SCIENCE3
Will cover techniques and management practices used in commercial and purebred cow-calf operations, as well as feeder cattle and feedlot operations. Field trips and hands-on practicums are an integral part of this course.

AG125 HORSE SCIENCE3
Horse Science is a study of the basic principles of animal agriculture specifically related to the equine industry. Prerequisite: Animal Science or consent of instructor.

AG128 ANIMAL HEALTH AND NUTRITION3
A study of the factors that influence animal health and proper nutrition. Typical species (cattle, swine, sheep and horses) in agriculture will be studied. Herd health methods along with up-to-date recommendations in animal nutrition will be provided. Prerequisite: AG115 Animal Science

***AG129 EQUINE GROUNDWORK TRAINING2**
Groundwork Training allows students with all equine interest levels and experience to learn the principles of working the horse's mind from the ground. It also provides handlers with a better understanding of and the importance of feel and timing when communicating during riding. This class will emphasize safety while teaching how to build a trusting and respectful relationship with horses. Lessons will consist of sensitizing the horse to move away from pressure and desensitizing the horse to help it relax while accepting applied pressure.

AG130 PRINCIPLES OF AGRICULTURAL ECONOMICS3
Is suggested for all students interested in the agricultural economy. A study of economic principles with emphasis on their application to the solution of farm, agribusiness and agricultural industry problems in relationship to other sectors of the U.S. economy and foreign countries.

AG132 AGRICULTURE MANAGEMENT3
Relates specifically to management of farms and ranches. Course content will emphasize budget planning, record keeping, record analysis, ag finance/credit, taxes and machinery and land management. Management exercises simulating farm and ranch activities and decisions are incorporated. Microcomputers are used to aid in the completion of these management exercises. Prerequisite: Principles of Microeconomics.

AG134 AGRICULTURAL MARKETING3
Provides an overview of marketing alternatives for agricultural commodities, primarily grains and livestock. Alternatives to

be discussed will include cash sales and contracting, hedging, and options. Students will become familiar with marketing plans, basis, and the effect supply and demand has on the markets. Prerequisite: Principles of Macroeconomics or Principles of Microeconomics.

***AG150 INTRODUCTION TO HORTICULTURE4**
This course introduces the basic concepts and practices of horticulture with a survey of different aspects and careers of the horticulture industry. Students will develop professional skills in preparation for a career in the horticultural industry. This course combines three hours lecture and one and one-half hours of laboratory time.

AG159 EQUINE EVALUATION.....1
The study of evaluating form and function in the equine species. Aspects of evaluation will include physical form as in halter classes, as well as the functional aspect of performance classes in both Western and English disciplines. The preparation of oral reasons to organize and justify comparative decisions will be emphasized. The class is designed to make each student more adept at evaluating differences in animals of the same species and is strongly recommended for students wishing to be on the horse judging team.

***AG164 ADVANCED SOIL CLASSIFICATION AND EVALUATION.....1**
An advanced exercise in classifying and evaluating soils, according to criteria recognized by USDA soil scientists including the fundamental chemical, physical, and biological properties of soils; their formation, fertility, and management. Soils are evaluated for their usefulness for agriculture and engineering purposes. Students will use techniques employed in writing descriptions of soil morphology and in classifying soils for intercollegiate soils judging.

AG165 EQUINE EVALUATION II1
This course offers the continued study of evaluating form and function in equine species. Aspects of evaluation will include physical form as in halter classes, as well as the functional aspects of performance classes in both Western and English disciplines. The preparation and delivery of oral reasons to organize and justify comparative decisions will be emphasized. This class is required for students on the horse judging team. Prerequisite: Equine Evaluation

AG166 FUNDAMENTALS OF LIVESTOCK NUTRITION.....3
This course teaches the elementary principles of comparative nutrition in farm animals. Additional topics include the anatomy and physiology of the digestive system; the process of nutrition; the origin, chemistry and feeding value of different feeds; the nutritional requirements; and the theory of practical economy for the maintenance and growth of farm animals. Prerequisite: Chemistry I.

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***AG188 VARSITY SPORTS: EQUESTRIAN/RODEO**

SKILLS1

Students will learn safe horse equitation and livestock handling and basic techniques of showing horses in English and/or western disciplines to compete at Intercollegiate Horse Association events and/or individual National Intercollegiate Rodeo Association events.

***AG189 VARSITY SPORTS: EQUESTRIAN/RODEO**

SKILLS II.....1

Students practice safe horse equitation and livestock handling and learn advanced techniques of showing horses in English and/or western disciplines to compete at Intercollegiate Horse Association events and/or individual National Intercollegiate Rodeo Association events.

AG210 AGRICULTURE ADVERTISING AND DESIGN.....3

This course exposes students to advertising and marketing principles as they apply to hands-on projects. Students will use industry-adopted software to develop printed communication pieces to the point of being “printer ready”. Assignments will integrate software functionality and design concepts with print production technology requirements.

AG217 FARM COMPUTER APPLICATION I3

Is designed for those with knowledge of Electronic Spreadsheets and Data Management and will involve setting up herd records for livestock operations, developing a ration formulation for actual herd records and developing machinery records and inventory.

AG220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220

***AG225 BASIC EQUITATION3**

This course assists students in advancing basic techniques involved in horseback riding. Safety, proper equipment use, and communication techniques will be emphasized. Students will be expected to increase their skills in performing basic maneuvers on horseback.

***AG226 ADVANCED EQUITATION.....3**

Designed to instruct students in how to achieve a higher level of performance with the equine athlete. The course will stress safety while riding, cues and circumstances, and achieving elevated levels of performance. The students will be expected to safely perform advanced maneuvers on horseback. Prerequisite: Basic Equitation or instructor approval.

***AG228 FOCUSED EQUITATION.....3**

Designed to allow equestrian students who have completed the series of riding classes to focus on a particular discipline such as western pleasure, trail, hunter hack, jumping, reining, etc. This class will stress safety when working with equines, for both the

human and horses. Horse psychology, learning, and training concepts will be introduced to the students. Prerequisite: completion of advanced equitation or instructor permission.

****AG255 PRECISION AG HARDWARE3**

Students will gain a basic knowledge of precision agriculture high tech equipment and management strategies.

***AG256 PRECISION AG SOFTWARE3**

This course will cover aspects of Global Positioning Systems (GPS), Geographic Information Systems (GIS), remote sensing, data acquisition, mapping, variable rate application, and the economics of precision agriculture software. Students will develop a fundamental understanding of precision agriculture software and how to effectively use data to create prescriptions.

*** A lab fee will be assessed for these courses.**

ALLIED HEALTH

AH099 MEDICATION AIDE UPDATE1

Will cover basic principles and skills essential for the administration, care and handling of medications which are for oral ingestion and for external application. Current topics such as biological affects of the geriatric patient, over medication, legal aspects, regulations, new drug classifications and reactions will be covered. Not applicable to any degree.

AH163 EMERGENCY MEDICAL TECHNICIAN 10

Is the emergency medical technician initial course of instruction required for persons involved in providing emergency care. It will include care of the patient prior to transport, control of the accident scene, preparation for transport, transport and care of the patient while en route to the hospital, transfer of a patient to a hospital emergency department, communications, reporting, record keeping, and vehicle care. It will provide the participant with the preparation necessary for testing for certification and practice as an Emergency Medical Technician in the State of Kansas. This Emergency Medical Technician course meets the requirements of the Kansas Board of Emergency Medical Services as set forth in the Kansas Administrative Regulations.

AH181 BASIC LIFE SUPPORT1

This course is designed to provide healthcare providers with an overview of the cardiovascular and respiratory systems, a discussion of medical and environmental emergencies leading to the need for CPR, and an introduction to diagnose signs and triage, as well as insight into the structure and function of the emergency medical services system. Participants will be trained to : (1)know how to perform CPR in both in-and-out-of-hospital settings; (2) promptly recognize cardiac arrest; (3) give high-quality chest compressions; (4) deliver appropriate ventilations; (5) provide early use of an automated external defibrillator (AED), as part

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of a team and individually; and, (6) recognize and relieve choking. Adult, child, and infant rescue techniques will be covered. Upon successful completion of all American Heart Association standards, the student will receive affirmation at the Healthcare Provider level.

AH182 ADVANCED CARDIOVASCULAR LIFE SUPPORT ...1

The Advanced Cardiovascular Life Support (ACLS) Provider Course is designed for healthcare providers who either direct or participate in the management of cardiopulmonary arrest or other cardiovascular emergencies with the goal of improving outcomes for adult patients with cardiac arrest and other cardiopulmonary emergencies through provider training. Through didactic instruction and active participation in simulated cases, the students will enhance their skills and clinical decision-making abilities for the diagnosis and treatment of cardiopulmonary arrest, acute arrhythmia, stroke, and acute coronary syndromes. Students are taught to use the following important concepts: Basic Life Support (BLS) Survey, high-quality cardiopulmonary resuscitation (CPR); ACLS Survey; ACLS algorithms; effective resuscitation team dynamics; and immediate post-cardiac arrest care. Prerequisite: AH181 Basic Life Support or BLS Certification.

AH191 ADVANCED EMT 13

This course is designed for individuals interested in providing Advanced Emergency Medical Technician (AEMT) level care in the pre-hospital setting. The program will provide the participant with opportunities to gain information and skills necessary for certification and practice as an AEMT in Kansas, which includes intravenous therapy and medication administration. The National Registry of Emergency Medical Technicians (NREMT) and the Kansas Board of Emergency Medical Services have approved the curriculum for this certification, which addresses information and techniques currently considered the responsibility of the AEMT according to Kansas Education Standards. The program consists of didactic (lecture) instruction and practical skills training. Pre-requisite: current EMT certification; and must be CPR/AED certified by the American Heart Association at the Health Care Provider level.

AH197 CERTIFIED NURSE AIDE5

This course will provide fundamental knowledge of the aging process with emphasis on meeting the requirements of geriatric residents in health care facilities including ethics, communication, normal and aging body system function, nutrition, diseases, observation skills, documentation, and personal care skills. The student will complete a minimum 45 hours of instruction and 45 hours of clinical following the Kansas Department for Aging and Disability Services curriculum. The student will prepare to take the Kansas Certified Nurse Aide State test. Prerequisite: Student must be 16 years or older to enroll in this course.

AH198 MEDICATION AIDE5

This course will enable the student to administer specific medications safely and accurately in an adult care home. The student will

complete a minimum 50 hours of instruction and 25 hours of clinical following the Kansas Department for Aging and Disability Services curriculum. The student will prepare to take the Kansas Medication Aide State test. Prerequisite: appropriate reading test score or English Composition I with a grade of C or better. Proof of active Kansas Nurse Aide Certification. Student must be 18 years or older by the end of the class to enroll in this course.

AH199 HOME HEALTH AIDE2

This course will provide fundamental knowledge of the aging process with emphasis on providing services essential to the physical, mental, and psycho-social well-being of clients in the home setting; incorporating basic care of clients with the instrumental Activities of Daily Living in the home setting. The student will complete 30 hours of instruction following the Kansas Department for Aging and Disability Services curriculum. The student will prepare to take the Kansas Certified Home Health Aide State test. Prerequisite: appropriate reading test score or English Composition I with a grade of C or better and proof of active Kansas Nurse Aid Certification.

AH207 CERTIFIED NURSE AIDE REFRESHER1

The C.N.A. in Kansas is required to work at least eight hours every two years for the C.N.A. license to remain active. The C.N.A. Refresher Course is designed to offer inactive C.N.A.'s an opportunity to refresh their skills and obtain current information concerning the care of the elderly in long-term care. Students will discuss the nurse aide's responsibility in the current health care system and the importance of residence rights. The students will demonstrate safety measures, infection control procedures, personal care skills, measurement of vital signs, transfers, positioning, and turning. Students enrolled in the refresher course must show proof of certification as a Kansas C.N.A. by providing a copy of their card prior to the first class session. Upon completion of this course, the status of C.N.A. becomes "active" and the individual has the opportunity to work as a C.N.A. again.

AH211 INTRAVENOUS THERAPY FOR LPN'S2

This course will prepare Licensed Practical Nurses for Intravenous Therapy certification. Students will perform activities as outlined by K.A.R. 60-16-102, under the regulatory agency, the Kansas State Board of Nursing. Prerequisites: Proof of Kansas eligible LPN licensure.

CRIMINAL JUSTICE

AJ100 ▮ INTRODUCTION TO CRIMINAL JUSTICE3

This course provides an introduction to the historical development and the internal and external issues of the various components of the criminal justice system including police, corrections, and the courts. The student will illustrate how these interrelated components result in the administration of justice today.

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AJ112 SPECIAL TOPICS IN CRIMINAL JUSTICE3

An organized course offering the opportunity for intensive examination of specialized topics in criminal justice not normally or not often available as part of regular course offerings. Course involves lectures, readings and classroom discussion of selected topics. Special topics may be repeated for credit when topics vary. Specific topic will be indicated when offered.

AJ114 COMMUNITY POLICING3

This course is an introduction to law enforcement in the United States, focusing on many contradictions and paradoxes that American policing presents. This course will focus on the development of police from the mid-19th century to the present, the varied roles of police, field behavior, organization and management, and contemporary issues facing police departments today.

AJ118 INTRODUCTION TO CORRECTIONS3

Students will evaluate the historical development of the correctional system as well as the role of corrections in our criminal justice system and society. The course analyzes how offenders are supervised in facilities and within the community. The range of sanctions used historically and today are discussed and examined. Issues in corrections such as gender, race relations, ethics, addictions, death penalty, and juveniles, are explored. This course will also examine careers and the future of corrections.

AJ140 VICTIMOLOGY3

Criminal justice professionals, regardless of their specific role, will always come in contact with victims of crime. This course will introduce the crime victim as part of our larger society and as part of the criminal and civil justice system. Students will develop an understanding of the role of victimology as a social science; the psychological impact of crime on the victim; the victim's role in the criminal justice and civil system; the financial impact of the crime on the victim; the victim's rights in the criminal justice system and in society; and the future of criminal justice and social policy as they relate to victims. The course will examine specific areas of victimization such as: sexual assault, domestic violence, child maltreatment, elder abuse and homicide.

AJ145 AGENCY ADMINISTRATION3

This course conducts a practical analysis of modern administration theory and supervisory, management principles and their application to the unique operating problems of criminal justice organizations.

AJ158 LEGAL RESEARCH AND WRITING I3

Introduces the student to the methods of legal research used in the modern law office. Students focus on the use of traditional hard cover and pamphlet resource materials with additional work focusing on the expanding electronic medium including the Internet. Students will also explore the principles of technical writing as well as the particular styles of writing used in the legal profession.

AJ200 LAW ENFORCEMENT OPERATIONS AND PROCEDURES3

This course examines the role of police in society and the application of key concepts to policing scenarios. Students identify, discuss and assess critical police practices and processes to include deployment, arrest procedures, search strategies, and other operational considerations.

AJ205 CRIMINOLOGY3

Is designed to introduce the student to the study of the origin and nature of the development of law and its impact on the behavior of society. It is a study of the conditions which might lead a person to act in ways which are deemed to be "incorrect or deviant behavior" by the society in which they are a part of. It also attempts to define the terms of, and then measure, deviant behavior through the analysis of available research information.

AJ206 ▽ CRIMINAL LAW3

The course examines the history, scope and nature of law. It focuses on the parties to a crime; classification of offenses; criminal acts and intent; the capacity to commit crime; and criminal defenses. It will cover the elements of misdemeanor and felony crimes.

AJ207 CRIMINAL PROCEDURES.....3

This course introduces basic court system procedures and the jurisdiction of the courts. It also focuses on the constitutional and other legal requirements that affect law enforcement practices and procedures. Specific topics include confessions and interrogations, identification procedures, arrest, search and seizure, and admissibility of evidence.

AJ209 JUVENILE DELINQUENCY AND JUSTICE.....3

This course examines the historical precedents and philosophical reasons for treating juveniles differently from adults. It reviews empirical evidence about child development that can illuminate the reasons for their special status within the system. It will study the major theories that have been proposed as explanations of delinquent behavior. The course will also provide a detailed overview of the juvenile justice system, from its beginnings to the current state of the institution.

***AJ210 CRIMINAL INVESTIGATION.....3**

This course explores issues including the effective interview and interrogation techniques, crime scene management and lab processes, crime scene documentation methods, case preparation and court presentation.

AJ211 CRIMINAL JUSTICE INTERVIEW AND REPORT WRITING3

This course focuses on the unique types of writing required in a criminal justice career. Students are required to gather pertinent information and then record that information by writing a variety of report narratives representative of those prepared by individuals working in a profession within the criminal justice system.

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AJ212 CRISIS INTERVENTION3

This course is an overview of crisis intervention for criminal justice personnel focusing on an understanding of the immediate needs of a person in crisis and on crisis intervention techniques in various situations. This course is intended to familiarize the student with the strategies involved in crisis intervention work and the wide range of issues addressed. The strategies of crisis intervention will be discussed in their own right and within the context of such areas as: suicide and personal loss/bereavement as well as other crisis of lethality; post-traumatic stress disorder and the catastrophic events that are related including a focus on children and PTSD, and sexual assault and domestic violence (including both adult and child victims and the perpetrators of these crimes) as well as the current issue of school-based violence and recent information pertaining to disaster events. Perspectives that relate specifically to special populations and crisis work, including persons with substance disorders, and topics related to the impact (hazards and rewards) of crisis intervention on the criminal justice intervener.

AJ220 COOPERATIVE EDUCATION INTERNSHIP..... 1-6
See CA220

AJ221 COMPUTER AND HIGH TECHNOLOGY CRIMES....3

This course will examine those crimes which involve the use of computers as well as those perpetrated against computers. Topics will include the various state, federal and international laws, investigative measures and techniques, and preventive measures utilized to provide a secure environment for computer hardware and software. The course will also examine developing trends in cybercrime and cyberlaw.

AJ225 ETHICS IN CRIMINAL JUSTICE.....3

This course explores the major components involved in the study of ethics, particularly as it applies to the field of criminal justice. Focus is placed on the code of conduct and ethics of the criminal justice profession and the standards held to in their professional role. The aim of the course is to produce professionals who are not only critical thinkers, but who have the skills necessary to pursue sound ethics in their day-to-day decisions and activities.

AJ251 CRIME SCENE INVESTIGATIONS4

This course is designed to provide students with the basic theoretical and philosophical understanding of the investigatory process. This course will examine techniques and methods of crime scene investigation such as: fundamentals of preliminary investigations, identification, collection of evidence, and fingerprinting. This course will provide students with a general introduction to the mechanics of crime scene investigation and its role in the criminal justice process.

AJ299 CAPSTONE IN CRIMINAL JUSTICE.....3

This course is the culmination of the criminal justice student's

academic experience. It serves to synthesize the knowledge gained from each course taken within the criminal justice curriculum and better prepare the graduate to continue on to upper-division studies in the discipline or for entry-level career positions in the criminal justice system. Prerequisite: Introduction to Criminal Justice.

ART

AR100 ▮ ART APPRECIATION.....3

Art Appreciation is a basic level course. The course is a study and appreciation of art and its development through the various periods and movements of man's existence. The course brings the student to a better understanding of art today, its past influences and its current significance.

***AR110 CERAMICS I +3**

Ceramics I is a beginning course covering the various techniques and forms of creating a ceramic piece, both hand built and thrown. It includes exploration of glazing and decorative techniques, but the emphasis is on bringing one's own personal concepts to the form and craftsmanship. The four and one-half hour per week class is considered both lecture and lab.

***AR111 CERAMICS II +3**

Ceramics II is a continuation of Ceramics I with greater emphasis on student experimentation and development of individual style. The four and one-half hour per week class is considered both lecture and lab.

***AR112 CERAMICS III +3**

Ceramics III is a continuation of Ceramics II with greater emphasis on student experimentation and development of individual style. The four and one-half hour per week class is considered both lecture and lab.

***AR120 ▮ DESIGN I +3**

Design I is a basic level course. This course introduces the basic concepts of design essential to working in the field of graphic design or visual communications. This class is beneficial to students in art, architecture, education, child care and interior design. It is structured around the basic organization of visual communication. The students will have hands on experience dealing with the elements and principles of design and will work with two-dimensional organization on both manual and computer-aided design projects. The four and one-half hour per week class is considered both lecture and lab.

***AR121 GRAPHIC DESIGN I +.....3**

In Graphic Design I, students will explore the creation and manipulation of visual content using basic design concepts and industry standard computer software. Students will learn to generate hardcopy output using laser and photo quality ink-jet printers. Students will become familiar with the latest practices in

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the field. Extensive hands-on work with the computer will enable the student to extend their design skills and computer software expertise. The four and one-half hour per week class is considered both lecture and lab. Prerequisite: Graphic Software Applications and Design I or Two-Dimensional Design, or with instructor permission.

***AR122 GRAPHIC DESIGN II +3**

Graphic Design II allows the student visual designer and artist to work with computer hardware and software fundamental for the visual designer and artist. It provides the basic knowledge necessary to operate Macintosh computers and to use software applications in design projects related to product and promotional purposes. This course integrates the graphic design process with the computer's capabilities. The student learns to take a sketch idea and develop it through digital thumbnails, laser proofs, and color output comprehensives as well as the creation and implementation of multimedia and web content. The four and one-half hour per week class is considered both lecture and lab. Prerequisite: Graphic Software Applications, Design I or Two-Dimensional Design, and Graphic Design I, or with instructor approval.

***AR129 INTRODUCTION TO DIGITAL PHOTOGRAPHY +3**

Introduction to Digital Photography is a course of study to develop an understanding of basic photographic techniques and computer assisted image manipulation. This course will include, but not limited to, the following topics; basic camera functions, basic digital image processing, visualization and design skills, and digital manipulation techniques needed in today's market place. Students will have opportunities to create portfolio pieces. The four and one-half hour class is considered both lecture and lab.

***AR130 ▸ DRAWING I +3**

Drawing I is an introductory drawing course for the student with limited art background. Students work on techniques of perception and graphic composition, using a variety of art materials. This is a hands-on class and begins with basic skills in perception and development of technique with various subject matter and drawing medias. The four and one-half hour class is considered both lecture and lab.

***AR131 DRAWING II +3**

Drawing II is a continuation of the Drawing I course. Students will continue to work on techniques of perception and graphic composition, as well as working with a variety of art materials. This is a hands-on class that will help the students enhance their personal vision and style by increasing their knowledge of perception and technique development with various subject matter and drawing medias. The four and one-half hour class is considered both lecture and lab.

***AR140 PAINTING I +3**

Painting I is an introductory painting course with a concentration on painting techniques and color mixing. Emphasis is placed on individual creativity and experimentation. This is a hands-on class and covers the fundamentals of painting, from color theory, techniques of color application, color modeling and surface separation and definition. The four and one-half hour class is considered both lecture and lab.

***AR141 PAINTING II +3**

Painting II is a continuation of Painting I focusing on individual experimentation in traditional, contemporary, and experimental techniques. The four and one-half hour class is considered both lecture and lab.

***AR145 WATERCOLOR +3**

Watercolor is a hands-on class dealing with water-based paint media. The student will explore the many uses and applications of this media. The associations of color in illustration will be applied through various media techniques to master balance through contrast, property of light, shadows, simultaneous contrast and tints. The applications will be achieved through the use of color theory, color themes and the various painting techniques associated with watercolor. The four and one-half hour per week class is considered both lecture and lab.

AR220 COOPERATIVE EDUCATION INTERNSHIP..... 1-6
See CA220

*** A lab fee will be assessed for these courses.**

+ These courses are considered lab courses.

BUSINESS

BE100 ▸ INTRODUCTION TO BUSINESS.....3

This course is an introduction to a broad range of terminology and topics useful to business management. Terminology necessary to understand business literature is emphasized. The course will provide an overall picture of business operations, as we cover different types of economic systems, global trade, business entrepreneurship, e-business, managerial decision-making, techniques for increasing employee motivation, packing, pricing & distributing products, the relationship between management and unions, business ethics, and much more. This course is designed to develop student responsibility for learning, thinking, and questioning while using business as the model.

BE115 BUSINESS MATHEMATICS.....3

Is a course starting with the basic math concepts and moving to more complex mathematical concepts. The course will not only deal with theory but will concentrate on applications of using those concepts in solving problems dealing with personal finance, business finance, and business analysis.

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BE121 BUSINESS COMMUNICATIONS3
 Provides instruction on the role of communication in the business environment and identifies the most effective methods for creating, sending, and receiving messages. In addition, students should be able to utilize effective oral and written communication skills in business; write and evaluate business documents, including letters, memos, and reports using the principles of correct style, organization and format; and prepare an effective oral business presentation.

BE122 ▸ MEDICAL OFFICE VOCABULARY2
 This course presents a study of basic medical terminology. Prefixes, suffixes, word roots, combining forms, special endings, plural forms, abbreviations, and symbols are included in the content. A programmed learning, word building systems approach is used to learn word parts for constructing or analyzing new terms. Emphasis is placed on spelling, definition, usage, and pronunciation.

BE124 LEGAL OFFICE VOCABULARY2
 Is designed to give students a working vocabulary of legal terms necessary for office success. The material is divided into modules, with content introduced at a basic level, progressing, by specialization, to more difficult matters.

BE139 BASIC PERSONAL FINANCE.....1
 This course focuses on the basic skills in personal financial management with an emphasis on basic money management including budgeting, personal financial statements, consumer credit, consumer debt, tax strategies, and investing fundamentals.

BE152 SALESMANSHIP3
 The student will be provided examples of selling in a global environment, information about the technology available to every salesperson, and most importantly, the ABC's (the fundamentals) of relationship selling. The course is a vehicle by which the student is given ample materials to construct his/her own sales presentation. Covering the basic foundations for understanding the concepts and practices of selling in a practical, straight-forward, and effective manner, the course provides the student a guide to use in preparing sales presentations and role-playing exercises.

BE153 ▸ PERSONAL FINANCE.....3
 A personal financial management course that emphasizes time value of money, budgeting, borrowing, taxes, insurance, consumer credit, risk management, investments, retirement, and estate planning. Practical knowledge and application of these areas are stressed.

BE154 ▸ BUSINESS LAW.....3
 Few subjects are as dramatic and challenging as the law. Because laws grow from human conflict, lawsuits are often emotional, complex, and costly. Despite these costs, more and more business and personal disputes are being settled in court every day. Ours is a

“litigious society.” Knowing more about the law can help students avoid legal conflicts in their professional and personal lives. If they cannot resolve a dispute, a background in the law will help them preserve their rights.

BE155 ▸ MARKETING3
 Is essential to the operation of any business firm or public service organization. The successful enterprise in today's changing and competitive world is increasingly characterized by its understanding of the many facets of marketing and by its ability to deliver goods and services to the market more efficiently than its competitors. This course is designed to introduce students to the basic concepts, practices, and techniques of marketing.

BE160 BUSINESS ACCOUNTING.....3
 Students receive instruction in the fundamentals of accounting from recording business transactions including financial statement preparation. Emphasis is on the fundamentals of double entry accounting and the basic accounting cycle for service and merchandising enterprises.

BE161 ▸ ACCOUNTING I3
 An introduction to the financial accounting fundamentals. This course focuses on analyzing transactions, the use of various journals and ledgers, measuring the value of assets and liabilities, calculation of the different methods of depreciation, preparation of financial statement as per U.S. GAAP along with an introduction of IFRS for service and merchandising enterprises.

BE162 ▸ ACCOUNTING II.....3
 A continuation of BE161 Accounting I with greater emphasis placed on the interpretation and use of accounting data. The course focuses on accounts, records, and financial statements specific to partnerships, corporations, and manufacturing companies. Fair Value is used where applicable. Managerial Accounting is introduced in this course. Prerequisite: Accounting I with grade of C or higher.

BE165 COMPUTERIZED ACCOUNTING.....3
 Provides a hands-on approach to learning how computerized integrated accounting systems function. Provided is an overview for using the software QuickBooks Pro and developing the process for recording transactions involving sales, receivables, purchases, payables, general accounting, end-of-period procedures, payroll, and computerization of a manual accounting system. Prerequisite: High School Accounting, Business Accounting, or higher.

BE166 PAYROLL ACCOUNTING.....3
 An in-depth look at the many aspects of preparing, distributing, and recording payroll. Included in this course are issues regarding reporting, deductions, Federal forms, deposits, regulations, and government laws related to payroll. Prerequisite: High School Accounting, Business Accounting or higher (may be enrolled currently).

Course Descriptions

BE170 BUSINESS STATISTICS3
Is an introduction to descriptive and inferential statistics. Included are the uses of measures of central tendency and dispersion, probability, estimation and hypothesis testing, analysis of variance, and correlation. Recommended Prerequisite: High school algebra, Intermediate Algebra, or Survey of Math with a C or better or appropriate Accuplacer/ACT score.

BE185 HUMAN RESOURCE MANAGEMENT3
This course examines the role of the human resource professional as a strategic partner in managing today's organizations. Key functions such as recruitment, selection, development, appraisal, retention, compensation, and labor relations are examined. Implications of legal and global environments are appraised and current issues such as diversity training, sexual harassment policies, and rising benefit costs are analyzed.

BE188 PRINCIPLES OF ADVERTISING3
Students will learn the fundamental role of advertising in the communication process, how it works as an element of the marketing process, basic terminology, the functions and effects of advertising in business, the influence of economics on the evolution of advertising, and advertising's overall impact on the society in which it operates. Emphasis is placed on analyzing current examples of advertising along with real-world experiences in the advertising industry.

BE210  LEADERSHIP DEVELOPMENT.....3
Is designed to prepare students to assume increasingly responsible leadership roles in their personal, professional and academic lives. The course focuses not only on significant theories of leadership and their applicability to leaders of the past and present, but also includes substantial hands-on experiential learning opportunities which puts leadership into action.

BE220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220

CAREER CENTER

CA192 DYNAMICS OF CAREER PLANNING 1-2
Is designed to help people explore their interests, abilities, strengths, weaknesses, likes and dislikes and relate them to the world of work. The class participants will learn techniques for exploring the world of work on the Internet and develop an academic plan which reflects their career decision.

CA220 COOPERATIVE EDUCATION INTERNSHIP 1-6
Cooperative Education Internships enhance the academic background of the student with a curriculum related on-the-job work experience. These experiences may be completed by working while attending school or by working during the summer. College

personnel will assist in matching employers and students in this program which is committed to the growth of the student. Cooperative Education is a valued partnership between employers, students, and educators. Students must 1) already be enrolled in at least 12 credit hours at CCCC or is in the process of completing coursework; 2) employed or work with college personnel to find a placement related to the curriculum they are enrolled in; 3) complete the necessary enrollment process which includes paying the tuition to be able to earn college credits; and 4) be a U.S. citizen or prove immigration eligibility to accept a work assignment.

CA221 JOB SEARCH1
Is to make the student aware of the skills needed for entry into the competitive world of work. It will provide valuable insight into one's strengths and weaknesses while providing practice in preparing resume's, cover letters and standard application forms. In addition, the student will learn techniques for presenting himself/herself in a confident, professional manner at the employment interview and how to appropriately respond to a wide range of possible questions at that interview.

COMMERCIAL DRIVERS LICENSE

***TD250 CDL CLASS A TRUCK DRIVING TRAINING I.....8**
This is the first course of a concurrent two-course program where students will gain the knowledge and practical experience necessary to be a driver of a commercial tractor-trailer unit and begin work with an over-the-road trucking firm. Students will take written and driving tests at the Kansas Department of Motor Vehicles and obtain their Class A Commercial Driver's License. Additional emphasis will be placed on driver's daily log and mileage records, defensive driving, vehicle inspections, and contemporary industry trends. Prerequisite: Students must be a 18 years old for intrastate (within the state) driving. To qualify for operation in interstate commerce, a driver must be at least 21 years old and must meet federal and state physical and health requirements. In addition, students must not be using narcotics or other habit forming drugs.

***TD251 CDL CLASS A TRUCK DRIVING TRAINING II7**
This is the second course of a concurrent two-course program where students will gain knowledge and practical experience necessary to be a driver of a commercial tractor-trailer unit and begin work with an over-the-road trucking firm. Students will practice driving a manual-shift combination tractor-trailer unit in rural, city, and interstate settings during daylight and dark, and in as many weather conditions as the season allows. Additional emphasis will be placed on safety, work ethic, driver health and wellness, and federal motor carrier regulations, including Motor Carrier Safety Improvement Act and Department of Transportation regulations. Prerequisite: Students must be a 18 years old for intrastate (within the state) driving. To qualify for operation in interstate commerce, a driver must be at least 21 years old and must meet federal and state physical and health requirements. In addition, students must not be using narcotics or other habit forming drugs.

Course Descriptions

***TD252 DEFENSIVE DRIVING FOR THE PROFESSIONAL TRUCK DRIVER.....1**

During this course, students will complete The National Safety Council's Defensive Driving Course for the Professional Truck Driver and will receive a certificate of completion to provide to employers and insurers. Students will also be instructed by an industry representative on the topic of railroad safety according to the Operation Lifesaver curriculum. Students will draw upon their driving experiences during the certificate program. Students will plan a coast-to-coast trip, utilizing the skills they have learned in the areas of defensive driving, map reading, route selection, hours of service, and log book recordkeeping. Prerequisite: Students must be a 18 years old for intrastate (within the state) driving. To qualify for operation in interstate commerce, a driver must be at least 21 years old and must meet federal and state physical and health requirements. In addition, students must not be using narcotics or other habit forming drugs. Must be currently enrolled in or previously passed TD251.

* A lab fee will be assessed for these courses.

COMMUNICATIONS

CM071 ENGLISH AS SECOND LANGUAGE I.....3

Through a variety of learning activities focused on improving reading and writing skills, students will improve their vocabulary and use of English structure. Prerequisite: appropriate Accuplacer composite ESL Reading, ESL Listening, and ESL Grammar Usage scores.

CM072 ENGLISH AS SECOND LANGUAGE II.....3

The second part of a two-semester developmental sequence in ESL instruction, this course provides a variety of learning activities to improve reading and vocabulary skills through writing activities. Prerequisite: appropriate Accuplacer composite ESL Reading, ESL Listening, and ESL Grammar Usage scores.

CM079 PEER TUTOR TRAINING1

This course prepares students to be peer tutors. The students will learn how to adjust to different learning styles, incorporate brain-based learning, and apply study strategies to specific courses.

CM087 READING COMPREHENSION..... 1-3

Complex materials are no longer a mystery as critical thinking about main ideas and details, summarization, and identification of patterns of organization are used to comprehend text. Reading and writing are blended to build strong academic skills.

***CM094 COMPOSITION WORKSHOP.....3**

Composition Workshop is a developmental course designed for the student who needs individualized instruction in the clear and correct usage of English grammar, extended practice with writing form and purpose, and additional support in the development of successful writing habits. Co-requisite: Because Composition Workshop focuses on building writing skills, Composition

Workshop should be paired with an English Composition I (CM 101) course at the time of enrollment. Students withdrawing from English Composition I (CM 101) will need instructor's permission to remain in Composition Workshop. Prerequisite: Appropriate ACT Accuplacer writing score, an appropriate writing score on the college-administered writing sample, or a C or better in Transitional English.

CM098 TRANSITIONAL ENGLISH3

Transitional English helps students develop their reading and writing skills in preparation for English Comp I and English Comp II courses. This class includes various writing assignments, grammar review, and critical reading. The class structure consists of lecture, discussions, class workshops, individual conferences, small group work, and in-class writing. Students may also be required to work assignments in the Student Success Center.

CM101 ▸ ENGLISH COMPOSITION I.....3

English Composition I provides instruction in writing with emphasis on grammatical correctness, acceptable usage, effective organization, and expression of ideas. Assigned reading, research and expository writing are required. Prerequisites: Appropriate ACT/Accuplacer score or Transitional English (CM098) with a C or better and enrollment in co-requisite, Composition Workshop (CM094). Co-requisite: Composition Workshop (CM094) determined by appropriate ACT/Accuplacer score.

CM102 ▸ ENGLISH COMPOSITION II3

English Composition II is a continuation of English Composition I with a focus on critical reading, writing, and research. Emphasis is placed on finding, evaluating, and ethically utilizing research to strengthen critical thinking skills and create substantive writing. Prerequisite: English Composition I.

CM106 ▸ CREATIVE WRITING I.....3

Creative Writing I is designed to present opportunities for the writing and rewriting of short story, poetry, drama, and other genres. It is a time for students to immerse themselves in the discipline of writing and become more conscious as writers - trying other genres, setting writing schedules, trying out advice for revision, discovering what makes them tick as a writer. Recommended preparatory course: English Composition I.

CM107 CREATIVE WRITING II.....3

Creative Writing II is designed to stimulate creativity and encourage students to seek answers and interpretations beyond the obvious - to develop insight and creative vision. It goes beyond the requirements of Creative Writing I, however, in that students work on one lengthy work or a series of connected short works, and consult with the instructor in and outside class in addition to the regular work of the class. Prerequisite: Creative Writing I.

CM115 ▸ PUBLIC SPEAKING3

Public Speaking is an elementary course in the study and practice of the basic principles of speech and interpersonal communication

Course Descriptions

with emphasis on critical thinking, the creative and intelligent selection of material, organization and oral presentation. Students taking this class in an online format will be required to record and submit speeches electronically. All speeches must be recorded in front of a live audience which the students must arrange. Minimum audience numbers vary by speech.

CM120 SURVEY OF TECHNICAL WRITING.....3

Survey of Technical Writing is an introduction to the process of technical and business writing. Topics include conducting audience and needs analysis; organizing and writing clear, precise, grammatically correct workplace prose; and producing a variety of routine professional reports and correspondence. Focused projects will include applied business/industry or technical degree exercises. Prerequisite: Appropriate ACT/Accuplacer score or Transitional English.

CM121 ▸ INTRODUCTION TO LITERATURE.....3

Introduction to Literature is a survey of literature from Britain, the United States and other countries emphasizing major poets, fiction writers and playwrights plus general literary analysis, including the literary devices used in these genres. Prerequisite: English Composition I. Recommended preparatory course: English Composition II.

CM122 ▸ AMERICAN LITERATURE I.....3

American Literature I is a historical survey of the literature of early Americans, emphasizing major authors, literary trends, historical events and significant ideas from early Native American works through the Transcendental Movement of the 1850's. Prerequisite: English Composition I. Recommended preparatory course: English Composition II.

CM123 ▸ AMERICAN LITERATURE II3

American Literature II is a study of American literature from the Civil War period through the trends of realism, naturalism, and on into the ideas and literary trends of modern and contemporary America. Prerequisite: English Composition I. Recommended Preparatory Courses: English Composition II.

CM124 WORLD LITERATURE AND THE HUMAN EXPERIENCE3

The course emphasizes the study of the literary, cultural, and human significance of select works of world literature. The class promotes an understanding of the works in their cultural/historical contexts and the enduring human values which unite the different literary traditions. Prerequisite: English Composition I. Recommended preparatory courses: English Composition II.

CM125 ▸ LITERATURE FOR CHILDREN3

Literature for Children is a survey of literature for children particularly in the elementary grades. It gives an opportunity to read and evaluate many books, stories and poems. Also promoted are resources and practical applications for reading aloud in

the classroom, as well as igniting a love for reading in the mind of the individual child. For teachers in elementary education. Prerequisite: English Composition I. Recommended preparatory course: English Composition II.

CM127 THE SHORT STORY.....3

The Short Story is a survey of short stories from both American and selected world authors. Selected short stories from different eras are studied. Assigned readings, various themes, and literary analysis are included. Prerequisite: English Composition I. Recommended preparatory course: English Composition II

CM139 SPORTS BROADCASTING3

Sports Broadcasting provides students a more in-depth look at the mechanics and preparation aspects involved in the coverage of a sporting event. Students will operate the equipment, prepare the information, and do the actual "on-air" broadcasts of sporting events. Emphasis will also be placed on sports reports, coach and athlete interviews, broadcast equipment terminology, and play-by-play announcing.

CM140 ▸ THEATRE APPRECIATION3

Theatre Appreciation challenges students to interpret, criticize, and appreciate roles theatre plays in society through positive comparisons to our modern "theatre of availability" - television and film.

CM148 AMERICAN CINEMA APPRECIATION3

American Cinema Appreciation is a survey of the American film industry as an art form, as a business, and as a system of representation and communication. The course further explores how Hollywood films work technically, aesthetically, and culturally to reinforce and challenge America's national self image.

CM157 MASS MEDIA PRODUCTION I.....3

This course is a hands-on, in-depth study of how media conventions and content interact. In this applied production course, students will use the principles of convergent media to report school, community, and national news, sports, and lifestyle stories to T-Bird News as well as other real-world industry outlets. Students will work hands-on, discovering, developing, composing, editing, and publishing a story. Students will be required to produce and publish each story using a variety of media including print, radio, video, and web.

CM158 MASS MEDIA PRODUCTION II3

This course emphasizes a multi-disciplinary and multimedia approach to business-client relationships. Students will prepare a strategic communication campaign on behalf of a local client. It will include the production of material in a variety of mediums including print, radio, video, and web for use by the client. These materials, in turn, may be used by the students as they develop their professional portfolios. This class is rooted in critical thinking, research, multimedia production, and problem solving as well as professionalism and strong communication skills.

Course Descriptions

CM220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

CM240 ▸ INTERPERSONAL COMMUNICATIONS3

This course is a study of dyadic communication within interpersonal relationships between friends, family, fellow students, romantic partners, supervisors, and colleagues in the workplace. Emphasis is placed on the role of healthy and meaningful communication in establishing, building, maintaining, and sometimes refashioning personal and/or professional interpersonal relationships. Course content stresses how to become a more effective and competent communicator by exploring personal communication goals, analyzing communication barriers, identifying relational breakdowns in communication, and addressing conflict scenarios in order to deepen a student's understanding of the communication process and improve communication skills.

* A lab fee will be assessed for these courses.

COMPUTER SCIENCE

CS102 PERSONAL COMPUTING3

Designed for individuals to become familiar with microcomputers and their operations. An introduction to the Windows environment will be discussed. Microsoft software will be used to apply this knowledge in the use of word processing, data-base, electronic spreadsheet, and data communications technology for both home and business use.

CS104 INTRODUCTION TO WEB SITE DESIGN3

Intended as an introductory course on creating Web pages. The objectives of this course are: to teach the fundamentals of developing Web pages using HTML; to acquaint students with the XHTML guidelines; to show students how to create Web pages suitable for course work, professional purposes, and personal use; to expose students to common Web page formats and functions; and to promote curiosity and independent exploration of World Wide Web resources. Prerequisite: Knowledge of computer software and Windows operating systems.

CS107 GRAPHIC SOFTWARE APPLICATIONS.....3

Introduction to, and studio practice in, the area of visual communication. Emphasis is placed on mastery of software applications used in the communication graphics industry. Emphasis will be given to concepts relating to the organization of how software applications can support design concepts, color usage, image and concept development, and creative problem solving.

CS108 ▸ COMPUTER APPLICATIONS.....3

An introductory computer course designed for individuals to become familiar with computers and their operations. An integrated software program will be used to apply this knowledge in word processing, database, and electronic spreadsheet technology for both home and business use.

CS140 INTRODUCTION TO ROBOTICS.....3

Introduction to Robotics students will be introduced to many facets of robotics and microcontrollers. This course will cover basic principles of open source software use and development. Class topics will cover components of a micro controlled circuit, terminology used within both the software and development of micro controller prototyping boards and programs.

CS141 INTRODUCTION TO ADDITIVE MANUFACTURING (3D PRINTING)3

Introduction to Additive Manufacturing, or 3D Printing as it is more commonly called, is a revolution in the modern era. This course will cover the basics of the history of 3D Printing, how Open Source communities have advanced the technology, and how to use the hardware and software to produce many prototype devices or products. The course will also explore the limitations of 3D Printing and what the future holds for the discovery of new 3D printing applications.

CS145 INTRODUCTION TO CAD.....3

Students in this Autodesk Fusion 360 course will be introduced to many facets of Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Aided Engineering (CAE), and 3D Printing. This course will cover the fundamentals of how to use these design tools to connect your entire product development process into one cloud-based platform.

CS155 NETWORKING AND COMPUTER TECHNOLOGY...3

Introduces the student to the networking field. Focuses on network terminology and protocols, local-area networks (LANs), wide-area networks(WANs), Open System Interconnection (OSI) model, cabling, cabling tools, switches, routers, Ethernet, Internet Protocol (IP) addressing, and network standards. The course will reinforce lecture and study from the text with laboratory activities through a simulated networking program called LabSim™ Online for Network+.

CS220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

ECONOMICS

EC101 ▸ PRINCIPLES OF MACROECONOMICS3

Presents a macroeconomic approach in the introduction of the concepts of scarcity, national income and monetary analysis, the economic role of government, brief history, and economic growth.

EC102 ▸ PRINCIPLES OF MICROECONOMICS3

Is concerned with microeconomic approach to the economics of the business firms and the market structures for the product and resource market allocation. Supply and demand will be studied in some detail, plus cost-benefit analysis and some domestic and international problems.

Course Descriptions

EC220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

EDUCATION

ED100 ▸ INTRODUCTION TO EDUCATION.....3
An introductory course for students considering a career in professional education. The course includes historical, philosophical, sociological and learning developments within the education profession, professional needs and demands and requirements of professional education programs. Prerequisite: at least a 2.5 GPA in a minimum of 12 General Education hours creditable to a university teacher education program; simultaneous classroom experience (ED101 or a practicum connected with another course).

ED101 INTRODUCTION TO EDUCATION PRACTICUM 1-2
The practicum is designed to provide aspiring education majors an opportunity to observe and interact with teachers and students in an elementary and secondary setting. Opportunities to evaluate the total spectrum of education will be offered through direct observation. Prerequisite: at least a 2.5 GPA in a minimum of 12 General Education hours creditable to a university teacher education program; proof of liability insurance. The student must be dual enrolled in ED100 Introduction to Education.

ED114 ART IN THE ELEMENTARY CLASSROOM.....3
Art methods, materials and philosophy of children's art at different grade levels. This is considered a lab class.

ED118 DIVERSE LEARNERS3
There are many ways that students differ from each other in academic situations. Understanding the implication of differences in abilities, disabilities, cultural backgrounds, religious backgrounds, psychological disorders, and first languages on learning can enhance the effectiveness of teachers in their classrooms.

ED119 TEACHER CADET CLASS.....3
The course is an introduction to the field of teaching. The course includes observation opportunities in local classrooms and didactic experiences in their various high schools. The intent of the class is to help students to decide if teaching is a career that they would want to pursue in the future.

ED123 MUSIC IN THE ELEMENTARY CLASSROOM.....3
A methods class that is designed to encourage thinking about teaching. Another primary purpose of the class is to encourage an understanding of how to help students express themselves through music. The class will prepare the student with a foundation in competencies to prepare materials, establish teaching objectives, and teach the use of music within the elementary classroom. The class will provide the student with skills in using recorders, guitars, keyboards, and rhythm instruments for musical activities. Time will also be spent with rhythmic movement, and doing creative musical activities.

ED124 ELEMENTARY SCHOOL PHYSICAL EDUCATION ..3
A methods class that is designed to instruct students in the essential components for teaching physical education to elementary students. Included in the class will be teaching styles, the development of children's physical, cognitive, and social skills, and organization of movement activities.

ED220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

FOREIGN LANGUAGE

FL111 ▸ SPANISH I.....4
Is a course designed as an overview of the initial grammar, vocabulary, and special features of the Spanish language. The focus of the course is upon the enhancement of reading, writing and oral communication skills.

FL112 ▸ SPANISH II4
Is a course designed to complete the initial grammar, vocabulary, and Spanish language began in Spanish I. The focus of the course is upon the enhancement of reading, writing, and oral communication skills. Prerequisite: Spanish I.

GEOGRAPHY

GE101 ▸ WORLD GEOGRAPHY.....3
World Geography is designed to survey the geographic and cultural features of the world's major regions. A central theme concerns the role played by technological change in shaping both the lifestyles and landscapes found in each of the regions studied. The resulting contrasts between the Technological World and the Developing World are examined in detail.

HISTORY

HI108 ▸ WOMEN IN AMERICAN SOCIETY3
Will explore the many facets of women in American society and the impact on relationships and family, both from historical and contemporary perspectives. Students will be offered a cross section of available information from a liberal arts perspective, including literature, psychology, history, political science, and social philosophy.

HI120 ▸ WORLD HISTORY I3
World History I is an introductory survey of major developments in the history of the world from the origins of civilizations to the 15th century. The focus is on a comparison of key trends and conditions in different parts of the world throughout these centuries.

HI121 ▸ WORLD HISTORY II.....3
World History II is an introductory survey of major developments

Course Descriptions

in the history of the world from the 15th century to the 21st century. Students will examine changes and continuities, patterns in and among various societies as they come into contact, influence each other, and, in places, become interdependent.

HI122 **U.S. HISTORY I**3
Is a survey of American History from its European background through the time of the Civil War. The political, economic and social growth of our country is emphasized.

HI123 **U.S. HISTORY II**.....3
Is a survey of American History from Reconstruction to the present. The intellectual, political, economic, and social growth of our country is emphasized.

HI124 INTRODUCTION TO HISTORY3
Covers what history is, how it is produced, and what its functions are. Designed for students who want an introductory course which explains the methodology and purposes of the discipline.

HUMAN ECOLOGY

HE124 **NUTRITION**3
Is designed to support the concept that achieving and maintaining optimal nutritional status is an essential component of health promotion. A molecular approach to nutrition is used as a basis for understanding the importance of nutrition in health and disease. Facts and principles are included to give the student a basic nutritional background to later enhance high quality nutritional care. The information acquired in this course will be used as the basis for understanding therapeutic nutrition.

EARLY CHILDHOOD EDUCATION

***HE095 ORIENTATION TO EARLY CHILDHOOD DEVELOPMENT**2
This course is a supplemental course to accompany HE150, Early Childhood Development, and is designed to aid the student who has scored below 74 on the reading and below 78 on the writing of the Accuplacer test, or below 41 on the ASSET test, or below 21 on the ACT test, or who indicated that they would like additional assistance with the course. Included will be review of the lectures in a discussion format, computer aided instruction, additional videos to explain concepts, and the use of chapter vocabulary worksheets and review questions for the HE150 lectures.

***HE144 INCLUSIVE EARLY CHILDHOOD EDUCATION ...**3
This course is a study of the research applications of how special children are included in the inclusive educational and day care settings. Emphasis will be placed on proven recommendations for inclusion merging early childhood education and early childhood special education philosophies.

***HE147 PRINCIPLES OF THE CHILD DEVELOPMENT ASSOCIATE CREDENTIAL**3
Will focus on the preparation for the Child Development Associate (C.D.A.) credential. The students will write their competency statements, prepare their Professional Resources File and study for the Early Childhood Studies Review. A person who has met the criteria established by the Council for Early Childhood Professional Recognition earns the CDA Credential. Successful completion of this course does not guarantee the granting of the C.D.A. by the Council for Early Childhood Professional Recognition.

***HE149 INTRODUCTION TO EARLY CHILDHOOD EDUCATION**1
This course is an introduction to employment opportunities in Early Childhood Education. An overview of philosophies, ethics and developmentally appropriate practice will offer students a look into what they can expect from this field.

***HE150** **EARLY CHILDHOOD DEVELOPMENT**.....3
Is a study of the physical, cognitive, affective, social, and emotional development of the child from conception to age eight. Emphasis is on the interrelationship of growth and behavior of the preschool child. Included will be the influence of cultural environment on development and individual differences in development.

***HE151 EARLY CHILDHOOD DEVELOPMENT LAB**1
The student will observe and learn about cognitive, emotional, social and physical development of the child from birth to age eight. The student will also learn proper observation techniques to be used for tracking healthy development.

***HE152 INTERACTION TECHNIQUES WITH YOUNG CHILDREN**3
Is a study of the guidance approaches which can be used to interact with and guide young children in a group or family setting. Communication skills and development of a positive self-concept will be emphasized.

***HE153 CREATIVE ACTIVITIES FOR YOUNG CHILDREN**.....3
Is an introduction to various learning activities which may be used with preschool aged children in a group setting, focusing on selection, preparation, and presentation. Prerequisite: Successful completion of HE150.

***HE154 CREATIVE ACTIVITIES FOR YOUNG CHILDREN LAB**1
Is a laboratory experience to plan, prepare, present, and evaluate a variety of activities for preschool aged children.

Course Descriptions

***HE155 PARENT, PROVIDERS, AND COMMUNITY RELATIONSHIPS3**

Is a study of Early Childhood Education provider's interrelationships with parents, colleagues, and the community. Topics included are public relations, family diversity and development, asset building, evaluations, parent meetings, parent-teacher communications, and professionalism.

***HE156 DEVELOPMENTAL PROGRAM PLANNING FOR YOUNG CHILDREN OVER 2.5.....3**

Is a study of the techniques of curriculum planning for young children over 2.5 years in a group setting, emphasizing the organization of activities into complete unit plans and year long plans. Assessment techniques and accountability in terms of curriculum will be emphasized.. Prerequisite: Successful completion of HE152, HE153, and HE154.

***HE157 DEVELOPMENTAL PROGRAM PLANNING FOR YOUNG CHILDREN OVER 2.5 LAB1**

Student will participate in various activity centers in a child care facility and will teach segments of the unit plans developed in Developmental Program Planning. Prerequisite: Successful completion of HE154 with a C or better.

***HE158 DIRECTED FIELD EXPERIENCE6**

Is a supervised practicum in which students are responsible for daily planning, preparation, presentation, and evaluation of activities meeting developmental needs of children in an approved licensed child care facility. A minimum of 350 on-site hours is required for the semester. Weekly on-campus seminars. Prerequisite: Successful completion of HE156 and HE157 with a C or better and approval of instructor.

***HE159 DIRECTED FIELD EXPERIENCE SEMINAR1**

Designed to facilitate the experience the students have in the approved licensed Child Care Facility. Topics of interest relevant to the learning taking place in the Centers will be discussed. Daily journals will be kept to facilitate optimal learning for the students. Must be taken concurrently with HE158.

***HE160 CHILD CARE ADMINISTRATION AND ORGANIZATION3**

Is an analysis of the administrator's role in the Early Childhood Education Center. Application of philosophical approaches, communication techniques, and management skills necessary to operate early childhood programs. Federal, State, and local regulations and support systems will also be discussed.

***HE161 HEALTH & NUTRITION FOR YOUNG CHILDREN.....3**

Is a study of the health, safety, and nutritional needs of children (prenatal to age 8). Emphasis will be placed on the methods in

which these health, safety, and nutritional needs can be met in a child care facility..

***HE162 CHILD CARE MANAGEMENT.....1**

Is a reflective course dealing with management style as it relates to child care and guidance. The practical application of management principles as they relate to child care and guidance will be emphasized.

***HE163 PARENTING3**

Is a study of varying approaches to parenting and their impact on the child's behavior and development. The major content of the course concerns preparing for parenthood using the democratic approach to parenting.

***HE164 DEVELOPMENTAL PROGRAMS PLANNING FOR YOUNG CHILDREN UNDER 2.53**

This class will focus on the development of the child ages birth to thirty-six months and how to plan for this child in group care. Emphasis will be placed upon the parent-child relationship, parent-teacher relationship, child-teacher relationship, and development of the child.

***HE165 DEVELOPMENTAL PROGRAMS PLANNING FOR YOUNG CHILDREN UNDER 2.5 LAB1**

This laboratory will focus on developing appropriate care giving behaviors for working with infants and toddlers. Focus will be placed upon developing care giving skills through direct involvement with the children. The semester will be shared between the infants and toddlers.

***HE168 FAMILY AND CULTURAL PERSPECTIVES.....3**

This course is an overview of diversity topics in early childhood education. Material covered may include, but is not limited to, reviewing personal biases, relationships with families, preparing the early childhood environment, sensitivity to diversity and conflict resolution.

HE220 COOPERATIVE EDUCATION INTERNSHIP..... 1-6
See CA220.

* A lab fee will be assessed for these courses.

HUMANITIES

HU201 HUMANITIES I3

Humanities I is designed to help you gain a richer understanding and enjoyment of the humanities, particularly in Western culture. This course includes an overview of the history of Western cultures between 1600 and the early 1800's and introduces great works of literature, philosophy, art, and music. As an interdisciplinary course, it seeks to show how these different elements contribute to and express human creativity and values. Prerequisite: English Composition I.

Course Descriptions

HU202 HUMANITIES II.....3
Humanities II promotes the understanding and enjoyment of the humanities in Western culture. This course includes an overview of the history of Western cultures from the 1830's to present time and introduces great works of literature, philosophy, art, and music. As an interdisciplinary course, it seeks to show how these different elements contribute to and express human creativity and values. Humanities I is not a prerequisite for Humanities II. Prerequisite: English Composition I.

INDUSTRIAL EDUCATION

IE116 OSHA 10-HOUR CONSTRUCTION TRAINING ... 1/2
This course is intended to provide an entry level construction worker with broad awareness in recognizing and preventing hazards on a construction site. It is also ideal for supervisors with safety and health responsibilities. OSHA recommends the training as an orientation to occupational safety and health. Students will be introduced to OSHA policies, procedures, and standards. Emphasis will be placed on hazard identification, avoidance, control, and prevention. Upon successful completion of the course, participants will receive an OSHA 10-Hour Construction DOL Course Completion Card by mail.

IE117 OSHA 10-HOUR GENERAL INDUSTRY TRAINING.....1
This course is intended to provide an entry level general industry worker with broad awareness in recognizing and preventing hazards on a general industry site. It is also ideal for supervisors with safety and health responsibilities. The course covers a variety of safety and health hazards which a worker may encounter. Students will be introduced to OSHA policies, procedures, and standards as well as general industry safety and health principles. Emphasis will be placed on hazard identification, avoidance, control, and prevention. Upon successful completion of the course, participants will receive an OSHA 10-Hour General Industry DOL Course Completion Card by mail.

IE125 BLUEPRINT READING AND CUTTING PROCESSES2
In this course, students will learn the importance of blue-prints/working drawings in welding as well as a variety of cutting processes. Line conventions, drawing views, dimensioning, scales, and welding symbols will be explored. Students will describe and demonstrate oxyacetylene, plasma, and carbon arc cutting following shop drawings.

IE126 SHIELDED METAL ARC WELDING3
Through classroom and/or lab/shop learning and assessment activities, students in this course will: describe the Shielded Metal Arc Welding process (SMAW); demonstrate the safe and correct

set up of the SMAW workstation; associate SMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes in the horizontal position; perform basic SMAW welds on selected weld joints; and perform visual inspection of welds

IE127 GAS METAL ARC WELDING.....3
Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW workstation.; correlate GMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes in the horizontal position; produce basic GMAW welds on selected weld joints; and conduct visual inspection of GMAW welds.

IE128 FLUX CORE ARC WELDING.....3
This course focuses on the Flux Cored Arc Welding (FCAW) process. Students in this course will describe and demonstrate Flux Cored Arc Welding through classroom and shop learning. Proficiency in welding in all positions according to AWS standard will be stressed.

IE129 GAS TUNGSTEN ARC WELDING3
Through classroom and/or lab/shop learning and assessment activities, students in this course will: explain the gas tungsten arc welding process (GTAW); demonstrate the safe and correct set up of the GTAW workstation; relate GTAW electrode and filler metal classifications with base metals and joint criteria; build proper electrode and filler metal selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes and filler material in the flat position; build pads of weld beads with selected electrodes and filler material in the horizontal position; perform basic GTAW welds on selected weld joints; and perform visual inspection of GTAW welds.

IE150 NATURAL/PROPANE GAS & ELECTRICAL SYSTEM SAFETY3
This course provides instruction to plumbers, electricians, and heating/air personnel in the proper techniques and procedures for working with natural or propane installations; as well as electrical lock-out/tag-out. The course covers the components of a gas system, sizing of piping, proper purging of a system, differences between a leak test and a pressure test, flow test, various safety issues, hands-on training with pipe/fitting display boards, demonstration of various testing equipment, and lock-out/tag-out per OSHA regulations.

Course Descriptions

JOURNALISM

JN100 **MASS MEDIA IN SOCIETY**3
A general survey of the various mediums of mass communication, including print media and electronic media and movies, and their roles in American society.

JN101 **BASIC MEDIA WRITING**.....3
Explores mass media sources of information, the preparation and the application of the media message. After learning techniques for information gathering, students will study and practice the fundamentals of writing for each of the mass media outlets.

JN140 **BEYOND WEB 2.0: SOCIAL MEDIA AS IDENTITY** .3
For today's college students, digital communication is the norm, but what does it mean to exist in an online community? Tools like Facebook, Twitter, and text messaging are prevalent and you can learn to use them all to maintain privacy, enhance reputation, and build a more satisfying personal and professional life online. This course proposes to make every enrolled student an astute digital learner. Students will also understand the sociocultural implications of their digital existence and the powerful marketing tool that is social media.

JN220 **COOPERATIVE EDUCATION INTERNSHIP**..... 1-6
See CA220.

* A lab fee will be assessed for these courses.

MANAGEMENT

MG101 **MANAGEMENT PRINCIPLES**3
Is an introductory course designed to provide the student with fundamental concepts and terminology. Designed for development of managerial techniques and practices and the understanding of their utilizations. For both terminal degree and transfer students.

MG102 **INTRODUCTION TO ENTREPRENEURSHIP**3
In this course you will find information on high growth, start-up ventures, such as Dell Computer, Google and Microsoft (all started while the founders were college students, by the way!). But more importantly you will find information on the kinds of small businesses most people really do start. These are small businesses in traditional industries and markets from the "Mom and Pop" retail, a manufacturing or service business, a web-based enterprise to the sophisticated, pre-packaged franchise operation. According to the textbook authors, small businesses are vitally important to our economy and helping them survive has long been an art. In this course you will study the art and the science of small business management. The objective of the course is to help you understand the challenge before you operate your own small business.

MG220 **COOPERATIVE EDUCATION INTERNSHIP** 1-6
See CA220.

MATHEMATICS

(Courses numbered 099 and below will not apply toward graduation.)

MA099 **ELEMENTARY ALGEBRA**3
This course is designed for students with little or no high school algebra, or those who have appropriate math scores on the ACT or Accuplacer exam. Topics covered will include properties of the graphs of linear equations, polynomials, factoring rational expressions, and radicals. Prerequisite: Pre-Algebra with a C or better, or appropriate test scores.

MA104 **TECHNICAL MATH**.....3
This course is intended as a terminal course for students seeking an AAS degree or various certificates. This course will not fulfill prerequisites for either Intermediate Algebra or College Algebra, and will not serve as a replacement for these classes to satisfy degree requirements for mathematics courses. This course covers the mathematics commonly used in technical fields at an elementary level. Topics covered may include, but are not limited to, the following: review of arithmetic operations and the Order of Operations agreement, simplifying various algebraic expressions, solving various types of equations, setting up and solving ratios, proportions and variation problems, rules for how to work with exponents and radicals, conversion of measurements between different systems, formulas for perimeter, area and volume of basic geometric objects, angles and trigonometric ratios, and personal finance tools and technologies. Prerequisite: none

MA107 **MEDICAL MATHEMATICS**1
This course covers application problems involving medical dosages and intravenous fluid rates. Students who need orientation to the mathematical procedures of medication calculations will benefit from this course.

MA110 **INTERMEDIATE ALGEBRA**3
This course is designed for students who are inadequately prepared for College Algebra. Topics covered will include linear equations and inequalities, functions, systems of linear equations, polynomials, exponents, rational expressions, radical expressions, and quadratic equations. Prerequisite: appropriate test scores or Elementary Algebra with a grade of C or better or its equivalent.

MA111 **COLLEGE ALGEBRA**.....3
This course reviews standard topics of algebra. Students will study linear and quadratic equations, functional notation, linear, quadratic, rational, logarithmic and exponential functions, systems of equations and inequalities, and matrix algebra. Other topics may be covered at the instructor's discretion. Prerequisite: appropriate test scores or Intermediate Algebra with a grade of C or better.

Course Descriptions

MA112 ▸ TRIGONOMETRY3

Is a study of trigonometric functions and their applications, solutions to right and oblique triangles, trigonometric identities, inverse functions, graphs of trigonometric functions, and vectors. Prerequisite: appropriate test scores or College Algebra with a grade of C or better.

MA114 ▸ ELEMENTARY STATISTICS3

This course is designed for students with adequate algebra background to cover introductory, non-calculus based statistics. Topics covered will include sampling and displaying data, measures of central tendency and variation, introductory probability theory, discrete probability distributions (binomial), normal distributions, standard normal distributions, sampling distributions and the central limit theorem, estimating parameters, hypothesis testing, regression and correlation, chi-square, and non-parametric statistics. Prerequisite: College Algebra with a C or better.

MA115 ▸ GENERAL CALCULUS3

This course is an introduction to calculus and linear algebra concepts particularly useful to economics and business administration students. It requires no knowledge of trigonometry, and is not intended for a student seeking a degree in a science related field. Topics covered include limits, derivatives, multivariate calculus, basic integrals, and systems of equations. Practical applications include analysis of mixing problems, optimization, analysis of graphs for sales and marketing purposes, and marginal analysis. Prerequisite: College Algebra with a C or better.

MA120 ▸ ANALYTIC GEOMETRY AND CALCULUS I5

This course reviews inequalities, linear equations, function notation, graphing and trigonometry. Students will study limits, continuity, derivatives, differentials, L'Hopital's Rule, and integrals. Practical applications include graphing, motion, optimization, related rates, Newton's Method, and L'Hopital's Rule, and area. Prerequisite: appropriate test scores or College Algebra and Trigonometry with grades of C or better.

MA121 ANALYTIC GEOMETRY AND CALCULUS II5

This course picks up where MA120 left off with applications of integration. Develops calculus as applied to logarithmic, and exponential. Students study limits, techniques of integration, infinite series, parametric equations and polar coordinates. Practical applications include growth and decay, Taylor series, surface area, work and arc length. Prerequisite: Analytic Geometry and Calculus I with a C or better.

MA122 ANALYTIC GEOMETRY AND CALCULUS III5

Students will study vectors, vector functions, surfaces, differentiation, integration, cylindrical and spherical coordinates, and vector calculus. Practical applications will include arc length, area, volume, and optimization. Prerequisite: Analytic Geometry and Calculus II with a C or better.

MA123 DIFFERENTIAL EQUATIONS4

This course is the study of qualitative and quantitative behavior of first- and second-order differential equations, as well as systems of first-order equations. Both analytical and numerical methods for solution will be studied, including the use of Laplace transforms. Prerequisite: Analytic Geometry and Calculus III with a C or better.

MA130 ▸ CONTEMPORARY MATH3

Explores the uses of mathematics in different settings. Applications are seen in the contemporary world, across different disciplines. Topics will include, but are not limited to, the following: critical and logical thinking, statistics and probability, the application of mathematics to social issues such as voting, and financial applications. Prerequisite: MA 110 Intermediate Algebra with a grade of C or better.

MA220 COOPERATIVE EDUCATION INTERNSHIP 1-6 SEE CA220.

MUSIC

MU100 ▸ MUSIC APPRECIATION3

Music Appreciation is a basic study of the development of the art of music (European based) and personal development of the art of creative listening through frequent use of recordings. Recommended for the general student and music major.

MU102 WORLD MUSIC3

Through the study of music from around the world, this course explores how music shapes and is shaped by the cultural settings in which it is performed. By learning about the musical elements and structures of diverse selections of world music, students will understand music as culture, human and social activity, and artistic expression.

MU103 HISTORY OF ROCK MUSIC3

This course will survey the history of rock music from 1950 to the present. Idioms covered will include early rhythm and blues, Southern influenced gospel and spirituals, rockabilly, the California "surf" sound, the British invasion, the Motown sound, pop and folk rock, contemporary Southern rock, heavy metal, funk, and modern hip-hop. Artists and music from these genres will be studied with special emphasis placed on the significance of music in development of popular culture.

MU104 CLOUD COUNTY COMMUNITY CHORALE1

The Cloud County Community Chorale is the community choir of Concordia and North Central Kansas. Comprised of singers from within the community as well as CCCC, the Chorale emphasizes the ideal of the "singing city" --friends and neighbors gathered together to rehearse and perform music from different time periods, with added emphasis on fostering arts and music

Course Descriptions

within Concordia and the broader region. Rehearsals are held once weekly with performances throughout the year. No audition is required.

MU110 **▶ HARMONY AND EAR TRAINING I.....4**
Harmony and Ear Training I is the study of the structure and components of western music. This study will include the fundamental concepts of notation, tonality, intervals, chords, melodic organization, rhythm, harmonic progression and analysis. Additional aural skills concepts of dictation and sight singing will also be covered.

MU111 **▶ HARMONY AND EAR TRAINING II.....4**
Harmony and Ear Training II is the intermediate study of the structure and components of western music and builds on the concepts explored in Harmony and Ear Training I. This study will include supplemental concepts of notation, tonality, intervals, chords, melodic organization, rhythm, harmonic progression and analysis. Additional aural skills concepts of dictation and sight singing will also be covered. Prerequisite: Harmony and Ear Training I or consent of instructor.

MU112 HARMONY AND EAR TRAINING III4
Harmony and Ear Training II is an advanced level course with the addition of altered chords, ninth, eleventh and thirteenth chords and simple and complex methods of modulation, plus advanced ear training procedures including harmonic as well as melodic dictation and sight singing. Prerequisite: Harmony and Ear Training II.

MU113 HARMONY AND EAR TRAINING IV.....4
Is a continuation of Harmony and Ear Training III. Prerequisite: Harmony and Ear Training III.

MU117 COLLEGE BAND1
The “Rolling Thunder” is the college activity band. This ensemble rehearses twice per week and performs in a college service capacity at athletic contests and other appropriate campus and community events.

MU118 COLLEGE BAND II.....1
This course is a continuation of College Band. The “Rolling Thunder” is the college activity band. This ensemble rehearses twice per week and performs in a college service capacity at athletic contests and other appropriate campus and community events.

MU119 COLLEGE BAND III1
This course is a continuation of College Band II. The “Rolling Thunder” is the college activity band. This ensemble rehearses twice per week and performs in a college service capacity at athletic contests and other appropriate campus and community events.

MU126 CONCERT BAND.....1
Concert Band rehearses one day weekly and will perform a formal concert each semester. Literature performed will be from the traditional as well as modern band repertoire and will include works from such representative composers as Gustav Holst, Ralph Vaughan-Williams, John Philip Sousa, and Johan DeMeij. Prerequisite: Proficiency on a traditional wind or percussion instrument.

MU127 JAZZ ENSEMBLE.....1
Jazz Ensemble is a small instrumental group designed to perform in the popular idiom, including rock, soul, folk type, and country music. This group is primarily a public performing ensemble that is small enough to be mobile yet large enough to perform all types of music in the popular fields. By audition. Jazz meets three times a week for fifty-five minutes each, one hour credit.

MU130 APPLIED MUSIC: VOICE.....1
Applied Music: Voice provides the opportunity for the student to improve his singing skills in a direct teacher-to-student instructional setting. Technical skills and their application will be explored within a varied song repertoire.

MU131 APPLIED MUSIC: INSTRUMENT1
Applied Music: Instrument is for individual instruction in instrument of student’s choice beginning with student’s level of competency.

MU132 **▶ APPLIED MUSIC: PIANO1**
Applied Music: Piano is for individual instruction in piano beginning with the student’s level of competency and developing piano techniques and building a repertoire.

MU134 APPLIED MUSIC: VOICE II1
Applied Music: Voice II is a continuation of Applied Music: Voice. It involves private instruction in voice techniques. Appropriate skills and applications will be addressed through preparation of appropriate literature for recital performance.

MU135 APPLIED MUSIC: INSTRUMENT II.....1
Applied Music: Instrument II is a continuation of Applied Music: Instrument. It involves private instruction in instrumental techniques. Appropriate skills and applications will be addressed through preparation of appropriate literature for recital performance.

MU136 APPLIED MUSIC: PIANO II.....1
Applied Music: Piano II is a continuation of Applied Music: Piano. It involves private instruction in piano techniques. Appropriate skills and applications will be addressed through preparation of appropriate literature for recital performance.

Course Descriptions

MU137 APPLIED MUSIC: VOICE III.....1
Applied Music: Voice III is a continuation of Applied Music: Voice II. It involves private instruction in piano techniques. Appropriate skills and applications will be addressed through preparation of appropriate literature for recital performance.

MU138 APPLIED MUSIC: INSTRUMENT III.....1
Applied Music: Instrument III is a continuation of Applied Music: Instrument II. It involves private instruction in piano techniques. Appropriate skills and applications will be addressed through preparation of appropriate literature for recital performance.

MU139 APPLIED MUSIC: PIANO III1
Applied Music: Piano III is a continuation of Applied Music: Piano II. It involves private instruction in piano techniques. Appropriate skills and applications will be addressed through preparation of appropriate literature for recital performance.

MU146 CHAMBER SINGERS.....1
Chamber Singers is the flagship ensemble of CCCC that performs for college, community and area events. Emphasis is placed on performance, literature and musicianship. This ensemble performs frequently. Membership is by audition.

MU147 CHAMBER SINGERS II1
Chamber Singers II is a continuation of Chamber Singers. Chamber Singers is the flagship ensemble of CCCC that performs for college, community and area events. Emphasis is placed on performance, literature and musicianship. This ensemble performs frequently. Membership is by audition.

MU148 CHAMBER SINGERS III.....1
Chamber Singers III is a continuation of Chamber Singers II. Chamber Singers is the flagship ensemble of CCCC that performs for college, community and area events. Emphasis is placed on performance, literature and musicianship. This ensemble performs frequently. Membership is by audition.

MU160 CONCERT CHOIR1
Concert Choir is a large, mixed-voice ensemble that performs for collegiate and community events. Emphasis is placed on developing musical skills, exploring diverse musical literature, and offering a challenging and satisfying musical experience. Rehearsals are held twice weekly. No audition is required.

MU160 CONCERT CHOIR II1
Concert Choir II is a continuation of Concert Choir.

MU220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

* A lab fee will be assessed for these courses.

NURSING

***NR111 HEALTH ASSESSMENT FOR NURSES3**
This course is designed to provide students with a basic understanding and working knowledge of health assessments to begin making clinical judgments. Opportunities are provided for students to demonstrate competencies of the individual across the life span. Emphasis is placed on the interview process and recognition of expected findings for history and physical examination of each system. Prerequisite: Anatomy & Physiology, Human Growth & Development, Intermediate Algebra or higher with a grade C or higher, admission to the associate degree nursing program, and NR111 taken concurrently or completed with an 80% (B) or higher.

***NR111 LIFESPAN NURSING I.....6**
This course is an introduction to the professional role of the nurse and nursing process. Foundational psychomotor skills, safe practice, and basic communication skills are taught to provide care to adults and older adults. Requisite lab and clinical experiences are part of this course. Prerequisite: Anatomy & Physiology, Human Growth and Development, General Psychology, Intermediate Algebra or higher with grade C or higher, admission to the associate degree nursing program, and NR110 taken concurrently or completed with an 80% (B) or higher.

***NR112 LIFESPAN NURSING II9**
This course is an introduction to the care of healthy families, health promotion, and patient centered care associated with common acute and chronic physical and psychosocial health alterations across the lifespan. Requisite lab and clinical experiences are part of this course. Prerequisite: Successful completion of Lifespan Nursing I and Health Assessment for Nurses with a grade of 80% (B) or higher.

***NR114 PHARMACOLOGY II.....2**
This course focuses on nursing implications associated with pharmacologic therapy for patients across the lifespan experiencing acute and chronic health alterations. Prerequisite: Successful completion of Lifespan Nursing I and Health Assessment for Nurses with a grade of 80% (B) or higher.

***NR115 PHARMACOLOGY III2**
In this course, students continue their study of pharmacology and nursing implications across the lifespan. Specific prototypes of selected drug classifications provide the framework for understanding the action, use, adverse effects and nursing implications of medications. The nurse's role in drug administration, assessment, and patient education are emphasized. Prerequisite: Pharmacology II with grade 80% (B) or higher or admission to the Nursing Program with Advanced Standing.

***NR210 LPN TO RN BRIDGE COURSE.....1**
This course focuses on professional standards, scope of practice, clinical reasoning and psychomotor skills for the Registered Nurse.

Course Descriptions

Prerequisite: Completion of a practical nurse program, LPN licensure or candidate for licensure, admission to the ADN program, Anatomy and Physiology, Human Growth and Development, Intermediate Algebra, and Pathophysiology.

***NR211 LIFESPAN NURSING III9**

This course builds to provide care for patients with complex, acute and chronic, physical and psychosocial health problems. The concepts of prioritization and clinical judgment are incorporated to provide care for patients across the lifespan. Requisite lab and clinical experiences are part of this course. Prerequisite: Successful completion of Lifespan Nursing II, Pharmacology II with a grade 80% (B) or higher. (or) LPN licensure, Concurrent NR210, Anatomy and Physiology, Human Growth and Development, General Psychology, English Composition I, Intermediate Algebra, Pathophysiology with a grade C or higher and admission to the ADN program.

***NR212 LIFESPAN NURSING IV9**

This course addresses emergent and multisystem healthcare problems. It supports the transition of the student to the professional role of the nurse. Requisite lab and clinical experiences are part of this course. Prerequisite: Pharmacology II and Lifespan Nursing III with a grade 80% (B) or higher.

NR220 COOPERATIVE EDUCATION INTERNSHIP..... 1-6
See CA220.

* A lab fee will be assessed for these courses.

PHYSICAL EDUCATION

PE101 TEAM SPORTS I.....1

Is designed to give the student an opportunity to participate in physical education activities of a team nature. Areas of interest includes, but are not limited to, soccer, men's basketball, women's basketball, volleyball, baseball, softball, and men's and women's track.

PE102 TEAM SPORTS II1

Is designed to give the student an opportunity to participate in physical education activities of a team nature. Second semester activities are basketball, volleyball, and softball.

***PE108 ARCHERY1**

Is designed for students interested in the sport of archery. The course will teach the student fundamentals in archery skills and competition.

PE110 TOTAL FITNESS.....1

Is designed to bring about changes in the body as manifested by physical exercise. This course can be physically demanding, but very satisfying for those interested in improving their physical condition. Students will be informed on how to correctly use all of

the equipment in the fitness center, and will have the opportunity to ask questions of the instructor or the fitness center staff member on duty when working out.

PE125 FITNESS FOR LIFE.....1

The primary purpose of this course is to acquaint students with a basic knowledge, understanding and value of physical activity as related to optimal healthful living.

PE126 CHEERLEADING I1

Is designed to teach the student the fundamentals of cheerleading. This is a first level cheer class. Students will learn beginning stunting including the preparation and practice of routines, weight conditioning programs, knowledge of personal health and self-motivation, as well as focusing on cheer techniques. Students will also learn cheer terminology, choreography, and other related topics. (With approval of Cheer Coach.)

PE127 CHEERLEADING II1

Is designed to teach the student the fundamentals of cheerleading. This is the second level of cheerleading. Students will be expected to be role models and help teach the advanced stunting to the first level students. This includes the preparation and practice of routines, weight conditioning programs, knowledge of personal health and self-motivation, as well as focusing on stunting techniques. Students will also learn stunting terminology, choreography, and other cheer related topics. (With approval of Cheer Coach.)

PE128 DANCE TEAM I.....1

Is designed to teach the student the fundamentals of dance. This is a first level dance class that will include the preparation and practice of routines, weight conditioning programs, knowledge of personal health and self-motivation, as well as focusing on jazz, hip hop, lyrical, and modern dance techniques. Students will also learn dance terminology, choreography, and other dance topics. (With approval of Dance Coach.)

PE129 DANCE TEAM II1

Is designed to teach the student the fundamentals of dance. This is a second level class where the students will be more involved with helping demonstrate techniques and will include the preparation and practice of routines, weight conditioning programs, knowledge of personal health and self-motivation, as well as focusing on jazz, hip hop, lyrical, and modern dance techniques. Students will also learn dance terminology, choreography, and other dance related topics. (With approval of Dance Coach.)

PE130 INTRODUCTION TO PHYSICAL EDUCATION.....3

Surveys the modern program of physical education, fitness and sport as to its history, philosophy, aims and objectives. It covers a broad scope of topics including personal fitness, scientific foundations, exploring careers professional development, coaching and athletics and social foundations.

Course Descriptions

***PE131** **†** **FIRST AID AND SAFETY**3

Acquaints the student with safety and first aid (treating injuries and sudden illnesses) in the home, school, and community. The National Safety Council first aid course and American Heart Association Heartsaver and Healthcare Provider courses are offered.

PE134 **PERSONAL AND COMMUNITY HEALTH**3

The study of personal health and wellness of the individual. The course examines several areas of wellness to include the physical, psychological, social, intellectual, spiritual, and environmental dimensions. The student will assess him/herself in numerous areas of lifestyle (i.e. stress, physical fitness, nutrition, destructive behaviors, communicable diseases, chronic diseases) and examine ways to improve his/her health for the future.

PE135 **CONCEPTS OF PHYSICAL EDUCATION**.....1

The primary purpose of this course is to acquaint students with a basic knowledge, understanding and value of physical activity as related to optimal healthful living. The course will include physical fitness assessment, exercise prescription, nutrition, weight management and stress management.

PE136 **THEORY OF COACHING**3

A comprehensive introduction to the art and science of coaching. This course introduces a positive coaching philosophy, the principles of coaching as digested from the fields of sport psychology, sport pedagogy, sport physiology, sport medicine, and sport management. This course includes American Sport Education Program Coaching Principles certification (K.S.H.S.A.A. - Level 1 certification)

PE137 **INTRODUCTION TO RECREATION**3

This course is designed to introduce the student to the nature, scope and history of recreation, leisure services, and outdoor education. It examines trends and issues of leisure studies and out-of-door recreation, and potential of these areas of service as a profession.

PE139 **TECHNIQUES OF COACHING BASKETBALL**2

Is designed to provide coaches with the skills needed to organize and develop a quality basketball program. It will include basketball techniques, strategies, theories, philosophies of offense and defense, also organizational, administrative skills to handle parents, players, assistant coaches and school personnel. Class will consist of lectures, small group activity, videos, observations and gymnasium activity.

PE140 **TECHNIQUES OF COACHING VOLLEYBALL**2

Is designed to provide coaches with the skills needed to organize and develop a quality volleyball program. It includes volleyball techniques and tactical strategies (offenses and defenses) of the game.

PE141 **†** **PERSONAL WELLNESS**.....3

The study of personal health and wellness of the individual. The course examines several areas of wellness to include the physical, psychological, social, intellectual, spiritual, and environmental dimensions. The student will assess him/herself in numerous areas of lifestyle (i.e. stress, physical fitness, nutrition, destructive behaviors, communicable diseases, chronic diseases) and examine ways to improve his/her health for the future.

PE143 **TOTAL FITNESS II**1

This class is designed to bring about continued changes in the body as manifested by increased amounts of physical exercise. This course is physically demanding, but very satisfying for those interested in continuing to improve their physical condition. Prerequisite: Total Fitness.

***PE144** **ARCHERY II**.....1

This class is designed for students interested in the sport of archery. This course is designed to teach the student more advanced archery skills and levels of competition.

PE146 **CONCEPTS OF TEAM SPORTS**.....3

This course is to provide learning experiences that will lead to the development of basic skills in team sports. In addition to skill acquisition, the course will focus on how to plan, implement, and explain the different sports/activities that are presented. An emphasis will be placed on the use of the game stages and movement framework as a guide for designing a variety of sport game experiences. Students will be expected to achieve an intermediate level of skill in the selected team sports. Practice outside of class time may be necessary for some students to achieve the expected performance level.

PE148 **INTRODUCTION TO SPORTS MANAGEMENT**3

Introduction to the discipline of sports management and its vast array of career opportunities. Successful management is required in all segments of the sport industry whether professional or amateur, private or public, school-related or club, community or national, and at all levels of competition.

PE150 **†** **BASIC CARE AND PREVENTION OF ATHLETIC INJURIES I**3

Is designed for students interested in the prevention and care of athletic injuries. Basic principles of all aspects of athletic training are covered. Through lectures on specific injuries and practical lab experiences, the student will learn how to recognize and care for common athletic injuries. This course is open to all students, it is a first semester requirement for students in the Athletic Training Program.

PE151 **BASIC CARE AND PREVENTION OF ATHLETIC INJURIES II**3

This course is designed for students interested in the evaluation, treatment, and rehabilitation of upper extremity athletic injuries.

Course Descriptions

The anatomy involved in specific injuries that commonly occur in athletics and evaluation techniques will be emphasized. The use of therapeutics modalities and rehabilitation exercises for athletic injuries will be presented. Through lectures on specific injuries and practical lab experiences the student will learn about basic athletic training. This course is open to all students. This course is a second semester requirement for students in the Athletic Training program. Prerequisite: Basic Care & Prevention of Athletic Injuries I with passing grade or consent of instructor.

PE155 RECOGNITION & CARE OF ATHLETIC INJURIES..3

This course will acquaint the student with the first-response recognition, evaluation and treatment techniques for more than 110 sport related injuries and illnesses. It will cover treatment of injuries and illness, injury prevention, as well as cardiopulmonary resuscitation (CPR) for young adults. This course includes American Sport Education Program Sport First Aid Certification (K.S.H.S.A.A. - Level 2 certification).

PE156 ▸ PRINCIPLES OF STRENGTH & CONDITIONING2

This course is designed to provide students with the theoretical and practical knowledge of the physiological, biomechanical and administrative aspects of designing and supervising safe and effective strength and conditioning programs for youth through adult populations.

PE160 VARSITY SPORTS: BASEBALL.....1

A sport for baseball players. It begins the first day of classes for the fall semester and ends with the regional and national baseball tournaments in May. Baseball consists of skill development, intended to produce a competitive baseball team, in pitching, fielding and hitting skills.

PE161 VARSITY SPORTS: BASKETBALL1

A sport for basketball players. Practice begins the first of October and concludes in March. Preseason conditioning starts four weeks preceding regular practice. Players will practice six days a week and play approximately 30 regular season games.

PE162 VARSITY SPORTS: TRACK1

A sport for track and field athletes. Athletes are expected to participate in all practices and meets scheduled by the coach.

PE165 VARSITY SPORTS: SOFTBALL.....1

A sport for softball players, which includes Fall and Spring Semester participation. Softball consists of daily practices and a schedule of approximately 20 games in the Fall and 50 games in the Spring.

PE167 VARSITY SPORTS: CROSS COUNTRY1

A sport for distance runners. It begins in August or at the start

of the Fall Semester and ends with the National Championship in November. Cross country consists of a variety of hill, road and track workouts to better develop the cardiovascular system.

PE168 VARSITY SPORTS: VOLLEYBALL1

This class is designed to bring about changes in the body as manifested by physical exercise. This course can be physically demanding, but very satisfying for those interested in improving their physical condition. Students will be informed on how to correctly play the game of volleyball, and will have numerous opportunities to play the game as well. Also students will be provided the opportunity to ask questions of the instructor training or competing.

PE169 VARSITY SPORTS: WRESTLING1

A sport for wrestlers. The course begins the first day of classes for the fall semester and ends with the regional wrestling tournaments in February. Wrestling consists of skill development intended to produce a nationally competitive NJCAA wrestling program in all aspects.

PE185 VARSITY SPORTS: BASKETBALL II.....1

Students will comprehend and demonstrate the fundamental skills of shooting, passing, dribbling, and rebounding the basketball. Students will learn to analyze and demonstrate these skills within a competitive environment. This course is a continuation of Varsity Sports: Basketball.

PE220 COOPERATIVE EDUCATION INTERNSHIP 1-6

See CA220.

PE250 STRESS MANAGEMENT3

This course will study the mind-body relationship and the psychophysiology of stress including the relationship of the stress reaction to specific illnesses and disease. The course will cover an understanding of the basic principles of stress management through coping skills, the study of the mind-body relationship in stress management, cognitive reappraisal of daily life stressors, and techniques to deal with these stressors. The cognitive strategies and relaxation techniques are cornerstones for optimal health and can help one manage stressors in a healthful and productive manner.

* A lab fee will be assessed for these courses.

PHARMACY TECHNICIAN

PM101 COMMUNITY PHARMACY PRACTICE.....1

In this course, we examine the history and roles of pharmacists and pharmacy technicians, we look at the evolution of laws and regulations that guide the practice of community pharmacies,

Course Descriptions

begin basic patient prescription processing, introduce extemporaneous compounding, and explore the changing face of community pharmacy away from dispensing only functions.

PM102 HEALTHCARE LAW OVERVIEW1

The purpose of this course is to introduce principles of law and ethics in pharmacy. The course will examine the federal and state laws that impact the practice of pharmacy, while emphasizing the legal and ethical principles applied by staff in their daily decision-making. Students will learn the governmental framework within which pharmacy is practiced, as well as acquire an understanding of the laws, regulations, and the ethical responsibilities applicable to pharmacy staff so that they will be able to protect the public and ensure patients' well-being.

PM103 PHARMACOLOGY FOR PHARM TECH3

In this class we examine the various drug classes and the mechanisms of action for many drugs. This course provides students a comprehensive pharmacology background to further prepare them for employment in community, institutional and other pharmacy settings.

PM110 HOSPITAL AND SPECIALITY PHARMACY

PRACTICE.....1

Explores the role of pharmacy technicians and the practice of pharmacy in the hospital, specialty, and institutional setting. This course covers institutional and pharmacy organization, operation, terminology, medication distribution systems, packaging and preparation of intravenous admixtures.

PM111 PHARMACY CALCULATIONS3

In this course we continue to build upon the skills acquired in Medical Math but focus on more complex forms of non-sterile and sterile compounding of pharmaceuticals. Pharmacy technicians are increasingly being asked to assist the pharmacist in calculating appropriate dose and dosage form. It is vital that the advanced technician be able to confidently and accurately perform these functions.

PM112 MEDICATION SAFETY AND ADVANCED

PRACTICE.....1

Exploration of Medication Therapy Management and the pharmacy technician's role in assuring best practice and patient safety. Technicians are being increasingly relied on to assist pharmacists in caring for patients needs outside of drug dispensing. Through examination of over the counter, natural health, and complementary health options, the student will be well prepared to assist the pharmacy customer on the retail side of the counter.

PHILOSOPHY

PH100 ▸ INTRODUCTION TO PHILOSOPHY3

Is a survey course designed to increase the student's understanding

of their own ideas, the ideas of philosophers, and the ideas of their fellow students. Topics covered include: logic, epistemology, ethics, pragmatism, and existentialism.

PH101 ▸ INTRODUCTION TO CRITICAL THINKING3

Is designed to help students recognize inaccurate and fallacious reasoning and identify and practice good thinking. Students will apply the standards of good reasoning to traditional and contemporary ethical, social, economic and political problems.

PH105 ▸ ETHICS3

Ethics explores basic concepts, theories, and methods of moral philosophy, their application to specific moral problems, and aspects of the rich history of moral philosophy. Traditional Ethical Philosophers are discussed such as Bentham, Mill, and Kant, to name a few. Moral problems and social issues such as abortion, capital punishment, business practices, and sexuality are examples of subjects examined from various viewpoints and philosophies.

RELIGION

RE104 ▸ WORLD RELIGIONS.....3

Discusses religions of mankind set in historical perspective. The course will focus upon the basic teachings of each of the major religions of the world, their founders, geographic distribution and importance in the theological world.

SCIENCE

***SC101 ▸ GENERAL BIOLOGY +4**

Engages the non-biology major in explorations of the unity and diversity of organisms with particular attention devoted to the commonalities. Students are involved in various investigative simulations and extended laboratory activities. Study begins with the chemical foundation of life and culminates with interactions between organisms and environment. This course combines three hours lecture and one and one-half hours of laboratory time.

***SC103 ▸ PHYSICAL SCIENCE +5**

Is a study of man's physical world emphasizing fundamental universal laws and their implications in modern living through observations and analysis of sensible data. This study may include (but is not limited to) topics in the following areas: astronomy, chemistry, geology, meteorology, and physics. This course combines three hours of lecture and three hours of laboratory time. Prerequisite: Elementary Algebra with a C or better or appropriate Accuplacer/ACT scores.

***SC104 ▸ GEOLOGY +4**

This course provides a study of the basic landforms and geological processes. Topics include Earth structure and composition, erosional and depositional processes, minerals and rocks, stream flow, glaciation, plate tectonics, and groundwater. This course includes three hours lecture and one and one-half hours laboratory time.

Course Descriptions

***SC105 ▸ GENERAL ASTRONOMY +4**

This course is an introduction to space science designed to acquaint students with the history of astronomy, the universe, the solar system, the Sun and other stars, the evolution and properties of celestial bodies, and astronomical phenomena. This course includes three hours lecture and one and one-half hours laboratory time.

***SC107 ▸ METEOROLOGY +4**

This course introduces the nature, origin, processes, and dynamics of the Earth's atmospheric environment. Content will focus on: (1) weather systems and processes, (2) seasonal trends, (3) atmospheric circulation, pressure, and moisture, (4) storm development, (5) air pollution, and (6) anthropogenic influences on weather and climate. This course includes three hours lecture and one and one-half hours laboratory time.

***SC109 APPLIED PHYSICS3**

The applied physics course is designed to teach the basic concepts of physics, while applying them to practical situations and situations pertaining to wind energy and wind energy generation. Students will use a hands-on approach to study the concepts of force, work, rate, resistance and energy as related to mechanical, fluid, electrical, and thermal systems. Prerequisite: Intermediate Algebra with a C or better or appropriate ACT/Accuplacer scores.

***SC110 ▸ PRINCIPLES OF BIOLOGY I +5**

Is a combined lecture and laboratory course for students planning to choose biological sciences as major and take additional courses in biology. Covers contents of basic biochemistry, cell structure and function, molecular biology, and genetics, integrated in an evolutionary perspective. Meets three hours of lecture and three hours of laboratory per week. Equivalent to Biology I for Majors With Lab approved by Kansas Board of Regents for system-wide transfer.

SC111 ▸ MICROBIOLOGY LECTURE3

Is a study of microorganisms with emphasis on bacteria including fundamentals of their morphology, physiology, genetics and relationship to health and disease. (This is a three-hour lecture only class. No lab is included. Students wishing to take Microbiology Lab will also need to enroll in SC112.) Prerequisite: A college level biological science course with a C or better.

***SC112 ▸ MICROBIOLOGY LAB +2**

Is an extended weekly time period during which students are given the opportunity to demonstrate via specific laboratory procedures, principles of microbial structure, function, and the relationship of microbes to health and disease. This course includes three hours laboratory time. Prerequisite: Microbiology Lecture (SC111) or concurrent enrollment.

***SC115 ▸ GEOLOGY LAB +1**

This lab is intended as a hands-on approach to learning Earth materials and geological processes. Experiments will include: (1)

using the scientific method and science tools to interpret geologic data, (2) examining the cause and effects of geologic hazards, (3) identifying rocks and minerals, (4) simulating stream and coastal processes, (5) assessing groundwater pollution, (6) analyzing geologic maps, and (7) interpreting the geologic history of the Great Plains. This course includes one and one-half hours laboratory time. Prerequisite: Previous credit in Geology lecture and approval from instructor

***SC116 METEOROLOGY LAB +1**

This lab is a hands-on study of atmospheric processes. Students will apply the scientific method to learn the reason for seasons and the causes of precipitation, weather hazards (tornadoes and hurricanes), atmospheric phenomena (mirages, halos, and rainbows), air pollution, and climate change. This course includes one and one-half hours laboratory time. Prerequisite: Previous credit in Meteorology lecture and approval from instructor.

***SC117 GENERAL BIOLOGY LAB +1**

This is a laboratory class that is an opportunity for an extended weekly time period during which students are given the opportunity to demonstrate via specific laboratory procedures, principles of scientific method, cellular biology, enzymatic functions, diversity, evolution, and ecology. This course includes one and one-half hours laboratory time. Prerequisite: Previous credit in Biology lecture and approval from instructor.

***SC120 ▸ HUMAN ANATOMY & PHYSIOLOGY I +4**

Is an introduction to the basic concepts of biochemistry, cytology, histology, and cellular physiology that relate to all tissues, organs and organ systems of the human body. This will include the following organ systems: integumentary, skeletal, muscular, and neural. This course includes three hours of lecture and one and one-half hours of laboratory time.

***SC121 ▸ HUMAN ANATOMY & PHYSIOLOGY II +4**

Is a continuation of topics introduced in Human Anatomy and Physiology I as related to the following organ systems: cardiovascular, respiratory, gastrointestinal, excretory, endocrine, and reproductive. This course includes three hours of lecture and one and one-half hours of laboratory time. Prerequisite: Completion of or concurrent enrollment in Human Anatomy and Physiology I.

***SC125 HUMAN BODY DISSECTION +1**

Is designed to give the more advanced student an opportunity for hands-on dissection experience with a human cadaver. This course includes one and one-half hours of laboratory time. Prerequisite: Completion of or concurrent enrollment in Human Anatomy & Physiology I.

***SC126 ▸ ANATOMY AND PHYSIOLOGY +5**

Anatomy and Physiology is an introduction to the basic concepts of biochemistry, cytology, histology, and cellular physiology that relate to all tissues, organs and organ systems of the human body. It will include the following organ systems: integumentary,

Course Descriptions

skeletal, muscular, neural, senses, endocrine, circulatory, respiratory, urinary, digestive, and reproductive. This course includes three hours of lecture and three hours of laboratory time.

SC128 PATHOPHYSIOLOGY4
 Focuses on pathophysiologic concepts related to the functional and structural changes that accompany disease processes and the application of basic concepts to body systems and selected disease processes. Etiologies, signs, symptoms, courses, and complications of common diseases of the following organ systems are included: neurologic, endocrine, reproductive, hematologic, cardiovascular, lymphatic, pulmonary, renal and urologic, digestive, musculoskeletal, and integumentary. This course is a four hour lecture class. This course has no lab. Prerequisite: SC126 Anatomy and Physiology or SC120 Human Anatomy and Physiology I and SC121 Human Anatomy and Physiology II.

***SC130 T GENERAL CHEMISTRY +.....5**
 Is an introductory course that assumes no previous experience with chemistry. The course includes a basic overview of inorganic, organic and biochemistry. This course includes three hour lecture and three hours laboratory time. Prerequisite: Elementary Algebra with a "C" or better or an appropriate ACT/Accuplacer math score.

***SC131 T CHEMISTRY I +.....5**
 Is an introductory course designed for engineering, allied health and science majors. Fundamental laws of chemistry, atomic theory and structure, chemical calculations, chemical bonding, gases and the kinetic molecular theory, chemical kinetics, acids, bases, and salts are covered in this course. This course includes three hours lecture and three hours laboratory time. Prerequisite: Intermediate Algebra with a "C" or better or appropriate ACT/Accuplacer scores.

***SC132 T CHEMISTRY II +5**
 This course will focus on the following topics: properties of solids and solutions, chemical kinetics, chemical equilibrium and applications, acids and bases, spontaneity, entropy, and free energy, thermochemistry, and an overview of organic and biochemistry. This course includes three hours lecture and three hours laboratory time. Prerequisite: Chemistry I with a C or better.

SC137 NATURAL HAZARDS AND DISASTERS3
 This course will examine the physical mechanisms that create natural hazards and disasters, explore the geographic distribution of disasters around the globe, and address how humans mitigate against and respond to them. Topics to be covered include tornadoes, earthquakes, tsunamis, volcanoes, floods, hurricanes, heat waves, and droughts, as well as some lesser-known and larger scale phenomena such as the El Nino/La Nina cycle, meteorite impacts, and global climate change. This course includes three hours lecture. This course has no lab. Students wishing to take Natural Hazards and Disasters Lab must enroll in SC138.

***SC138 NATURAL HAZARDS AND DISASTERS LAB +1**
 This lab will examine the physical mechanisms that create natural hazards and disasters, explore the geographic distribution of disasters around the globe, and address how humans mitigate against and respond to them. Topics to be covered include tornadoes, earthquakes, tsunamis, volcanoes, floods, hurricanes, heat waves, and droughts, as well as some lesser-known and larger scale phenomena such as El Nino/La Nina cycle, meteorite impacts, and global climate change. This course includes one and one-half hour lab time. Prerequisite: Previous or concurrent enrollment in SC137.

***SC140 T COLLEGE PHYSICS I +5**
 Is an introductory course covering the general topics of mechanics, static, and dynamic forces, energy, momentum and simple harmonic motion. Depending on the time and level of class preparation other material may be covered during the first semester, particularly heat and thermodynamics. College Physics I is recommended for majors in science and allied health. This course includes three hours lecture and three hours laboratory time. Prerequisite: College Algebra and College Trigonometry with a "C" or better or appropriate ACT/Accuplacer scores.

***SC141 T COLLEGE PHYSICS II +5**
 Is the second half of introductory physics covering the general topics of heat, sound, electricity, light, and modern physics. College Physics II is recommended for majors in science and allied health. This course includes three hours lecture and three hours laboratory time. Prerequisite: College Physics I with a C or better.

***SC142 T UNIVERSITY PHYSICS I +5**
 Is an introductory course covering the general topics of mechanics and heat and is recommended for majors in science and engineering. Extended laboratory are required as this course combines three hours of lecture and three hours of laboratory time. Co-requisite: Analytic Geometry and Calculus I.

***SC143 T UNIVERSITY PHYSICS II +5**
 Is the second half of introductory physics covering the general topics of sound, electricity, light, and modern physics. University Physics II is recommended for majors in science and engineering. This course includes three hours lecture and three hours laboratory time. Prerequisite: University Physics I with a "C" or better.

SC151 T PRINCIPLES OF BIOLOGY II +.....5
 A combined lecture and laboratory course for students planning to choose majors of biological sciences and take additional courses in biology. Covers contents of basic plant and animal morphology and physiology, biodiversity and phylogeny, population genetics, and principles of evolution and ecology. Meets three hours of lecture and three hours of laboratory per week. Equivalent to Biology II for Majors with Lab approved by Kansas Board of Regents for system-wide transfer.

Course Descriptions

SC220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

* A lab fee will be assessed for these courses.
+ These courses are considered lab courses.

STUDENT DEVELOPMENT

SD099 PERSONAL ASSESSMENT AND PLANNING1
Allows students to assess their skills, aptitudes, interests, and values. It helps students: 1) determine what obstacles are interfering with their learning, 2) devise a plan to overcome these obstacles, and 3) gain the self-confidence and self-determination necessary for college success. All students with academic probation status are required to enroll in this course. Students may not drop or withdraw from this course without prior approval from the Vice-President of Academic Affairs.

SD100 COLLEGE SKILLS AND RESOURCES1
Familiarizes incoming Cloud students with the campus, its facilities, procedures and regulations. Students are assisted in 1) defining their educational goals, 2) identifying courses and experiences that can help fulfill their goals and 3) accessing the support services necessary to achieve their goals. Required for first-time college students enrolled in nine or more credit hours.

SOCIAL SCIENCE

SS101 ▸ GENERAL PSYCHOLOGY.....3
A survey of methods, facts, and principles relating to basic psychological processes. Major topic areas include neural bases of behavior, learning and motivation, psychosocial development and abnormal psychology, human cognition, cognitive development, individual differences and social psychology. The classroom lab activities provide experience with methods of research and data collection.

SS102 ABNORMAL PSYCHOLOGY3
Presents an overview of deviant behavior study, the concept of differential diagnosis categories of deviant behavior, an overview of the major theoretical models explaining deviant behavior and a discussion of major psychological and psychiatric models for treating and modifying deviant behavior.

SS103 SOCIAL PSYCHOLOGY3
Is an introduction to the discipline that utilizes the scientific method to attempt to understand and explain how the individual's behavior, thoughts, and feelings are influenced by the actual, imagined or implied presence of others. Analysis of the self, culture and gender will be given special emphasis in regard to their direct and indirect influence upon human behavior.

SS105 ▸ HUMAN GROWTH AND DEVELOPMENT3
This course is a study of the self and steps which lead to psychological maturity. The class will include an analysis of our culture

in relationship to the needs for personal growth and will study the individual from conception through death. The course will cover physical, mental, and cultural needs for a rich and satisfying life.

SS106 ▸ MARRIAGE AND FAMILY3
Is a study of mate selection, marriage, and the family from the psychological, sociological, biological, and developmental points of view. Included are the relationship of values to marriage, sex roles, dating and engagement, family planning, parenthood, family economics, communication and marital growth and fulfillment, and death in the family.

SS107 HUMAN SEXUALITY3
Is an introductory course focusing on the biological, psychological, social and legal aspects of human sexuality with the major emphasis on the development of wholesome attitudes toward the masculine and/or feminine elements of one's unique development.

SS113 HUMAN RELATIONS3
Is an experience-oriented class which is designed to assist persons to focus upon themselves and others. Utilizing group interaction and discussion, emphasis is placed upon the development of listening and communication skills, conflict management, personal and interpersonal awareness, goal setting, and effective time management.

SS125 ▸ INTRODUCTION TO CULTURAL ANTHROPOLOGY3
Is designed to introduce students to the extraordinary diversity of human cultures. This variation is viewed as a reflection of each society's continuing need to adapt successfully to local, social and environmental conditions. While the course focuses chiefly upon primitive and nonindustrialized societies today (i.e., those living in the "ethnographic present"), past cultures are also surveyed from the perspectives of physical anthropology and archaeology.

SS127 ▸ CHILD PSYCHOLOGY.....3
Child psychology is designed to cover the developmental aspects of physical, neurological, cognitive, psychosocial and personality development of the child from conception through adolescence. Research methods and genetic, behavioral and environmental theory will be included. This course will explore current impacts on behavior and development.

SS129 ▸ INTRODUCTION TO SOCIAL WORK3
This course aims to assist students gain knowledge about the nature of social work practice including its values, ethics, roles and activities; understand some of the differences between conventional and progressive approaches to social work; understand more about themselves in regard to social work; and gain familiarity with the work done by social workers in the community and the world.

Course Descriptions

SS130 † **INTRODUCTION TO SOCIOLOGY**.....3

Is designed as an introduction to the study of the structure and function of human groups, particularly those which occur in contemporary industrialized cultures. The relationships between the individual and his society, culture and society, and the social dynamics of institutions are investigated.

SS131 † **RACE AND ETHNIC RELATIONS IN THE UNITED STATES**.....3

This course seeks to expose students to historical and contemporary issues related to diversity, race, and ethnicity in the United States. The course will utilize different sociological perspectives to critically analyze racial and ethnic relations. The course will highlight concepts such as power, oppression, stereotypes, inequality, prejudice, and social stratification. The course examines social policy as it relates

SS140 † **U.S. GOVERNMENT: NATIONAL**3

Is an introduction to the structure and function of the United States Government and the political behavior of the American people.

SS141 † **U.S. GOVERNMENT: STATE AND LOCAL**3

Is a study of the structure and function of state and local governments with special attention given to the governments in Kansas.

SS142 **CURRENT POLITICAL ISSUES**.....3

An introduction to contemporary political issues and the problems that concern American society. This course will look at current events that are shaping current political policy at the local, state and national levels.

SS150 † **INTRODUCTION TO INTERNATIONAL RELATIONS**3

This course focuses on concepts and patterns of political behavior within societies, and the reasons behind these patterns. The aim of this course is to furnish students with the intellectual tools to understand the future, as well as current events in their society and around the globe.

SS201 † **SOCIAL PROBLEMS**.....3

This course involves the application of sociological concepts and principles to the description and critical analysis of major social problems of modern societies. A founding assumption to this course is that it is crucial for people to be able to subject their own society to scrutiny in order to arrive at intelligent assessments of particular social problems. It is equally important that people understand the general patterns of societal development that often cause or aggravate these problems. Within this framework, this course will examine various problems including those of wealth and poverty, class stratification, race and ethnicity, crime and deviance, gender, and problems of our consumer society.

SS220 **COOPERATIVE EDUCATION INTERNSHIP**..... 1-6
See CA220.

* A lab fee will be assessed for these courses.

SOLAR ENERGY

***SE100 INTRODUCTION TO SOLAR ENERGY**3

Introduction to Solar Energy students will be exposed to many facets of the solar industry. This course will cover basic principles of solar energy conversion. The solar industry worldwide is growing every year and the cost of the energy has been declining because of the efficiency of new technologies. Class topics will not only cover the mechanical, technical, and electrical aspects of solar energy but also environmental, social, political and economic aspects of solar energy.

***SE101 SOLAR ENERGY FUNDAMENTALS**.....3

Solar Energy Fundamentals will cover the solar industry, composition of PV systems, basic terminology for the industry, importance of the sun's insolation, and the effects of solar shading. The course will also examine the specifics of a panel at the component level and the importance of panel selection.

***SE102 SOLAR ENERGY DESIGN**3

Solar Energy Design students will learn real world knowledge, experience, and understanding of solar photovoltaic and solar power systems. This course will cover designing, estimation, bidding, submitting, permitting, building, and passing inspections of PV systems.

***SE103 SOLAR ENERGY OPERATIONS & MAINTENANCE**.....3

Solar Energy Operations and Maintenance course will cover analyzing results of test tools used during commissioning, performance evaluations, operations, maintenance, and troubleshooting. Tools include insulation resistance testing, IV curve tracing, infrared cameras, and thermal imaging. Students will learn the proper set-up, use, and function of the tools and the proper ways to evaluate the system. The course will also include the proper ways to troubleshoot and locate common faults of PV systems using tools and methods.

***SE201 ADVANCED SOLAR ENERGY DESIGN**3

Solar Energy Advanced System students will be exposed to the specific techniques in design of a solar project. This course will cover customer expectations and characteristics specific to a site. Class topics will also cover the mechanical, technical, and electrical design requirements of solar PV systems.

***SE202 ADVANCED SOLAR ENERGY INSTALLATION**3

Solar Energy Advanced Installation will cover all aspects of the installation of a solar PV project. The course will explore the safety requirements of the solar industry and hazards associated. It will also cover the proper regulations and methods required by the NEC and other governing bodies.

Course Descriptions

***SE203 SOLAR ENERGY SYSTEM COMMISSIONING.....3**

Solar Energy System Commissioning students will learn the proper procedures in commissioning of a solar PV system. This course will cover equipment use, proper inspection, conducting proper tests, and verification of proper system operation.

***SE204 SOLAR ADVANCED OPERATIONS & MAINTENANCE.....3**

Solar Energy Advanced Operations and Maintenance course will learn methods for verifying system operation and performance in order to diagnose and correct problems. Students will perform preventative maintenance on PV systems in real life situations and determine corrective actions to take.

* A lab fee will be assessed for these courses.

UNMANNED AIRCRAFT SYSTEMS

***UA100 INTRODUCTION TO SUAS.....3**

This course is an introduction to Unmanned Aerial Systems. It will cover the safety requirements to operate in the National Air Space in the United States. It will also evaluate the role of the FAA and local laws which govern the operation of UAV's. Other organizations which work to keep citizens and operators safe and efficient in their operation of UAV's will also be introduced. Through the course, the different types of drones and applications in today's world will be explored.

***UA110 SUAS GROUND SCHOOL3**

The sUAS Ground School Course sets a sturdy foundation of required aeronautical knowledge for remote pilots of UAS less than 55 pounds. The curriculum addresses all pertinent aeronautical knowledge factors outlined by the FAA for the Unmanned Aircraft General (UAG) examination and augments those with safety concepts and practices to develop well-informed and responsible remote pilots. Students who successfully complete the course receive a certificate of completion from ARGUS Unmanned and are well prepared to pass the UAG exam.

***UA140 SUAS APPLICATIONS3**

Unmanned Applications course objectives is to provide an understanding of how unmanned aircraft are used to accomplish a variety of tasks in a complex environment and how remote pilots apply UAS technology for commercial, scientific, and governmental purposes while respecting both the physical and regulatory limitations. Additionally, this course creates a foundation for the concept of professionalism and ethics as they apply to remote pilots.

***UA150 SUAS PERSONNEL, SAFETY, & CREW RESOURCE MANAGEMENT3**

sUAS sUAS Personnel, Safety, and Crew Resource Management course objective is to provide the basic knowledge needed to integrate drones into the National Airspace and to develop a workflow

for UAV missions. The importance of safety and mitigating risk is of paramount importance for UAV's to be considered a viable means of collecting data in the National Airspace. This course is not intended to be a management of personnel but a framework to develop safe, efficient, workflow for all UAV missions.

***UA201 SUAS COMMAND, CONTROL, & COMMUNICATIONS.....3**

Command, Control, and Communications will be covered as it relates to the team operation of a UAS. Students will learn the various types of systems and controls required to operate a UAV in the National Air Space. They will learn the devices needed and the reliability of the differing technologies for safe and effective flight. Both hardware components and software control solutions will be covered.

***UA210 SUAS SYSTEMS AND CONCEPTUAL DESIGN3**

This course will introduce the components required for remote controlled flight by a multi-rotor vehicle. Within the course the structural pieces of the UAV will be constructed by 3D printer techniques and all components which cannot be printed will be added to the design with a finished flying UAV by the end of the course. Through this process students will learn the various laws of physics and construction and repair techniques to create an air-worthy multi-copter.

WIND ENERGY

***WE100 INTRODUCTION TO WIND ENERGY.....3**

Students will be exposed to the many facets of the wind industry. This course will cover basic principles of wind energy conversion. The wind industry world wide is growing faster than any other energy source. Class topics will not only cover the mechanical, technical, and electrical aspects of wind energy but also environmental, social, political and economic aspects of wind energy.

***WE102 ENERGY INDUSTRY FUNDAMENTALS3**

Energy Industry Fundamentals provides a broad understanding of the electric and natural gas utility industry and the energy generation, transmission, and distribution infrastructure, commonly called the "largest machine in the world," which forms the backbone for the industry. The course includes business models, regulations, types of energy and their conversion to useable energy such as electric power, how generated power is transmitted and distributed to the point of use, emerging technologies, and the connection to careers in the energy industry.

***WE105 EMPLOYABILITY SKILLS, SAFETY, BLUEPRINT READING.....3**

A course designed specifically for the wind energy students. Each of the course's topics will be presented for approximately a third of the semester. Employability Skills will provide the student with lifelong career planning skills and employability skills necessary to secure a career in the wind industry. Safety will cover the necessary topics of OSHA safety training in the electrical industry.

Course Descriptions

Blueprint Reading will provide the student with communication skills in the areas of reading blueprints for development, construction, operation, maintenance, and electrical power systems.

***WE110 ELECTRICAL THEORY3**
Students will be exposed to many facets of electrical energy. This course will cover basic electrical circuit information such as voltage, current, resistance, series circuits, parallel circuits, combination circuits, conductors, insulators, electrical power, sources of electrical energy, magnetism, meters, AC/DC current, and other topics that are appropriate.

***WE120 HYDRAULICS.....3**
Hydraulics is a study dealing with the mechanical properties of liquids. Hydraulic topics cover concepts such as hydraulic pumps, actuators, accumulators, cylinders, control valves, check valves, flow control valves, directional control valves, pressure control valves, motors, filters, coolers, and reservoirs.

***WE130 WIND PUBLIC/LANDOWNER RELATIONS3**
Educating the public and/or landowners on the advantages and disadvantages of wind energy is a necessary step in the development of a wind project. Information on economic and environmental issues will be necessary from the initial development period to the completion of the wind project. Students will learn how to answer the Myth vs. Fact questions concerning wind farm development. Procedures for obtaining the proper permits and access rights to enter property to assess the wind resource will be addressed. Additionally, students will learn about setback constraints, archaeological restrictions, aviation obstruction marking requirements, and other organizational and governmental regulations affecting wind power project development.

***WE150 MECHANICAL SYSTEMS3**
Mechanical Systems will expose the wind energy students to the installation, use, maintenance, and troubleshooting of mechanical drive components. This course will cover basic principles of wind energy mechanical systems with practical hands-on tasks which will be encountered in the wind industry.

***WE202 ELECTRICAL POWER DELIVERY3**
This course will cover the entire scope of electric power delivery from generation to transmission and distribution to electrical loads. Students will learn about the generation systems that convert resources into electrical power. Underground and overhead transmission cables, distribution lines, and substations will be studied. The students will also learn about the interconnection of electrical energy into the electrical grid, and how it is distributed throughout the grid to electrical loads. General transformer function and operation will be discussed, as well as protective relaying and circuit breaker types. A combination of site visits to operating generation plants, substations, and electric utility companies will reinforce the classroom material.

***WE205 WIND BUSINESS3**
Wind Business is designed to learn about topics in business as they apply to the wind industry. Students will become familiar with different manufacturers of wind turbines, warranties, and service agreements. Knowledge of the supply and demand of wind equipment is necessary when developing a wind project. Students will learn about dispatchable and non-dispatchable resources, why curtailment is sometimes necessary, and capacity factor. Information related to the construction process of a wind farm will be included in this course.

***WE210 ELECTRONICS3**
The study of the flow of charge through various electrical devices and the transmission of power and information. This course will cover principles of the electronics fields which will be necessary to understand how electronic components are used to make complex electrical systems. These electrical systems are the backbone of the electrical energy industry. Prerequisite: Electrical Theory with a C or better.

***WE215 ELECTRICAL SYSTEM PROTECTION AND COORDINATION.....3**
Students will learn how circuit breakers and fuses are employed to ensure optimal system protection from system faults and overload conditions. Proper installation and operation of switching mechanisms, fuses, and single-phase and three-phase circuit breakers and reclosers will be covered through lecture and hands-on experience. Protective relaying, sectionalizing, and remote monitoring and control through SCADA systems will also be covered.

WE220 COOPERATIVE EDUCATION INTERNSHIP 1-6
See CA220.

***WE225 MOTORS, GENERATORS, PLCS3**
Provides students with the basic understanding of the principles of motors, generators, motor controls, and programmable logic controllers (PLCs). Both electromechanical and solid state electronic control devices are covered in this course.

***WE227 PLCs (PROGRAMMABLE LOGIC CONTROLLERS)3**
The PLC course will provide a broad-based understanding of important PLC principals and concepts. You will understand how to connect to PLC hardware, create ladder logic programs, explore applications of PLC controls, and see how they function in various control systems. You will also study various programming conventions, as well as practical issues about automation controls and components.

***WE230 SUBSTATION & VOLTAGE REGULATION.....3**
A study of substations, capacitors, voltage regulators, boost and buck boosters; practical experience in substation grounding, inspections, substation maintenance; operation and installation of high side fuses, power transformers, substation buswork, and

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transfer switches; methods of voltage regulation, and Supervisory Control and Data Acquisition (SCADA).

***WE240 GIS/GPS.....3**

The GIS/GPS course is designed to provide a basic working knowledge of Geographical Information Systems and Global Positioning Systems as they relate to the operation of small UAVs. Upon completion of this course, the student will understand the timeline of development for GIS, GPS, and UAVs. The student will be able to demonstrate necessary software configuration, operation and maintenance of a UAV for purposes of aerial imaging. The course will be taught with the intent of expanding one's ability to complete inspection of wind turbine blades, power lines and substations, agricultural surveys and the integration of sports and event photography.

***WE250 DATA ACQUISITION AND COMMUNICATIONS ..3**

This course will give students information on how resource data is collected and analyzed for the use in the generation of electricity. Analog-to-digital data conversion will be studied, as well as instrument calibration. Students will also learn how data is communicated to assess power production of generation systems. The function of Supervisory Control and Data Acquisition (SCADA) systems will be discussed in detail.

***WE255 AIRFOILS AND COMPOSITE REPAIR.....3**

Students will be exposed to many facets of composites to build concrete foundations and blades on a wind turbine. This course will cover basic principles of the wind turbine blade design, blade composition, and base construction. The airfoils portion of this class will cover the aero-dynamic basics of the wind turbine blades using the wind to convert one form of energy to another. Composite materials will be studied as they are used in the manufacturing processes of wind turbine components.

***WE257 APPLIED AIRFOILS.....3**

Applied Airfoil students will be exposed to many facets of wind turbine blades from the wind turbine industry. Reliability of wind turbines is directly related to the quality and service of the rotor and blades. Documentation of defects from manufacturing as well as current stress is vital to determining blade length of service and projected maintenance schedules. This course will cover fundamental principles of mold construction, blade construction, quality control, inspection, and materials used for wind turbine blades.

***WE260 WIND TURBINE SITING.....3**

Students will be exposed to many facets of the proper placement (siting) of individual wind turbines as well as wind farms. This course will cover basic principles of how to find the best site and if it is suitable for wind energy. Class topics will cover the physical restrictions, institutional restrictions, wind turbine noise, placement near the grid, spacing of turbines, social aspects of wind turbines, and environmental issues associated with wind turbines.

***WE262 BLADE REPAIR OPERATIONS.....4**

Blade Repair Operations will introduce the students to industry standards of safety, operation, and maintenance of wind turbines and project operations. Students will be trained on the proper techniques and safety to gain access to the blades of a wind turbine for inspection and repair procedures. Specific training on suspended access equipment will allow student to safely inspect/repair wind turbine blades. Safety is at the heart of everything we do in this training program. Students will also understand the concept of day to day operations of a blade repair technician. Students will become familiar with the tools and equipment used and learn the value of teamwork as it applies to operations and repair of wind turbine blades. Students must be admitted to the Wind Energy Technology Program or permission of the Department Chair to enroll in this course.

***WE265 FIELD TRAINING & PROJECT OPERATIONS.....5**

This course will introduce students to industry standards of safety, operation and maintenance of wind turbines and project operations. Students will also benefit from field trips to operational projects to gain perspective of day to day operations of a wind turbine generation facility. Students must be admitted to the Wind Energy Technology Program or permission of the Department Chair to enroll in this course.

***WE270 TRANSFORMER THEORY.....3**

A transformer is a device used to transform (change) electrical power from one circuit to another. This course will cover the basics of magnetism, induction, windings, turns ratios, step-up transformers, step-down transformers, efficiencies, power transmission, single-phase power, three-phase power, delta windings, wye windings, and other transformer topics.

***WE280 WIND ENERGY TECHNOLOGY INTERNSHIP.....4**

The CCCC WET Internship program allows students to gain real world experiences with a wind energy or electrical related industrial company. Internships provide a bridge between classroom learning and full-time employment. Students work as a team with other competent employees who help guide the students to develop job skill sets necessary for employment in the area of electrical generation and distribution. An internship enables students to experience valuable work experience to help make future career choices.

*** A lab fee will be assessed for these courses.**

▮ The courses noted with this symbol qualify for guaranteed transfer. Visit www.kansasregents.org/transfer_articulation for more information.