PSYC 2320 - ABNORMAL PSYCHOLOGY

This course provides an introduction to the psychological, biological, and socio-cultural factors involved in the development, diagnosis, and treatment of psychological disorders. It includes a review of the historical understanding of abnormal behavior and the development of modern diagnostic systems. It includes discussion of psychological research and practice as it relates to mental health and psychological functioning, as well as legal and ethical issues. PSYC 2320 is included in the Psychology Field of Study.

Upon successful completion, students will be able to:

- Discuss the historical antecedents to modern understandings of abnormal behavior.
- Identify and describe the major classes and characteristics of psychological disorders as presented in the Diagnostic and Statistical Manual (DSM).
- Describe the factors and theoretical perspectives related to the development and maintenance of different types of abnormal behavior.
- List the primary treatments for psychological disorders and discuss their effectiveness.
- Discuss the current research and methodological issues in the study of abnormal behavior.
- Discuss the legal and ethical issues associated with the treatment of and research related to abnormal behavior.
- Develop an understanding of how social and cultural factors impact the expression of psychological disorders.
- Examine the impact of biological factors on the development of psychological disorders.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

- **PSYC 2301** - GENERAL PSYCHOLOGY

Restrictions:

- Must meet TSI College Readiness Standard for Reading
OSHT 1313 - ACCIDENT PREVENTION, INSPECTION & INVESTIGATION

Provides a basis for understanding the nature of occupational hazard recognition, accident prevention, loss reduction, inspection techniques, and accident investigation analysis.

Upon successful completion, students will be able to:

- Describe the components of an effective accident investigation
- Analyze factors which contributed to accidents
- Recommend appropriate changes to prevent further accidents
- Explain the components of an effective safety inspection
- Make appropriate recommendations to correct hazards identified by the inspection

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ACNT 2302 - ACCOUNTING CAPSTONE

Allows students to apply broad knowledge of the accounting profession through discipline specific projects involving the integration of individuals and teams performing activities to simulate workplace situations.

Upon successful completion, students will be able to:

- Complete the accounting cycle for service and merchandising businesses.
- Demonstrate computer skills related to accounting applications in business.
- Prepare financial reports;
- Communicate report findings in written and/or oral form.
- Solve complex accounting issues.
- Participate in research and discussion on accounting issues, trends, and/or situations.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Restrictions:

- Instructor approval required.

ACNT 2332 - ACCOUNTING INFORMATION SYSTEMS

A study of accounting information systems and related subsystems, including data collection, security, retrieval, manipulation, filtering and sorting of data.

Upon successful completion, students will be able to:
• Describe the purposes of an accounting information system.
• Apply concepts and terms that provide the foundation of accounting information systems.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ACCT 2302 - PRINCIPLES OF MANAGERIAL ACCOUNTING

This course is an introduction to the fundamental concepts of managerial accounting appropriate for all organizations. Students will study information from the entity’s accounting system relevant to decisions made by internal managers, as distinguished from information relevant to users who are external to the company. The emphasis is on the identification and assignment of product costs, operational budgeting and planning, cost control, and management decision making. Topics include product costing methodologies, cost behavior, operational and capital budgeting, and performance evaluation.

Upon successful completion, students will be able to:

• Identify the role and scope of financial and managerial accounting and the use of accounting information in the decision making process of managers
• Define operational and capital budgeting, and explain its role in planning, control, and decision making
• Prepare an operating budget, identify its major components, and explain the interrelationships among its various components
• Explain methods of performance evaluation
• Use appropriate financial information to make operational decisions
• Demonstrate use of accounting data in the areas of product costing, cost behavior, cost control, and operational and capital budgeting for management decisions

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• ACCT 2301 - PRINCIPLES OF FINANCIAL ACCOUNTING

ACNT 1303 - INTRODUCTION TO ACCOUNTING I

A study of analyzing, classifying, and recording business transactions in a manual and computerized environment. Emphasis on understanding the complete accounting cycle and preparing financial statements, bank reconciliations and payroll.

Upon successful completion, students will be able to:

• Define accounting terminology
• Analyze and record business transactions in a manual and computerized environment
• Complete the accounting cycle
• Prepare financial statements
• Apply accounting concepts related to cash and payroll
• Prepare bank reconciliations
• Correct accounting errors

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ACNT 1311 - INTRODUCTION TO COMPUTERIZED ACCOUNTING

Introduction to utilizing the computer in maintaining accounting records with primary emphasis on a general ledger package.

Upon successful completion, students will be able to:

• Utilize an application software to perform accounting tasks
• Maintain records
• Prepare reports
• Analyze reports for a business entity
• Complete a comprehensive project
• Explain the components of general ledger software

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

HART 2334 - ADVANCED AIR CONDITIONING CONTROLS

Theory and application of electrical control devices, electromechanical controls, and/or pneumatic controls.

Upon successful completion, students will be able to:

• Install and troubleshoot complex electrical control devices; control circuits
• Apply A/C control concepts
• Analyze the effects of smart energy networks and how they interface with HVAC control systems

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
BARB 2431 - ADVANCED BARBER STYLING I

Advanced skills in all areas of haircutting, hairstyling and skincare. Introduction to haircoloring techniques.

Upon successful completion, students will be able to:

- Perform advanced haircutting and hairstyling techniques
- Evaluate different skin types and skin disorders
- Demonstrate haircolor techniques
- Practice safety and sanitation

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 64.0

Restrictions:
- Texas Cosmetology Operator License

BARB 2441 - ADVANCED BARBER STYLING II

Continuation of Advanced Barber Styling I with further refinement of all skills and theory for licensure.

Upon successful completion, students will be able to:

- Perform advanced styling operations
- Apply massage manipulations to the neck, head, and face
- Explain the use of chemicals in hair coloring
- Perform chemical services
- Practice safety and sanitation

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 112.0

Restrictions:
- Texas Cosmetology Operator License

HALT 2331 - ADVANCED LANDSCAPE DESIGN

In-depth coverage of advanced practices in landscape planning for commercial and residential landscapes. Topics include advanced design analysis, architectural elements, space articulation, and land engineering concepts.

Upon successful completion, students will be able to:
• Design landscape plans including construction and planting details and specifications
• Produce a graphic drawing of a landscape

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ITSC 2325 - ADVANCED LINUX

Provides instruction in advance open-source Linux operating system. Develops directory services for clients, support users remotely, and install and configure network services.

Upon successful completion, students will be able to:

• Install, administer, and manage advanced network environment using a Linux system
• Demonstrate advanced skills and proficiency with Linux utilities and configurations
• Deploy secure networks
• Integrate Linux networks with existing networks

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

• ITSC 1316 - LINUX INSTALLATION AND CONFIGURATION

AGAH 2313 - PRINCIPLES OF FEEDS & FEEDING

Study of the role and application of feed nutrients and additives. Topics include comparative aspects of digestion, absorption, and metabolism of nutrients. Emphasis on identification of nutrient requirements and formulation of dietary feeding regimens.

Upon successful completion, students will be able to:

• Outline the roles and functions of feed nutrients and non-nutritive feed additives
• Describe and compare digestion, absorption, and metabolism
• Compute dietary feeding regimens
• Identify nutritional problems as related to digestive systems

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
AGCR 1371 - SUSTAINABLE AGRICULTURE

Introduction to history, principles, and practices of sustainable agriculture as applied to local and global agriculture. A comparison and evaluation of sustainability of conventional agricultural practices will be made from the environmental, economic, and social perspectives ("planet, profit, and people"). Case studies and other tools will be used to relate principles of sustainable agriculture to basic farming practices.

Upon successful completion, students will be able to:

- Describe and demonstrate various techniques and management practices used to optimize agriculture from an environmental, social, and financial perspective
- Identify environmental, social and financial factors which are important in both sustainable and conventional
- Express and discuss the importance of sustainable agriculture as it compares to conventional agriculture
- Utilize computer programs and agriculture related programs associated with this course and various aspects of the agriculture related industry
- Demonstrate the implementation of planning, establishing, and maintaining agricultural operations under sustainable practices

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0

AGEQ 1315 - HORSE EVALUATION I

Instruction in evaluation and selection of horses based on breed and performance criteria. Topics include basic anatomy and its relation to function, breed type, and characteristics, and standard performance classes. Emphasis will be given to breed standards and rules of judging performance horses.

Upon successful completion, students will be able to:

- Relate conformation to equine functions
- Prioritize and utilize criteria as related to evaluation and selection
- Employ appropriate terminology used in discussing evaluation and selection processes

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0

AGEQ 1319 - WESTERN HORSEMANSHIP I

Instruction in basic horsemanship skills including handling, saddling, bridling, mounting, riding, grooming, safety, and basic health care. Emphasis will be given to proper
riding techniques, use of aids and cues, and proper leg, seat, and hand position. NCTC School horse and appropriate tack will be provided for use.

Upon successful completion, students will be able to:

- Recognize and employ basic handling and riding safety practices
- Identify and care for equipment and tack
- Demonstrate proper leg, seat, and hand positions as they relate to riding techniques

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0

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**AGEQ 1322 - FUNDAMENTALS OF RIDING INSTRUCTION**

Methodologies of riding instruction. Includes safety, horsemanship, teaching techniques, group control, and professionalism.

Upon successful completion, students will be able to:

- Develop teaching techniques in riding instruction
- Implement safe practices
- Evaluate risk management factors
- Demonstrate effective communication skills

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:
- Course requires approval of instructor.

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**AGEQ 1350 - EQUINE REPRODUCTION**

Reproductive anatomy, physiological functions, and common management practices related to equine reproductive facilities.

Upon successful completion, students will be able to:

- Identify equine reproductive organs and functions
- Relate endocrinology to the reproductive process
- Implement managerial practices designed to improve reproductive efficiency

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0
AGEQ 1370 - LOCAL NEEDS - PRINCIPLES OF RANCH HORSE RIDING I

Instruction in the basic principles of Ranch Horse riding. To include, but not limited to handling, saddling, bridling, mounting, riding, grooming, safety, basic health care, basic rope handling, basic cow handling and tactics for competing in Ranch Horse events.

Upon successful completion, students will be able to:

- Recognize and employ basic handling and riding safety practices
- Identify and care for equipment and tack
- Demonstrate proper leg, seat, and hand positions as they relate to basic principles of Ranch Horse riding
- Identify core areas of focus for training the versatile ranch horse
- Generalize rules and procedures related to Ranch Horse competitions

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0
Restrictions:

- Must have instructor approved personally owned horse to be in this course.

AGEQ 1371 - LOCAL NEEDS - PRINCIPLES OF RANCH HORSE RIDING II

Introduction to the advanced principles of Ranch Horse riding. To include, but not limited to handling, saddling, bridling, mounting, riding, grooming, safety, health care, advanced rope handling, advanced cow handling and tactics for competing in Ranch Horse events.

Upon successful completion, students will be able to:

- Assess and rate individual horses based upon their performance and abilities as a versatile ranch horse
- Interpret horse reaction to various headgear/bit selections and further use this information in selecting the best headgear & bit for each individual horse
- Propose and implement a conditioning and training schedule for their own horse
- Demonstrate proper and safe rope handling from horseback
- Exhibit proper use of the mechanical cow for training purposes
- Employ tactics facilitated in the course during the working of live cattle

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0
Restrictions:

- Must have instructor approved personally owned horse to be in this course.
AGEQ 1411 - EQUINE SCIENCE I

An introduction to the horse industry. Includes history, organization and operation of equine enterprises, selection, breeds, breeding, reproduction, health, nutrition, management, and marketing.

Upon successful completion, students will be able to:

• Explain the historical significance of the horse to society
• Identify horse breeds
• Identify basic anatomy and physiological functions
• Outline managerial practices relevant to the horse industry

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0

AGEQ 2310 - EQUINE BUSINESS MANAGEMENT

Management of the equine business. Includes record keeping, insurance and liability, show management, equine promotion and sales, and employer relationships.

Upon successful completion, students will be able to:

• Initiate equine business records
• Explain insurance and liability needs
• Outline and demonstrate the proper procedures for show management
• Summarize equine marketing
• Identify the socioeconomic factors involved in the equine industry

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0

AGEQ 2311 - EQUINE SCIENCE II

Study of advanced concepts in horse production. Emphasis on management practices utilized in the horse industry.

Upon successful completion, students will be able to:

• Identify and assess needs in the production & management of horses
• Employ critical thinking skills in management decisions
• Implement management practices

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0
Prerequisites:

- AGEQ 1411 - EQUINE SCIENCE I

AGEQ 2315 - HORSE EVALUATION II

Study of the advanced concepts in evaluation and selection of horses.
Upon successful completion, students will be able to:

- Evaluate conformation as it applies to equine functions
- Evaluate western and English performance classes
- Organize, apply, and defend criteria as related to the evaluation and selection of horses

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

Prerequisites:

- AGEQ 1315 - HORSE EVALUATION I

Restrictions:

- Requires Instructor/Coach approval

AGEQ 2339 - WESTERN HORSEMANSHIP II

Instruction in advanced horsemanship skills including cues, lead changes, head-set, side-pass, and pivots. NCTC School horse and appropriate tack will be provided for use.
Upon successful completion, students will be able to:

- Demonstrate a balanced seat and posture in all natural gaits
- Maintain correct leads
- Develop and utilize proper cues

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0  
Lab hours: 16.0

Prerequisites:

- AGEQ 1319 - WESTERN HORSEMANSHIP I
AGEQ 2371 - LOCAL NEEDS - ADVANCED RANCH HORSE RIDING

An advanced course in the principles and fundamentals of finishing and riding the versatile ranch horse; instruction will focus on the use of the horse to assist in the management of cattle as commonly utilized for both ranch work and cowhorse competitions. Topics will include reading cattle, roping, handling cattle on the end of the rope, sorting and control of an individual cow. Course will also include techniques for tuning and elevating the performance of finished horses in the area of cow work.

Upon successful completion, students will be able to:

- Demonstrate industry recognized training methods for finishing horses in the area of cow work
- Exhibit the ability to rope live cattle and properly handle cattle in a manner which is safe for both horse and rider
- Summarize the fundamentals to be employed when reading cattle for handling purposes
- Show the ability to handle and manipulate the movement of an individual cow
- Identify and appraise the characteristics of individual horses and their abilities when performing cow work
- Demonstrate progressive ability in completing a competitive cow horse pattern

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0

Restrictions:

- Must have instructor approved personal horse to be in this course. NCTC School Horse is not provided.

AGEQ 2372 - LOCAL NEEDS - ADVANCED REINING

Advanced principles in training, working and showing reining horses will be taught. Topics include rules, judging, conditioning, and advanced showmanship. Students will also learn methods for keeping their horses healthy and in competitive condition during the rigors of traveling to and from shows. Showing in at least two competitions is required. Student must provide their own horse for training and or competition.

Upon successful completion, students will be able to:

- Demonstrate the ability to judge and properly score a reining horse in competition
- Explain and outline a proper conditioning routine for a horse that will be shown in advanced levels of reining competition
- Demonstrate advancement in riding skill by scoring higher in all required maneuvers performed in reining
- Explain areas of concern during hauling to competitions as well as strategies for addressing these concerns as it relates to horse health and competitive condition

Grade Basis: L
AGEQ 2373 - INTRODUCTION TO EQUINE VETERINARY TECHNOLOGY

Basic concepts of equine veterinary care will be taught. The course will be a survey of equine veterinary medicine from the physical exam to medical terminology, preventive medicine and pharmacology as well as basic principles of alternative therapies, diagnostic imagery, medical records and client communication.

Upon successful completion, students will be able to:

• Calculate correct drug dosage for frequently used equine pharmaceuticals
• Design a vaccination protocol for different types of equine operations
• Identify anatomic parts of the equine patient in medical terminology
• Interpret clinical pathology results
• Explain proper restraint methods of an equine patient for various veterinary procedures

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

• AGEQ 1411 - EQUINE SCIENCE I
• AGEQ 2311 - EQUINE SCIENCE II

AGEQ 2374 - BASICS OF DRESSAGE

The fundamental principles of dressage will be addressed. Basic riding exercises and dressage movements will be introduced emphasizing horse and rider fitness, and the development of the equine athlete through the classical and sequential training scale of rhythm, relaxation, connection, impulsion, straightness, and finally collection. Western Dressage principles will also be discussed and use of a western, hunt seat, or traditional dressage saddle will be acceptable. NCTC School horse and appropriate tack will be provided for use. Use of personal horse and tack is accepted per instructor approval. Classic dressage saddles are not provided, but western and hunt seat saddles are available and acceptable for use in this class.

Upon successful completion, students will be able to:
• Demonstrate progressive ability to ride a horse forward with rhythm, relaxation, and connection, with the goal of achieving impulsion, straightness and finally collection through a variety of basic dressage movements. (USDF Pyramid of Training adapted from the German training scale)
• Understand and demonstrate elements of a balanced riding position and the coordination and timing of the aids. Circle of the Aids
• Exhibit ability to successfully complete an appropriate level Classical or Western Dressage test

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

AGEQ 2386 - INTERNSHIP - EQUINE SCIENCE

A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer. Each student will be placed in the horse industry under the supervision of a prominent person who specializes in the student's main areas of interest. The student's industry training will be supervised by the instructor as well as their immediate supervisor on the job. Internship is typically completed 8 weeks, full time hours, during the summer, or part time hours during the fall or spring semester. This course serves as the external or capstone experience.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0
Restrictions:
• Departmental approval required for registration in this course.

AGEQ 2401 - EQUINE BEHAVIOR & TRAINING II

A study of advanced concepts in equine behavioral patterns that is relevant to specific performance training strategies.

Upon successful completion, students will be able to:

• Identify appropriate equine training methods for specific results
• Identify equine behavioral patterns
• Implement appropriate equine training procedures for desired results

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0

AGME 1307 - AGRICULTURE EQUIPMENT & TOOLS

Introduction to hand tool and shop equipment skills and safety.
Upon successful completion, students will be able to:

• Identify hand tools and shop equipment
• Demonstrate their applications, maintenance, and safe operational procedures

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGME 1315 - FARM & RANCH SHOP SKILLS

Study and application of shop skills used in agricultural processes including arc welding, oxyacetylene cutting and welding, drawing and planning projects, tool maintenance, metal working, woodworking, plumbing, and concrete.
Upon successful completion, students will be able to:

• Demonstrate oxyacetylene cutting procedures
• Demonstrate arc welding
• Identify shop tools
• Utilize shop plans
• Describe construction processes

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Lab hours: 16.0

AGMG 2301 - LIVESTOCK BUSINESS MANAGEMENT

Instruction in contracts, leases, laws and regulations, estate planning, and applications of personnel and management principles.
Upon successful completion, students will be able to:

• Discuss contract terms related to livestock and real estate
• Explain laws and regulations pertaining to the livestock industry
• Illustrate the importance of estate planning
• Compare the personnel and management techniques employed in the livestock industry

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

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**AGRI 1131 - THE AGRICULTURE INDUSTRY**

Overview of agriculture and the American agricultural system, including an examination of career opportunities and requirements.

Upon successful completion, students will be able to:

• Explain the history and importance of agriculture.
• Identify the various industries of agriculture.
• Assess careers in agriculture and related educational requirements.
• Apply verbal and written communication skills in agricultural contexts.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 32.0

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**AGRI 1309 - COMPUTERS IN AGRICULTURE**

Survey of the use of computers in agricultural applications. Lab fees apply

Upon successful completion, students will be able to:

• Demonstrate a basic understanding and use of word processing, spreadsheet, presentation, and communication software in agriculture
• Identify common uses of computers in agriculture
• Demonstrate appropriate use of the internet for agricultural purposes

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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**AGRI 1325 - MARKETING OF AGRICULTURE PRODUCTS**

Essential marketing functions in the movement of agricultural commodities and products from producer to consumer.

Upon successful completion, students will be able to:

• Explain the essential marketing functions of buying, selling, transporting, storing, financing, standardizing, pricing, and risk bearing
• Apply economic principles to the marketing of agricultural products
• Identify alternatives in marketing of agricultural commodities/products
• Examine the structure of agricultural markets

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGRI 1407 - AGRONOMY

Principles and practices in the development, production, and management of field crops including plant breeding, plant diseases, soils, insect control, and weed control. Laboratory activities will reinforce the fundamental principles and practices in the development, production, and management of field crops including growth and development, climate, plant requirements, pest management, and production methods. Lab fees apply.

Upon successful completion, students will be able to:

• Summarize the role of climate and geography in present and past crop production
• Explain the growth and development of crops
• Analyze the impact of climate on crops
• Assess the interactions of soils, water, and fertility on crop production
• Contrast methods of pest management in crop production
• Differentiate production methods based on geography and crop selection
• Apply scientific reasoning to investigate questions and utilize scientific and agronomic tools to collect and analyze data and demonstrate methods
• Use critical thinking and scientific problem-solving to make informed decisions
• Communicate effectively the results of scientific investigations
• Summarize the role of climate and geography in present and past crop production

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

AGRI 1419 - INTRODUCTORY ANIMAL SCIENCE

Scientific animal production and the importance of livestock and meat industries. Selection, reproduction, nutrition, management, and marketing of livestock. Laboratory activities will reinforce scientific animal production and the importance of livestock and meat industries. Selection, reproduction, nutrition, management, and marketing of livestock. Lab fees apply.

Upon successful completion, students will be able to:

• Explain the role of animal agriculture in providing benefits for mankind
• Identify common livestock breeds and classes
• Define terminology specific to animal science disciplines
• Demonstrate understanding of fundamental animal science principles including selection, reproduction, nutrition, and health
• Apply animal science principles by solving common problems
• Identify animal issues of interest to society, and related responsibilities
• Apply scientific reasoning to investigate questions and utilize animal science tools to collect and analyze data and demonstrate methods
• Use critical thinking and scientific problem-solving to make informed decisions
• Communicate effectively the results of scientific investigations

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

AGRI 2303 - AGRICULTURAL CONSTRUCTION I

Selection, use, and maintenance of hand and power tools; arc and oxy-acetylene welding; and construction materials and principles.

Upon successful completion, students will be able to:

• Demonstrate proper safety procedures in an agricultural construction laboratory
• Determine the proper usage of common hand and power tools
• Demonstrate principles of project layout (e.g. measurements, squaring, leveling)
• Demonstrate proper use of metal cutting and welding equipment
• Apply basic wiring and plumbing techniques
• Illustrate the principles of surveying and concrete layout

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGRI 2317 - INTRODUCTION TO AGRICULTURAL ECONOMICS

Fundamental economic principles and their application in the agricultural industry.

Upon successful completion, students will be able to:

• Describe fundamental macro- and micro-economic principles
• Apply economic principles to agricultural production, marketing, and consumption
• Describe the different agricultural economics fields (e.g. food industry, demand theory, supply theory, competitive environments)

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGRI 2321 - LIVESTOCK EVALUATION I

Evaluation and grading of market cattle, swine, sheep, and goats and their carcasses and wholesale cuts. Emphasis will be placed on value determination. Selection and
evaluation of breeding cattle, sheep, swine, and goats with emphasis on economically important traits.

Upon successful completion, students will be able to:

- Accurately evaluate and grade meat animals (cattle, swine, sheep, and goats), their carcasses, and wholesale cuts according to USDA and industry standards
- Determine market value for meat animals, carcasses, and whole cuts
- Evaluate and select breeding animals based upon their economic potential in common production scenarios
- Apply knowledge of both subjective and objective techniques, tools, and information in order to make evaluation, grading, and selection decisions in practical production scenarios

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGRI 2330 - WILDLIFE CONSERVATION & MANAGEMENT

Principles and practices used in the production and improvement of wildlife resources. Aesthetic, ecological, and recreational uses of public and private lands.

Upon successful completion, students will be able to:

- Explain basic ecological principles of population dynamics, habitat, succession, and ecosystems
- Describe how these ecological principles can be applied to manage wildlife populations and habitats
- Contrast wildlife management strategies for different purposes (i.e. recreation, conservation, and preservation)
- Use critical thinking and scientific problem-solving to make informed decisions about wildlife and natural resources management strategies
- Discuss the impact of current trends and societal issues on wildlife and increased demands on natural resources

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGMG 2316 - AGRICULTURAL FINANCE

Examination of the acquisition and use of capital in agriculture. Topics include fundamental record-keeping principles, financial statements, cash flow, and other instruments of financial analysis.

Upon successful completion, students will be able to:

- Describe the acquisition and use of capital
- Demonstrate record keeping principles
- Analyze financial statements
AGAH 1343 - ANIMAL HEALTH

An overview of anatomy and physiology as it relates to animal health. Topics include disease symptoms, basic immunology, diagnosis, prevention, and control of infectious and non-infectious diseases of animals.

Upon successful completion, students will be able to:

• Summarize the importance of livestock diseases and animal health
• Diagnose symptoms and identify causes of various animal diseases
• Implement preventative and treatment methods for various animal diseases

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

AGAH 1347 - ANIMAL REPRODUCTION

Study of organs, functions, endocrinology, and common management practices related to reproduction.

Upon successful completion, students will be able to:

• Identify reproductive organs and functions
• Relate endocrinology to the reproductive process
• Implement managerial practices designed to improve reproductive efficiency.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ANTH 2346 - GENERAL ANTHROPOLOGY

The study of human beings, their antecedents and related primates, and their cultural behaviors and institutions. Introduces the major sub-fields: physical and cultural anthropology, archaeology, linguistics, their applications, and ethics in the discipline.

Meets NCTC Core Curriculum Requirements

Upon successful completion, students will be able to:

• Describe the key concepts and methods of anthropology
• Compare and contrast the sub-fields of anthropology, including but not limited to physical anthropology, cultural anthropology, and archaeology
• Demonstrate an understanding of anthropological approaches to human diversity

Grade Basis: L
ANTH 2351 - CULTURAL ANTHROPOLOGY

The study of human cultures. Topics may include social organization, institutions, diversity, interactions between human groups, and ethics in the discipline. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Describe key concepts and methods of cultural anthropology.
• Explain the concept of culture, cultural diversity, and cultural change.
• Demonstrate how anthropological concepts apply to addressing human and global challenges.

ARTC 1302 - DIGITAL IMAGING I (PHOTOSHOP)

Digital Imaging using raster image editing and/or image creation software: scanning, resolution, file formats, output devices, color systems, and image-acquisitions.

Upon successful completion, students will be able to:

• Identify terminology, advantages and limitations of image editing software
• Distinguish bit-mapped resolutions for image acquisitions and output devices
• Use digital editing and painting tools
• Use basic half-tone theory in production of images, manipulate, create, and edit digital images for print and for web
• Specify appropriate file formats

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
ARTC 1325 - INTRODUCTION TO COMPUTER GRAPHICS

A survey of design concepts, terminology, processes, and procedures. Topics include computer graphics hardware, digital images, digital publishing, vector-based graphics, and interactive multimedia.

Upon successful completion, students will be able to:

• Define computer terminology
• Identify peripherals
• Demonstrate page layout, multimedia, and peripherals software use

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ARTS 1301 - ART APPRECIATION

A general introduction to the visual arts designed to create an appreciation of the vocabulary, media, techniques, and purposes of the creative process. Students will critically interpret and evaluate works of art within formal, cultural, and historical contexts. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Apply art terminology as it specifically relates to works of art.
• Demonstrate knowledge of art elements and principles of design.
• Differentiate between the processes and materials used in the production of various works of art.
• Critically interpret and evaluate works of art.
• Demonstrate an understanding of the impact of arts on culture.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ARTS 1303 - ART HISTORY I: Prehistoric to 14th Century

A chronological analysis of the historical and cultural contexts of the visual arts from prehistoric times to the 14th century.

Upon successful completion, students will be able to:

• Identify and describe works of art based on their chronology and style, using standard categories and terminology.
• Investigate major artistic developments and significant works of art from prehistoric times to the 14th century.
• Analyze the relationship of art to history by placing works of art within cultural, historical, and chronological contexts.
• Critically interpret and evaluate works of art.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

ARTS 1304 - ART HISTORY II: 14th Century to Present

A chronological analysis of the historical and cultural contexts of the visual arts from the 14th century to the present day.

Upon successful completion, students will be able to:

• Identify and describe works of art based on their chronology and style, using standard categories and terminology.
• Investigate major artistic developments and significant works of art from the 14th century to the present day.
• Analyze the relationship of art to history by placing works of art within cultural, historical, and chronological contexts.
• Critically interpret and evaluate works of art.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

ARTS 1311 - DESIGN I: 2-Dimensional

An introduction to the fundamental terminology, concepts, theory, and application of two-dimensional design.

Upon successful completion, students will be able to:

• Identify and apply the elements of art and principles of two-dimensional design
• Employ discipline specific vocabulary in the evaluation of two-dimensional design problems.
• Demonstrate creative skill in aesthetic problem solving within assigned parameters
• Demonstrate an appropriate level of professional practice, including safety, craft and presentation.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

ARTS 1312 - DESIGN II: 3-Dimensional

An introduction to the fundamental terminology, concepts, theory, and application of three-dimensional design.

Upon successful completion, students will be able to:
• Identify and apply the elements of art and principles of three-dimensional design.
• Employ discipline specific vocabulary in the evaluation of three-dimensional design problems.
• Demonstrate creative skill in aesthetic problem solving within assigned parameters.
• Demonstrate an appropriate level of professional practice, including safety, craft and presentation.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

ARTS 1316 - DRAWING I

A foundation studio course exploring drawing with emphasis on descriptive, expressive, and conceptual approaches. Students will learn to see and interpret a variety of subjects while using diverse materials and techniques. Course work will facilitate a dialogue in which students will engage in critical analysis and begin to develop their understanding of drawing as a discipline.

Upon successful completion, students will be able to:

• Describe visual subjects through the use of accurate and sensitive observation
• Generate drawings that demonstrate descriptive, expressive, and conceptual approaches.
• Utilize varied materials and techniques with informed aesthetic and conceptual strategies.
• Demonstrate an appropriate level of professional practice, including safety, craft and presentation.
• Analyze and critique drawings verbally and/or in writing.
• Relate drawing to design, art history and contemporary artistic production.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

ARTS 1317 - DRAWING II

A studio course exploring drawing with continued emphasis on descriptive, expressive, and conceptual approaches. Students will further develop the ability to see and interpret a variety of subjects while using diverse materials and techniques. Course work will facilitate a dialogue in which students will employ critical analysis to broaden their understanding of drawing as a discipline.

Upon successful completion, students will be able to:

• Describe visual subjects through the use of accurate and sensitive observation.
• Generate drawings that demonstrate descriptive, expressive, and conceptual approaches with an increased focus on individual expression.
• Utilize varied materials and techniques, including color media, with informed aesthetic and conceptual strategies.
• Demonstrate an appropriate level of professional practice, including safety, craft and presentation.
• Analyze and critique drawings verbally and/or in writing
• Relate their drawings to historical and contemporary developments in the field.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ASTR 1403 - STARS AND GALAXIES

Study of stars, galaxies, and the universe outside our solar system.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

ASTR 1404 - SOLAR SYSTEM

Study of the sun and its solar system, including its origin.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

CHEF 1301 - BASIC FOOD PREPARATION

A study of the fundamental principles of food preparation and cookery to include Brigade System, cooking techniques, material handling, heat transfer, sanitation, safety, nutrition, and professionalism. Lab fees apply

Upon successful completion, students will be able to:

• Demonstrate skills in knife tool and equipment handling
• Operate equipment safely and correctly
• Demonstrate proficiency in dry and moist heat cooking methods
• Produce a variety of food products applying principles of food handling and preparation
• Implement professional standards in food production

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0
HPRS 1204 - BASIC HEALTH PROFESSIONS SKILLS

A study of the concepts that serve as the foundation for health profession courses, including client care and safety issues, basic client monitoring, and health documentation methods.

Grade Basis: L
Credit hours: 2.0

HPRS 2210 - BASIC HEALTH PROFESSIONS SKILLS II

Builds on previously acquired knowledge and skills relevant to the professional development of the student. Lecture and simulated laboratory experiences prepare the student to perform patient care utilizing critical thinking and advanced clinical skills.

Grade Basis: L
Credit hours: 2.0

MCHN 1338 - BASIC MACHINE SHOP I

A course that introduces the student to machining fundamentals. The student will use basic machine tools including the lathe, milling machine, drill press, power saw, and bench grinder. Machine terminology, theory, math, part layout, and bench work using common measuring tools is included. Emphasis is placed on shop safety, housekeeping, and preventative maintenance.

Upon successful completion, students will be able to:

- Demonstrate set-up and use of the lathe, milling machine, drill press, power saw, and bench grinder applying good housekeeping, and proper safety
- Use precision instruments to perform bench work including part layout, drilling, reaming, taping, press fitting, location of hole centers and surfaces
- Set up power saws for cutoff operation
- Demonstrate tooling maintenance, and hazardous material handling
- Perform preventative maintenance
- Interpret blueprints

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 64.0

MCHN 1341 - BASIC MACHINE SHOP II

A continuation of Basic Machine Shop I.

Upon successful completion, students will be able to:

- Identify machine parts and their functions
- Select layout tools and techniques
• Define machine shop terminology
• Perform basic machine setups
• Calculate common shop formulas
• Perform semi-precision layout
• Demonstrate basic machine operations
• Apply proper measuring tools
• Demonstrate industry standard safety practices

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 64.0

BCIS 1305 - BUSINESS COMPUTER APPLICATIONS

Introduces and develops foundational skills in applying essential and emerging business productivity information technology tools. The focus of this course is on business productivity software applications, including word processing, spreadsheets, databases, presentation graphics, data analytics, and business-oriented utilization of the internet. BCIS 1305 is included in the Business Field of Study.

Upon successful completion, students will be able to:

• Describe the fundamentals of information technology concepts – hardware, software, security, and privacy.
• Demonstrate proper file management techniques to manipulate electronic files and folders in local, network, and online environments.
• Create business documents with word processing software using spelling and grammar check, format and layout, tables, citations, graphics, and mail merge.
• Create business documents and analyze data with spreadsheet software using (1) tables, sorting, filtering, charts and graphics, pivot tables, macros; (2) statistical, financial, logical and look-up functions and formulas; and (3) add-ins.
• Create business multimedia presentations with presentation software using templates, lists, groups, themes, colors, clip art, pictures, tables, transitions, animation, video, charts, and views.
• Create databases and manage data with database software using tables, fields, relationships, indexes, keys, views, queries, forms, reports, and import/export functions.
• Integrate business software applications.
• Use web-based technologies to conduct ethical business research.
• Use “goal seeking” and “what-if analysis” to solve problems and make adjustments/recommendations in a business environment.

Grade Basis: AL
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
AGAH 1353 - BEEF CATTLE PRODUCTION

An overview of the beef cattle industry. Topics include the organization and operation of beef cattle enterprises, selection breeding, reproduction, health, nutrition, management, and marketing.

Upon successful completion, students will be able to:

- Summarize the importance of the beef cattle industry and its role in food production
- Identify beef cattle breeds, classes, and products
- Implement managerial practices designed to increase the efficiency of beef cattle production

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

BIOL 1322 - NUTRITION & DIET THERAPY I

This course introduces general nutritional concepts in health and disease and includes practical applications of that knowledge. Special emphasis is given to nutrients and nutritional processes including functions, food sources, digestion, absorption, and metabolism. Food safety, availability, and nutritional information including food labels, advertising, and nationally established guidelines are addressed.

Upon successful completion, students will be able to:

- Apply nutritional knowledge to analyze personal dietary intakes, to plan nutritious meals using nationally established criteria to meet recommended goals, and to evaluate food labels and the validity of nutritional claims.
- Trace the pathways and processes that occur in the body to handle nutrients and alcohol through consumption, digestion, absorption, transport, metabolism, storage and waste excretion.
- Discuss functions, sources, deficiencies, and toxicities of macro- and micronutrients, including carbohydrates, lipids, proteins, water, vitamins, and minerals.
- Apply the concept of energy balance and its influences at the physical, emotional, societal, and cellular level to evaluate advantages and disadvantages of various methods used to correct energy imbalances.
- Utilize concepts of aerobic and anaerobic energy systems, and knowledge about macronutrients, vitamins, minerals, ergogenic, and supplements and relate them to fitness and health.
- Describe health and disease issues related to nutrition throughout the life cycle, including food safety, corrective dietary modifications, and the influence of specific nutrients on diseases.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
BIOL 1406 - BIOLOGY FOR SCIENCE MAJORS I

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included. This laboratory-based course accompanies Biology 1306, Biology for Science Majors I. Laboratory activities will reinforce the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Study and examination of the concepts of cytology, reproduction, genetics, and scientific reasoning are included.

Upon successful completion, students will be able to:

- Describe the characteristics of life.
- Explain the methods of inquiry used by scientists.
- Identify the basic requirements of life and the properties of the major molecules needed for life.
- Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
- Describe the structure of cell membranes and the movement of molecules across a membrane.
- Identify the substrates, products, and important chemical pathways in metabolism.
- Identify the principles of inheritance and solve classical genetic problems.
- Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
- Describe the unity and diversity of life and the evidence for evolution through natural selection.
- Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
- Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
- Communicate effectively the results of scientific investigations.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0

BIOL 1407 - BIOLOGY FOR SCIENCE MAJORS II

The diversity and classification of life will be studied, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals. Lab required. This laboratory-based course accompanies Biology 1307, Biology for Science Majors II. Laboratory activities will reinforce study of the diversity and classification of life, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals.

Upon successful completion, students will be able to:
• Describe modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation.
• Describe phylogenetic relationships and classification schemes.
• Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
• Describe basic animal physiology and homeostasis as maintained by organ systems.
• Compare different sexual and asexual life cycles noting their adaptive advantages.
• Illustrate the relationship between major geologic change, extinctions, and evolutionary trends
• Apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
• Use critical thinking and scientific problem solving to make informed decisions in the laboratory
• Communicate effectively the results of scientific investigations.
• Demonstrate knowledge of modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation.
• Distinguish between phylogenetic relationships and classification schemes

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0

BIOL 1408 - BIOLOGY FOR NON-SCIENCE MAJORS I

Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction. This laboratory-based course accompanies BIOL 1308, Biology for Non-Science Majors I. Laboratory activities will reinforce a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction.

Upon successful completion, students will be able to:

• Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
• Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
• Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
• Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
• Describe karyotyping, pedigrees, and biotechnology and provide an example of the uses of each
• Identify parts of a DNA molecule, and describe replication, transcription, and translation.
• Analyze evidence for evolution and natural selection.
• Apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
• Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
• Communicate effectively the results of scientific investigations.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

BIOL 1411 - GENERAL BOTANY

Fundamental biological concepts relevant to plant physiology, life cycle, growth and development, structure and function, and cellular and molecular metabolism. The role of plants in the environment, evolution, and phylogeny of major plant groups, algae, and fungi. This course is intended for science majors. This laboratory-based course accompanies Biology 1311, General Botany. Laboratory activities will reinforce fundamental biological concepts relevant to plant physiology, life cycle, growth and development, structure and function, and cellular and molecular metabolism. The role of plants in the environment, evolution, and phylogeny of major plant groups, algae, and fungi.

Upon successful completion, students will be able to:

• Compare and contrast the structures, reproduction, and characteristics of plants, algae, and fungi.
• Describe the characteristics of life and the basic properties of substances needed for life.
• Identify the principles of inheritance and solve classical genetic problems.
• Describe phylogenetic relationships and classification schemes.
• Identify the major phyla of life with an emphasis on plants, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
• Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins
• Identify the substrates, products, and important chemical pathways in photosynthesis and respiration.
• Describe the unity and diversity of plants and the evidence for evolution through natural selection
• Compare different sexual and asexual life cycles noting their adaptive advantages.
• Describe the reasoning processes applied to scientific investigations and thinking.
• Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
• Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
• Communicate effectively the results of scientific investigations.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0
BIOL 1413 - GENERAL ZOOLOGY

Fundamental biological concepts relevant to animals, including systemics, evolution, structure, and function, cellular and molecular metabolism, reproduction, development, diversity, phylogeny, and ecology. This course is intended for science majors. This laboratory-based course accompanies Biology 1313, General Zoology. Laboratory activities will reinforce fundamental biological concepts relevant to animals, including systematics, evolution, structure and function, cellular and molecular metabolism, reproduction, development, diversity, phylogeny, and ecology.

Upon successful completion, students will be able to:

- Compare and contrast the structures, reproduction, and characteristics of animals.
- Describe the characteristics of life and the basic properties of substances needed for life.
- Identify the principles of inheritance and solve classical genetic problems.
- Describe phylogenetic relationships and classification schemes.
- Identify the major phyla of life with an emphasis on animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
- Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
- Identify the substrates, products, and important chemical pathways in respiration.
- Describe the unity and diversity of animals and the evidence for evolution through natural selection.
- Describe the reasoning processes applied to scientific investigations and thinking.
- Describe basic animal physiology and homeostasis as maintained by organ systems.
- Describe modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation.
- Describe the structure of cell membranes and the movement of molecules across a membrane.
- Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
- Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
- Communicate effectively the results of scientific investigations.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

BIOL 2401 - HUMAN ANATOMY AND PHYSIOLOGY I

Anatomy and Physiology I is the first part of a two-course sequence. It is a study of the structure and function of the human body including cells, tissues and organs of the following systems: integumentary, skeletal, muscular, nervous and special senses.
Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis. The lab provides a hands-on learning experience for exploration of human system components and basic physiology. Systems to be studied include integumentary, skeletal, muscular, nervous, and special senses.

Upon successful completion, students will be able to:

• Use anatomical terminology to identify and describe locations of major organs of each system covered.
• Explain interrelationships among molecular, cellular, tissue, and organ functions in each system.
• Describe the interdependency and interactions of the systems.
• Explain contributions of organs and systems to the maintenance of homeostasis.
• Identify causes and effects of homeostatic imbalances.
• Describe modern technology and tools used to study anatomy and physiology.
• Apply appropriate safety and ethical standards.
• Locate and identify anatomical structures.
• Appropriately utilize laboratory equipment, such as microscopes, dissection tools, general lab ware, physiology data acquisition systems, and virtual simulations.
• Work collaboratively to perform experiments.
• Demonstrate the steps involved in the scientific method.
• Communicate results of scientific investigations, analyze data and formulate conclusions.
• Use critical thinking and scientific problem-solving skills, including, but not limited to, inferring, integrating, synthesizing, and summarizing, to make decisions, recommendations and predictions.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

BIOL 2402 - HUMAN ANATOMY AND PHYSIOLOGY II

Anatomy and Physiology II is the second part of a two-course sequence. It is a study of the structure and function of the human body including the following systems: endocrine, cardiovascular, immune, lymphatic, respiratory, digestive including nutrition, urinary including fluid and electrolyte balance, and reproductive including human development and genetics. Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis. The lab provides a hands-on learning experience for exploration of human system components and basic physiology. Systems to be studied include endocrine, cardiovascular, immune, lymphatic, respiratory, digestive including nutrition, urinary including fluid and electrolyte balance, and reproductive including human development and genetics.

Upon successful completion, students will be able to:

• Use anatomical terminology to identify and describe locations of major organs of each system covered.
• Explain interrelationships among molecular, cellular, tissue, and organ functions in each system.
• Describe the interdependency and interactions of the systems.
• Explain contributions of organs and systems to the maintenance of homeostasis.
• Identify causes and effects of homeostatic imbalances.
• Describe modern technology and tools used to study anatomy and physiology.
• Apply appropriate safety and ethical standards.
• Locate and identify anatomical structures.
• Appropriately utilize laboratory equipment, such as microscopes, dissection tools, general lab ware, physiology data acquisition systems, and virtual simulations.
• Work collaboratively to perform experiments.
• Demonstrate the steps involved in the scientific method.
• Communicate results of scientific investigations, analyze data and formulate conclusions.
• Use critical thinking and scientific problem-solving skills, including, but not limited to, inferring, integrating, synthesizing, and summarizing, to make decisions, recommendations, and predictions.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

BIOL 2406 - ENVIRONMENTAL BIOLOGY

Principles of environmental systems and ecology, including biogeochemical cycles, energy transformations, abiotic interactions, symbiotic relationships, natural resources and their management, lifestyle analysis, evolutionary trends, hazards and risks, and approaches to ecological research. This laboratory-based course accompanies Biology 2306, Environmental Biology. Laboratory activities will reinforce principles of environmental systems and ecology, including biogeochemical cycles, energy transformations, abiotic interactions, symbiotic relationships, natural resources and their management, lifestyle analysis, evolutionary trends, hazards and risks, and approaches to ecological research.

Upon successful completion, students will be able to:

• Explain the structure and impact of biogeochemical cycles.
• Describe energy transformations across trophic levels.
• Illustrate abiotic/biotic interactions and symbiotic relationships.
• Identify various types of natural resources, human impact on these resources, and common resource management practices.
• Quantify and analyze the impact of lifestyle on the environment.
• Depict evolutionary trends and adaptations to environmental changes.
• Describe environmental hazards and risks and the social and economic ramifications.
• Describe ecological and statistical techniques and approaches used in the study of environmental biology.
• Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
• Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
• Communicate effectively the results of scientific investigations.
• Explain the structure and impact of biogeochemical cycles.
• Describe energy transformations across trophic levels.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

BIOL 2420 - MICROBIOLOGY - For Pre-Nursing or Health Science Majors

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health. This course covers basics of culture and identification of bacteria and microbial ecology. This course is primarily directed at pre-nursing and other pre-allied health majors and covers basics of microbiology. Emphasis is on medical microbiology, infectious diseases, and public health.

Upon successful completion, students will be able to:

• Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.
• Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
• Distinguish between mechanisms of physical and chemical agents to control microbial populations.
• Explain the unique characteristics of bacterial metabolism and bacterial genetics.
• Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
• Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).
• Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.
• Explain transmission and virulence mechanisms of cellular and acellular infectious agents.
• Use and comply with laboratory safety rules, procedures, and universal precautions.
• Demonstrate proficient use of a compound light microscope.
• Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.
• Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.
• Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
• Perform basic bacterial identification procedures using biochemical tests.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0

BMGT 1327 - PRINCIPLES OF MANAGEMENT

Concepts, terminology, principles, theories, and issues in the field of management.

Upon successful completion, students will be able to:

• Explain various theories, processes, and functions of management
• Apply theories to a business environment
• Identify leadership roles in organizations
• Describe elements of the communication process

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

BMGT 2309 - LEADERSHIP

Leadership and its relationship to management. Prepares the student with leadership and communication skills needed to motivate and identify leadership styles.

Upon successful completion, students will be able to:

• Determine individual leadership styles
• Distinguish differences between leadership and management
• Explain the effects of leadership style in various organizational environments
• Apply principles of leadership

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

BUSG 1301 - INTRODUCTION TO BUSINESS

Fundamental business principles including structure, functions, resources, and operational processes.

Upon successful completion, students will be able to:
• Identify business functions of accounting, management, marketing, and economics
• Describe the relationships of social responsibility, ethics, and law
• Describe the scope of global business enterprise

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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**BUSG 1304 - FINANCIAL LITERACY**

A study of the financial principles when managing financial affairs. Includes topics such as budgeting, retirement, property ownership, savings, and investment planning.

Upon successful completion, students will be able to:

• Identify the concepts associated with the time value of money
• Identify the differences among various savings and investment programs and classes of securities
• Identify the options for insurance
• Describe retirement and estate planning techniques
• Explain owning versus renting real property
• Describe consumer protection legislation

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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**BUSG 2305 - BUSINESS LAW & CONTRACTS**

Principles of law which form the legal framework for business activity including applicable statutes, contracts, and agency.

Upon successful completion, students will be able to:

• Define fundamental legal terminology regarding contracts, torts, property, and wills.
• Differentiate between business ethics and legal issues.
• Explain required elements of torts, requirements of contracts, and various consumer laws as applied to business and individuals.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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**BUSG 2380 - COOPERATIVE EDUCATION - BUSINESS & COMMERCE, GENERAL**

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under
the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

- As outlined in the learning plan, apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
- Will demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0

CHEM 1406 - INTRODUCTORY CHEMISTRY

Survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Designed for allied health students and for students who are not science majors. Lab fees apply

Upon successful completion, students will be able to:

- Express an appreciation for the subject of chemistry by being able to discuss how it relates to everyday life.
- Understand the basic concepts of matter
- Use appropriate mathematics to solve associated chemistry problems
- Use the periodic table to explain atomic structure
- Explain chemical bonding, molecular structure, and inorganic nomenclature
- Understand, write, and balance chemical equations
- Understand the relationship between solids, liquids and gases and solve associated problems
- Understand the principles of solutions and solve associated problems
- Understand and apply the principles of equilibrium thermodynamics, and chemical kinetics
- Understand and apply the principles of acids and bases
- Understand and apply the fundamental concepts of organic chemistry in relation to reactions, structure and nomenclature
- Understand and explain the biochemical principles of carbohydrates, lipids, proteins, enzymes, nucleic acids and bioenergetics

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
CHEM 1411 - GENERAL CHEMISTRY I

Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. Introduction of the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports. Lab fees apply

Upon successful completion, students will be able to:

- Define the fundamental properties of matter.
- Classify matter, compounds, and chemical reactions
- Determine the basic nuclear and electronic structure of atoms.
- Identify trends in chemical and physical properties of the elements using the Periodic Table.
- Describe the bonding in and the shape of simple molecules and ions.
- Solve stoichiometric problems.
- Write chemical formulas.
- Write and balance equations.
- Use the rules of nomenclature to name chemical compounds.
- Define the types and characteristics of chemical reactions.
- Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
- Determine the role of energy in physical changes and chemical reactions.
- Use basic apparatus and apply experimental methodologies used in the chemistry laboratory
- Demonstrate safe and proper handling of laboratory equipment and chemicals.
- Conduct basic laboratory experiments with proper laboratory techniques.
- Make careful and accurate experimental observations.
- Relate physical observations and measurements to theoretical principles.
- Interpret laboratory results and experimental data, and reach logical conclusions.
- Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
- Design fundamental experiments involving principles of chemistry.
- Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Grade Basis: AL
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
Prerequisites:
- MATH 1314 - COLLEGE ALGEBRA
CHEM 1412 - GENERAL CHEMISTRY II

Chemical equilibrium; phase diagrams and spectrometry; acid-base concepts; thermodynamics; kinetics; electrochemistry; nuclear chemistry; an introduction to organic chemistry and descriptive inorganic chemistry. Introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports. Lab fees apply

Upon successful completion, students will be able to:

• State the characteristics of liquids and solids, including phase diagrams and spectrometry
• Articulate the importance of intermolecular interactions and predict trends in physical properties.
• Identify the characteristics of acids, bases, and salts, and solve problems based on their quantitative relationships.
• Identify and balance oxidation-reduction equations, and solve redox titration problems.
• Determine the rate of a reaction and its dependence on concentration, time, and temperature.
• Apply the principles of equilibrium to aqueous systems using LeChatelier’s Principle to predict the effects of concentration, pressure, and temperature changes on equilibrium mixtures.
• Analyze and perform calculations with the thermodynamic functions, enthalpy, entropy, and free energy
• Discuss the construction and operation of galvanic and electrolytic electrochemical cells, and determine standard and non-standard cell potentials
• Define nuclear decay processes.
• Describe basic principles of organic chemistry and descriptive inorganic chemistry
• Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
• Demonstrate safe and proper handling of laboratory equipment and chemicals.
• Conduct basic laboratory experiments with proper laboratory techniques.
• Make careful and accurate experimental observations.
• Relate physical observations and measurements to theoretical principles.
• Interpret laboratory results and experimental data, and reach logical conclusions.
• Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
• Design fundamental experiments involving principles of chemistry and chemical instrumentation.
• Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
Prerequisites:

• CHEM 1411 - GENERAL CHEMISTRY I
CHEM 2423 - ORGANIC CHEMISTRY I

Fundamental principles of organic chemistry will be studied, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. This course is intended for students in science or pre-professional programs. Laboratory activities will reinforce fundamental principles of organic chemistry, including the structure, bonding, properties, and reactivity of organic molecules, and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. Methods for the purification and identification of organic compounds will be examined. Lab fees apply

Upon successful completion, students will be able to:

- Classify organic compounds by structure, molecular orbitals, hybridization, resonance, tautomerism, polarity, chirality, conformation, and functionality.
- Identify organic molecules using appropriate organic nomenclature.
- Describe the principle reactions for syntheses of molecules, ions, and radicals.
- Describe organic reactions in terms of radical and ionic mechanisms.
- Describe the use of spectroscopic data to determine the structure of organic molecules.
- Formulate appropriate reaction conditions for the synthesis of simple organic molecules.
- Perform chemical experiments, analysis procedures, and waste disposal in a safe and responsible manner.
- Utilize scientific tools such as glassware and analytical instruments to collect and analyze data.
- Identify and utilize appropriate separation techniques such as distillation, extraction, and chromatography to purify organic compounds.
- Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.
- Demonstrate a basic understanding of stereochemistry.
- Classify organic compounds by structure, molecular orbitals, hybridization, resonance, tautomerism, polarity, chirality, conformation, and functionality in laboratory reports.
- Identify organic molecules using appropriate organic nomenclature in laboratory reports.
- Perform organic syntheses of molecules.
- Describe organic reactions in terms of radical and ionic mechanisms in laboratory reports.
- Use spectroscopic data to determine the structure of organic molecules.
- Formulate appropriate reaction conditions for the synthesis of simple organic molecules.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
Prerequisites:

- **CHEM 1412** - GENERAL CHEMISTRY II

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**CHEM 2425 - ORGANIC CHEMISTRY II**

Advanced principles of organic chemistry will be studied, including the structure, properties, and reactivity of aliphatic and aromatic organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. This course is intended for students in science or pre-professional programs. Laboratory activities reinforce advanced principles of organic chemistry, including the structure, properties, and reactivity of aliphatic and aromatic organic molecules, and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. Lab fees apply

Upon successful completion, students will be able to:

- Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules.
- Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials.
- Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships.
- Describe reaction mechanisms in terms of energetics, reaction kinetics, and thermodynamics.
- Use spectroscopic techniques to characterize organic molecules and subgroups.
- Perform chemical experiments, analysis procedures, and waste disposal in a safe and responsible manner.
- Utilize scientific tools such as glassware and analytical instruments to collect and analyze data.
- Identify and utilize appropriate separation techniques such as distillation, extraction, and chromatography to purify organic compounds.
- Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.
- Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules.
- Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials.
- Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships.
• Describe reaction mechanisms in terms of energetics, reaction kinetics, and thermodynamics.
• Use spectroscopic techniques to characterize organic molecules and subgroups.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
Prerequisites:
• [CHEM 2423] - ORGANIC CHEMISTRY I

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**CJCR 1304 - PROBATION & PAROLE**

A survey of the structure, organization, and operation of probation and parole services. Emphasis on applicable state statutes and administrative guidelines.

Upon successful completion, students will be able to:

• Describe the professional qualifications for employment as a probation or parole practitioner
• Demonstrate skills in management and treatment practices
• Create and develop community relations strategies

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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**CJSA 1317 - JUVENILE JUSTICE SYSTEM**

A study of the juvenile justice process to include specialized juvenile law, role of the juvenile law, role of the juvenile courts, role of police agencies, role of correctional agencies, and theories concerning delinquency.

Upon successful completion, students will be able to:

• Describe the juvenile law and the role of juvenile courts
• Explain the roles of police and correctional agencies concerning delinquency
• Review and contrast the theories of delinquent conduct

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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**CJSA 1325 - CRIMINOLOGY**

Current theories and empirical research pertaining to crime and criminal behavior and its causes, methods of prevention, systems of punishment, and rehabilitation.
Upon successful completion, students will be able to:

- Identify and explain the various theories of causation of criminal behavior
- Identify and appraise the avenue of prevention
- Outline the various research methods/methodology used in criminological research
- Identify the categories and sources of criminological data utilized in interpreting crime trends

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

### CJSA 1342 - CRIMINAL INVESTIGATION

Investigative theory; collection and preservation of evidence, sources of information, interview and interrogation, uses of forensic sciences, case and trial preparation.

Upon successful completion, students will be able to:

- Define the goals and objectives of criminal investigation
- Demonstrate ability to conduct proper crime scene investigations
- Illustrate the use of forensic science for various statutory offenses
- Organize the criminal case including field notes, reports, crime scene activities, and mandatory documentation of statutory warning

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

### CJSA 1348 - ETHICS IN CRIMINAL JUSTICE

Ethical philosophies and issues pertaining to the various professions in the criminal justice system. Includes ethical issues emanating from constitutional conflict with public protection and individual rights, civil liberties, and correctional policies.

Upon successful completion, students will be able to:

- Explain the foundation of ethics
- Compare and contrast theories of ethics with personal and professional practices
- Interpret and apply ethical considerations in policing, the courts, and corrections

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

### CJSA 1351 - USE OF FORCE

Study of the use of force including introduction to and statutory authority for the use of force, deadly force, and related legal issues. Fulfills the Texas Commission on Law
Enforcement Use of Force Intermediate Certificate requirement. This course was designed to be repeated multiple times to improve student proficiency.

Upon successful completion, students will be able to:

- Identify the status pertaining to use of force
- Explain the use of force continuum
- Describe key elements of major court cases involving use of force issues

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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CJSA 2331 - CHILD ABUSE - PREVENTION & INVESTIGATION

Forms of child abuse and neglect and the traits of typical abusers. Includes strategies to investigate abuse, interview victims and witnesses, document evidence in accordance with state law, and conduct case studies.

Upon successful completion, students will be able to:

- Identify forms of abuse and neglect
- Compare and contrast characteristics of typical abusers
- Outline investigative strategies

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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CJSA 2334 - CONTEMPORARY ISSUES IN CRIMINAL JUSTICE

A series of lectures and class participation exercises presenting selected topics currently confronting criminal justice personnel and the public they serve.

Upon successful completion, students will be able to:

- Explore an assigned contemporary topic in criminal justice
- List specific problems within the topic and suggest solutions

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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CJSA 2388 - INTERNSHIP

A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

Upon successful completion, students will be able to:
• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0

CJSA 2302 - POLICE MANAGEMENT, SUPERVISION, AND RELATED TOPICS

Techniques and theories regarding dealing with people, their performance, and problems. Topics include basic supervision, leadership, time management, first-line supervision, and management by objectives.

Upon successful completion, students will be able to:

• Describe the various leadership/management theories, skills, and styles.
• Apply human relations aspects of leadership role.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

MDCA 1060 - CLINICAL MEDICAL ASSISTANT

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional. Emphasis on patient assessment, examination, and treatment as directed by physician. Includes vital signs, collection and documentation of patient information, asepsis, office clinical procedures, and other treatments as appropriate for ambulatory care settings.

Grade Basis: L
Lecture hours: 120.0

HART 2341 - COMMERCIAL AIR CONDITIONING

A study of components, applications, and installation of air conditioning systems with capacities of 25 tons or less.

Upon successful completion, students will be able to:

• Apply and describe the sequence of operation for commercial air conditioning systems and their accessories
• Identify components relative to commercial air conditioning
• Explain energy efficient and renewable energy technologies
ACNT 1313 - COMPUTERIZED ACCOUNTING APPLICATIONS

Use of the computer to develop and maintain accounting records and to process common business applications for managerial decision-making.

Upon successful completion, students will be able to:

- Utilize spreadsheet and/or database software for accounting and management applications.
- Complete a comprehensive project.

AGMG 2280 - COOPERATIVE EDUCATION - AGRICULTURAL BUSINESS & MANAGEMENT, GENERAL

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
- Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

ITSC 2380 - COOPERATIVE EDUCATION - COMPUTER & INFORMATION SCIENCES, GENERAL

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under
the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry.
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0

Restrictions:

• Division Chair approval required unless student is in last semester of the Information Technology degree.

COSC 1436 - PROGRAMMING FUNDAMENTALS I

This course introduces the fundamental concepts of structured programming, and provides a comprehensive introduction to programming for computer science and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. This course assumes computer literacy. This course is included in the Computer Science Field of Study Curriculum.

Upon successful completion, students will be able to:

• Describe how data are represented, manipulated, and stored in a computer
• Categorize different programming languages and their uses
• Understand and use the fundamental concepts of data types, structured programming, algorithmic design, and user interface design
• Demonstrate a fundamental understanding of software development methodologies, including modular design, pseudo code, flowcharting, structure charts, data types, control structures, functions, and arrays
• Develop projects that utilize logical algorithms from specifications and requirements statements
• Demonstrate appropriate design, coding, testing, and documenting of computer programs that implement project specifications and requirements
• Apply computer programming concepts to new problems or situations

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0
COSC 1437 - PROGRAMMING FUNDAMENTALS II

This course focuses on the object-oriented programming paradigm, emphasizing the definition and use of classes along with fundamentals of object-oriented design. The course includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering processes. Students will apply techniques for testing and debugging software. This course is included in the Computer Science Field of Study Curriculum.

Upon successful completion, students will be able to:

- Identify and explain a programming development lifecycle, including planning, analysis, design, development, and maintenance
- Demonstrate a basic understanding of object-oriented programming by using structs and classes in software projects
- Use object-oriented programming techniques to develop executable programs that include elements such as inheritance and polymorphism
- Document and format code in a consistent manner
- Apply basic searching and sorting algorithms in software design
- Apply single- and multi-dimensional arrays in software
- Use a symbolic debugger to find and fix runtime and logical errors in software
- Demonstrate a basic understanding of programming methodologies, including object-oriented, structured, and procedural programming
- Describe the phases of program translation from source code to executable code

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0
Prerequisites:

- COSC 1436 - PROGRAMMING FUNDAMENTALS I

COSC 2425 - COMPUTER ORGANIZATION

The organization of computer systems is introduced using assembly language. Topics include basic concepts of computer architecture and organization, memory hierarchy, data types, computer arithmetic, control structures, interrupt handling, instruction sets, performance metrics, and the mechanics of testing and debugging computer systems. Embedded systems and device interfacing are introduced. This course is included in the Computer Science Field of Study Curriculum.

Upon successful completion, students will be able to:

- Explain contemporary computer system organization
- Describe data representation in digital computers
- Explain the concepts of memory hierarchy, interrupt processing, and input/output mechanisms
- Measure the performance of a computer system
- Design and develop assembly language applications
• Explain the interfaces between software and hardware components
• Explain the design of instruction set architectures
• Develop a single-cycle processor
• Explain the concept of virtual memory and how it is realized in hardware and software
• Explain the concepts of operating system virtualization

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

Prerequisites:

• [COSC 1436] PROGRAMMING FUNDAMENTALS I

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COSC 2436 - PROGRAMMING FUNDAMENTALS III

Further applications of programming techniques, introducing the fundamental concepts of data structures and algorithms. Topics include data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), searching, sorting, recursion, and algorithmic analysis. Programs will be implemented in an appropriate object-oriented language. This course is included in the Computer Science Field of Study Curriculum.

Upon successful completion, students will be able to:

• Design and develop programs that implement basic data structures, including stacks, queues, linked lists, hash tables, trees, and graphs
• Apply recursive techniques and algorithms to solve problems
• Implement searching and sorting algorithms
• Understand algorithm efficiency, Big-O notation, and why it should be considered in programming
• Analyze and select appropriate data structures to implement a solution to a problem
• Design and implement data structures using classes and incorporating object-oriented concepts
• Demonstrate best practices of software development including testing, validation, and documentation

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

Prerequisites:

• [COSC 1437] PROGRAMMING FUNDAMENTALS II

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PSYC 2330 - BIOLOGICAL PSYCHOLOGY

An introduction to the biological bases of behavior. Topics include evolution, genetics, research methods in behavioral neuroscience, motivation and emotion, sensation and perception, learning and memory, lifespan development, cognition, psychological disorders, and other complex behaviors. PSYC 2330 is included in the Psychology Field of Study.

Upon successful completion, students will be able to:

• Define and explain the biological foundations of behavior, including theories, history, and research methods.
• Describe the evolution and development of the nervous system – neuroanatomy, neurophysiology, neurotransmission, and neuroendocrinology.
• Identify the structures and function that underlie sensation, perception, and motor control.
• Identify and discuss the regulation of behavior, including motivation and emotion, sexual behavior, and biological rhythms.
• Articulate the biological components of learning, memory, and language.
• Describe the biological underpinnings of age-related changes in cognition and socioemotional functioning over the lifespan.
• Examine how biological processes impact health and well-being.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:
• PSYC 2301 - GENERAL PSYCHOLOGY

Restrictions:
• Must meet TSI College Readiness Standard for Reading

CRIJ 1301 - INTRODUCTION TO CRIMINAL JUSTICE

This course provides a historical and philosophical overview of the American criminal justice system, including the nature, extent, and impact of crime; criminal law; and justice agencies and processes.

Upon successful completion, students will be able to:

• Describe the history and philosophy of the American criminal justice system
• Explain the nature and extent of crime in America
• Analyze the impact and consequences of crime
• Evaluate the development, concepts, and functions of law in the criminal justice system
• Describe the structure of contemporary federal, state, and local justice agencies and processes
CRIJ 1306 - COURT SYSTEMS & PRACTICES

This course is a study of the court system as it applies to the structures, procedures, practices and sources of law in American courts, using federal and Texas statues and case law.

Upon successful completion, students will be able to:

- Describe the American judicial systems (civil, criminal, and juvenile), their jurisdiction, development, and structure
- Analyze the function and dynamics of the courtroom work group
- Identify judicial processes from pretrial to appeal
- Describe the significant Constitutional Amendments, doctrines, and other sources of law in the American judicial system

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

CRIJ 1310 - FUNDAMENTALS OF CRIMINAL LAW

This course is the study of criminal law including application of definitions, statutory elements, defenses, and penalties using Texas statutes, the Model Penal Code, and case law. The course also analyzes the philosophical and historical development of criminal law and criminal culpability.

Upon successful completion, students will be able to:

- Identify the elements of crimes and defenses under Texas statutes, Model Penal Code, and case law
- Classify offenses and articulate penalties for various crimes
- Compare culpable mental states when assigning criminal responsibility
- Assess the impact of history and philosophy on current criminal laws
- Evaluate the application of criminal law to other areas of criminal justice such as law enforcement and corrections

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

CRIJ 2313 - CORRECTIONAL SYSTEMS & PRACTICES

This course is a survey of institutional and non-institutional corrections. Emphasis will be placed on the organization and operation of correctional systems, treatment and rehabilitation, populations served, Constitutional issues, and current and future issues.
Upon successful completion, students will be able to:

- Describe the organization and operation of correctional systems and alternatives to institutionalization
- Describe treatment and rehabilitative programs
- Differentiate between the short-term incarceration and long-term institutional environments
- Evaluate current and future correctional issues
- Identify the Constitutional rights applicable to the correctional setting

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**CRIJ 2328 - POLICE SYSTEMS & PRACTICES**

This course examines the establishment, role and function of police in a democratic society. It will focus on types of police agencies and their organizational structure, police-community interaction, police ethics, and use of authority.

Upon successful completion, students will be able to:

- Describe the types of police agencies and explain the role of police in America within the context of a democratic society
- Describe means and methods utilized to ensure police accountability
- Explain the historical development of policing
- Describe the selection process for police officers
- Compare and contrast organizational structures, policies, strategies and tactics employed to ensure police effectiveness, efficiency and equity

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**CSME 1248 - PRINCIPLES OF SKIN CARE**

An introduction of the theory and practice of skin care.

Upon successful completion, students will be able to:

- Define terminology related to skin care treatments
- Demonstrate skin care procedures
- Practice safety and sanitation according to the laws and rules of the state licensing agency
- Exhibit workplace competencies in skin care

**Grade Basis:** L  
**Credit hours:** 2.0  
**Lecture hours:** 16.0  
**Lab hours:** 64.0
CSME 1401 - ORIENTATION TO COSMETOLOGY

An overview of the skills and knowledge necessary for the field of cosmetology.

Upon successful completion, students will be able to:

- Demonstrate introductory skills, professional ethics, safety, and sanitation
- Explain the laws and rules of the state

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 64.0

CSME 1405 - FUNDAMENTALS OF COSMETOLOGY

A course in the basic fundamentals of cosmetology. Topics include safety and sanitation, service preparation, manicure, facial, chemical services, shampoo, haircut, wet styling, and comb out.

Upon successful completion, students will be able to:

- Identify fundamental concepts related to skills required by the Texas Department of Licensing and Regulation (TDLR)
- Demonstrate basic required skills by TDLR standards

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 128.0

CSME 1410 - INTRODUCTION TO HAIRCUTTING & RELATED THEORY

Introduction to the theory and practice of haircutting. Topics include terminology, implements, sectioning and finishing techniques.

Upon successful completion, students will be able to:

- Define terminology
- Practice basic workplace competencies related to haircutting and finishing techniques
- Demonstrate use of implements, sectioning, haircutting and finishing skills

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 128.0
CSME 1420 - ORIENTATION TO FACIAL SPECIALIST

An overview of the skills and knowledge necessary for the field of facials and skin care. Upon successful completion, students will be able to:

- Demonstrate facial and skin care skills
- Practice safety and sanitation according to the rules of the state licensing agency
- Practice professional ethics

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 96.0

CSME 1421 - PRINCIPLES OF FACIAL & SKIN CARE TECHNOLOGY I

An introduction to the principles of facial and skin care technology. Topics include anatomy, physiology, theory and related skills of facial and skin care technology. Upon successful completion, students will be able to:

- Explain the basic anatomy and physiology of the skin
- Demonstrate the related skills of skin care and cosmetics

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

CSME 1443 - MANICURING & RELATED THEORY

Presentation of the theory and practice of nail services. Topics include terminology, application, and workplace competencies related to nail services. Upon successful completion, students will be able to:

- Define terminology related to nail services
- Demonstrate the basic procedures of nail services
- Practice safety and sanitation according to the laws and rules of the state licensing agency
- Exhibit workplace competencies in nail services

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 96.0
CSME 1545 - PRINCIPLES OF FACIAL & SKIN CARE TECHNOLOGY II

A continuation of the concepts and principles in skin care and other related technologies. Topics include advanced instruction in anatomy, physiology, theory, and related skills of facial and skin care technology.

Upon successful completion, students will be able to:

- Demonstrate the use of facial machines
- Explain the chemical composition of products
- Practice advanced applications of skin care and cosmetics
- Remove superfluous hair

Grade Basis: L
Credit hours: 5.0
Lecture hours: 32.0
Lab hours: 144.0

CSME 1447 - PRINCIPLES OF SKIN CARE/FACIALS & RELATED THEORY

In-depth coverage of the theory and practice of skin care, facials and cosmetics.

Upon successful completion, students will be able to:

- Define terminology related to the skin, products, and treatments
- Demonstrate applications related to skin care and cosmetics
- Practice safety and sanitation according to the laws and rules of the state licensing agency
- Exhibit workplace competencies in skin care and cosmetics

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 128.0

CSME 1453 - CHEMICAL REFORMATION & RELATED THEORY

Presentation of the theory and practice of chemical reformation including terminology, application, and workplace competencies.

Upon successful completion, students will be able to:

- Define terminology related to chemical reformation
- Follow safety and sanitation laws and rules according to the state licensing agency
- Exhibit workplace competencies related to chemical reformation

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 128.0

CSME 1534 - COSMETOLOGY INSTRUCTOR I

The fundamentals of instructing cosmetology students.
Upon successful completion, students will be able to:

- Demonstrate classroom/clinic management
- Differentiate teaching methodologies
- Identify different learning styles
- Assess lesson plans

Grade Basis: L
Credit hours: 5.0
Lecture hours: 32.0
Lab hours: 144.0
Restrictions:
- Division Chair approval required.

CSME 1535 - ORIENTATION TO THE INSTRUCTION OF COSMETOLOGY

An overview of the skills and knowledge necessary for the instruction of cosmetology students.
Upon successful completion, students will be able to:

- Identify teaching methodologies
- Observe lesson plan implementation
- Monitor various learning settings

Grade Basis: L
Credit hours: 5.0
Lecture hours: 32.0
Lab hours: 144.0

CSME 2237 - ADVANCED COSMETOLOGY TECHNIQUES

Mastery of advanced cosmetology techniques including hair designs, professional cosmetology services, and workplace competencies.
Upon successful completion, students will be able to:

- Utilize a variety of hair techniques
- Perform professional cosmetology services
- Demonstrate workplace competencies
CSME 2410 - ADVANCED HAIRCUTTING & RELATED THEORY

Advanced concepts and practice of haircutting. Topics include haircuts utilizing scissors, razor, and/or clippers.

Upon successful completion, students will be able to:

- Utilize correct terminology related to advanced haircutting techniques
- Demonstrate workplace competencies related to advanced haircutting techniques

CSME 2343 - SALON DEVELOPMENT

Procedures necessary for salon development. Topics include professional ethics, goal setting, salon operation, and record keeping.

Upon successful completion, students will be able to:

- Create a salon portfolio or business plan
- Demonstrate organizational skills related to salon operation and management

CSME 2501 - THE PRINCIPLES OF HAIR COLORING & RELATED THEORY

Presentation of the theory, practice, and chemistry of hair color. Topics include terminology, application, and workplace competencies related to hair color.

Upon successful completion, students will be able to:

- Define terminology
- Demonstrate hair color application
- Practice safety and sanitation according to the laws and rules of the state licensing agency
- Practice workplace competencies related to hair color

Grade Basis: L
CSME 2431 - PRINCIPLES OF FACIALS & SKIN CARE TECHNOLOGY III

Advanced concepts and principles of skin care and other related technologies.
Upon successful completion, students will be able to:

- Demonstrate professional ethics
- Design salon management
- Perform advanced skin care services
- Exhibit related skills in preparation for the state licensing examination

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 96.0

CSME 2441 - PREPARATION FOR THE STATE LICENSING EXAMINATION

Preparation for the state licensing examination.
Upon successful completion, students will be able to:

- Review for the written state licensing exam
- Prepare for the practical state licensing exam
- Practice safety and sanitation according to the laws and rules of the state licensing agency

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 128.0

CSME 2514 - COSMETOLOGY INSTRUCTOR II

A continuation of the fundamentals of instructing cosmetology students.
Upon successful completion, students will be able to:

- Demonstrate effective classroom and clinic management
- Implement teaching methodologies
- Develop lesson plans

Grade Basis: L
Credit hours: 5.0
Lecture hours: 32.0
Lab hours: 144.0
Restrictions:
  • Division Chair approval required.

DANC 2303 - DANCE APPRECIATION I

Survey of primitive, classical, and contemporary dance and its interrelationship with cultural developments and other art forms. Meets NCTC Core Curriculum Requirement

Grade Basis: L
Credit hours: 3.0

DNTA 1015 - DENTAL ASSISTING

A study of pre-clinical chairside assisting procedures, instrumentation, OSHA and other regulatory agencies’ standards.

Grade Basis: L
Lecture hours: 112.0

DNTA 1060 - DENTAL ASSISTANT EXTERNSHIP

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: P

DFTG 1305 - TECHNICAL DRAFTING

Introduction to the principles of drafting to include terminology and fundamentals, including size and shape descriptions, projection methods, geometric construction, sections, and auxiliary views.

Upon successful completion, students will be able to:

  • Create technical sketches, geometric constructions, orthographic projections, pictorial-sectional views, dimension drawings, and apply lettering techniques

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
DFTG 1309 - BASIC COMPUTER-AIDED DRAFTING

An introduction to computer-aided drafting. Emphasis is placed on setup; creating and modifying geometry, storing and retrieving predefined shapes; placing, rotating, and scaling objects, adding text and dimensions, using layers, coordinate systems, and plot/print to scale.

Upon successful completion, students will be able to:

- Identify terminology and basic functions used with CAD software
- Use CAD hardware and software to create, organize, display, and plot/print working drawings
- Use file management techniques

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

DFTG 1317 - ARCHITECTURAL DRAFTING-RESIDENTIAL

Architectural drafting procedures, practices, terms, and symbols. Preparation of detailed working drawings for residential structures. Emphasis on light frame construction methods.

Upon successful completion, students will be able to:

- Utilize architectural terms, symbols, residential construction materials, and processes to produce a set of residential construction drawings including site plan, floor plan, elevations, wall sections, schedules, details, and foundation plan using reference materials.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

DFTG 1333 - MECHANICAL DRAFTING

Study of mechanical drawings using dimensioning and tolerances, sectioning techniques, orthographic projection, and pictorial drawings.

Upon successful completion, students will be able to:

- Develop a set of working drawings including assembly, detail, and pictorial

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
DFTG 1358 - ELECTRICAL/ELECTRONICS DRAFTING

Electrical and electronic drawings stressing modern representation used for block diagrams, schematic diagrams, logic diagrams, wiring/assembly drawings, printed circuit board layouts, motor control diagrams, power distribution diagrams, and electrical one-line diagrams.

Upon successful completion, students will be able to:

- Layout components and symbols, both electronic and electrical
- Apply basic math and the theory of electricity
- Utilize component identification including schematics, block, wiring, and logic
- Perform diagram construction and drafting

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

DFTG 2300 - INTERMEDIATE ARCHITECTURAL DRAFTING - RESIDENTIAL

Continued application of principles and practices used in residential construction.

Upon successful completion, students will be able to:

- Define the principles of design and implementation of advanced residential construction.
- Incorporate site and environmental considerations in planning a residential development.
- Select materials.
- Apply codes and standards in the creation of construction drawings.
- Write specifications.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

- DFTG 1317 - ARCHITECTURAL DRAFTING-RESIDENTIAL

DFTG 2302 - MACHINE DRAFTING

Production of detail and assembly drawings of machines, threads, gears, utilizing tolerances, limit dimensioning, and surface finishes.

Upon successful completion, students will be able to:

- Interpret terms used in tolerancing
• Identify dimensions of two mating parts
• Draw spur and/or bevel gears
• Draw details and assemblies
• Identify interference and clearance fits
• Identify types of threads forms
• Interpret thread notes

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

• DFTG 1333 - MECHANICAL DRAFTING

DFTG 2306 - MACHINE DESIGN

Theory and practice of design. Projects in problem-solving, including press fit, bolted and welded joints, and transmission components.

Upon successful completion, students will be able to:

• Utilize the steps used in the design process, terminology, mechanical processes to produce drawings

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

DFTG 2317 - DESCRIPTIVE GEOMETRY

Graphical solutions to problems involving points, lines, and planes in space.

Upon successful completion, students will be able to:

• Describe spatial relationships
• Use sequential thinking
• Create views necessary to show object’s true size and shape/development using points, lines, and planes in space

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
DFTG 2319 - INTERMEDIATE COMPUTER-AIDED DRAFTING

A continuation of practices and techniques used in basic computer-aided drafting including the development and use of prototype drawings, construction of pictorial drawings, extracting data, and basics of 3D.

Upon successful completion, students will be able to:

- Produce 2D and 3D drawings and pictorial drawings
- Use external referencing of multiple drawings to construct a composite drawing
- Import and extract data utilizing attributes

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:

- DFTG 1305 - TECHNICAL DRAFTING
- DFTG 1309 - BASIC COMPUTER-AIDED DRAFTING

DFTG 2323 - PIPE DRAFTING

A study of pipe fittings, symbols, specifications and their applications to a piping process system. Creation of symbols and their usage in flow diagrams, plans, elevations, and isometrics.

Upon successful completion, students will be able to:

- Create drawings of foundations, structural supports, and process equipment
- Identify symbols and research specifications
- Generate a bill of material list
- Use charts and standards
- Generate isometric drawings
- Calculate measurements for pipe fittings

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

DFTG 2328 - ARCHITECTURAL DRAFTING - COMMERCIAL

Architectural drafting procedures, practices, governing codes, terms and symbols, including the preparation of detailed working drawings for a commercial building, with emphasis on commercial construction methods.

Upon successful completion, students will be able to:

- Apply commercial construction materials and processes
• Produce a set of commercial construction drawings including a site plan, floor plans, reflected ceiling plan, sections, elevations, schedules, and details

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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DFTG 2330 - CIVIL DRAFTING

An in-depth study of drafting methods and principles used in civil engineering.

Upon successful completion, students will be able to:

• Interpret field notes  
• Develop documents for a civil project  
• Analyze and layout drainage and utilities infrastructure  
• Perform related calculations

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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DFTG 2332 - ADVANCED COMPUTER-AIDED DRAFTING

Application of advanced CAD techniques.

Upon successful completion, students will be able to:

• Use a customized CAD system to create documents and/or solid models  
• Use OLE with external software

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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DFTG 2340 - SOLID MODELING & DESIGN

A computer-aided modeling course. Development of three-dimensional drawings and models from engineering sketches and orthographic drawings and utilization of three-dimensional models in design work.

Upon successful completion, students will be able to:

• Create three-dimensional solid model objects  
• Generate pictorial and orthographic drawings

Grade Basis: L
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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**DFTG 2358 - ADVANCED MACHINE DESIGN**

Design process skills for the production of complete design package, including jig and fixture design, extrusion dies, and injection mold design.

Upon successful completion, students will be able to:

- Analyze design problems and prepare solutions to complete a set of drawings

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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**DRAM 1120 - THEATER PRACTICUM I**

Practicum in theater open to all students with emphasis on technique and procedures with experience gained in play productions.

Upon successful completion, students will be able to:

- Use collaboration in the creation of theatrical productions.
- Demonstrate the practical application of appropriately leveled theatrical skills and procedures.
- Apply critical thinking skills required for the creation of a theatrical production.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 48.0

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**DRAM 1121 - THEATER PRACTICUM II**

Continuation of DRAM1120. Practicum in theater open to all students with emphasis on technique and procedures with experience gained in play productions.

Upon successful completion, students will be able to:

- Use collaboration in the creation of theatrical productions
- Demonstrate the practical application of appropriately leveled theatrical skills and procedures.
- Apply critical thinking skills required for the creation of a theatrical production.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 48.0  
Prerequisites:
• **DRAM 1120 - THEATER PRACTICUM I**

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**DRAM 1310 - INTRODUCTION TO THEATER**

Survey of theater including its history, dramatic works, stage techniques, production procedures, and relation to other art forms. Participation in productions may be required. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Analyze theater through written responses to play texts and/or live performance.
- Demonstrate a basic knowledge of theater history and dramatic works.
- Describe the collaborative nature of theater arts
- Demonstrate the relationship of the arts to everyday life as well as broader historical and social contexts.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**DRAM 1330 - STAGECRAFT I**

Study and application of the methods and components of theatrical production which may include one or more of the following: theater facilities, scenery construction and painting, properties, lighting, costume, makeup, sound, and theatrical management. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Apply a vocabulary and knowledge of the environment, tools, and skills required to mount a theatrical production.
- Demonstrate knowledge of the variety of work required to mount a theatrical production.
- Describe the collaborative nature of production within theatre arts.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**DRAM 1351 - ACTING I**

An introduction to the fundamental principles and tools of acting as used in auditions, rehearsals, and performances. This may include ensemble performing, character and script analysis, and basic theater terminology. This exploration will emphasize the development of the actor’s instrument: voice, body and imagination.

Upon successful completion, students will be able to:

- Analyze scripts from the viewpoint of the actor.
- Analyze, develop, and perform a character.
• Demonstrate effective and safe use of the voice and body.
• Define and discuss terms and concepts using the vocabulary of theater
• Perform at an appropriately skilled level in ensemble building exercises, scenes and final projects, which may include participation in plays.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

DRAM 1352 - ACTING II

Exploration and further training within the basic principles and tools of acting, including an emphasis on critical analysis of oneself and others. The tools include ensemble performing, character and script analysis, and basic theater terminology. This will continue the exploration of the development of the actor's instrument: voice, body and imagination.

Upon successful completion, students will be able to:

• Analyze scripts more in depth from the viewpoint of the actor.
• Analyze, develop, and perform a character.
• Demonstrate effective and safe use of the voice and body.
• Define and discuss terms and concepts using an expanded vocabulary of theater
• Perform at an increasingly skilled level in ensemble building exercises, scenes and final projects, which may include participation in plays
• Analyze and critique personal and peer performances.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

Prerequisites:

• DRAM 1351 - ACTING I

DRAM 2120 - THEATER PRACTICUM III

Continuation of DRAM1120 and DRAM1121. Practicum in theater open to all students with emphasis on technique and procedures with experience gained in play productions.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 48.0

Prerequisites:

• DRAM 1120 - THEATER PRACTICUM I  
• DRAM 1121 - THEATER PRACTICUM II
DRAM 2121 - THEATER PRACTICUM IV

Continuation of DRAM 1120, DRAM 1121, and DRAM 2120. Practicum in theater open to all students with emphasis on technique and procedures with experience gained in play productions.

Upon successful completion, students will be able to:

• Use collaboration in the creation of theatrical productions.
• Demonstrate the practical application of appropriately leveled theatrical skills and procedures
• Apply critical thinking skills required for the creation of a theatrical production.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

Prerequisites:

• [DRAM 1120] - THEATER PRACTICUM I
• [DRAM 1121] - THEATER PRACTICUM II
• [DRAM 2120] - THEATER PRACTICUM III

DRAM 2331 - STAGECRAFT II

Continued study of DRAM1330 and the application of the methods and components of theatrical production which may include one or more of the following: theater facilities, scenery construction, and painting, properties, lighting, costume, makeup, sound and theatrical management.

Upon successful completion, students will be able to:

• Apply an expanded vocabulary and knowledge of the environment, tools, and skills required to mount a theatrical production.
• Demonstrate increased knowledge of the variety of work required to mount a theatrical production.
• Describe in depth the collaborative nature of production within theatre arts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• [DRAM 1330] - STAGECRAFT I

DRAM 2366 - INTRODUCTION TO CINEMA

Survey and analyze cinema including history, film techniques, production procedures, selected motion pictures, and cinema's impact on and reflection of society. Meets NCTC Core Curriculum Requirement
Upon successful completion, students will be able to:

• Analyze film through written response.
• Demonstrate a basic knowledge of film history, form, and genre.
• Describe the collaborative nature of cinema and the many jobs required to develop a motion picture.
• Discuss/Describe the relationship of cinema to society as it relates to his/her perspective.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ECON 2301 - PRINCIPLES OF MACROECONOMICS

An analysis of the economy as a whole including measurement and determination of Aggregate Demand and Aggregate Supply, national income, inflation, and unemployment. Other topics include international trade, economic growth, business cycles, and fiscal policy and monetary policy. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Explain the role of scarcity, specialization, opportunity cost, and cost/benefit analysis in economic decision-making.
• Identify the determinants of supply and demand; demonstrate the impact of shifts in both market supply and demand curves on equilibrium price and output.
• Define and measure national income and rates of unemployment and inflation.
• Identify the phases of the business cycle and the problems caused by cyclical fluctuations in the market economy.
• Define money and the money supply; describe the process of money creation by the banking system and the role of the central bank.
• Construct the aggregate demand and aggregate supply model of the macro economy and use it to illustrate macroeconomic problems and potential monetary and fiscal policy solutions.
• Explain the mechanics and institutions of international trade and their impact on the macro economy
• Define economic growth and identify sources of economic growth.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ECON 2302 - PRINCIPLES OF MICROECONOMICS

Analysis of the behavior of individual economic agents, including consumer behavior and demand, producer behavior and supply, price and output decisions by firms under various market structures, factor markets, market failures, and international trade. Meets NCTC Core Curriculum Requirement
Upon successful completion, students will be able to:

- Explain the role of scarcity, specialization, opportunity cost, and cost/benefit analysis in economic decision-making.
- Identify the determinants of supply and demand; demonstrate the impact of shifts in both market supply and demand curves on equilibrium price and output.
- Summarize the law of diminishing marginal utility; describe the process of utility maximization.
- Calculate supply and demand elasticities, identify the determinants of price elasticity of demand and supply, and demonstrate the relationship between elasticity and total revenue.
- Describe the production function and the Law of Diminishing Marginal Productivity; calculate and graph short-run and long-run costs of production.
- Identify the four market structures by characteristics; calculate and graph the profit maximizing price and quantity in the output markets by use of marginal analysis.
- Determine the profit maximizing price and quantity of resources in factor markets under perfect and imperfect competition by use of marginal analysis.
- Describe governmental efforts to address market failure such as monopoly power, asymmetric information, externalities, and public goods.
- Identify the benefits of free trade using the concept of comparative advantage.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

EDUC 1300 - LEARNING FRAMEWORK

A study of research and theory in the psychology of learning, cognition, and motivation, factors that impact learning, and application of learning strategies. Theoretical models of strategic learning, cognition, and motivation serve as the conceptual basis for the introduction of the college-level student academic strategies. Students use assessment instruments (e.g. learning inventories) to help them identify their own strengths and weaknesses as strategic learners. Students are ultimately expected to integrate and apply the learning skills discussed across their own academic programs and become effective and efficient learners. Students developing these skills should be able to continually draw from the theoretical models they have learned.

Upon successful completion, students will be able to:

- Strengthen academic performance by identifying key components of the successful student.
- Develop self-awareness and career goals within an academic atmosphere.
- Evaluate the quality and conclusions of the research to which they are exposed, which can simultaneously influence human thought, emotion and behavior.
- Analyze and gain an understanding of historical, biological, psychological, and socio-cultural dimensions of learning and developmental psychology, dimensions that can simultaneously influence human thought, emotion, and behavior.
- Describe the research and theory in the psychology of learning, cognition, and motivation.
EDUC 1301 - INTRODUCTION TO THE TEACHING PROFESSION

An enriched, integrated pre-service course and content experience that: Provides active recruitment and institutional support of students interested in a teaching career, especially in high need fields. Provides students with opportunities to participate in early field observations at all levels of P-12 schools with varied and diverse students populations. Provides students with support from college and school faculty for the purpose of introduction to and analysis of the culture of schooling and classrooms. Course content is aligned as applicable with State Board for Educator Certification Pedagogy and Professional Responsibilities standards. Course must include a minimum of 16 contact hours of field experience in P-12 classrooms.

Upon successful completion, students will be able to:

- Identify current issues influencing the field of education and teacher professional development.
- Analyze the culture of schooling and classrooms from the perspectives of language, gender, socioeconomic, ethnic, and disability-based academic diversity and equity.
- Provide examples from classroom observations and course activities that demonstrate understanding of educational pedagogy and professional responsibilities of teachers.
- Evaluate personal motivations, educational philosophies, and factors related to educational career decision making.
- Recognize the various multiple intelligences/learning styles in order to be able to implement instructional practices that meet the needs of all students.

EDUC 2301 - INTRODUCTION SPECIAL POPULATIONS

An enriched, integrated pre-service course and content experience that provides an overview of schooling and classrooms from the perspectives of language, gender, socioeconomic status, ethnic and academic diversity, and equity with an emphasis on factors that facilitate learning. The course provides students with opportunities to participate in early field observations of P-12 special populations and should be aligned as applicable with State Board for Educator Certification Pedagogy and Professional Responsibilities standards. Must include a minimum of 16 contact hours of field experience in P-12 classrooms with special population.

Upon successful completion, students will be able to:
• Describe the characteristics of exceptional learners (e.g. Learning Disabilities, Gifted and Talented), including legal implications.
• Describe and analyze characteristics of diverse learners (e.g. language, gender, sexual orientation, race, and ethnicity) and how diversity impacts learning.
• Describe the impact of socio-economic status on learning and creating equitable classrooms.
• Demonstrate an understanding of the benefits and challenges of racial, ethnic, and other types of cultural diversity in the classroom.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

**Prerequisites:**

- [EDUC 1301](#) - INTRODUCTION TO THE TEACHING PROFESSION

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**EECT 1300 - TECHNICAL CUSTOMER SERVICE**

General principles of customer service within a technical environment. Topics include internal/external customer relationships, time-management, best practices, and verbal and non-verbal communications skills.

Upon successful completion, students will be able to:

- Identify internal and external customer relationships
- Address customer questions and complaints in a polite and thorough manner
- Update customers on work progress to maintain customer satisfaction and public relations
- Communicate technical information in a clear, precise and logical manner
- Identify verbal and non-verbal communications skills

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**HITT 1011 - ELECTRONIC HEALTH RECORDS**

Introduction to health IT standards, health-related data structures, software applications, and enterprise architecture in health care and public health. Course reviews the implementation and management of electronic health information using common electronic data interchange systems and maintaining the medical, legal, accreditation and regulatory requirements of the electronic health record.

**Grade Basis:** L  
**Lecture hours:** 95.0
ELPT 1319 - FUNDAMENTALS OF ELECTRICITY I

An introduction to basic direct current (DC) theory including electron theory and direct current applications.

Upon successful completion, students will be able to:

- Explain atomic structure and basic electrical values such as voltage, current, resistance, and power
- Calculate electrical values for series, parallel, and combination circuits
- Calculate voltage drop based on conductor length, type of material, and size
- Summarize the principles of magnetism; and utilize electrical measuring instruments

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ELPT 1325 - NATIONAL ELECTRICAL CODE I

An introductory study of the National Electric Code (NEC) for those employed in fields requiring knowledge of the Code. Emphasis on wiring design, protection, methods, and materials; equipment for general use; and basic calculations.

Upon successful completion, students will be able to:

- Locate and interpret the sections in the NEC that pertain to electrical installations
- Calculate the size of conductors, boxes, raceways, and overcurrent protective devices for branch circuits supplying electrical equipment
- Calculate conductors, over-current protection, and service equipment as applied to building services
- Compute the size of branch circuits, feeders, and equipment for motors

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ELPT 1341 - MOTOR CONTROL

Operating principles of solid-state and conventional controls along with their practical applications. Includes braking, jogging, plugging, safety interlocks, wiring, and schematic diagram interpretations.

Upon successful completion, students will be able to:

- Identify practical applications of jogging and plugging
- Describe the types of motor braking and their operating principles
- Explain different starting methods for large motors
• Demonstrate proper troubleshooting methods on circuits using wiring and schematic diagrams

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

ELPT 2305 - MOTORS & TRANSFORMERS

Operation of single- and three-phase motors and transformers. Includes transformer banking, power factor correction, and protective devices.

Upon successful completion, students will be able to:

• Match the type of single-phase motor with its principles of operation  
• Compare the operating characteristics of the three types of three-phase motors  
• Explain the advantages of Wye and Delta connections in motor and transit applications  
• Size over-current, short circuit, and ground fault protective devices  
• Utilize nameplate information

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

ELPT 2319 - PROGRAMMABLE LOGIC CONTROLLERS I

Fundamental concepts of programmable logic controllers, principles of operation, and numbering systems as applied to electrical controls.

Upon successful completion, students will be able to:

• Identify and describe digital logic circuits and explain numbering systems  
• Explain the operation of programmable logic controllers  
• Convert ladder diagrams into programs  
• Incorporate timers and counters utilizing programmable logic controllers  
• Execute and evaluate programs

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

EMSP 2237 - EMERGENCY PROCEDURES

Application of emergency medical procedures. This course was designed to be repeated multiple times to improve student proficiency.
EMSP 1160 - CLINICAL - EMERGENCY MEDICAL TECHNICIAN/TECHNOLOGY

A method of instruction providing detailed education, training and work-based experience, and direct patient/client care, generally at a clinical site. Specific detailed learning objectives are developed for each course by the faculty. On-site clinical instruction, supervision, evaluation, and placement are the responsibility of the college faculty. Clinical experiences are unpaid external learning experiences. Course may be repeated if topics and learning outcomes vary.

EMSP 1338 - INTRODUCTION TO ADVANCED PRACTICE

Fundamental elements associated with emergency medical services to include preparatory practices, pathophysiology, medication administration, and related topics. Upon successful completion, students will be able to:

- Understand the roles and responsibilities of a paramedic within the EMS system
- Apply the basic concepts of development, pathophysiology and pharmacology to assessment and management of emergency patients
- Properly administer medications
- Communicate effectively with patients
- Understand the medical, legal, and ethical issues relating to EMS practice as well as the issues impacting the well being of the paramedic

EMSP 1355 - TRAUMA MANAGEMENT

A detailed study of the knowledge and skills necessary to reach competence in the assessment and management of patients with traumatic injuries.
**EMSP 1356 - PATIENT ASSESSMENT & AIRWAY MANAGEMENT**

A detailed study of the knowledge and skills required to reach competence in performing patient assessment, airway management, and artificial ventilation.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

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**EMSP 1501 - EMERGENCY MEDICAL TECHNICIAN**

Introduction to the level of Emergency Medical Technician (EMT) - Basic. Includes all the skills necessary to provide emergency medical care at a basic life support level with an ambulance service or other specialized services.

**Grade Basis:** L  
**Credit hours:** 5.0  
**Lecture hours:** 64.0  
**Lab hours:** 64.0

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**EMSP 2306 - EMERGENCY PHARMACOLOGY**

Utilization of medications in treating emergency situations.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**EMSP 2261 - CLINICAL I - EMERGENCY MEDICAL TECHNICIAN/PARAMEDIC**

A method of instruction providing detailed education, training and work-based experience, and direct patient/client care, generally at a clinical site. Specific detailed learning objectives are developed for each course by the faculty. On-site clinical instruction, supervision, evaluation, and placement are the responsibility of the college faculty. Clinical experiences are unpaid external learning experiences. Course may be repeated if topics and learning outcomes vary.

**Grade Basis:** L  
**Credit hours:** 2.0

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**EMSP 2262 - CLINICAL II - EMERGENCY MEDICAL TECHNICIAN/PARAMEDIC**

A method of instruction providing detailed education, training and work-based experience, and direct patient/client care, generally at a clinical site. Specific detailed learning objectives are developed for each course by the faculty. On-site clinical
EMSP 2305 - EMS OPERATIONS

Knowledge and skills to safely manage multi-casualty incidents and rescue situations, utilize air medical resources, identify hazardous materials, and other specialized incidents.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

EMSP 2352 - EMERGENCY MEDICAL SERVICES RESEARCH

Primary and/or secondary research in current and emerging issues in EMS. Basic research principles, scientific inquiry, and interpretation of professional literature are emphasized. Students will demonstrate computer competencies during this course. Students will be required to present research data utilizing the internet. Data presentation shall include, but not be limited to PowerPoint, Excel or other Windows platforms.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

EMSP 2434 - MEDICAL EMERGENCIES

A detailed study of the knowledge and skills necessary to reach competence in the assessment and management of patients with medical emergencies.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

EMSP 2544 - CARDIOLOGY

A detailed study of the knowledge and skills necessary to reach competence in the assessment and management of patients with cardiac emergencies.

Grade Basis: L
Credit hours: 5.0
Lecture hours: 64.0
Lab hours: 32.0
ENGL 1301 - COMPOSITION I

Intensive study of and practice in writing processes, from invention and researching to drafting, revising, and editing, both individually and collaboratively. Emphasis on effective rhetorical choices, including audience, purpose, arrangement, and style. Focus on writing the academic essay as a vehicle for learning, communicating, and critical analysis. Note: ENGL 1301 is a pre-requisite for all 2000-level literature courses. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Demonstrate knowledge of individual and collaborative writing processes.
• Develop ideas with appropriate support and attribution.
• Write in a style appropriate to audience and purpose.
• Read, reflect, and respond critically to a variety of texts.
• Use Edited American English in academic essays.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:

• Must meet TSI College Readiness Standard for Reading and Writing.

ENGL 1302 - COMPOSITION II

Intensive study of and practice in the strategies and techniques for developing research-based expository and persuasive texts. Emphasis on effective and ethical rhetorical inquiry, including primary and secondary research methods; critical reading of verbal, visual, and multimedia texts; systematic evaluation, synthesis, and documentation of information sources; and critical thinking about evidence and conclusions. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Demonstrate knowledge of individual and collaborative research processes.
• Develop ideas and synthesize primary and secondary sources within focused academic arguments, including one or more research-based essays.
• Analyze, interpret, and evaluate a variety of texts for the ethical and logical uses of evidence.
• Write in a style that clearly communicates meaning, builds credibility, and inspires belief or action.
• Apply the conventions of style manuals for specific academic disciplines (e.g., APA, CMS, MLA, etc.)

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:
ENGL 1301 - COMPOSITION I

Restrictions:

• Must meet TSI College Readiness Standard for Reading and Writing.

ENGL 2307 - CREATIVE WRITING

Practical experience in the techniques of imaginative writing. May include fiction, nonfiction, poetry, screenwriting, or drama.

Upon successful completion, students will be able to:

• Discuss written works of art from classic and contemporary movements.
• Create pieces of narrative work experimenting with elements of fiction (plot, character, setting, etc.), create pieces of poetic work experimenting with form, content, and style, and/or create pieces of dramatic work experimenting with elements of stage and screen (story, character, form, set, etc.), and/or create reflective work experimenting with elements of creative nonfiction.
• Discuss students’ creative texts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ENGL 2311 - TECHNICAL & BUSINESS WRITING

Intensive study of and practice in professional settings. Focus on the types of documents necessary to make decisions and take action on the job, such as proposals, reports, instructions, policies and procedures, e-mail messages, letters, and descriptions of products and services. Practice individual and collaborative processes involved in the creation of ethical and efficient documents. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Recognize, analyze, and accommodate diverse audiences.
• Produce documents appropriate to audience, purpose, and genre.
• Analyze the ethical responsibilities involved in technical communication.
• Locate, evaluate, and incorporate pertinent information.
• Develop verbal, visual, and multimedia materials as necessary, in individual and/or collaborative projects, as appropriate.
• Edit for appropriate style, including attention to word choice, sentence structure, punctuation, and spelling.
• Design and test documents for easy reading and navigation.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
ENGL 2322 - BRITISH LITERATURE I

A survey of the development of British literature from the Anglo-Saxon period to the Eighteenth Century. Students will study works of prose, poetry, drama, and fiction in relation to their historical, linguistic, and cultural contexts. Texts will be selected from a diverse group of authors and traditions. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
• Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
• Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
• Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
• Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Prerequisites:

• ENGL 1301 - COMPOSITION I

Restrictions:

• Must meet TSI College Readiness Standard for Reading and Writing.

ENGL 2323 - BRITISH LITERATURE II

A survey of the development of British literature from the Romantic period to the present. Students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from a diverse group of authors and traditions. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
• Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
• Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
• Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
• Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

**Prerequisites:**
- [ENGL 1301] - COMPOSITION I

**Restrictions:**
- Must meet TSI College Readiness Standard for Reading and Writing.

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**ENGL 2327 - AMERICAN LITERATURE I**

A survey of American literature from the period of exploration and settlement through the Civil War. Students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from among a diverse group of authors for what they reflect and reveal about the evolving American experience and character. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
• Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
• Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
• Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
• Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

**Prerequisites:**
- [ENGL 1301] - COMPOSITION I

**Restrictions:**
- Must meet TSI College Readiness Standard for Reading and Writing.
ENGL 2328 - AMERICAN LITERATURE II

A survey of American literature from the Civil War to the present. Students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from among a diverse group of authors for what they reflect and reveal about the evolving American experience and character. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

- Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
- Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
- Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
- Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
- Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:
- ENGL 1301 - COMPOSITION I

Restrictions:
- Must meet TSI College Readiness Standard for Reading and Writing.

ENGL 2332 - WORLD LITERATURE I

A survey of world literature from the ancient world through the sixteenth century. Students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from a diverse group of authors and traditions. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

- Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
- Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
- Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
• Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
• Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0  

Prerequisites:  
• ENGL 1301 - COMPOSITION I

Restrictions:  
• Must meet TSI College Readiness Standard for Reading and Writing.

ENGL 2333 - WORLD LITERATURE II

A survey of world literature from the seventeenth century to the present. Students will study works of prose, poetry, drama, and fiction in relation to their historical and cultural contexts. Texts will be selected from a diverse group of authors and traditions. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.  
• Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.  
• Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.  
• Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.  
• Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0  

Prerequisites:  
• ENGL 1301 - COMPOSITION I

Restrictions:  
• Must meet TSI College Readiness Standard for Reading and Writing.
INRW 0310 - INTEGRATED READING/WRITING

Integration of critical reading and academic writing skills. This Intervention is designed specifically for students assessed at BASE levels 3-4 and must be part of a student’s co-enrollment (corequisite) enrollment: as a mainstreamed intensifier providing contact hours for additional, just-in-time instructional support for the student’s success in the developmental IRW course, or as a contextualized and/or integrated basic skills instructional support for a Career/Technical Education course.

Upon successful completion, students will be able to:

- Locate explicit textual information, draw complex inferences, and describe, analyze, and evaluate the information within and across multiple texts of varying lengths.
- Comprehend and use vocabulary effectively in oral communication, reading, and writing.
- Identify and analyze the audience, purpose, and message across a variety of texts.
- Describe and apply insights gained from reading and writing a variety of texts.
- Compose a variety of texts that demonstrate reading comprehension, clear focus, logical development of ideas, and use of appropriate language that advance the writer’s purpose.
- Determine and use effective approaches and rhetorical strategies for given reading and writing situations.
- Generate ideas and gather information relevant to the topic and purpose, incorporating the ideas and words of other writers in student writing using established strategies.
- Evaluate relevance and quality of ideas and information in recognizing, formulating, and developing a claim.
- Develop and use effective reading and revision strategies to strengthen the writer’s ability to compose college-level writing assignments.
- Recognize and apply the conventions of standard English in reading and writing.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

HART 1356 - EPA RECOVERY CERTIFICATION PREPARATION

Certification training for HVAC refrigerant recovery, recycle, and reclaim. Instruction will provide a review of EPA guidelines for refrigerant recovery and recycling during the installation, service, and repair of all HVAC and refrigeration systems.

Upon successful completion, students will be able to:

- Define refrigerant recovery
- Recycle, and reclaim terms
- Explain refrigerant recovery, recycle, and reclaim procedures
- Analyze refrigerant recovery, recycle, and reclaim operations
- Identify Type I, Type II, and Type III appliances
- Examine and utilize Section 608 of the Clean Air Act of 1990 Refrigerant, Recovery, Recycle, and Reclaim
AGEQ 1401 - EQUINE BEHAVIOR AND TRAINING I

Instruction in basic equine behavior and training methods. Topics include anatomy and physiology, behavior, safety, health care management, and training methods.

Upon successful completion, students will be able to:

• Recognize behavioral patterns as they relate to training methods and desired results
• Implement appropriate training strategies
• Evaluate progress and adapt training method(s) accordingly

AGEQ 1305 - EQUINE ENTERPRISE MANAGEMENT

Overview of the equine industry. Includes equine industry segments, job market, and economic impact.

Upon successful completion, students will be able to:

• Define the various equine industry segments and explain their economic significance
• Identify employment opportunities in the equine industry

ACNT 2336 - FINANCIAL STATEMENT ANALYSIS

Financial statement analysis from a decision-maker’s perspective. This course may also be offered for qualifying education credit for CPA examinations by Texas community colleges that meet Texas State Board of Public Accountancy standards.

Upon successful completion, students will be able to:

• Identify the objectives of financial statement.
• Examine the accounting principles used in compiling financial statements.
• Describe the qualitative characteristics of financial statements.
• Analyze financial statements including analysis of accounts, variance, trends, and ratios.
FIRT 1349 - FIRE ADMINISTRATION II

In-depth study of fire service management as pertaining to budgetary requirements, administration, organization of divisions within the fire service, and relationships between the fire service and outside agencies.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

FIRS 1203 - FIREFIGHTER AGILITY & FITNESS PREPARATION

Physical ability testing methods. Rigorous training in skills and techniques needed in typical fire department physical ability tests.

Grade Basis: L
Credit hours: 2.0
Lab hours: 48.0

FIRS 1301 - FIREFIGHTER CERTIFICATION I

One in a series of courses in basic preparation for a new firefighter. Should be taken in conjunction with Firefighter Certification III, IV, V, and VI to satisfy the Texas Commission on Fire Protection (TCFP) curriculum for Basic Structural Fire Suppression, Course #100. This course may be offered only by institutions certified as a training facility by the Texas Commission on Fire Protection (TCFP).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

FIRS 1313 - FIREFIGHTER CERTIFICATION III

One in a series of courses in basic preparation for a new firefighter. Should be taken in conjunction with Firefighter Certification I, IV, V, and VI to satisfy the Texas Commission on Fire Protection (TCFP) curriculum for Basic Structural Fire Suppression, Course #100. This course may be offered only by institutions certified as a training facility by the Texas Commission on Fire Protection (TCFP).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0
FIRS 1319 - FIREFIGHTER CERTIFICATION IV

One in a series of courses in basic preparation for a new firefighter. Should be taken in conjunction with Firefighter Certification I, III, V, and VI to satisfy the Texas Commission on Fire Protection (TCFP) curriculum for Basic Structural Fire Suppression, Course #100. This course may be offered only by institutions certified as a training facility by the Texas Commission on Fire Protection (TCFP).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0

FIRS 1323 - FIREFIGHTER CERTIFICATION V

One in a series of courses in basic preparation for a new firefighter. Should be taken in conjunction with Firefighter Certification I, III, IV, and VI to satisfy the Texas Commission on Fire Protection (TCFP) curriculum for Basic Structural Fire Suppression, Course #100. This course may be offered only by institutions certified as a training facility by the Texas Commission on Fire Protection (TCFP).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0

FIRS 1329 - FIREFIGHTER CERTIFICATION VI

One in a series of courses in basic preparation for a new firefighter. Should be taken in conjunction with Firefighter Certification I, III, IV, and V to satisfy the Texas Commission on Fire Protection (TCFP) curriculum for Basic Structural Fire Suppression, Course #100. This course may be offered only by institutions certified as a training facility by the Texas Commission on Fire Protection (TCFP).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 48.0

FIRT 1307 - FIRE PREVENTION CODES & INSPECTIONS

Examination of building codes and requirements, construction types, and building materials. Includes walls, floorings, foundations, and various roof types and the associated dangers of each. This course meets Fire and Emergency Services Higher Education (FESHE) Model Curriculum core requirements.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
FIRT 1309 - FIRE ADMINISTRATION I

Introduction to the organization and management of a fire department and the relationship of government agencies to the fire service. Emphasis on fire service leadership from the perspective of the company officer.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

FIRT 1319 - FIREFIGHTER HEALTH & SAFETY

Course Description: Firefighter occupational safety and health in emergency and non-emergency situations. This course meets Fire and Emergency Services Higher Education (FESHE) Model Curriculum core requirements.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

FIRT 1329 - BUILDING CODES & CONSTRUCTION

Local building and fire prevention codes. Fire prevention inspections, practices, and procedures. This course meets Fire and Emergency Services Higher Education (FESHE) Model Curriculum core requirements.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

FIRT 1333 - FIRE CHEMISTRY I

Chemical nature and properties of compounds as related to the fire service. Fundamental laws of chemistry, states of matter, gas laws, chemical bonding, and thermodynamics. This course meets Fire and Emergency Services Higher Education (FESHE) Model Curriculum core requirements.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

FIRT 1338 - FIRE PROTECTION SYSTEMS

Design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection, and portable fire extinguishers. This course meets Fire and Emergency Services Higher Education (FESHE) Model Curriculum core requirements.

Grade Basis: L
FIRS 2188 - INTERNSHIP-FIRE PROTECTION & SAFETY TECHNOLOGY

A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the College and the employer. This may be a paid or unpaid experience.

Grade Basis: L
Credit hours: 1.0

FIRT 2309 - FIREFIGHTING STRATEGIES & TACTICS

Analysis of the nature of fire problems and selection of initial strategies and tactics including an in-depth study of efficient and effective use of staffing and equipment to mitigate the emergency.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

FMKT 1301 - FLORAL DESIGN

Principles and elements of floral art with an emphasis on commercial design. Topics include basic design styles and color harmonies, identification, use, and care of processing of cut flowers and foliage, mechanical aids and containers, personal flowers, holiday designs, and plant identification and care. History of floral art in society.

Upon successful completion, students will be able to:

- Apply principles and elements of design
- Identify floral design styles
- Identify cut flowers and foliage
- Explain the care and processing methods for extended vase life
- Select containers and mechanical aids
- Create basic floral arrangements

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

FMKT 2331 - ADVANCED FLORAL DESIGN

An in-depth coverage of advanced floral design practices for the retail floral industry. Topics include contemporary floral arrangement styles and trends.
Upon successful completion, students will be able to:

- Create contemporary floral designs
- Identify specialty flowers and foliage used in retail flower shops
- Determine care and processing techniques
- Select mechanical aids
- Calculate price by various methods

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

**Prerequisites:**

- [FMKT 1301 - FLORAL DESIGN](#)

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**AGCR 1341 - FORAGE & PASTURE MANAGEMENT**

Study of the production and management of forage crops and pastures including establishment, fertilization, weed control, grazing systems, hay, seed production, and harvesting. Lab fees apply

Upon successful completion, students will be able to:

- Develop techniques and management practices to optimize pasture and forage production
- Determine forage nutritive quality in relation to livestock production
- Identify forage and pasture plants and weed species

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 48.0

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**ACNT 1305 - FORENSIC ACCOUNTING**

Accounting fraud and examination designed to provide a basic understanding of the impact that fraud has on an organization.

Upon successful completion, students will be able to:

- Describe how fraud is committed.
- Explain how internal control systems can deter fraudulent acts.
- Identify signs of occupational fraud.
- Explain anti-fraud prevention methods.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0
ENGL 2341 - FORMS OF LITERATURE

The study of one or more literary genres including, but not limited to, poetry, fiction, drama, and film. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
• Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
• Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
• Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
• Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

Prerequisites:

• ENGL 1301 - COMPOSITION I

Restrictions:

• Must meet TSI College Readiness Standard for Reading and Writing.

FREN 1411 - BEGINNING FRENCH I

Fundamental skills in listening comprehension, speaking, reading, and writing. Includes basic vocabulary, grammatical structures, and culture. Lab fees apply.

Upon successful completion, students will be able to:

• Engage in conversations using level-appropriate grammatical structures including narrating events that take place in the present and producing questions and responses on a variety of topics dealing with everyday life.
• Demonstrate understanding of level-appropriate spoken French.
• Write simple sentences and organize them into short paragraphs.
• Read and comprehend level-appropriate texts.
• Identify and discuss traditions, customs and values of the French world.
• Compare and contrast the traditions, customs and values of the French world with characteristics of their own culture.

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 48.0
FREN 1412 - BEGINNING FRENCH II

Fundamental skills in listening comprehension, speaking, reading, and writing. Includes basic vocabulary, grammatical structures, and culture. Lab fees apply.

Upon successful completion, students will be able to:

• Engage in conversations using level-appropriate grammatical structures including narrating events that take place in the past.
• Demonstrate understanding of level-appropriate spoken French produced by French speakers of diverse origins.
• Write simple to moderately complex sentences using level-appropriate grammatical structures and organize them into cohesive paragraphs.
• Read and comprehend level-appropriate authentic texts.
• Identify and discuss traditions, customs and values of the French world.
• Compare and contrast the traditions, customs and values of the French world with characteristics of their own culture.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

Prerequisites:

• FREN 1411 - BEGINNING FRENCH I

Restrictions:

• 1 year high school French, FREN 1411, or approval by instructor.

FREN 2311 - INTERMEDIATE FRENCH I

Review and application of skills in listening comprehension, speaking, reading, and writing. Emphasizes conversation, vocabulary acquisition, reading, composition, and culture.

Upon successful completion, students will be able to:

• Demonstrate comprehension of authentic spoken discourse produced by French speakers of diverse origins.
• Produce oral French comprehensible to native speakers using complex grammatical structures to narrate, describe and elicit information.
• Demonstrate increasing comprehension of authentic written texts in a variety of genres.
• Write descriptions and narratives at a low intermediate level using complex grammatical structures.
• Formulate cohesive paragraphs and short/simple essays.
• Describe cultural practices and products of the French-speaking world drawing on authentic materials including literature and the visual arts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• FREN 1411 - BEGINNING FRENCH I
• FREN 1412 - BEGINNING FRENCH II

Restrictions:

• 2 years high school French, FREN 1412, or approval by instructor

FREN 2312 - INTERMEDIATE FRENCH II

Review and application of skills in listening comprehension, speaking, reading, and writing. Emphasizes conversation, vocabulary acquisition, reading, composition, and culture.

Upon successful completion, students will be able to:

• Summarize authentic spoken discourse produced by French speakers of diverse origins.
• Produce French comprehensible to native speakers using complex grammatical structures to communicate analytical and interpretive information in both impromptu and prepared speech.
• Demonstrate increasing comprehension of authentic written texts in a variety of genres.
• Write evaluations and critiques at a high intermediate level using complex grammatical structures.
• Formulate cohesive paragraphs and essays.
• Interpret cultural practices and products of the French-speaking world drawing on authentic materials including literature and the visual arts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• FREN 1411 - BEGINNING FRENCH I
• FREN 1412 - BEGINNING FRENCH II
• FREN 2311 - INTERMEDIATE FRENCH I

Restrictions:

• 3 years high school French, FREN 2311, or approval by instructor.
PSTR 1301 - FUNDAMENTALS OF BAKING

Fundamentals of baking including dough, quick breads, pies, cakes, cookies, and tarts. Instruction in flours, fillings, and ingredients. Topics include baking terminology, tool and equipment use, formula conversions, functions of ingredients, and the evaluation of baked products. Lab fees apply.

Upon successful completion, students will be able to:

• Identify and explain baking terms, ingredients, equipment, and tools
• Scale and measure ingredients
• Convert and cost recipes
• Operate baking equipment and tools
• Prepare yeast products, quick breads, pies, tarts, cookies, various cakes, and icings
• Demonstrate fundamental decorating techniques
• Demonstrate fundamental decorating techniques
• Produce commercially acceptable baked products

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 64.0

GAME 1303 - INTRODUCTION TO GAME DESIGN & DEVELOPMENT

Introduction to electronic game development and game development careers. Includes examination of history and philosophy of games, the game production process, employee factors for success in the field, and current issues and practices in the game development industry.

Upon successful completion, students will be able to:

• Describe the history and evolution of video and computer games and game genres
• Identify the phases and processes involved in developing a computer game
• Design a simple computer game from initial concept to final design document
• Describe current trends in the game industry with regards to hiring practices, working conditions, etc

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

GAME 1306 - DESIGN AND CREATION OF GAMES

Introduction to game and simulation development. Includes an overview of cultural history of electronic games, survey of the major innovators, and examination of the trends that motivate game design.

Upon successful completion, students will be able to:
• Summarize the evolution of the electronic game industry
• Explain essential game and simulation elements
• Evaluate the strengths and limitations of game and simulation systems
• Identify programmatic and graphical elements of a development system
• Develop a concept document and simple game

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

GAME 1309 - INTRODUCTION TO ANIMATION PROGRAMMING

Mathematical elements and algorithms involved in basic animation. Includes generating graphics, viewing 3D environments such as visible line detection and 3D surfaces, image processing techniques, and special effects.

Upon successful completion, students will be able to:

• Develop programs that apply the basic character animation techniques, pose animated characters, and implement proper timing within animations.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

GAME 1328 - VIDEO GAME DESIGN

Introduction to video game design techniques which inspire artists and non-artists. Including characters, environments, architecture, static objects, user interface, and storyboards for games. Emphasizes applying 2D design concepts.

Upon successful completion, students will be able to:

• Describe best practices in design techniques  
• Recommend design solutions  
• Identify criteria for communicating design

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

GAME 1343 - GAME AND SIMULATION PROGRAMMING I

Game and simulation programming. Includes advanced pointer manipulation techniques and pointer applications, points and vectors, sound, and graphics.

Upon successful completion, students will be able to:
• Incorporate sound and graphics in programs
• Develop a game/simulation advanced pointer techniques and application

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:
• ITSE 2321 - OBJECT-ORIENTED PROGRAMMING

GAME 2308 - PORTFOLIO FOR GAME DEVELOPMENT

Design and management of an industry standard portfolio. Includes techniques in self-promotion, resume writing, portfolio distribution systems, and interviewing.

Upon successful completion, students will be able to:

• Design a professional portfolio for various delivery systems
• Create resume, business card, web page, demo reel, and hardcopy

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Restrictions:
• Division Chair approval required

GAME 2342 - GAME DEVELOPMENT USING C++

Skill development in C++ programming for games and simulations.

Upon successful completion, students will be able to:

• Utilize standard game libraries
• Examine interfaces, exceptions, file access, and random numbers
• Create basic game or simulation frameworks building upon C++ knowledge

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:
• ITSE 2321 - OBJECT-ORIENTED PROGRAMMING
HPRS 2231 - GENERAL HEALTH PROFESSIONS MANAGEMENT

Exploration and application of management concepts necessary for effective health profession operations.

Grade Basis: L
Credit hours: 2.0

GEOL 1401 - EARTH SCIENCE FOR NON-MAJORS I

Survey of geology, meteorology, oceanography, and astronomy. Activities will cover methods used to collect and analyze data in geology, meteorology, oceanography, and astronomy. Lab fees apply

Upon successful completion, students will be able to:

- Explain the current theories concerning the origin of the Universe and of the Solar System.
- Explain the place of Earth in the Solar System and its relationships with other objects in the Solar System.
- Relate the origin and evolution of Earth’s internal structures to its resulting geologic systems, including Earth materials and plate tectonic activities.
- Explain the operation of Earth’s geologic systems and the interactions among the atmosphere, the geosphere, and the hydrosphere, including meteorology and oceanography.
- Explain the history of the Earth including the evolution of earth systems and life forms.
- Classify rocks and minerals based on chemical composition, physical properties, and origin.
- Apply knowledge of topographic maps, diagrams, and/or photographs to identify landforms and explain the processes that created them.
- Differentiate the types of plate boundaries, explain the processes that occur at each and identify associated structural features on maps, block diagrams and cross sections.
- Apply relative and numerical age-dating techniques to construct geologic histories.
- Measure atmospheric processes that affect weather and climate.
- Describe the composition and motion of ocean water and analyze the factors controlling both.
- Compare properties and motions of objects in the solar system.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

GEOL 1402 - EARTH SCIENCES FOR NON-MAJORS II

Extension of the study of geology, astronomy, meteorology and oceanography, focusing on natural resources, hazards and climate variability. This laboratory-based course
accompanies GEOL 1302 Earth Sciences II. Activities will focus on methods used to collect and analyze data related to natural resources, hazards and climate variability. Lab fees apply

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

GOVT 2305 - FEDERAL GOVERNMENT - FEDERAL CONSTITUTION & TOPICS

Origin and development of the U.S. Constitution, structure and powers of the national government including the legislative, executive, and judicial branches, federalism, political participation, the national election process, public policy, civil liberties and civil rights. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Explain the origin and development of constitutional democracy in the United States.
• Demonstrate knowledge of the federal system.
• Describe separation of powers and checks and balances in both theory and practice.
• Demonstrate knowledge of the legislative, executive, and judicial branches of the federal government.
• Evaluate the role of public opinion, interest groups, and political parties in the political system.
• Analyze the election process.
• Describe the rights and responsibilities of citizens.
• Analyze issues, and policies in U.S. politics.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading

GOVT 2306 - TEXAS GOVERNMENT - TEXAS CONSTITUTION & TOPICS

Origin and development of the Texas constitution, structure and powers of state and local government, federalism and inter-governmental relations, political participation, the election process, public policy, and the political culture of Texas. Meets Core Curriculum Requirement

Upon successful completion, students will be able to:

• Explain the origin and development of the Texas Constitution.
• Demonstrate an understanding of state and local political systems and their relationship with the federal government.
• Describe separation of powers and checks and balances in both theory and practice in Texas.
• Demonstrate knowledge of the legislative, executive, and judicial branches of Texas government.
• Evaluate the role of public opinion, interest groups, and political parties in Texas.
• Analyze the state and local election process.
• Identify the rights and responsibilities of citizens.
• Analyze issues, policies, and political culture of Texas.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:

• Must meet TSI College Readiness Standard for Reading

HALT 1303 - HERBACEOUS PLANTS

A study of herbaceous plant material. Topics include practices and procedures used in the identification, growth, propagation, maintenance, and utilization of herbaceous plants in the horticulture industry.

Upon successful completion, students will be able to:

• Identify herbaceous plants at various growth stages
• Explain methods used to propagate herbaceous plants
• Describe the cultural requirements for care and use of herbaceous plants

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

HALT 1309 - INTERIOR PLANTS

Instruction in the identification and classification of the plants used in home and commercial interior landscapes. Topics include design characteristics for interiorscapes and environmental requirements of the plants.

Upon successful completion, students will be able to:

• Identify interior plants
• Select care methods for specific plants
• Identify production methods of interior plants

Grade Basis: L
Credit hours: 3.0
HALT 1325 - LANDSCAPE PLANT MATERIAL

Study of the identification, characteristics, cultural requirements, and landscape uses of native and adapted plants.

Upon successful completion, students will be able to:

- Identify plants
- Select plants for various landscape situations
- List characteristics of plants
- Describe cultural requirements of plants

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

HALT 1331 - WOODY PLANT MATERIALS

Study of woody plant materials used in the horticulture industry. Topics include identification, characteristics, adaptation, cultural requirements, pest and disease problems, and use in the landscape.

Upon successful completion, students will be able to:

- Identify woody plants in various growth stages
- Describe morphological, anatomical, or other botanical features
- Explain cultural requirements of woody plants

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

HALT 1333 - LANDSCAPE IRRIGATION

Coverage of irrigation systems including equipment, design, performance, and maintenance. Topics include residential and small business applications, troubleshooting, repair, and technological advances in irrigation systems.

Upon successful completion, students will be able to:

- Describe the basic installation techniques used to install an irrigation system
- Discuss the separation of zones for turf areas, shrubs, ground covers, and other plant groups
- Prepare a design for an irrigation system
HALT 1353 - LANDSCAPE COMPUTER DESIGN

A course in computer-aided landscape design. Emphasis on the application of design concepts and techniques using software.

Upon successful completion, students will be able to:

- Design landscape plans using computer software programs
- Print a report of all hardscape and softscape materials used in the design

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

- HALT 1422 - LANDSCAPE DESIGN

HALT 1372 - NATURALISTIC HORTICULTURE

An organic approach to plant production, pest management, soil fertility, and plant health. Emphasis on sustainability, xeriscaping and landscaping using native plants as well as creating wildlife landscapes.

Upon successful completion, students will be able to:

- Demonstrate and apply sustainable horticulture techniques and principles
- Explain the benefits of biodiversity in the garden
- Produce and maintain healthy soils

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

HALT 1422 - LANDSCAPE DESIGN

A study of the principles and elements of landscape design. Topics include client interview, site analysis, plan view, scale, plant selection, basic drawing and drafting skills, and plan preparation.

Upon successful completion, students will be able to:

- Demonstrate procedures utilized in the development of a landscape plan
• Develop a landscape design
• Perform a site analysis and incorporate the information into the final design

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 48.0  
Lab hours: 32.0

HALT 2280 - COOPERATIVE EDUCATION

Career-related activities encountered in the student’s area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L  
Credit hours: 2.0  
Lecture hours: 16.0  
Lab hours: 160.0

HALT 2302 - GREENHOUSE CROP PRODUCTION

Production of crops within the greenhouse environment. Topics include growing techniques, environmental control, crop rotation, scheduling, preparation for sale, and marketing.

Upon successful completion, students will be able to:

• Produce crops within a greenhouse
• Explain various cultural requirements for greenhouse crops
• Implement marketing and sales
• Modify crop growth and development

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0
HALT 2307 - HORTICULTURAL FOOD CROPS

A study of commercial and home cultivated food crops including various vegetables, fruits, and nuts. Topics address planting, maintenance, harvest, and storage of the various crops.

Upon successful completion, students will be able to:

- Demonstrate the ability to plan, design, and plant a vegetable garden or small fruit orchard and properly cultivate, fertilize, water, and harvest the garden or orchard
- Discuss various types of gardens and their applications in both commercial and residential settings

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

HALT 2308 - GREENHOUSE MANAGEMENT

Fundamentals of greenhouse construction and operation. Topics include architectural styles, construction materials, environmental systems and controls, growing media, fertilizers, post-harvest handling, marketing, and business management.

Upon successful completion, students will be able to:

- Compare and select architectural styles and materials for greenhouse construction
- Calculate heating, cooling, and light requirements and select appropriate equipment
- Determine cultural and business methods necessary for crop production

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

HALT 2321 - SMALL FARMING

Instruction in small farming techniques with emphasis on horticulture science including comprehensive and profitable guidelines. Topics include herbs, fruits, nut, and vegetable crops.

Upon successful completion, students will be able to:

- Identify major physical and biological factors that affect crops
- Utilize innovative production techniques for a small farming operation
- Demonstrate creative marketing techniques for small farming operations
- Design productive and profitable small farming operations

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0  
Lab hours: 32.0

HART 1301 - BASIC ELECTRICITY FOR HVAC

Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

Upon successful completion, students will be able to:

- Demonstrate knowledge of basic principles of electricity, electrical current, circuitry, and air conditioning devices
- Apply Ohm's law to electrical calculations
- Perform electrical continuity, voltage, and current tests with appropriate meters
- Demonstrate electrical safety

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

HART 1307 - REFRIGERATION PRINCIPLES

An introduction to the refrigeration cycle, heat transfer theory, temperature/pressure relationship, refrigerant handling, refrigeration components, and safety.

Upon successful completion, students will be able to:

- Identify refrigeration components
- Explain operation of the basic refrigeration cycle and heat transfer
- Demonstrate proper application and/or use of tools, test equipment, and safety procedures

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

HART 1341 - RESIDENTIAL AIR CONDITIONING

A study of components, applications, and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair, and charging of air conditioning systems.

Upon successful completion, students will be able to:

- Identify various types of system applications
- Perform charging, recovery, and evacuation procedures of an installed system
- Perform component and part diagnostics and replacement
- Perform system maintenance
HART 2301 - AIR CONDITIONING & REFRIGERATION CODES

HVAC standards and concepts with emphasis on the understanding, and documentation of the codes and regulations required for the state mechanical contractors license and local codes.

Upon successful completion, students will be able to:

- Demonstrate the ability to locate and identify information in code books and reference materials applicable to installation procedures governed by Texas Department of Licensing and Regulation (TDLR)

HART 2342 - COMMERCIAL REFRIGERATION

Theory and practical application in the maintenance of commercial refrigeration; medium, and low temperature applications and ice machines.

Upon successful completion, students will be able to:

- Explain and apply medium and low temperature systems operation
- Explain and apply ice machine and packaged refrigeration system operation
- Explain application and conversion procedures of refrigerants related to specific systems

HART 2358 - TESTING, ADJUSTING & BALANCING HVAC SYSTEMS

A study in the process of checking and adjusting all the building environmental systems to produce the design objectives. Emphasis on efficiency and energy savings.

Upon successful completion, students will be able to:

- Interpret HVAC design specifications and plans
- Measure air flow, water flow, and system pressure with instruments
- Perform calculations for fan and pump laws including psychometric
- Adjust and align mechanical equipment
- Diagnose malfunctioning equipment and create a punch list
• Test air quality, humidity, noise, and temperature

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

HART 2380 - COOPERATIVE EDUCATION - HEATING, AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines learning with work experience. Includes lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 16.0

HART 2349 - HEAT PUMPS

A study of heat pumps, heat pump control circuits, defrost controls, auxiliary heat, air flow, and other topics related to heat pump systems.

Upon successful completion, students will be able to:

• Explain a reverse cycle system  
• List the mechanical and electrical components for the heat pump operation  
• Explain the operation of heat pump modes including cooling, heating, defrost, emergency heat, and auxiliary heat mode  
• Identify and explain different methods of accomplishing defrost  
• Charge a system correctly in the heating and cooling mode  
• Troubleshoot electrical and mechanical components  
• Perform tests for adequate air flow  
• Determine balance point and coefficient of performance (C.O.P.)  
• Define attributes of geothermal heat pump systems

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0
HIST 1301 - UNITED STATES HISTORY I

A survey of the social, political, economic, cultural, and intellectual history of the United States from the pre-Columbian era to the Civil War/Reconstruction period. United States History I includes the study of pre-Columbian, colonial, revolutionary, early national, slavery and sectionalism, and the Civil War/Reconstruction eras. Themes that may be addressed in United States History I include: American settlement and diversity, American culture, religion, civil and human rights, technological change, economic change, immigration and migration, and creation of the federal government. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Create an argument through the use of historical evidence.
• Analyze and interpret primary and secondary sources.
• Analyze the effects of historical, social, political, economic, cultural, and global forces on this period of United States history.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
• Must meet TSI College Readiness Standard for Reading

HIST 1302 - UNITED STATES HISTORY II

A survey of the social, political, economic, cultural, and intellectual history of the United States from the Civil War and Reconstruction era to the present. United States History II examines industrialization, immigration, world wars, the Great Depression, Cold War and post-Cold War eras. Themes that may be addressed in the United States History II include American culture, religion, civil and human rights, technological change, economic change, immigration and migration, urbanization and suburbanization, the expansion of the federal government, and the study of U.S. foreign policy. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Create an argument through the use of historical evidence.
• Analyze and interpret primary and secondary sources.
• Analyze the effects of historical, social, political, economic, cultural, and global forces on this period of the United States History.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
• Must meet TSI College Readiness Standard for Reading.

HIST 2301 - TEXAS HISTORY

A survey of the political, social, economic, cultural, and intellectual history of Texas from the pre-Columbian era to the present. Themes that may be addressed in Texas History include: Spanish colonization and Spanish Texas; Mexican Texas; the Republic of Texas; statehood and secession; oil, industrialization, and urbanization; civil rights; and modern Texas. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Create an argument through the use of historical evidence.
• Analyze and interpret primary and secondary sources.
• Analyze the effects of historical, social, political, economic, cultural, and global forces on this period of Texas History.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading.

HIST 2321 - WORLD CIVILIZATIONS I

A survey of the social, political, economic, cultural, religious, and intellectual history of the world from emergence of human cultures through the 15th century. The course examines major cultural regions of the world in Africa, the Americas, Asia, Europe, and Oceania and their global interactions over time. Themes include the emergence of early societies, the rise of civilizations, the development of political and legal systems, religion and philosophy, economic systems and trans-regional networks of exchange. The course emphasizes the development, interaction and impact of global exchange. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Create an argument through the use of historical evidence.
• Analyze and interpret primary and secondary sources.
• Analyze the effects of historical, social, political, economic, cultural, and global forces on this period of world history.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading.
HIST 2322 - WORLD CIVILIZATIONS II

A survey of the social, political, economic, cultural, religious, and intellectual history of the world from the 15th century to the present. The course examines major cultural regions of the world in Africa, the Americas, Asia, Europe, and Oceania and their global interactions over time. Themes include maritime exploration and transoceanic empires, nation/state formation and industrialization, imperialism, global conflicts and resolutions, and global economic integration. The course emphasizes the development, interaction and impact of global exchange. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Create an argument through the use of historical evidence.
• Analyze and interpret primary and secondary sources.
• Analyze the effects of historical, social, political, economic, cultural, and global forces on this period of world history.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading

HITT 1205 - MEDICAL TERMINOLOGY

Study of the basic structure of medical words including prefixes, suffixes, roots, combining forms, plurals, pronunciation, spelling, and the definitions of medical terms. Emphasis is on building a professional vocabulary required for employment in the allied health care field.

Upon successful completion, students will be able to:

• Use medical terms in context
• Utilize prefixes, suffixes, root words, and plurals to construct medical terms
• Analyze medical terms
• Translate medical abbreviations
• Interpret symbols
• Identify, pronounce, and spell medical terms

Grade Basis: L
Credit hours: 2.0
Lecture hours: 2.0

HORT 1401 - HORTICULTURE

Structure, growth, and development of horticultural plants. Examination of environmental effects, basic principles of reproduction, production methods ranging from outdoor to controlled climates, nutrition, and pest management.
Upon successful completion, students will be able to:

- Identify the various horticultural industries and their roles in our society
- Investigate methods of environmental manipulation (e.g. greenhouse controls, frost management methods, hot caps)
- Apply scientific reasoning to investigate questions and utilize scientific and horticultural tools to collect and analyze data and demonstrate methods
- Use critical thinking and scientific problem-solving to make informed decisions
- Communicate effectively the results of scientific investigations
- Describe the fundamentals of plant science
- Assess the interactions of soils, water, and fertility in plant science
- Contrast the methods of plant reproduction and propagation
- Explain the impacts of production methods and technologies on plant science
- Contrast methods of pest management in plant science

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 48.0  
Lab hours: 32.0

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**HRPO 2301 - HUMAN RESOURCES MANAGEMENT**

Behavioral and legal approaches to the management of human resources in organizations.

Upon successful completion, students will be able to:

- Explain the development of human resources management
- Explain current methods of job analysis, recruitment, selection, training/development, performance management, promotion, and separation
- Describe management's ethical, social, and legal responsibilities
- Explain methods of compensation and benefits planning
- Describe the role of strategic human resources planning

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

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**HRPO 2307 - ORGANIZATIONAL BEHAVIOR**

The analysis and application of organizational theory, group dynamics, motivation theory, leadership concepts and the integration of interdisciplinary concepts from the behavioral sciences.

Upon successful completion, students will be able to:

- Explain organizational theory as it relates to management practices, employee relations, and structure of the organization to fits its environment and operation
- Analyze leadership styles and determine their effectiveness in employee situations
- Identify methods in resolving organizational problems
• Describe the impact of corporate culture on employee behavior
• Analyze team dynamics, team building strategies, and cultural diversity

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

HUMA 1301 - INTRODUCTION TO THE HUMANITIES I

This stand-alone course is an interdisciplinary survey of cultures focusing on the philosophical and aesthetic factors in human values with an emphasis on the historical development of the individual and society and the need to create. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Demonstrate awareness of the scope and variety of works in the arts and humanities.
• Articulate how these works express the values of the individual and society within a historical and social context.
• Articulate an informed personal response and critically analyze works in the arts and humanities.
• Demonstrate knowledge and understanding of the influence of literature, philosophy, and the arts on cultural experiences.
• Demonstrate an awareness of the creative process and why humans create.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:

• Must meet TSI College Readiness Standard for Reading.

HYDR 1345 - HYDRAULICS & PNEUMATICS

Discussion of the fundamentals of hydraulics and pneumatics, components of each system, and the operations, maintenance, and analysis of each system.

Upon successful completion, students will be able to:

• Demonstrate the operation of basic hydraulic and pneumatic systems including associated instruments
• Interpret schematics
• Troubleshoot systems
• Design a schematic drawing of a working system

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
IBUS 1305 - INTRODUCTION TO INTERNATIONAL BUSINESS & TRADE

The techniques for entering the international marketplace. Emphasis on the impact and dynamics of sociocultural, demographic, economic, technological, and political-legal factors in the foreign trade environment. Topics include patterns of world trade, internationalization of the firm, and operating procedures of the multinational enterprise.

Upon successful completion, students will be able to:

- Explain terms used in the international business environment
- Discuss internal and external factors influencing the conduct of international business

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

IMED 1316 - WEB DESIGN I

Instruction in web page design and related graphic design issues including mark-up languages and browser issues.

Upon successful completion, students will be able to:

- Identify how the Internet functions with specific attention to the file transfer
- Apply design techniques in the creation and optimization of graphics and other embedded elements
- Demonstrate the use of World Wide Web Consortium (W3C) formatting and layout standards
- Design, create, test, and maintain a web site

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

IMED 1345 - INTERACTIVE DIGITAL MEDIA I

Exploration of the use of graphics and sound to create interactive digital media applications and/or animations using industry standard authoring software. Lab fees apply

Upon successful completion, students will be able to:

- Develop an interactive digital media presentation integrating different types of media
- Design a navigation scheme
- Demonstrate animation techniques
ITNW 1354 - IMPLEMENTING AND SUPPORTING SERVERS

Implement, administer, and troubleshoot information systems that incorporate servers in a networked computing environment.

Upon successful completion, students will be able to:

- Configure peripherals and devices
- Set up servers
- Configure directory replication
- Manage licensing
- Create and manage system policies and profiles
- Administer remote servers and disk resources
- Create and share resources
- Implement fault-tolerance
- Configure servers for interoperability
- Install and configure Remote Access Service (RAS)
- Identify and monitor performance bottlenecks and resolve configuration problems

INEW 2334 - ADVANCED WEB PROGRAMMING

Web programming using industry-standard languages and data stores.

Upon successful completion, students will be able to:

- Design, code, and implement a dynamic website
- Develop connectivity between data store and website
Lab hours: 32.0
Prerequisites:

- ITSE 2321 - OBJECT-ORIENTED PROGRAMMING

INMT 1305 - INTRODUCTION TO INDUSTRIAL MAINTENANCE

Basic mechanical skills and repair techniques common to most fields of industrial maintenance. Topics include precision measuring instruments and general safety rules common in industry, including lock-out/tag-out.

Upon successful completion, students will be able to:

- Identify various types of fasteners common to industrial maintenance
- Utilize various hand and power tools
- Utilize precision measuring instruments
- Demonstrate proper lock-out/tag-out procedures

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

INMT 2303 - PUMPS, COMPRESSORS & MECHANICAL DRIVES

A study of the theory and operations of various types of pumps and compressors. Topics include mechanical power transmission systems including gears, v-belts, and chain drives.

Upon successful completion, students will be able to:

- Identify the principles involved in the operation of centrifugal and positive displacement pumps and compressors
- Explain the function of various components in pumps and compressors, disassemble and reassemble pumps, compressors and mechanical drives, and troubleshoot pumps, compressors and mechanical drives

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

INMT 2345 - INDUSTRIAL TROUBLESHOOTING

An advanced study of the techniques used in troubleshooting various types of industrial equipment to include mechanical, electrical, hydraulic, and pneumatic systems and their control devices. Emphasis will be placed on the use of schematics and diagrams in conjunction with proper troubleshooting procedures.
Upon successful completion, students will be able to:

- Demonstrate various troubleshooting techniques
- Troubleshoot hydraulic, pneumatic, electrical mechanical drive systems using schematics and diagrams

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

**INMT 2380 - COOPERATIVE EDUCATION - MANUFACTURING TECHNOLOGY**

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
- Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0

**INRW 0305 - INTEGRATED READING AND WRITING**

Integration of critical reading and academic writing skills. Successful completion of this course fulfills TSI requirements for reading and/or writing.

Upon successful completion, students will be able to:

- Locate explicit textual information, draw complex inferences, and describe, analyze, and evaluate the information within and across multiple texts of varying lengths.
- Comprehend and use vocabulary effectively in oral communication, reading, and writing.
- Identify and analyze the audience, purpose, and message across a variety of texts.
- Describe and apply insights gained from reading and writing a variety of texts.
- Compose a variety of texts that demonstrate reading comprehension, clear focus, logical development of ideas, and use of appropriate language that advance the writer’s purpose.
• Determine and use effective approaches and rhetorical strategies for given reading and writing situations.
• Generate ideas and gather information relevant to the topic and purpose, incorporating the ideas and words of other writers in student writing using established strategies.
• Evaluate relevance and quality of ideas and information in recognizing, formulating, and developing a claim.
• Develop and use effective reading and revision strategies to strengthen the writer’s ability to compose college-level writing assignments.
• Recognize and apply the conventions of standard English in reading and writing.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ACNT 2303 - INTERMEDIATE ACCOUNTING I

Analysis of generally accepted accounting principles, concepts, and theory underlying the preparation of financial statements.

Upon successful completion, students will be able to:

• Identify objectives of financial accounting.
• Define generally accepted accounting principles.
• Prepare and analyze financial statements.
• Analyze complex transactions affecting asset accounts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ACNT 2304 - INTERMEDIATE ACCOUNTING II

Continued in-depth analysis of generally accepted accounting principles underlying the preparation of financial statements including comparative analysis and statement of cash flows.

Upon successful completion, students will be able to:

• Prepare financial statements.
• Analyze financial statements.
• Apply concepts in measuring, recording, and reporting stockholder’s equity and earnings per share.
• Analyze complex transactions affecting liability and equity accounts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
ACNT 2331 - INTERNAL CONTROL AND AUDITING

Internal controls, auditing standards and processes used by internal auditors, managers, and independent public accountants.

Upon successful completion, students will be able to:

- Analyze internal control procedures.
- Describe auditing standards, procedures and the audit reports.
- Prepare audit working papers with related schedules.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

DFTT 2386 - INTERNSHIP-DRAFTING AND DESIGN TECHNOLOGY/TECHNICIAN, GENERAL

A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

Upon successful completion, students will be able to:

- As outlined in the learning plan, apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry.
- Will demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

Grade Basis: L
Credit hours: 3.0
Restrictions:

- Must complete in the last semester.
- Instructor approval required.

ACNT 1304 - INTRODUCTION TO ACCOUNTING II

A study of accounting for merchandising, notes payable, notes receivable, valuation of receivables and equipment, and valuation of inventories in a manual and computerized environment.

Upon successful completion, students will be able to:

- Define accounting terminology.
• Analyze and record business transactions for a merchandising operation in a manual and computerized environment.
• Calculate interest.
• Apply valuation methods for receivables and payables.
• Utilize various inventory and depreciation methods.
• Identify internal control procedures for inventory, receivables, and payables.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

WLDG 1313 - INTRODUCTION TO BLUEPRINT READING FOR WELDERS

A study of industrial blueprints. Emphasis placed on terminology, symbols, graphic description, and welding processes. Includes systems of measurement and industry standards. Also includes interpretation of plans and drawings used by industry to facilitate field application and production.

Upon successful completion, students will be able to:

• Define terms and abbreviations
• Interpret views, lines, dimensions, detail drawings and welding symbols
• Identify structural shapes
• Demonstrate the proper use of measuring devices
• Calculate dimensions; and develop bill of materials

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

MCHN 1326 - INTRODUCTION TO COMPUTER AIDED MANUFACTURING (CAM)

A study of Computer-Aided Manufacturing (CAM) software which is used to develop applications for manufacturing. Emphasis on tool geometry, tool selection, and the tool library.

Upon successful completion, students will be able to:

• Use Computer-Aided Manufacturing software to create part programs
• Transfer programs to the machine control unit
• Use Computer-Aided Manufacturing software to create machine parts

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
FDNS 1301 - INTRODUCTION TO FOODS

A study of the composition of food and the chemical and biological changes that occur in storage and processing. Includes preparation techniques and selection principles. Lab fees apply

Upon successful completion, students will be able to:

- Explain esthetic values applied to food preparation, acid/base characteristics, use of heat in cookery, protein properties, composition of milk, egg, cheese, meat and fish, and properties of starch foods
- Describe what makes a solution
- Define carbohydrates, lipids, objective food analysis
- List standards of fruit/vegetable selection
- Demonstrate approved measuring techniques, microwave cookery, and cooking principles for cereal, pasta, starch, plant protein, fruit, vegetables, cheese, poultry, fish, meat and sauces
- Explain and demonstrate principles of various dough products, quick and yeast breads, and cooking with fat

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

BARB 1307 - INTRODUCTION TO HAIR DESIGN

Introduction to hair styling with emphasis on the fundamentals of haircutting and related skills.

Upon successful completion, students will be able to:

- Identify career opportunities and define professional ethics
- Identify sanitation methods, and explain how to use them
- Identify and demonstrate implements, tools, and equipment
- Explain the structure and functions of the hair and scalp

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Restrictions:

- Texas Cosmetology Operator License

WLDG 1317 - INTRODUCTION TO LAYOUT & FABRICATION

A fundamental course in layout and fabrication related to the welding industry. Major emphasis on structural shapes and use in construction.
Upon successful completion, students will be able to:

- Interpret welding symbols
- Utilize measuring instruments and tools for fabricating projects
- Define layout and fabrication terminology
- Identify structural shapes and materials

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 64.0

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**DFTG 1302 - INTRODUCTION TO TECHNICAL ANIMATION AND RENDERING**

Basic study of technical computer models and animation.

Upon successful completion, students will be able to:

- Identify basic terminology and concepts associated with the development of technical computer models and animation
- Create a technical 3-D simulation using lighting, camera, materials, textures, views, and scenes
- Demonstrate importing models from computer-aided design or solid modeling programs

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

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**HPRS 1201 - INTRODUCTION TO HEALTH PROFESSIONS**

An overview of roles of various members of the health care system, educational requirements, and issues affecting the delivery of health care.

**Grade Basis:** L  
**Credit hours:** 2.0

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**ITCC 1414 - CCNA 1: INTRODUCTION TO NETWORKS**

This course covers networking architecture, structure, and functions; introduces the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations to provide a foundation for the curriculum. Certification Agency: Cisco

Upon successful completion, students will be able to:

- Build simple LANs
- Perform basic configuration on routers and switches
• Implement IP addressing schemes

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 48.0  
Lab hours: 32.0

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**ITCC 1440 - CCNA 2: ROUTING AND SWITCHING ESSENTIALS**

Describes the architecture, components, and basic operation of routers and explains the basic principles of routing and routing protocols. It also provides an in-depth understanding of how switches operate and are implemented in the LAN environment for small and large networks. Certification Agency: Cisco

Upon successful completion, students will be able to:

• Configure and maintain routers and switches  
• Resolve common issues with routing protocols, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 48.0  
Lab hours: 32.0

**Prerequisites:**

• ITCC 1414 - CCNA 1: INTRODUCTION TO NETWORKS

**Restrictions:**

• Must complete ITCC 1414 - CCNA 1 with a C or higher to enroll

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**ITCC 2412 - CCNA 3: SCALING NETWORKS**

CCNA R&S: Scaling Networks (ScaN) covers the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches using advanced protocols. Certification Agency: Cisco

Upon successful completion, students will be able to:

• Configure advanced routing and switching  
• Resolve common issues with OSPF, EIGRP, and STP in IP networks  
• Implement a WLAN in a small-to-medium network

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 48.0  
Lab hours: 32.0

**Prerequisites:**
ITCC 1440 - CCNA 2: ROUTING AND SWITCHING ESSENTIALS

Restrictions:

- Must complete ITCC 1440 - CCNA 2 with a C or higher to enroll

ITCC 2413 - CCNA 4: CONNECTING NETWORKS

WAN technologies and network services required by converged applications in a complex network; enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Certification Agency: Cisco

Upon successful completion, students will be able to:

- Configure and troubleshoot network devices
- Resolve common issues with data link protocols
- Resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks
- Implement virtual private network (VPN) operations in a complex network
- Implement security best practices

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

Prerequisites:

- ITCC 2412 - CCNA 3: SCALING NETWORKS

Restrictions:

- Must complete ITCC 2412 - CCNA 3 with a C or higher to enroll

ITNW 1308 - IMPLEMENTING AND SUPPORTING CLIENT SYSTEMS

The fundamentals of managing and configuring network clients.

Upon successful completion, students will be able to:

- Install and configure network clients
- Setup users, groups, policies, and profiles
- Configure hardware components and applications
- Setup and maintain logon security and security for files and printers
- Configure and optimize clients in multiple environments

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
ITNW 1313 - COMPUTER VIRTUALIZATION

Implement and support virtualization of clients of servers in a networked computing environment. This course explores installation, configuration, and management of computer virtualization workstation and servers.

Upon successful completion, students will be able to:

- Install and configure virtual machine managers
- Create and network virtual machines and set priorities for accessing resources
- Move and clone virtual machines
- Ensure high availability for applications within virtual machines

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0  
Prerequisites:
- ITCC 1414 - CCNA 1: INTRODUCTION TO NETWORKS  
- ITNW 1358 - NETWORK+

ITNW 1335 - INFORMATION STORAGE AND MANAGEMENT

An introduction to data storage-related technologies. Topics include data storage for cloud, Big Data, mobile, social media, and software-defined data centers. Provides a strong understanding of storage technologies and prepares students for advanced concepts, technologies, and processes.

Upon successful completion, students will be able to:

- Differentiate storage architectures and key data center elements
- Explain the components of storage infrastructure including subsystems, RAID and intelligent storage systems
- Demonstrate network technologies used in storage systems
- Outline the benefits and components of Storage Area Networks (SANs)
- Adapt contingency plans for backup, replication and archiving
- Evaluate information security requirements and recommend solutions
- List SAN management issues and requirements

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0  
Prerequisites:
- ITCC 1414 - CCNA 1: INTRODUCTION TO NETWORKS  
- ITCC 1440 - CCNA 2: ROUTING AND SWITCHING ESSENTIALS  
- ITNW 1358 - NETWORK+
ITNW 1353 - SUPPORTING NETWORK SERVER INFRASTRUCTURE

Installing, configuring, managing, and supporting a network infrastructure.
Upon successful completion, students will be able to:

- Install and configure DHCP, DNS, remote access, network security using public key infrastructure
- Integrate network services
- Deploy operating systems using remote installation services

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

- ITCC 1414 - CCNA 1: INTRODUCTION TO NETWORKS
- ITCC 1440 - CCNA 2: ROUTING AND SWITCHING ESSENTIALS
- ITNW 1308 - IMPLEMENTING AND SUPPORTING CLIENT SYSTEMS
- ITNW 1358 - NETWORK+

ITNW 1358 - NETWORK+

Assists individuals in preparing for the Computing Technology Industry Association (CompTIA) Network+ certification exam and career as a network professional.
Upon successful completion, students will be able to:

- Identify and define terminology, hardware, and software components of computer networks
- Utilize equipment, protocols, and topologies to differentiate between various network systems
- Demonstrate skills in installing network hardware, software, and cable
- Troubleshoot network connectivity
- Configure network protocol
- Install and configure network client software

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ITNW 2280 - COOPERATIVE EDUCATION - COMPUTER SYSTEMS NETWORKING

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under
the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

**Grade Basis:** L  
**Credit hours:** 2.0  
**Lecture hours:** 16.0  
**Restrictions:**

• Departmental Chair approval required unless student is in last semester of the Networking Degree.

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**ITSC 1316 - LINUX INSTALLATION AND CONFIGURATION**

Introduction to Linux operating system. Includes Linux installation, basic administration, utilities and commands, upgrading, networking, security, and application installation. Emphasizes hands-on setup, administration, and management of Linux.

Upon successful completion, students will be able to:

• Install, administer, and manage a Linux system  
• Demonstrate proficiency with Linux utilities, commands, and applications  
• Identify and resolve security-based issues  
• Integrate a Linux system into an existing network

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

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**ITSC 1325 - PERSONAL COMPUTER HARDWARE**

A study of current personal computer hardware including assembly, upgrading, setup, configuration, and troubleshooting.

Upon successful completion, students will be able to:

• Assemble, setup, and upgrade personal computer systems  
• Diagnose and isolate faulty components  
• Optimize system performance  
• Install and connect peripherals
ITSE 1302 - COMPUTER PROGRAMMING

Introduction to computer programming including design, development, testing, implementation, and documentation.

Upon successful completion, students will be able to:

- Design, write, test, and document computer programs

Prerequisites:

- ITSE 2321 - OBJECT-ORIENTED PROGRAMMING

ITSE 1303 - INTRODUCTION TO MySQL

Introduction to fundamentals of SQL and relational databases.

Upon successful completion, students will be able to:

- Identify database terminology and concepts
- Plan, define, and design a database
- Design and generate tables
- Devise and process queries
- Install and start the MySQL server
- Troubleshoot syntax

ITSE 1311 - BEGINNING WEB PROGRAMMING

Skills development in web programming including mark-up and scripting languages.

Upon successful completion, students will be able to:

- Demonstrate the use of markup and scripting languages
- Create interactive web pages

Grade Basis: L
ITSE 1333 - MOBILE APPLICATIONS DEVELOPMENT

An overview of different mobile platforms and their development environments.
Upon successful completion, students will be able to:

- Design, write, and test small interactive programs for mobile platforms

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ITSE 1345 - INTRODUCTION TO ORACLE SQL

An introduction to the design and creation of relational databases using Oracle. Topics include storing, retrieving, updating, and displaying data using Structured Query Language (SQL).
Upon successful completion, students will be able to:

- Write Structured Query Language (SQL) statements using Oracle
- Select and sort data
- Produce reports with SQL
- Create and manage tables which include constraints
- Create Views and other database objects

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:

- ITSE 2321 - OBJECT-ORIENTED PROGRAMMING

ITSE 1346 - DATABASE THEORY AND DESIGN

Introduction to the analysis and utilization of data requirements and organization into normalized tables using the four normal forms of database design.
Upon successful completion, students will be able to:

- Organize data into normalized tables by applying the four normal forms of database design
• Create Entity-Relationship models and diagrams to graphically represent their database design
• Design database tables with One-to-Many and Many-to-Many relationships
• Create tables using the SQL "create" and "insert" statements
• Retrieve data from tables using SQL "select" statement
• Maintain data in tables using the SQL "update" and "delete" statements
• Implement stored procedures, triggers, and constraints using SQL statements

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

ITSE 2302 - INTERMEDIATE WEB PROGRAMMING

Server-side and client-side techniques for Web development.  
Upon successful completion, students will be able to:
  • Create and use client-side and server-side scripts to design and implement dynamic websites

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0  
Prerequisites:
  • IMED 1316 - WEB DESIGN I

ITSE 2310 - iOS APPLICATION PROGRAMMING

Course explores developing applications for iOS devices. Will include the current iOS programming language, use of the iOS SDK environment, and current programming issues in the iOS environment.  
Upon successful completion, students will be able to:
  • Complete the procedures to become a registered Apple iOS developer.  
  • Design interfaces for iOS applications
  • Produce concept documentation
  • Create iOS applications in native SDK.
  • Deploy applications for various iOS devices.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0
ITSE 2317 - JAVA PROGRAMMING

Java programming for applications and web applets.
Upon successful completion, students will be able to:

• Design, write and document Java applications and applets

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:

• ITSE 2321 - OBJECT-ORIENTED PROGRAMMING

ITSE 2321 - OBJECT-ORIENTED PROGRAMMING

Program design with classes, including development, testing, implementation, and documentation.
Upon successful completion, students will be able to:

• Develop executable programs
• Create appropriate documentation
• Write programs using classes and objects using object-oriented programming techniques.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ITSE 2333 - IMPLEMENTING A DATABASE ON MICROSOFT SQL SERVER

Skills development in the implementation of a database solution using Microsoft SQL Server client/server database management system.
Upon successful completion, students will be able to:

• Describe the elements of Microsoft SQL Server and its operational environments
• Describe the elements of the Transact-SQL language
• Demonstrate and configure the data storage architecture of SQL server
• Write, maintain, and tune advanced queries
• Manage locking options and transactions to ensure data concurrency and recoverability
• Create views of data
• Design and create stored procedures
• Design and create triggers
• Use distributed data

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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**ITSE 2343 - ADVANCED MOBILE PROGRAMMING**

Programming for mobile devices including file access methods, data structures, modular programming, program testing and documentation.

Upon successful completion, students will be able to:

• Design, write, and document mobile programs

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

**Prerequisites:**

• [ITSE 1333](#) - MOBILE APPLICATIONS DEVELOPMENT  
• [ITSE 2321](#) - OBJECT-ORIENTED PROGRAMMING

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**ITSE 2354 - ADVANCED ORACLE PL/SQL**

Advanced use of Oracle SQL. Topics include hierarchical queries, set based queries, correlated subqueries, scripting, and scripting generation.

Upon successful completion, students will be able to:

• Retrieve data including SET operators, correlated subqueries, and hierarchical queries  
• Write SQL scripts that execute remote procedure calls  
• Create a package to group together variables, cursors, exceptions, procedures, and functions  
• Invoke a package constraint

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

**Prerequisites:**

• [ITSE 1345](#) - INTRODUCTION TO ORACLE SQL
ITSE 2356 - ORACLE DATABASE ADMINISTRATION I

Fundamentals of the tasks and functions required of a database administrator using Oracle.

Upon successful completion, students will be able to:

- Create an operational database using Oracle
- Create, delete, and modify associated files, table spaces, segments, extents, and blocks
- Start up and shut down an Oracle instance and database
- Add, delete, and modify users, privileges, and resources
- Demonstrate use of National Language and Support (NLS) features

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:
- ITSE 1345 - INTRODUCTION TO ORACLE SQL

ITSE 2358 - ORACLE DATABASE ADMINISTRATION II

A continuation of Oracle Database Administration I. Topics include the recovery procedures, logical backups, standby database capabilities, and performance tuning of the Oracle Server. Common performance problems and the use of diagnostic tools to troubleshoot and optimize throughout will be discussed.

Upon successful completion, students will be able to:

- List the Oracle backup and recovery components
- Formulate a backup and recovery strategy
- Practice backup and recovery operations
- Use Oracle tools to diagnose performance problems
- Optimize and troubleshoot Oracle database performance

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:
- ITSE 2356 - ORACLE DATABASE ADMINISTRATION I
ITSE 2380 - COOPERATIVE EDUCATION - COMPUTER PROGRAMMER

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0
Restrictions:
• Departmental Chair approval required unless student is in last semester of the Computer Information Degree.

ITSW 1307 - INTRODUCTION TO DATABASE

Introduction to database theory and the practical applications of a database.

Upon successful completion, students will be able to:

• Identify database terminology and concepts
• Plan, define, and design a database
• Design and generate tables, forms, and reports
• Devise and process queries

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

ITSW 2337 - ADVANCED DATABASE

Advanced concepts of database design and functionality.

Upon successful completion, students will be able to:

• Explain relational database theory
• Collect and distribute data
• Analyze data
• Perform complex queries, data validation and table relationships

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:

• ITSW 1307 - INTRODUCTION TO DATABASE

ITSY 1342 - INFORMATION TECHNOLOGY SECURITY

Instruction in security for network hardware, software, and data, including physical security, backup procedures, relevant tools, encryption, and protection from viruses.

Upon successful completion, students will be able to:

• National Institute of Standards and Technology (NIST) Guidelines and other best practices
• Develop backup procedures to provide for data security
• Use network operating system features to implement network security
• Identify computer and network threats and vulnerabilities and methods to prevent their effects
• Use tools to enhance network security
• Use encryption techniques to protect network data

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:

• ITCC 1414 - CCNA 1: INTRODUCTION TO NETWORKS
• ITCC 1440 - CCNA 2: ROUTING AND SWITCHING ESSENTIALS
• ITNW 1358 - NETWORK+

ITSY 2300 - OPERATING SYSTEM SECURITY

Safeguard computer operating systems by demonstrating server support skills and designing and implementing a security system. Identify security threats and monitor network security implementations. Use best practices to configure operating systems to industry security standards.

Upon successful completion, students will be able to:

• Identify network security risks, security design, and monitoring solutions
• Identify sources of computer threats, evaluate potential practices, tools, and technologies to protect individual network systems
• Establish and sustain an operating system security plan utilizing systems and application security tools
• Implement procedures to secure and monitor audit logs and set system administrator alerts
• Develop an organizational operating system security plan that provides for periodic reviews of security policies, procedures, authorized users list, and software update patches

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0  
Prerequisites:
• [ITSY 1342 - INFORMATION TECHNOLOGY SECURITY]

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**ITSY 2301 - FIREWALLS AND NETWORK SECURITY**

Identify elements of firewall design, types of security threats and responses to security attacks. Use Best Practices to design, implement, and monitor a network security plan. Examine security incident postmortem reporting and ongoing network security activities.

Upon successful completion, students will be able to:

• Demonstrate system security skills through firewall implementation and testing
• Use system tools, practices, and relevant technologies to implement a security plan
• Evaluate practices, tools, and technologies to identify security breaches, sources of attacks, and protect mission critical systems
• Establish an appropriate level of security based on an analysis of security logs
• Use relevant tools to secure a network, respond to and follow up on various types of attacks

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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**ITSY 2330 - INTRUSION DETECTION**

Computer information systems security monitoring, intrusion detection, and crisis management. Includes alarm management, signature configuration, sensor configuration, and troubleshooting components. Emphasizes identifying, resolving, and documenting network crises and activating the response team.

Upon successful completion, students will be able to:

• Build IDS sensors and attach them to the network (hardware and software)
• Install and manage a secure communication link between all sensors and the monitor
• Install and manage event database(s)
• Analyze an event and trends
• Install, manage, and interpret syslog servers and system logs
• Identify legal and policy issues associated with system and network monitoring
• Deploy, implement, and test IDS security plan

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

• ITSY 2300 - OPERATING SYSTEM SECURITY
• ITSY 2301 - FIREWALLS AND NETWORK SECURITY

ITSY 2342 - INCIDENT RESPONSE & HANDLING

In-depth coverage of incident response and incident handling, including identifying sources of attacks and security breaches; analyzing security logs; recovering the system to normal; performing postmortem analysis; and implementing and modifying security measures.

Upon successful completion, students will be able to:

• Identify sources of attacks
• Restore the system to normal operation
• Identify and prevent security threats
• Perform a postmortem analysis
• Identify computer investigation issues
• Identify the roles and responsibility of the incident response team

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

• ITSY 2300 - OPERATING SYSTEM SECURITY
• ITSY 2301 - FIREWALLS AND NETWORK SECURITY

ITSY 2343 - COMPUTER SYSTEM FORENSICS

In-depth study of system forensics including methodologies used for analysis of computer security breaches. Collect, document and evaluate evidence to perform postmortem analysis of a security breach.

Upon successful completion, students will be able to:

• Identify computer investigation issues
• Identify legal issues associated with computer investigations
• Collect, document, and evaluate evidence
• Evaluate network traffic

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

Prerequisites:

• ITSY 2300 - OPERATING SYSTEM SECURITY
• ITSY 2342 - INCIDENT RESPONSE & HANDLING

ITSY 2382 - COOPERATIVE EDUCATION-COMPUTER & INFORMATION SYSTEM SECURITY

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0

Restrictions:

• Departmental Chair approval required unless student is in last semester of the Cyber Security Degree.

ITSY 2445 - NETWORK DEFENSE AND COUNTERMEASURES

This is a practical application and comprehensive course that includes the planning, design, and construction of defenses for a complex network that will sustain an attack, document events, and mitigate the effects of the attack.

Upon successful completion, students will be able to:

• Assemble network defense tools
• Differentiate between authorized and unauthorized activity on a network
• Respond to a breach in security through the use of countermeasures designed to minimize the impact of the breach on the network
• Document network events
• Present an analysis of network breach and plan for remediation

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0
Prerequisites:

• [ITSY 2300](#) - OPERATING SYSTEM SECURITY
• [ITSY 2330](#) - INTRUSION DETECTION
• [ITSY 2342](#) - INCIDENT RESPONSE & HANDLING

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**RNSG 1003 - IV THERAPY BASICS**

Basic theory and techniques of venipuncture, intravenous (IV) infusions, and blood drawing. Basic information regarding venous system physiology, fluid, electrolytes, blood, blood products, total parenteral nutrition, lipids, and complications of IV therapy.

Grade Basis: L
Lecture hours: 30.0

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**ACNT 2311 - MANAGERIAL ACCOUNTING**

Practical applications of accounting with emphasis on cost behavior, capital management decisions, budgeting, and financial statement analysis.

Upon successful completion, students will be able to:

• Apply accounting concepts to analyze and interpret information for management decision-making.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

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**MATH 0303 - PRE-ALGEBRA**

The course supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate use of technology. Topics include the study of numeracy and the real number system; algebraic concepts, notation, and reasoning; quantitative relationships; mathematical models; and problem solving. This introductory course includes a general overview of basic arithmetic: fractions, decimals, and percent. Other topics include algebraic concepts, integers, solving equations, linear equations, graphing and polynomials. Simple geometric
concepts are also discussed. This course is designed for those students with little or no algebra background. This course does not count toward graduation at NCTC.

Upon successful completion, students will be able to:

- Use appropriate symbolic notation and vocabulary to communicate, interpret, and explain mathematical concepts.
- Define, represent, and perform operations on real numbers, applying numeric reasoning to investigate and describe quantitative relationships and solve real world problems in a variety of contexts.
- Use algebraic reasoning to solve problems that require ratios, rates, percentages, and proportions in a variety of contexts using multiple representations.
- Apply algebraic reasoning to manipulate expressions and equations to solve real world problems.
- Use graphs, tables, and technology to analyze, interpret, and compare data sets.
- Construct and use mathematical models in verbal, algebraic, graphical, and tabular form to solve problems from a variety of contexts and to make predictions and decisions.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**MATH 0305 - BEGINNING ALGEBRA**

This course supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate use of technology. Topics include the study of numeracy and the real number system; algebraic concepts, notation, and reasoning; quantitative relationships; mathematical models; and problem solving. This course also includes basic algebraic concepts and notations, algebraic expressions and equations, factoring polynomials and graphing. Some algebra is required. This course does not count toward graduation at NCTC.

Upon successful completion, students will be able to:

- Use appropriate symbolic notation and vocabulary to communicate, interpret, and explain mathematical concepts.
- Define, represent, and perform operations on real numbers, applying numeric reasoning to investigate and describe quantitative relationships and solve real world problems in a variety of contexts.
- Use algebraic reasoning to solve problems that require ratios, rates, percentages, and proportions in a variety of contexts using multiple representations.
- Apply algebraic reasoning to manipulate expressions and equations to solve real world problems.
- Use graphs, tables, and technology to analyze, interpret, and compare data sets.
- Construct and use mathematical models in verbal, algebraic, graphical, and tabular form to solve problems from a variety of contexts and to make predictions and decisions.

**Grade Basis:** L  
**Credit hours:** 3.0
MATH 0310 - INTERMEDIATE ALGEBRA

A study of relations and functions, inequalities, algebraic expressions and equations (absolute value, polynomial, radical, rational), with a special emphasis on linear and quadratic expressions and equations.

Upon successful completion, students will be able to:

- Define, represent, and perform operations on real and complex numbers.
- Recognize, understand, and analyze features of a function.
- Recognize and use algebraic (field) properties, concepts, procedures (including factoring), and algorithms to combine, transform, and evaluate absolute value, polynomial, radical, and rational expressions.
- Identify and solve absolute value, polynomial, radical, and rational equations.
- Identify and solve absolute value and linear inequalities.
- Model, interpret and justify mathematical ideas and concepts using multiple representations.
- Connect and use multiple strands of mathematics in situations and problems, as well as in the study of other disciplines.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

MATH 1314 - COLLEGE ALGEBRA

In-depth study and applications of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included. This course is intended for STEM (Science, Technology, Engineering, and Mathematics) majors, as well as students pursuing some Business and Education programs. It is a preparation for advanced coursework in mathematics. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

- Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses.
- Recognize and apply polynomial, rational, radical, exponential and logarithmic functions and solve related equations.
- Apply graphing techniques.
- Evaluate all roots of higher degree polynomial and rational functions.
- Recognize, solve and apply systems of linear equations using matrices.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
MATH 1316 - PLANE TRIGONOMETRY

In-depth study and applications of trigonometry including definitions, identities, inverse functions, solutions of equations, graphing, and solving triangles. Additional topics such as vectors, polar coordinates and parametric equations may be included. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
• Graph trigonometric functions and their transformations.
• Prove trigonometric identities.
• Solve trigonometric equations.
• Solve right and oblique triangles.
• Use the concepts of trigonometry to solve applications.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:

• Must meet TSI College Readiness standard for Mathematics

MATH 1324 - MATHEMATICS FOR BUSINESS & SOCIAL SCIENCES

The application of common algebraic functions, including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. The applications include mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices; linear programming; and probability, including expected value. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Apply elementary functions, including linear, quadratic, polynomial, rational, logarithmic, and exponential functions to solving real-world problems.
• Solve mathematics of finance problems, including the computation of interest, annuities, and amortization of loans.
• Apply basic matrix operations, including linear programming methods, to solve application problems.
• Demonstrate fundamental probability techniques and application of those techniques, including expected value, to solve problems.
• Apply matrix skills and probability analyses to model applications to solve real-world problems.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:

- Must meet TSI College Readiness standard for Mathematics

MATH 1325 - CALCULUS FOR BUSINESS & SOCIAL SCIENCES

This course is the basic study of limits and continuity, differentiation, optimization, and graphing, and integration of elementary functions, with emphasis on applications in business, economics, and social sciences. This course is not a substitute for MATH 2413 Calculus I. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Apply calculus to solve business, economics, and social sciences problems.
- Apply appropriate differentiation techniques to obtain derivatives of various functions, including logarithmic and exponential functions.
- Solve application problems involving implicit differentiation and related rates.
- Solve optimization problems with emphasis on business and social sciences applications.
- Determine appropriate technique(s) of integration.
- Integrate functions using the method of integration by parts or substitution, as appropriate.
- Solve business, economics, and social sciences applications problems using integration techniques.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

- MATH 1314 - COLLEGE ALGEBRA
- MATH 1324 - MATHEMATICS FOR BUSINESS & SOCIAL SCIENCES

MATH 1332 - CONTEMPORARY MATHEMATICS (Quantitative Reasoning)

General mathematics course, intended for Non STEM (Science, Technology, Engineering, and Mathematics) majors. Topics include introductory treatments of sets and logic, financial mathematics, probability and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course. Additional topics may be covered. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Apply the language and notation of sets.
• Determine the validity of an argument or statement and provide mathematical evidence.
• Solve problems in mathematics of finance.
• Demonstrate fundamental probability/counting techniques and apply those techniques to solve problems.
• Interpret and analyze various representations of data.
• Demonstrate the ability to choose and analyze mathematical models to solve problems from real-world settings, including, but not limited to, personal finance, health literacy, and civic engagement.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness standard for Mathematics

MATH 1342 - ELEMENTARY STATISTICAL METHODS

Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Use of appropriate technology is recommended. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Explain the use of data collection and statistics as tools to reach reasonable conclusions.
• Recognize, examine and interpret the basic principles of describing and presenting data.
• Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
• Explain the role of probability in statistics.
• Examine, analyze and compare various sampling distributions for both discrete and continuous random variables.
• Describe and compute confidence intervals.
• Solve linear regression and correlation problems.
• Perform hypothesis testing using statistical methods.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness standard for Mathematics
MATH 1350 - MATHEMATICS FOR TEACHERS I

This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the conceptual development of the following: sets, functions, numeration systems, number theory, and properties of the various number systems with an emphasis on problem solving and critical thinking.

Upon successful completion, students will be able to:

- Explain and model the arithmetic operations for whole numbers and integers.
- Explain and model computations with fractions, decimals, ratios, and percentages.
- Describe and demonstrate how factors, multiples, and prime numbers are used to solve problems.
- Apply problem-solving skills to numerical applications.
- Represent and describe relationships among sets using the appropriate mathematical terminology and notation.
- Compare and contrast structures of numeration systems

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Prerequisites:

- MATH 1314 - COLLEGE ALGEBRA

MATH 1351 - MATHEMATICS FOR TEACHERS II

This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the concepts of geometry, measurement, probability, and statistics with an emphasis on problem solving and critical thinking.

Upon successful completion, students will be able to:

- Apply fundamental terms of geometry such as points, lines, and planes to describe two and three dimensional figures.
- Make and test conjectures about figures and geometric relationships.
- Use a variety of methods to identify and justify congruency and similarity of geometric objects.
- Perform geometric transformations.
- Demonstrate fundamental probability techniques and apply those techniques to solve problems.
- Explain the use of data collection and statistics as tools to reach reasonable conclusions.
- Recognize, examine, and utilize the basic principles of describing and presenting data.
- Perform measurement processes and explain the concept of a unit of measurement.
- Develop and use formulas for the perimeter, area, and volume for a variety of figures.
MATH 2318 - LINEAR ALGEBRA

Introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their geometric significance, representing and solving systems of linear equations using multiple methods including Gaussian elimination and matrix inversion, matrices, determinants, linear transformations, quadratic forms, eigenvalues and eigenvector, and applications in science and engineering.

Upon successful completion, students will be able to:

- Be able to solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion.
- Be able to carry out matrix operations, including inverses and determinants.
- Demonstrate understanding of the concepts of vector space and subspace.
- Demonstrate understanding of linear independence, span, and basis.
- Be able to determine eigenvalues and eigenvectors and solve problems involving eigenvalues.
- Apply principles of matrix algebra to linear transformations.
- Demonstrate application of inner products and associated norms.

MATH 2320 - DIFFERENTIAL EQUATIONS

Ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, boundary value problems; application of differential equations to real-world problems.

Upon successful completion, students will be able to:

- Identify homogeneous equations, homogeneous equations with constant coefficients, and exact and linear differential equations.
- Solve ordinary differential equations and systems of equations using: a) Direct integration b) Separation of variables c) Reduction of order d) Methods of
undetermined coefficients and variation of parameters e) Series solutions f) Operator methods for finding particular solutions g) Laplace transform methods

- Determine particular solutions to differential equations with given boundary conditions or initial conditions.
- Analyze real-world problems in fields such as Biology, Chemistry, Economics, Engineering, and Physics, including problems related to population dynamics, mixtures, growth and decay, heating and cooling, electronic circuits, and Newtonian mechanics.

**Grade Basis:** L
**Credit hours:** 3.0
**Lecture hours:** 48.0
**Prerequisites:**
- [MATH 2414] - CALCULUS II

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**MATH 2412 - PRE-CALCULUS MATH**

In-depth combined study of algebra, trigonometry, and other topics for calculus readiness. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Demonstrate and apply knowledge of properties of functions.
- Recognize and apply algebraic and transcendental functions and solve related equations.
- Apply graphing techniques to algebraic and transcendental functions.
- Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
- Prove trigonometric identities.
- Solve right and oblique triangles.

**Grade Basis:** L
**Credit hours:** 4.0
**Lecture hours:** 80.0
**Prerequisites:**
- [MATH 1314] - COLLEGE ALGEBRA

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**MATH 2413 - CALCULUS I**

Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:
• Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.
• Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.
• Determine whether a function is continuous and/or differentiable at a point using limits.
• Use differentiation rules to differentiate algebraic and transcendental functions.
• Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
• Evaluate definite integrals using the Fundamental Theorem of Calculus.
• Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0
Prerequisites:

• MATH 2412 - PRE-CALCULUS MATH

MATH 2414 - CALCULUS II

Differentiation and integration of transcendental functions; parametric equations and polar coordinates; techniques of integration; sequences and series; improper integrals.

Upon successful completion, students will be able to:

• Use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications.
• Use substitution, integration by parts, trigonometric substitution, partial fractions, and tables of anti-derivatives to evaluate definite and indefinite integrals.
• Define an improper integral.
• Apply the concepts of limits, convergence, and divergence to evaluate some classes of improper integrals.
• Determine convergence or divergence of sequences and series.
• Use Taylor and MacLaurin series to represent functions.
• Use Taylor or MacLaurin series to integrate functions not integrable by conventional methods.
• Use the concept of polar coordinates to find areas, lengths of curves, and representations of conic sections.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0
Prerequisites:

• MATH 2413 - CALCULUS I
MATH 2415 - CALCULUS III

Advanced topics in calculus, including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals, and Jacobians, and application of the line integral including Green's Theorem, the Divergence Theorem, and Stokes' Theorem.

Upon successful completion, students will be able to:

- Perform calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
- Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
- Find extrema and tangent planes
- Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, the Divergence Theorem, and Stokes' Theorem.
- Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0
Prerequisites:

- MATH 2414 - CALCULUS II

MCHN 1302 - PRINT READING FOR MACHINING TRADES

A study of blueprints for machining trades with emphasis on machine drawings.

Upon successful completion, students will be able to:

- Identify the elements of machine drawings
- Interpret dimensions, tolerances, and geometric aspects of blueprints
- Explain Geometric Dimensioning and Tolerancing (GD&T) symbols and their meanings

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

MCHN 1343 - MACHINE SHOP MATHEMATICS

Designed to prepare the student with technical, applied mathematics that will be necessary in future machine shop-related courses.

Upon successful completion, students will be able to:

- Identify conversion methods of numbering systems
- Convert fractions to decimals and back
• Use formulas to solve measurement problems

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

MCHN 2303 - FUNDAMENTALS OF COMPUTER NUMERICAL CONTROLLED (CNC) MACHINE CONTROLS

Programming and operation of Computer Numerical Controlled (CNC) machine shop equipment.

Upon successful completion, students will be able to:

• Demonstrate operations of CNC machine controls  
• Compare and contrast the differences between conventional and CNC machines  
• Utilize CNC machine applications for machining operations

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

MCHN 2380 - COOPERATIVE EDUCATION - MACHINE TOOL TECHNOLOGY/MACHINIST

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

• Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry  
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 16.0

MCHN 2434 - OPERATION OF CNC MACHINING CENTERS

A study of CNC operations with an emphasis on vertical machining centers.

Upon successful completion, students will be able to:
• Set up and operate CNC machining centers
• Set machine and tool offsets for machining operations
• Edit the program as required

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 64.0

MCHN 2435 - ADVANCED CNC MACHINING

The study of advanced CNC operation with an emphasis on programming and operations of machining and turning centers.

Upon successful completion, students will be able to:

• Set up and operate CNC machining centers and CNC turning centers
• Select proper tooling with correct speeds and feeds
• Produce a part to specific tolerances

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 64.0

POFM 1017 - MEDICAL ADMINISTRATIVE ASSISTANT

Instruction in medical office procedures including appointment scheduling, medical records creation and maintenance, telephone communications, third party reimbursement and application of governmental health care guidelines.

Grade Basis: L
Lecture hours: 60.0

HITT 1013 - MEDICAL BILLING & CODING

An overview of skills and knowledge in ICD and CPT coding and claims forms for reimbursement of medical services.

Grade Basis: L
Lecture hours: 80.0

HPRS 2302 - MEDICAL TERMINOLOGY FOR ALLIED HEALTH

A study of medical terminology, word origin, structure, and application with an emphasis on building a professional vocabulary required for employment within the allied health care field.

Grade Basis: L
METL 1301 - INTRODUCTION TO METALLURGY

A study of refining, mechanical, and physical properties of ferrous and non-ferrous materials including the theory of alloys, heat treatment, and testing.

Upon successful completion, students will be able to:

- Define the physical and mechanical properties of ferrous and non-ferrous metals
- Describe the steel making process
- Name and describe methods of destructive and nondestructive testing
- Explain the effects of hot working, cold working, welding, machining, and heat treating on metal properties
- Define metallurgical terms and processes
- Recognize defects and their causes

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ENGL 2351 - MEXICAN AMERICAN LITERATURE

A survey of Mexican American/Chicanx literature from Mesoamerica to the present. Students will study literary works of fiction, poetry, drama, essays, and memoirs in relation to their historical, linguistic, political, regional, gendered, and cultural contexts. Texts will be selected from a diverse group of authors, literary movements, and media forms. Topics and themes may include the literary performance of identity and culture, aesthetic mediation of racialization, struggle and protest, and artistic activism. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

- Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
- Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.
- Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods or in different regions.
- Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities.
- Write research-based critical papers about the assigned readings in clear and grammatically correct prose, using various critical approaches to literature.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Prerequisites:
• **ENGL 1301** - COMPOSITION I

Restrictions:

• Must meet TSI College Readiness Standard for Reading and Writing.

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**ELPT 2305 - MOTORS & TRANSFORMERS**

Operation of single and three phase motors and transformers. Includes transformer banking, power factor correction, and protective device. Lab fees apply.

Upon successful completion, students will be able to:

• Match the type of single-phase motor with its principles of operation
• Compare the operating characteristics of the three types of three-phase motors
• Explain the advantages of Wye and Delta connections in motor and transit applications
• Size overcurrent, short circuit, and ground fault protective devices
• Utilize nameplate information

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

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**MRKG 1301 - CUSTOMER RELATIONSHIP MANAGEMENT**

General principles of customer relationship management including skills, knowledge, attitudes, and behaviors.

Upon successful completion, students will be able to:

• Examine internal and external customer relationship management (CRM) strategies

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

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**MRKG 1311 - PRINCIPLES OF MARKETING**

Introduction to the marketing mix functions and process. Includes identification of consumer and organizational needs and explanation of environmental issues.

Upon successful completion, students will be able to:

• Identify the marketing mix components in relation to market segmentation
• Explain the environmental factors which influence consumer and organizational decision-making processes
• Outline a marketing plan
MUAP 1176 - APPLIED VOICE

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply
Upon successful completion, students will be able to:

- Identify vocal literature and demonstrate correct vocal technique.
- Demonstrate vocal production.
- Demonstrate vocal skills necessary for the development and growth of students’
  vocal performance.
- Demonstrate proper breath control, diction, posture, vocal exercises, interpretation,
  and general musicianship.

MUAP 1273 - APPLIED STRINGS

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply
Upon successful completion, students will be able to:

- Demonstrate correct techniques of string instrument playing, knowledge of
  literature, and knowledge of music fundamentals.
- Apply theory as related to the string instrument.
- Demonstrate an ability to read music as applicable to the string instrument.

MUAP 1274 - APPLIED PIANO

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply
Upon successful completion, students will be able to:

- Demonstrate keyboard technique and knowledge of keyboard skills and patterns
  which foster a practical understanding of music rudiments and harmony.
- Demonstrate skill in reading music accurately and musically through exercises
  designed to build visual and aural familiarity with piano score idioms.
- Develop a repertoire utilizing music representative of various stylistic periods.
MUAP 1277 - APPLIED BRASS

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate the ability to identify techniques and literature of individual brass instruments.
- Demonstrate proficiency in playing brass instruments.
- Demonstrate proper breath control, tone production, interpretation, and general musicianship.

Grade Basis: L
Credit hours: 2.0
Lab hours: 16.0

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MUAP 1278 - APPLIED PERCUSSION

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate the ability to identify techniques and literature of individual percussion instruments.
- Demonstrate proficiency in playing of percussion instruments.

Grade Basis: L
Credit hours: 2.0
Lab hours: 16.0

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MUAP 1279 - APPLIED WOODWINDS

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate the ability to identify techniques and literature of individual woodwind instruments.
- Demonstrate proficiency in playing of woodwind instruments.
- Demonstrate proper breath control, tone production, interpretation, and general musicianship.

Grade Basis: L
Credit hours: 2.0
Lab hours: 16.0
MUAP 1272 - APPLIED GUITAR

Individual instruction in voice, instrument, composition, or conducting. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate correct techniques of guitar playing; knowledge of literature; and knowledge of music fundamentals.
- Apply theory as related to the guitar.
- Demonstrate an ability to read music as applicable to the guitar.

Grade Basis: L
Credit hours: 2.0
Lab hours: 16.0

MUEN 1125 - JAZZ BAND

May be repeated for credit. Consisting of 16-21 instrumentalists, the band performs both traditional and contemporary jazz literature. A number of performances occur on and off campus including some travel. Open to all students.

Upon successful completion, students will be able to:

- Demonstrate proficiency in playing individual instruments in an ensemble setting.
- Demonstrate the ability to identify musical literature as it relates to jazz ensemble performance.
- Demonstrate proficiency in jazz improvisation.
- Gain musical competence through public performances.

Grade Basis: L
Credit hours: 1.0
Lab hours: 48.0
Restrictions:
- Audition required.

MUEN 1131 - WIND ENSEMBLE

May be repeated for credit. Study and performance of a wide range of wind instrument repertoire (woodwind, brass, and percussion) from the Renaissance through the Twentieth Century. Open to all students. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate proficiency in playing wind instruments in weekly rehearsals.
- Demonstrate the ability to identify musical literature as it relates to wind instruments.
- Gain musical competence through public performances.

Grade Basis: L
MUEN 1135 - GUITAR ENSEMBLE

May be repeated for credit. Study and performance of a wide range of guitar repertoire from the Renaissance through the Twentieth Century. Open to all students.

Upon successful completion, students will be able to:

- Demonstrate the ability to identify and perform guitar music of extended length.
- Demonstrate the development of guitar proficiency.
- Demonstrate the musical growth through performance situations.
- Demonstrate critical skills in analyzing music for different stylistic periods.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0
Restrictions:
- Audition required.

MUEN 1138 - STRINGS ENSEMBLE

May be repeated for credit. Study and performance of a wide range of string instrument repertoire including the double bass, violin, viola, cello from Renaissance through the 20th Century. Open to all students. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate the ability to identify and perform string music of extended length.
- Demonstrate the development of string instrument proficiency.
- Demonstrate the musical growth through performance situations.
- Demonstrate critical skills in analyzing music for different stylistic periods

Grade Basis: L
Credit hours: 1.0
Lab hours: 48.0
Restrictions:
- Audition required.
MUEN 1151 - COLLEGE ENSEMBLE

May be repeated for credit. Entrance by audition only from College Singers. This group will perform in connection with public relations activities and recruitment for the College. Travel in the service area will be required. Lab fees apply

Upon successful completion, students will be able to:

- Demonstrate the ability to identify and perform vocal music of extended length.
- Demonstrate the development of vocal proficiency.
- Demonstrate the musical growth through performance situations.
- Demonstrate critical skills in analyzing music for different stylistic periods.

Grade Basis: L
Credit hours: 1.0
Lab hours: 48.0

Restrictions:

- Must be a member of MUEN 1154 College Singers

MUEN 1154 - COLLEGE SINGERS

May be repeated for credit. Entrance by audition only. Study and performance of a broad range of music from Renaissance motets and madrigals to pop and show. This group will be involved in public relations activities for the college. Lab fees apply

Upon successful completion, students will be able to:

- Perform music from a wide-range of periods and styles from Renaissance to Jazz and popular music.
- Demonstrate vocal proficiency.
- Demonstrate critical skills in analyzing music from different stylistic periods.
- Demonstrate the ability to be involved in public music performances.

Grade Basis: L
Credit hours: 1.0
Lab hours: 48.0

MUSI 1116 - SIGHT SINGING & EAR TRAINING I

Singing tonal music in treble and bass clefs, and aural study of elements of music, such as scales, intervals and chords, and dictation of basic rhythm, melody, and diatonic harmony.

Upon successful completion, students will be able to:

- Apply a method of sight singing to diatonic melodies in treble and bass clef, and oral demonstration of simple rhythms
- Classify elements of music, such as scales, intervals and chords.
- Transcribe aural rhythms and diatonic melodies.
• Transcribe and analyze aural basic harmonic progressions
• Read and reproduce rhythms in various simple meters.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0

MUSI 1117 - SIGHT SINGING & EAR TRAINING II

Singing tonal music in various clefs, continued aural study of the elements of music, and
dictation of intermediate rhythm, melody, and diatonic harmony.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0

Prerequisites:
• MUSI 1116 - SIGHT SINGING & EAR TRAINING I

MUSI 1181 - CLASS PIANO I

Beginning class instruction in the fundamentals of keyboard technique.

Upon successful completion, students will be able to:

• Produce five finger patterns in major and minor keys.
• Play major and minor scales in selected keys.
• Construct and play chords of different qualities.
• Harmonize a melody
• Perform selected compositions.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0

MUSI 1182 - ADVANCED CLASS PIANO

Advanced beginning class instruction in the fundamentals of keyboard technique.

Upon successful completion, students will be able to:

• Play additional major and minor scales.
• Introduce select chord progressions and concepts of voice leading
• Continued harmonization of melodies.
• Perform selected compositions.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0
MUSI 1192 - BEGINNING CLASS GUITAR

Class instruction in fundamental guitar playing, including technique, music-reading, fretboard theory, melodic and harmonic realizations.

Upon successful completion, students will be able to:

- Show proper left and right hand technique.
- Demonstrate an understanding of basic music reading in first position.
- Perform basic harmonic chord progressions.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0

MUSI 1306 - MUSIC APPRECIATION

Understanding music through the study of cultural periods, major composers, and musical elements. Illustrated with audio recordings and live performances. Course does not apply to a music major degree. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Identify musical works and elements in a variety of styles.
- Analyze the elements and structures of music using appropriate terminology.
- Critically evaluate the influence of social, political, technological, and/or cultural ideas on music
- Articulate the significance of music as an art form within historical, cultural and social contexts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

MUSI 1310 - AMERICAN MUSIC

A general survey of various styles of music of the Americas, including but not limited to jazz, folk, rock, and contemporary music. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Identify the elements, styles, and musicians representative of music within the chosen style(s)
- Analyze the elements and structures of music using appropriate terminology.
- Critically evaluate the influence of social, political, technological, and/or cultural ideas on the chosen musical style(s).
- Articulate an informed personal reflection of the chosen musical style(s).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
MUSI 1311 - MUSIC THEORY I

The study of analysis and writing of tonal melody and diatonic harmony, including fundamental music concepts, scales, intervals, chords, 7th chords, and early four-part writing. Analysis of small compositional forms.

Upon successful completion, students will be able to:

• Construct and identify major scale and all forms of the minor scale.
• Construct and identify triads and seventh chords in all inversions.
• Analyze triads in harmonic context utilizing standard roman-numeral symbols.
• Compose music in standard four-part chorale style.
• Identify small musical forms.
• Demonstrate musical concepts covered in class, including scales, triads, and basic harmonic progression on the keyboard.
• Demonstrate an understanding of rhythmic meter and note duration through score analysis and composition.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

MUSI 1312 - MUSIC THEORY II

Continuation of MUSI 1311. The study of analysis and writing of tonal melody and diatonic harmony, including all diatonic chords and seventh chords in root position and inversions, non-chord tones, and functional harmony. Introduction to more complex topics, such as modulation, may occur. Optional correlated study at the keyboard.

Upon successful completion, students will be able to:

• Construct and identify all triads and seventh chords in root position and inversions.
• Properly utilize and identify all non-chord tones.
• Analyze harmonic progressions utilizing standard roman-numeral symbols.
• Compose original harmonic progressions that properly utilize functional harmony.
• Demonstrate on the keyboard musical concepts covered in class, including triads in inversions and progressions with non-chord tones.
• Demonstrate an understanding of rhythmic meter and note duration through score analysis and composition.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• MUSI 1311 - MUSIC THEORY I
MUSI 2116 - SIGHT SINGING & EAR TRAINING III

Singing more difficult tonal music in various clefs, aural study including dictation of more complex rhythm, melody, chromatic harmony, and extended tertian structures.

Upon successful completion, students will be able to:

- Apply a method of sight singing to more difficult tonal melodies, oral demonstration of complex rhythms.
- Classify more difficult elements of music, including extended-tertian chords, compound intervals, and non-diatonic scales.
- Transcribe more complex rhythms and diatonic and non-diatonic melodies.
- Transcribe and analyze diatonic and chromatic harmonies.
- Read and reproduce rhythms in various meters, including syncopation and irregular beat divisions.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0
Prerequisites:

- MUSI 1116 - SIGHT SINGING & EAR TRAINING I
- MUSI 1117 - SIGHT SINGING & EAR TRAINING II

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MUSI 2117 - SIGHT SINGING & EAR TRAINING IV

Singing advanced tonal music and introduction of modal and post-tonal melodies. Aural study including dictation of advanced rhythm, melody, and harmony.

Upon successful completion, students will be able to:

- Apply a method of sight singing to more difficult diatonic and non-diatonic melodies, including modes and non-tonal scales.
- Transcribe more complex rhythms, including contemporary materials.
- Transcribe increasingly more chromatic melodies.
- Transcribe and analyze diatonic and chromatic harmonies.
- Read and reproduce rhythms in various meters, including asymmetrical meters, syncopation, and irregular beat divisions.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 32.0
Prerequisites:

- MUSI 1116 - SIGHT SINGING & EAR TRAINING I
- MUSI 1117 - SIGHT SINGING & EAR TRAINING II
- MUSI 2116 - SIGHT SINGING & EAR TRAINING III
MUSI 2311 - MUSIC THEORY III

Advanced harmony voice leading, score analysis and writing of more advanced tonal harmony including chromaticism and extended-tertian structures. Optional correlated study at the keyboard.

Upon successful completion, students will be able to:

- Construct and identify extended-tertian and chromatic harmonies.
- Analyze musical compositions, which include various forms of tonal modulation utilizing standard roman-numeral symbols.
- Demonstrate proper voice-leading practices through composition in appropriate styles.
- Demonstrate concepts covered in class on the keyboard, including progressions that utilize modulation.
- Demonstrate an understanding of rhythmic meter and note duration through score analysis and composition.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0  
Prerequisites:

- MUSI 1311 - MUSIC THEORY I  
- MUSI 1312 - MUSIC THEORY II

MUSI 2312 - MUSIC THEORY IV

Continuation of MUSI 2311. Continuation of advanced chromaticism and survey of analytical and compositional procedures in post-tonal music. Optional correlated study at the keyboard.

Upon successful completion, students will be able to:

- Construct and identify advanced chromatic harmonies.
- Analyze musical compositions that utilize advanced chromatic harmonies and foreign-key modulation techniques.
- Analyze musical compositions that utilize a variety of post-tonal practices.
- Compose music utilizing appropriate post-tonal practices.
- Demonstrate musical concepts covered in class on the keyboard.
- Demonstrate an understanding of rhythmic meter and note duration through score analysis and composition.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0  
Prerequisites:

- MUSI 1311 - MUSIC THEORY I  
- MUSI 1312 - MUSIC THEORY II
NCBM 0100 or 01XX - NON-COURSE BASED OPTION FOR MATHEMATICS

The NCBM supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate use of technology. Topics include the study of numeracy and the real number system; algebraic concepts, notation, and reasoning; quantitative relationships; mathematical models; and problem solving. This course is a developmental education intervention and supports topics in MATH 1332 or MATH 1342. Course may include basic study skills such as note-taking, time management, learning styles, math anxiety, and test-taking strategies. Must be taken concurrently with a MATH 1332 or MATH 1342 course. NCBM 0100 indicates an intervention paired with any section of MATH1332 or 1342. An NCBM course specifically tied to a MATH 1332 or 1342 course will be indicated by the last two digits (e.g., MATH 1332 + NCBM 0132). This course does not count toward graduation at NCTC.

Upon successful completion, students will be able to:

- Use appropriate symbolic notation and vocabulary to communicate, interpret, and explain mathematical concepts.
- Define, represent, and perform operations on real numbers, applying numeric reasoning to investigate and describe quantitative relationships and solve real world problems in a variety of contexts.
- Use algebraic reasoning to solve problems that require ratios, rates, percentages, and proportions in a variety of contexts using multiple representations.
- Apply algebraic reasoning to manipulate expressions and equations to solve real world problems.
- Use graphs, tables, and technology to analyze, interpret, and compare data sets.
- Construct and use mathematical models in verbal, algebraic, graphical, and tabular form to solve problems from a variety of contexts and to make predictions and decisions.

Grade Basis: P
Credit hours: 1.0
Lecture hours: 16.0

NCBM 0205 - DEVELOPMENTAL MATHEMATICS - BASE INTERVENTION

The BASE NCBO supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate use of technology. Topics include the study of numeracy and the real number system; algebraic concepts, notation, and reasoning; quantitative relationships; mathematical models; and problem solving. This intervention is designed specifically for students assessed at BASE levels 3-4 and must be part of a student’s co-enrollment (co-requisite) enrollment: as a mainstreamed intensifier providing contact hours
for additional, just-in-time instructional support for the student’s success in the
developmental math course, or as a contextualized and/or integrated basic skills
instructional support for a Career/Technical Education course. This course is a BASE
developmental education intervention and supports topics in mathematics such as
fractions, integers, decimals, percentages, algebraic concepts, solving equations, and
polynomials. This course is designed for students with little algebraic background and
will be paired with MATH 0305. The course may also include basic study skills such as
note-taking, time management, learning styles, math anxiety, and test-taking strategies.
This course does not count toward graduation at NCTC.

Upon successful completion, students will be able to:

- Use appropriate symbolic notation and vocabulary to communicate, interpret, and
  explain mathematical concepts.
- Define, represent, and perform operations on real numbers, applying numeric
  reasoning to investigate and describe quantitative relationships and solve real
  world problems in a variety of contexts.
- Use algebraic reasoning to solve problems that require ratios, rates, percentages,
  and proportions in a variety of contexts using multiple representations.
- Apply algebraic reasoning to manipulate expressions and equations to solve real
  world problems.
- Use graphs, tables, and technology to analyze, interpret, and compare data sets.
- Construct and use mathematical models in verbal, algebraic, graphical, and tabular
  form to solve problems from a variety of contexts and to make predictions and
  decisions.

Grade Basis: P
Credit hours: 2.0
Lecture hours: 32.0

NCTC 1001 - FIRST YEAR EXPERIENCE

The First Year Experience Course is a one credit, 4 week course designed to provide
students with the tools needed to persist and succeed at North Central Texas
College. Topics covered in the course include: learning styles, study techniques,
note-taking, test-taking, personal wellness and finance, time management, career
and educational planning, and interpersonal skill development. First time college
students, excluding dual credit, are required to pass NCTC 1001. Students that have
successfully completed 9 hours of dual credit courses on campus, are not required to
enroll. The course does not satisfy requirements for any degree plan at NCTC, has no
prerequisites, and is non-transferable.

Grade Basis: L
Credit hours: 1.0

NURA 1060 - CNA CLINICAL

A health-related work-based learning experience that enables the student to apply
specialized occupational theory, skills, and concepts. Direct supervision is provided by
the clinical professional.
MCHN 2431 - OPERATION OF CNC TURNING CENTERS

CNC operations with an emphasis on turning centers.

Upon successful completion, students will be able to:

- Set up and operate CNC turning centers
- Set the tool and workpiece offsets for machining operations
- Edit the program as required

OSHT 1320 - ENERGY INDUSTRIAL SAFETY

An overview for industrial workers of state/federal regulations and guidelines which require industrial safety training. Topics include the 29 C.F.R. 1910, 1926 and National Fire Protection Association (NFPA) 70E standards such as confined space entry, emergency action, lock out/tag out, arc flash, and other work related subjects.

Upon successful completion, students will be able to:

- Describe the basic components of safety, health, and environmental systems as defined by the Occupational Safety and Health Administration
- Describe Hazardous Waste Operator (HAZWOPER) standards
- Locate Material Safety Data Sheets (MSDS) and interpret the data
- Select and don Personal Protective Equipment (PPE)
- Perform lock out and tag out procedures
- Complete a confined space and hot work permit
- Select and employ fall protection equipment
- Fill out a Job Hazard Analysis (JHA)

EMSP 2364 - PRACTICUM - EMERGENCY MEDICAL TECHNOLOGY/TECHNICIAN EMT/PARAMEDIC

A method of instruction providing detailed education, training an work-based experience, and direct patient/client care, generally at a clinical site. Specific detailed learning objectives are developed for each course by the faculty. On-site clinical instruction, supervision, evaluation, and placement are the responsibility of the college faculty. Clinical experiences are unpaid external learning experiences. Course may be repeated if topics and learning outcomes vary.
HPRS 2201 - PATHOPHYSIOLOGY

Study of the pathology and general health management of diseases and injuries across the life span. Topics include etiology, symptoms, and the physical and psychological reactions to diseases and injuries.

ACNT 1329 - PAYROLL & BUSINESS TAX ACCOUNTING

A study of payroll procedures, taxing entities, and reporting requirements of local, state, and federal taxing authorities in a manual and computerized environment.

Upon successful completion, students will be able to:

- Calculate employee payroll and employer-related taxes
- Prepare related tax forms
- Manage payroll records required to reflect current laws and regulations

PTRT 2359 - PETROLEUM COMPUTER APPLICATIONS

Computer applications used in the petroleum industry. Includes the automation of open and closed loop systems.

Upon successful completion, students will be able to:

- Describe the different computer systems used to monitor and control petroleum processes
- Troubleshoot components and operating systems of modern process control

HPRS 2300 - PHARMACOLOGY FOR HEALTH PROFESSIONS

A study of drug classifications, actions, therapeutic uses, adverse effects, routes of administration, and calculation of dosages.
PHRA 1001 - PHARMACY TECHNICIAN

An overview of the qualifications, operational guidelines, and job duties of a pharmacy technician. Instruction includes drug interactions, terminology, and dosage calculations.

Grade Basis: L
Lecture hours: 60.0

PHED 1108 - BOWLING I

This course is designed to introduce the student to basic bowling skills, etiquette, safety procedures, and scoring.

Upon successful completion, students will be able to:

• Exhibit proper etiquette and safety while bowling and spectating.
• Demonstrate the proper grip, stance, approach, and delivery.
• Define basic terminology associated with bowling.
• Show mastery of the rules and scoring.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1109 - BOWLING II

This course is designed to introduce the student to basic bowling skills, etiquette, safety procedures, and scoring.

Upon successful completion, students will be able to:

• Exhibit proper etiquette and safety while bowling and spectating.
• Demonstrate the proper grip, stance, approach, and delivery.
• Define basic terminology associated with bowling.
• Show mastery of the rules and scoring.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1110 - GOLF I

This course is designed to introduce the student to basic golf skills, etiquette, safety procedures, and swing.

Upon successful completion, students will be able to:

• Understand scoring in golf.
• Identify rules dealing with water hazards.
• Knowledge of club assignment.
• Understanding etiquette on putting.
• Knowledge of time management and golf etiquette.

**Grade Basis:** L  
**Credit hours:** 1.0  
**Lecture hours:** 48.0

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**PHED 1111 - GOLF II**

This course is designed to introduce the student to basic golf skills, etiquette, safety procedures, and swing.

Upon successful completion, students will be able to:

• Identify rules dealing with water hazards.  
• Knowledge of tee box etiquette.  
• Knowledge of bag and club rules.  
• Identify markers and course layout.  
• Knowledge of fairway etiquette.

**Grade Basis:** L  
**Credit hours:** 1.0  
**Lecture hours:** 48.0

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**PHED 1114 - VARSITY SPORTS I**

This course is designed to support the institutional mission to provide competitive athletic opportunities for student/athletes to pursue academic success, physical and emotional well-being and social development.

Upon successful completion, students will be able to:

• Have knowledge and understanding of sport specific rules.  
• Understand and demonstrate competitive team play and sport related skills.  
• Demonstrate positive teamwork and sportsmanship.

**Grade Basis:** L  
**Credit hours:** 1.0  
**Lecture hours:** 48.0  
**Restrictions:**  
• Varsity athletes only.
PHED 1115 - VARSITY SPORTS II

This course is designed to support the institutional mission to provide competitive athletic opportunities for student/athletes to pursue academic success, physical and emotional well-being and social development.

Upon successful completion, students will be able to:

- Have knowledge and an understanding of offensive and defensive tactics.
- Develop and perform teamwork with all members of the team.
- Acknowledge the importance of understanding scoring system, rules, rotations and communication on the field/court.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0
Restrictions:

- Varsity athletes only.

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PHED 1116 - VARSITY CONDITIONING I

This course is designed to support the institutional mission to provide competitive athletic opportunities for student/athletes to pursue academic success, physical and emotional well-being and social development.

Upon successful completion, students will be able to:

- Define aerobic and anaerobic exercise and recognize the difference.
- Have knowledge of simple skeletal and muscular systems of the body.
- Understand the importance of proper nutrition and hydration in an individual exercise program.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0
Restrictions:

- Varsity athletes only.

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PHED 1117 - VARSITY CONDITIONING II

This course is designed to support the institutional mission to provide competitive athletic opportunities for student/athletes to pursue academic success, physical and emotional well-being and social development.

Upon successful completion, students will be able to:

- Understand the purpose of exercise movements as they relate to muscle function and balance.
• Demonstrate basic principles of training: Cardiovascular, muscular strength and endurance, flexibility and body composition.
• Execute discipline, hard work and teamwork.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 48.0  
Restrictions:  
• Varsity athletes only.

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**PHED 1118 - JOGGING/WALKING I**

This course is designed to improve or maintains the student's cardiovascular endurance and knowledge of cardiovascular fitness such as heart rates, body mass index and body fat percentage according to the student's age, gender, height and weight.

Upon successful completion, students will be able to:

• Have Knowledge of the benefits of jogging and walking for cardiovascular health.  
• Explain and demonstrate basic concepts of jogging and walking for weight loss.  
• Understand the role of proper nutrition and hydration before, during and after exercise.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 48.0

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**PHED 1119 - JOGGING/WALKING II**

This course is designed to improve or maintain the student's cardiovascular endurance and knowledge of cardiovascular fitness such as heart rates, body mass index and body fat percentage according to the student's age, gender, height and weight.

Upon successful completion, students will be able to:

• Have Knowledge of the benefits of jogging and walking for cardiovascular health.  
• Explain and demonstrate basic concepts of jogging and walking for weight loss.  
• Understand the role of proper nutrition and hydration before, during and after exercise.

Grade Basis: L  
Credit hours: 1.0  
Lecture hours: 48.0

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**PHED 1120 - AEROBIC WORKOUT I**

This course is designed to improve the student's maximum muscular and cardiovascular endurance.
Upon successful completion, students will be able to:

- Determine maximum heart rate
- Identify aerobic and anaerobic exercise
- Define flexibility, agility, balance and coordination
- Understand the importance of flexibility, agility, balance and coordination
- Calculate body fat percentage
- List different types of aerobic activity

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1121 - AEROBIC WORKOUT II

This course is designed to improve the student's maximum muscular and cardiovascular
durability.

Upon successful completion, students will be able to:

- Identify aerobic and anaerobic exercise
- Define flexibility, agility, balance and coordination
- Understand the importance of flexibility, agility, balance and coordination
- Calculate body fat percentage
- List different types of aerobic activity
- Determine what constitutes Anaerobic Threshold
- Describe reaction time as it pertains to exercise
- Knowledgeable in muscular endurance and strength
- Identify how oxygen is carried through the blood

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1124 - WEIGHT TRAINING I/JOGGING

This course is designed to improve the student's muscular strength, endurance, and
cardiovascular endurance and introduce the student to the basic muscular groups.

Upon successful completion, students will be able to:

- Have knowledge of the human muscular system
- Demonstrate and have knowledge of the benefits of weight training in a total fitness program.
- Have knowledge of popular exercises for sport specific training.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0
PHED 1125 - WEIGHT TRAINING II/JOGGING

This course is designed to improve the student's muscular strength, endurance, and cardiovascular endurance and introduce the student to the basic muscular groups.

Upon successful completion, students will be able to:

- Know the importance of nutrition in weight training and conditioning performance.
- Understand various weight training and conditioning programs for specific sports.
- Knowledge of what muscles a specific exercise works as well as proper technique for performing certain lifts.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1126 - MARTIAL ARTS I

This course is designed to condition the body in a manner to enhance ones ability to do moves and activities in martial arts. This will encompass conditioning moves targeted directly to the parts of the body required to improve ones flexibility, punches, kicks and cardio.

Upon successful completion, students will be able to:

- Demonstrate proper endurance routines.
- Demonstrate proper stretching and flexibility routines.
- Demonstrate the 15 choreographed moves of Tai Chi.
- Demonstrate Upper and Lower body Kata Forms.
- Written test on History, Terminology, Etiquette, Stories and Keynotes.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1127 - MARTIAL ARTS II

This course is designed to condition the body in a manner to enhance ones ability to do moves and activities in martial arts. This will encompass conditioning moves targeted directly to the parts of the body required to improve ones flexibility, punches, kicks and cardio.

Upon successful completion, students will be able to:

- Name and demonstrate 3 Falling Techniques @ 100%
- Name and demonstrate 4 kicks and blocks with reaction @ 100%
- Name and demonstrate 4 Punches and blocks with reaction @ 100%
- Name and demonstrate 10 Break nerves with reaction @ 100%
- Memorize and verbally test 20 terminology terms @ 100%

Grade Basis: L
PHED 1134 - BASKETBALL I

This course is designed to teach the student the rules, skills, and fundamentals necessary to play the game. The course is also designed to improve the student’s physical fitness.

Upon successful completion, students will be able to:

- Gain knowledge of court dimensions for a high school court.
- Gain knowledge of the three point line distance on a high school court.
- Gain knowledge of the free throw line distance from the backboard.
- Gain knowledge of the proper game ball sizes for high school boys and girls.
- Gain knowledge of the terms consistent with the game.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1135 - BASKETBALL II

This course is designed to teach the student the rules, skills, and fundamentals necessary to play the game. The course is also designed to improve the student’s physical fitness.

Upon successful completion, students will be able to:

- Students will be able to demonstrate knowledge of game official’s duties.
- Students will gain general principals of offensive strategies.
- Students will gain general principals of defensive strategies.
- Students will gain an understanding of basketball terminology.
- Students will be to identify the three main passing techniques.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1140 - CARDIO FITNESS I

This course is designed to improve the student's maximum muscular and cardio vascular endurance through a variety of exercises and help teach the basics of the muscles used during physical activity in cardio and weight lifting and making healthy food choices and how they all work together for overall cardio fitness.

Upon successful completion, students will be able to:

- Demonstrate basic knowledge of all the various nutrition categories.
- Knowledge of determining what maximum heart rate is and how to find theirs.
• All students will have the knowledge of identifying the different muscle groups and their functions.
• Students will be able to define what fitness is and how it affects them.
• Students will be able to define what a calorie is.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1141 - CARDIO FITNESS II

This course is designed to improve the student's maximum muscular and cardio vascular endurance through a variety of exercises and help teach the basics of the muscles used during physical activity in cardio and weight lifting and making healthy food choices and how they all work together for overall cardio fitness.

Upon successful completion, students will be able to:

• Students will be able to calculate recommended percentage of maximum heart rate for exercising and where the range is for themselves.
• Students will be able to define RPE, what it stands for and how it affects everyday life before and after the use of exercise.
• All students will be able calculate calories to pound formula during and after exercising.
• Students will be able to define DOMS and what it does.
• Students will be able to name the three muscles types and what they do.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1146 - YOGA I

This course is designed to improve the student's body flexibility, muscular strength and endurance, breath capacity, posture, balance and concentration.

Upon successful completion, students will be able to:

• Importance of modification of the pose
• Functional muscular strength and flexibility
  • Postural alignment

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0
PHED 1147 - YOGA II

This course is designed to improve the student's body flexibility, muscular strength and endurance, breath capacity, posture, balance and concentration.

Upon successful completion, students will be able to:

• Diverse Styles of Yoga and Use
• Muscle Group Interaction
• Benefits of Yoga

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1148 - PILATES I

This course is designed to improve the student's knowledge of the basic principles of biomechanical body awareness, breath capacity, muscular endurance and stamina in accordance to the Pilates Principles.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1149 - PILATES II

This course is designed to improve the student's knowledge of the basic principles of biomechanical body awareness, breath capacity, muscular endurance and stamina in accordance to the Pilates Principles.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 1301 - INTRODUCTION TO PHYSICAL FITNESS & SPORT

The purpose of this course is to provide students with an introduction to human movement that includes the historical development of physical education, exercise science and sport. This course offers the student both an introduction to the knowledge base, as well as, information on expanding career opportunities.

Upon successful completion, students will be able to:

• Distinguish between and identify terminology and research within the sub-disciplines in the field of Kinesiology and their application to diverse careers.
• Summarize the historical and philosophical approaches to physical activity, physical education, exercise science and sport.
• Identify the characteristics of a physically educated person and the importance of assessment and advocacy in physical education, exercise science, and sport.
• Discuss how the changing nature of education and technological advances may influence physical education, exercise science, and sport in the future.
• Identify major professional organizations, foundations, and associations supporting physical activity at local, state, national and international levels as well as data tools and resources.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

PHED 1308 - SPORTS OFFICIATING

The purpose of this course is to study the officiating requirements for sports and games with an emphasis on mechanics, rule interpretation, and enforcement.

Upon successful completion, students will be able to:

• Interpret and enforce contest rules in a variety of sports and games.
• Demonstrate officiating mechanics and techniques in a variety of sports and games for appropriate age and skill level.
• Develop a personal philosophy guided by rules, ethics, and etiquette necessary to be an effective official.
• Apply problem-solving techniques relevant to officiating a sports contest and how to maintain a positive self-image in a group contest environment.
• Assess and manage player, coach, and spectator behaviors when officiating to provide a healthy sport environment.
• Identify governing bodies of various sports and procedures for becoming an official.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

PHED 1321 - COACHING, SPORTS & ATHLETICS

Study of the history, theories, philosophies, rules, and terminology of competitive sports. Includes coaching techniques.

Upon successful completion, students will be able to:

• Develop a philosophy of coaching based on sound educational principals
• Become familiar with the scope and content of the fields of Sport Psychology, Sport Pedagogy, Sport Physiology and Sport Management.
• Develop an understanding of the role of sports in the schools, and their relationship to the home, community, and academic environments.
• Become aware of the problem related to safety, liability and law in relation to facilities, conduct of practices and competitive events.
• Discussed policies related to team discipline, substance abuse, conditioning, conduct of players, grades, response to officials, and team cohesiveness.

Grade Basis: L
PHED 1338 - CONCEPTS OF PHYSICAL FITNESS

This course is designed to familiarize students with knowledge, understanding, and values of health related fitness and its influence on the quality of life emphasizing the development and implementation of fitness programs.

Upon successful completion, students will be able to:

• Describe the elements of health related physical fitness, performance related physical fitness, inactivity, and hypokinetic diseases on health and wellness
• Distinguish the influence of personal behavior and responsibility on the development, treatment, and prevention of infectious diseases, stress, and addictions.
• Compare and contrast the relationships among physical activity, nutrition, and body composition.
• Participate in physical fitness activities that will aid in assessing personal health related fitness
• Design, implement, and evaluate fitness programs to promote societal lifetime physical fitness.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

PHED 2101 - RACQUETBALL

This course is designed to instruct the student in rules, terminology, court dimensions and the playing of singles, doubles, cut-throat, and tournament formatting.

Upon successful completion, students will be able to:

• Demonstrate the grip, strokes, serves, and footwork.
• Show mastery of the games rules, terminology, history, and strategy.
• Exhibit proper etiquette while playing and spectating the sport.
• Participate in tournament play.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

PHED 2356 - CARE & PREVENTION OF ATHLETIC INJURIES

Prevention and care of athletic injuries with emphasis on qualities of a good athletic trainer, avoiding accidents and injuries, recognizing signs and symptoms of specific sports injuries and conditions, immediate and long-term care of injuries, and administration procedures in athletic training.
Upon successful completion, students will be able to:

- Organize and administer a sports medicine program including a sports medical coverage team, designing a facility, developing conditioning programs, and pre-participation physical exams. Organize and administer pre-participation sports physicals.
- Distinguish signs and symptoms of environmental injuries and conditions that occur in sports such as heat illness, hypothermia, lightning safety and participation at altitude.
- Perform the steps of a primary and secondary survey of an injured athlete
- Learn the basic anatomy, signs and symptoms, and evaluation techniques of sports injuries to the ankle, leg, knee, thigh, high, should elbow, hand, and head.
- Perform basic wrapping and taping techniques for sports injuries.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

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**PHIL 1301 - INTRODUCTION TO PHILOSOPHY**

A study of major issues in philosophy and/or the work of major philosophical figures in philosophy. Topics in philosophy may include theories of reality, theories of knowledge, theories of value, and their practical applications. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Read, analyze, and critique philosophical texts.
- Demonstrate knowledge of key concepts, major arguments, problems, and terminology in philosophy.
- Present logically persuasive arguments both orally and in writing.
- Demonstrate critical thinking skills in evaluation an application of philosophical concepts to various aspects of life.
- Evaluate the personal and social responsibilities of living in a diverse world.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0  
Restrictions:

- Must meet TSI College Readiness Standard for Reading.

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**PHIL 2303 - INTRODUCTION TO FORMAL LOGIC**

The purpose of the course is to introduce the student symbolic logic, including syllogisms, propositional and predicate logic, and logical proofs in a system of rules.

Upon successful completion, students will be able to:
• Determine the logical structure of English arguments by identifying premises and conclusions.
• Understand basic concepts in logic, such as truth functionality, validity, soundness, counter-examples, tautology, self-contradiction, logical equivalence, logical contradictoriness, and logical consistence.
• Translate English statements into propositional and/or predicate notation.
• Determine the validity of symbolic propositional or predicate arguments using such methods as direct/indirect truth tables, natural deduction, and/or the finite universe method.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading

PHIL 2306 - INTRODUCTION TO ETHICS

The systematic evaluation of classical and/or contemporary ethical theories concerning the good life, human conduct in society, morals, and standards of value. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Read, analyze, and critique philosophical texts.
• Define and appropriately use important terms such as relativism, virtue, duty, rights, utilitarianism, natural law, egoism, altruism, autonomy, and care ethics.
• Demonstrate knowledge of major arguments and problems in ethics.
• Present and discuss well-reasoned ethical positions in writing.
• Apply ethical concepts and principles to address moral concerns.
• Apply course material to various aspects of life.
• Discuss ways of living responsibly in a world where people have diverse ethical beliefs.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading

PLAB 1023 - CERTIFIED PHLEBOTOMY TECHNICIAN

Skill development in the performance of a variety of blood collection methods using proper techniques and standard precautions. Includes vacuum collection devices, syringes, capillary skin puncture, butterfly needles and blood culture, and specimen collection on adults, children, and infants. Emphasis on infection prevention, patient
identification, specimen labeling, quality assurance, specimen handling, processing, accessioning, professionalism, ethics, and medical terminology.

**Grade Basis:** L  
**Lecture hours:** 60.0

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**PHYS 1401 - COLLEGE PHYSICS I**

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, mechanical waves and sound, physical systems, Newton's Laws of Motion, and gravitation and other fundamental forces with emphasis on problem solving. Laboratory activities will reinforce fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, mechanical waves and sound, physical systems, Newton’s Laws of Motion, and gravitation and other fundamental forces; emphasis will be on problem solving. Lab fees apply. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
- Apply Newton’s laws to physical problems including gravity
- Solve problems using principles of energy.
- Use principles of impulse and linear momentum to solve problems.
- Solve problems in rotational kinematics and dynamics, including the determination of the location of the center of mass and center of rotation for rigid bodies in motion.
- Solve problems involving rotational and linear motion.
- Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
- Demonstrate an understanding of equilibrium, including the different types of equilibrium.
- Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
- Solve problems using the principles of heat and thermodynamics.
- Solve basic fluid mechanics problems.
- Demonstrate techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.
- Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.

**Grade Basis:** L  
**Credit hours:** 4.0  
**Lecture hours:** 48.0  
**Lab hours:** 48.0  

**Prerequisites:**

- **MATH 1314** - COLLEGE ALGEBRA
PHYS 1402 - COLLEGE PHYSICS II

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, optics, and modern physics topics; with emphasis on problem solving. Laboratory activities will reinforce fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, optics, and modern physics topics; with emphasis on problem solving. Lab fees apply

Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Solve problems involving the inter-relationship of fundamental charged particles, and electrical forces, fields, and currents.
- Apply Kirchhoff’s Rules to analysis of circuits with potential sources, capacitance, inductance, and resistance, including parallel and series capacitance and resistance
- Solve problems in the electrostatic interaction of point charges through the application of Coulomb’s Law.
- Solve problems involving the effects of magnetic fields on moving charges or currents, and the relationship of magnetic fields to the currents that produce them.
- Use Faraday’s and Lenz’s laws to determine electromotive forces and solve problems involving electromagnetic induction.
- Articulate the principles of reflection, refraction, diffraction, interference, and superposition of waves.
- Describe the characteristics of light and the electromagnetic spectrum.
- Develop techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.
- Demonstrate the collections, analysis, and reporting of data using the scientific method.
- Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0

Prerequisites:

- PHYS 1401 - COLLEGE PHYSICS I
PHYS 1415 - PHYSICAL SCIENCE

Physics Science course is designed for non-science majors. Surveys topics from physics, chemistry, geology, astronomy, and meteorology. Lab fees apply Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Use the principles of mechanics to solve problems involving motion, forces, energy, momentum, and repetitive motion.
• Describe the basic principles of fluid mechanics.
• Demonstrate an understanding of the principles of heat and thermodynamics.
• Solve basic problems involving electricity.
• Describe the relationship between electricity and magnetism.
• Describe the characteristics of light and the electromagnetic spectrum.
• Demonstrate an understanding of the atomic model and nuclear energy.
• Demonstrate understanding of the basis of science using terms such as scientific method, hypothesis, law, theory, and pseudoscience.
• Discuss energy resources.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

PHYS 2425 - UNIVERSITY PHYSICS I

Fundamental principles of physics, using calculus, for science, computer science, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving. Basic laboratory experiments supporting theoretical principles involving the principles and applications of classical mechanics, including harmonic motion and physical systems; experimental design, data collection and analysis, and preparation of laboratory reports. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

• Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
• Solve problems involving forces and work.
• Apply Newton’s laws to physical problems.
• Identify the different types of energy.
• Solve problems using principles of conservation of energy.
• Define the principles of impulse, momentum, and collisions.
• Use principles of impulse and momentum to solve problems.
• Determine the location of the center of mass and center of rotation for rigid bodies in motion.
• Discuss rotational kinematics and dynamics and the relationship between linear and rotational motion.
• Solve problems involving rotational and linear motion.
- Define equilibrium, including the different types of equilibrium.
- Discuss simple harmonic motion and its application to real-world problems.
- Solve problems involving the First and Second Laws of Thermodynamics.
- Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
- Conduct basic laboratory experiments involving classical mechanics.
- Relate physical observations and measurements involving classical mechanics to theoretical principles.
- Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
- Design fundamental experiments involving principles of classical mechanics.
- Identify appropriate sources of information for conducting laboratory experiments involving classical mechanics.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
Prerequisites:
- MATH 2413 - CALCULUS I

PHYS 2426 - UNIVERSITY PHYSICS II

Principles of physics for science, computer science, and engineering majors, using calculus, involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics. Laboratory experiments supporting theoretical principles presented in the lecture involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light and optics, experimental design, data collection and analysis, and preparation of laboratory reports. Lab fees apply Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Articulate the fundamental concepts of electricity and electromagnetism, including electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell’s Laws.
- State the general nature of electrical forces and electrical charges, and their relationship to electrical current.
- Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.
- Apply Kirchhoff’s Laws to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
- Calculate the force on a charged particle between the plates of a parallel-plate capacitor.
- Apply Ohm’s law to the solution of problems.
- Describe the effects of static charge on nearby materials in terms of Coulomb’s Law.
- Use Faraday’s and Lenz’s laws to find the electromotive forces.
• Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
• Articulate the principles of reflection, refraction, diffraction, interference and superposition of waves.
• Solve real-world problems involving optics, lenses, and mirrors.
• Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
• Conduct basic laboratory experiments involving electricity and magnetism.
• Relate physical observations and measurements involving electricity and magnetism to theoretical principles.
• Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
• Design fundamental experiments involving principles of electricity and magnetism.
• Identify appropriate sources of information for conducting laboratory experiments involving electricity and magnetism.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 48.0
Prerequisites:

• MATH 2414 - CALCULUS II
• PHYS 2425 - UNIVERSITY PHYSICS I

MDCA 1064 - CLINICAL MEDICAL ASSISTANT EXTERNSHIP

Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

Grade Basis: P

PLAB 1060 - PHLEBOTOMY TECHNICIAN EXTERNSHIP

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: P

ACNT 1325 - PRINCIPLES OF ACCOUNTING I


Upon successful completion, students will be able to:

• Apply generally accepted accounting principles, concepts, and procedures
• Complete the accounting cycle for service and merchandising enterprises

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

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**ACCT 2301 - PRINCIPLES OF FINANCIAL ACCOUNTING**

This course is an introduction to the fundamental concepts of financial accounting as prescribed by U.S. generally accepted accounting principles (GAAP) and applied to transactions and events that affect business organizations. Students will examine the procedures and systems to accumulate, analyze, measure, and record financial transactions. Students will use recorded financial information to prepare a balance sheet, income statement, statement of cash flows, and statement of shareholders' equity to communicate the business entity's results of operations and financial position to users of financial information who are external to the company. Students will study the nature of assets, liabilities, and owners' equity while learning to use reported financial information for purposes of making decisions about the company. Students will be exposed to International Financial Reporting Standards (IFRS).

Upon successful completion, students will be able to:

- Use basic accounting terminology and the assumptions, principles, and constraints of the accounting environment.
- Identify the difference between accrual and cash basis accounting.
- Analyze and record business events in accordance with U.S. generally accepted accounting principles (GAAP).
- Prepare adjusting entries and close the general ledger.
- Prepare financial statements in an appropriate U.S. GAAP format, including the following: income statement, balance sheet, statement of cash flows, and statement of shareholders' equity.
- Analyze and interpret financial statements using financial analysis techniques.
- Describe the conceptual differences between International Financial Reporting Standards and U.S. generally accepted accounting principles.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**PSYC 1300 - LEARNING FRAMEWORK**

A study of the research and theory in the psychology of learning, cognition, and motivation, factors that impact learning, and application of learning strategies. Theoretical models of strategic learning, cognition, and motivation serve as the conceptual basis for the introduction of the college-level student academic strategies. Students use assessment instruments (e.g. learning inventories) to help them identify their own strengths and weaknesses as strategic learners. Students are ultimately expected to integrate and apply the learning skills discussed across their own academic
programs and become effective and efficient learners. Students developing these skills should be able to continually draw from the theoretical models they have learned. This course is cross-listed as EDUC 1300. The student may register for either EDUC 1300 or PSYC 1300 but may receive credit for only one of the two.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

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**PSYC 2301 - GENERAL PSYCHOLOGY**

General Psychology is a survey of the major psychological topics, theories, and approaches to the scientific study of behavior and mental processes. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Identify various research methods and their characteristics used in the scientific study of psychology
- Describe the historical influences and early schools of thought that shaped the field of psychology
- Describe some of the prominent perspectives and approaches used in the study of psychology
- Use terminology unique to the study of psychology
- Describe accepted approaches and standards in psychological assessment and evaluation
- Identify factors in physiological and psychological processes involved in human behavior

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

**Restrictions:**

- Must meet TSI College Readiness Standard for Reading.

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**PSYC 2314 - LIFESPAN GROWTH & DEVELOPMENT**

Lifespan Growth and Development is a study of social, emotional, cognitive and physical factors and influences of a developing human from conception to death. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Describe the stages of the developing person at different periods of the life span from birth to death
- Discuss the social, political, economic, and cultural forces that affect the development process of the individual
- Identify factors of responsible personal behavior with regard to issues such as sexual activity, substance abuse, marriage and parenting
Explain the biosocial, cognitive, and psychological includes throughout the lifespan as an ongoing set of processes involving both continuity and change
Describe the different development perspectives of the major theories of development (i.e. cognitive, learning, humanistic and psychodynamic)
Identify examples of some of the cultural and ethnic differences that influence development throughout the lifespan
Discuss the various causes or reasons for disturbances in the developmental process

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Restrictions:

• Must meet TSI College Readiness Standard for Reading.

PSYC 2319 - SOCIAL PSYCHOLOGY

Study of individual behavior within the social environment. Topics may include socio-psychological processes, attitude formation and change, interpersonal relations, group processes, self, social cognition, and research methods.

Upon successful completion, students will be able to:

• Define social psychology and related terminology.
• Discuss the relationship between the person and the situation and its influence on attitudes, prejudice, aggression, prosocial behavior, and interpersonal relationships.
• Describe the dynamics of group behavior in areas of social influence, such as altruism, conformity, obedience, deindividuation, leadership, intergroup relations, and conflict and cooperation.
• Identify and evaluate the current and historical research, and research methods of social psychology, including ethical considerations.
• Apply social psychological principles to real-world issues.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• PSYC 2301 - GENERAL PSYCHOLOGY

Restrictions:

• Must meet TSI College Readiness Standard for Reading
PRTT 1301 - INTRODUCTION TO PETROLEUM INDUSTRY

An introduction to the various aspects of petroleum industry including equipment, systems, instrumentation, operations, and the various scientific principles. Addresses a variety of petroleum technologies: exploration, drilling, production, transportation, marketing, and chemical processing industries.

Upon successful completion, students will be able to:

- Identify the concepts of exploration, production, refining, marketing, and transportation
- Describe the terms and phrases associated with the petroleum industry

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

PRTT 1303 - DRILLING

A study of practices and procedures that are involved in drilling operations. Topics on rig equipment, casing design, fishing, and proper procedures to successfully drill a well are discussed.

Upon successful completion, students will be able to:

- Describe fundamentals operations in the drilling industry
- Identify the five major systems and equipment of a drilling rig
- Describe specific down-hole problems; and explain solutions

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

PRTT 1307 - RECOVERY & PRODUCTION METHODS

Petroleum recovery and production methods.

Upon successful completion, students will be able to:

- Describe natural reservoir drive mechanisms, and artificial lift methods
- Identify the components of surface systems, identify factors used to select and describe basic life and recovery methods

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0
PTRT 1317 - NATURAL GAS PROCESSING I

An overview of natural gas processing operations. Topics include fundamentals of gas processing, the scientific principles and how they apply to the process, processing equipment, and procedures.

Upon successful completion, students will be able to:

- Describe the basic components of processing equipment
- Explain various gas plant operational procedures

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

PTRT 1324 - PETROLEUM INSTRUMENTATION

Study of instruments, instrument systems, terminology, process variables, and control loops as used in a petroleum environment.

Upon successful completion, students will be able to:

- Describe the oil field instrumentation
- Identify the basic instruments used with temperature, pressure, level, flow, and analytical field applications
- Describe the basic components of a control loop

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

PTRT 2331 - WELL COMPLETIONS

Drilling and wellbore analysis data to develop a well completion plan.

Upon successful completion, students will be able to:

- Analyze production and completion data
- Develop a plan of action for completing a well

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
PTRT 2380 - COOPERATIVE EDUCATION - PETROLEUM TECHNOLOGY/TECHNICIAN

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
- Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0

RADR 1160 - CLINICAL I

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
Credit hours: 1.0

RADR 1201 - INTRODUCTION TO RADIOGRAPHY

An overview of the historical development of radiography, basic radiation protection, an introduction to medical terminology, ethical and legal issues for health care professionals, and an orientation to the program and the health care system.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 32.0

RADR 1166 - PRACTICUM I

Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

Grade Basis: L
Credit hours: 1.0
RADR 1267 - PRACTICUM II

Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

**Grade Basis:** L  
**Credit hours:** 2.0

RADR 1303 - PATIENT CARE

An introduction in patient assessment, infection control procedures, emergency and safety procedures, communication and patient interaction skills, and basic pharmacology. Lab fees apply.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

RADR 1313 - PRINCIPLES OF RADIOGRAPHIC IMAGING I

Radiographic image quality and the effects of exposure variables.

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0

RADR 1411 - BASIC RADIOGRAPHIC PROCEDURES

An introduction to radiographic positioning terminology, the proper manipulation of equipment, positioning and alignment of the anatomical structure and equipment, and evaluation of images for proper demonstration of basic anatomy. Lab fees apply.

**Grade Basis:** L  
**Credit hours:** 4.0  
**Lecture hours:** 48.0  
**Lab hours:** 64.0

RADR 2205 - PRINCIPLES OF IMAGING II

A continuation of the study of radiographic imaging technique formulation, image quality assurance, and the synthesis of all variables in image production.

**Grade Basis:** L  
**Credit hours:** 2.0  
**Lecture hours:** 48.0
RADR 2209 - RADIOGRAPHIC IMAGING EQUIPMENT

A study of the equipment and physics of x-ray production, basic x-ray circuits, and the relationship of equipment components to the imaging process.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 48.0

RADR 2217 - RADIOGRAPHIC PATHOLOGY

A presentation of the disease process and common diseases and their appearance on medical images.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 32.0

RADR 2401 - INTERMEDIATE RADIOGRAPHY PROCEDURES

A continuation of study of the proper manipulation of radiographic equipment, positioning and alignment of the anatomical structure and equipment, and evaluation of images for proper demonstration of anatomy. Lab fees apply

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 64.0

RADR 2313 - RADIATION BIOLOGY & PROTECTION

A study of the effects of radiation exposure on biological systems, typical medical exposure levels, methods for measuring and monitoring radiation, and methods for protecting personnel and patients from excessive exposure.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

RADR 2333 - ADVANCED MEDICAL IMAGING

An exploration of specialized imaging modalities.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
RADR 2335 - RADIOLOGIC TECH SEMINAR

A capstone course focusing on the synthesis of professional knowledge, skills, and attitudes in preparation for professional employment and lifelong learning.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

RADR 2466 - PRACTICUM III

Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

Grade Basis: L
Credit hours: 4.0

RADR 2267 - PRACTICUM IV

Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

Grade Basis: L
Credit hours: 2.0

AGCR 1307 - RANGE MANGEMENT

Practical problems of managing native pastures and rangelands. Includes rangeland ecology, stocking rates, rotation systems, toxic plants, range reseeding, brush control, and ecological and physiological responses of range vegetation to grazing.

Upon successful completion, students will be able to:

- Identify range problems including toxic plants, overgrazing, and water distribution
- Evaluate brush control methods including biological, mechanical, chemical, and range burning
- Devise range reseeding and water development plans
- Design rotational grazing systems; and compute stocking rates

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

HART 2345 - RESIDENTIAL AIR CONDITIONING SYSTEMS DESIGN

Study of the properties of air and results of cooling, heating, humidifying or dehumidifying; heat gain and heat loss calculations including equipment selection and balancing the air system.

Upon successful completion, students will be able to:
• Calculate heat loss and heat gain
• Size heating and cooling equipment to the structure
• Read and interpret detailed HVAC design plans
• Perform a load calculation using industry standards
• Design a complete air distribution system including ventilation requirements and indoor air quality

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0

RNSG 1162 - TRANSITION CLINICAL I

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
Credit hours: 1.0
Lecture hours: 48.0

RNSG 1163 - CLINICAL - PSYCHIATRIC NURSING

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional. Emphasis is on nursing skills essential for the care of patients along the mental health and mental illness continuum.

Grade Basis: L
Credit hours: 1.0

RNSG 1219 - INTEGRATED NURSING SKILLS I

Study of the concepts and principles necessary to perform basic nursing skills for care of diverse patients across the life span; demonstrate competence in the performance of nursing procedures. Content includes knowledge, judgment, skills, and professional values within a legal and ethical framework. Lab fees apply

Grade Basis: L
Credit hours: 2.0
Lecture hours: 16.0
Lab hours: 48.0

RNSG 1229 - INTEGRATED NURSING SKILLS II

Study of the concepts and principles necessary to perform intermediate or advanced nursing skills for care of patients across the lifespan. Content includes knowledge,
judgment, skills, and professional values within a legal/ethical framework. This course lends itself to an integrated approach.

**Grade Basis:** L  
**Credit hours:** 2.0  
**Lecture hours:** 16.0  
**Lab hours:** 32.0

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**RNSG 1261 - CLINICAL NURSING I**

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

**Grade Basis:** L  
**Credit hours:** 2.0

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**RNSG 1300 - HEALTH ASSESSMENT ACROSS THE LIFESPAN**

Development of skills and techniques required for a comprehensive nursing health assessment of patients across the lifespan: pediatric, adult, and geriatric. Includes assessment of patients' health promotion and maintenance, illness and injury prevention and restoration, and application of the nursing process within a legal/ethical framework. Lab fees apply

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 16.0  
**Lab hours:** 48.0

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**RNSG 1423 - INTRODUCTION TO PROFESSIONAL NURSING FOR INTEGRATED PROGRAMS**

Introduction to the profession of nursing including the roles of the professional nurse as provider of patient-centered care, patient safely advocate, member of health care team, and member of the profession with emphasis on health promotion and primary disease prevention across the life span, essential components of the nursing health assessment, identification of deviations from expected health patterns, the application of a systematic, problem-solving process to provide basic nursing care to diverse patients across the lifespan, and applicable competencies in knowledge, judgment, skills, and professional values within a legal and ethical framework.

**Grade Basis:** L  
**Credit hours:** 4.0  
**Lecture hours:** 48.0  
**Lab hours:** 16.0
RNSG 1462 - CLINICAL NURSING II

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
Credit hours: 4.0

RNSG 2161 - TRANSITION CLINICAL III

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
Credit hours: 1.0

RNSG 2162 - TRANSITION CLINICAL II

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
Credit hours: 1.0

RNSG 2404 - INTEGRATED CARE OF THE PATIENT WITH COMMON HEALTH CARE NEEDS

Application of a systematic problem-solving process, critical thinking skills and concepts to provide nursing care to diverse patients and families across the life span with common health care needs including, but not limited to, common childhood/adolescent diseases, uncomplicated perinatal care, mental health concepts, perioperative care, frequently occurring adult health problems and health issues related to aging. Emphasis on secondary disease prevention and collaboration with members of the interdisciplinary health care team. Content includes roles of the professional nurse and applicable competencies in knowledge, judgment, skills, and professional values within a legal/ethical framework. Lab fees apply

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0
Lab hours: 32.0
RNSG 2414 - INTEGRATED CARE OF THE PATIENT WITH COMPLEX HEALTH CARE NEEDS

Application of a systematic problem solving process, critical thinking skills and concepts to provide comprehensive nursing care to diverse patients and families across the life span with complex health care needs including, but not limited to, complex childhood/adolescent diseases, complicated perinatal care, acute mental illness, complex perioperative care, serious adult health problems and health issues related to aging. Emphasis on tertiary disease prevention, health maintenance/restoration and collaboration with members of the multidisciplinary health care team. Content includes the roles of the professional nurse and applicable competencies in knowledge, judgment, skills, and professional values within a legal/ethical framework. Lab fees apply

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0
Lab hours: 32.0

RNSG 2435 - INTEGRATED PATIENT CARE MANAGEMENT

Application of independent nursing interventions to care for diverse patients and families throughout the life span whose health care needs may be difficult to predict. Emphasis on collaborative clinical reasoning, nursing leadership skills, and patient management. Content includes the significance of professional development, trends in nursing and health care, and applicable knowledge, judgment, skills, and professional values within a legal/ethical framework.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0
Lab hours: 32.0

RNSG 2461 - CLINICAL NURSING III

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
Credit hours: 4.0

RNSG 2462 - CLINICAL NURSING IV

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Grade Basis: L
CHEF 1305 - SANITATION AND SAFETY

A study of personal cleanliness, sanitary practices in food preparation, causes, investigation, control of illness caused by food contamination (Hazard Analysis Critical Control Points), and workplace safety standards.

Upon successful completion, students will be able to:

- Identify causes of and prevention procedures for food-borne illness, intoxication, and infection
- Discuss personal hygiene and safe food handling procedures
- Describe food storage and refrigeration techniques
- Explain sanitation of dishes, equipment, and kitchens including cleaning material, garbage, and refuse disposal
- Discuss Occupational Safety and Health Administration (OSHA) requirements and workplace safety programs

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

ITSY 2359 - SECURITY ASSESSMENT & AUDITING

Comprehensive experience for the security curriculum. Synthesizes technical material covered in prior courses to monitor, audit, analyze, and revise computer and network security systems that ensure appropriate levels of protection are in place to assure regulatory compliance.

Upon successful completion, students will be able to:

- Appraise security plan to ensure appropriate level of protection
- Assess network security design
- Audit network system based on security design
- Use relevant tools to assure security requirements
- Review security policies and procedures on a regular basis

Grade Basis: L
Credit hours: 3.0
Lecture hours: 32.0
Lab hours: 32.0
Prerequisites:

- ITSY 1342 - INFORMATION TECHNOLOGY SECURITY
SOCI 1301 - INTRODUCTION TO SOCIOLOGY

The scientific study of human society, including ways in which groups, social institutions, and individuals affect each other. Causes of social stability and social change are explored through the application of various theoretical perspectives, key concepts, and related research methods of sociology. Analysis of social issues in their institutional context may include topics such as social stratification, gender, race/ethnicity, and deviance. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Compare and contrast the basic theoretical perspectives of sociology.
- Identify the various methodological approaches to the collection and analysis of data in sociology.
- Describe key concepts in sociology.
- Describe the empirical findings of various subfields of sociology.
- Explain the complex links between individual experiences and broader institutional forces.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
- Must meet TSI College Readiness Standard for Reading

SOCI 1306 - SOCIAL PROBLEMS

Application of sociological principles and theoretical perspectives to major social problems in contemporary society such as inequality, crime and violence, substance abuse, environmental issues, deviance, or family problems. Meets NCTC Core Curriculum Requirement

Upon successful completion, students will be able to:

- Describe how the sociological imagination can be used to explain the emergence and implications of contemporary social problems
- Explain the nature of social problems from at least one sociological perspective, e.g., critical, functional, interpretive, etc.
- Identify multidimensional aspects of social problems including the global, political, economic, and cultural dimensions of social problems
- Discuss how “solutions” to social problems are often contentious due to diverse values in society
- Describe how the proposed “solutions” to a social problem, including social policies, may bring rise to other social problems

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
• Must meet TSI College Readiness Standard for Reading.

SOCI 2301 - MARRIAGE & THE FAMILY

Sociological and theoretical analysis of the structures and functions of the family, the varied cultural patterns of the American family, and the relationships that exist among the individuals within the family, as well as the relationships that exist between the family and other institutions in society.

Upon successful completion, students will be able to:

• Demonstrate understanding of the family and marriage as social institutions through theoretical perspectives.
• Examine the diversity and complexity of contemporary families.
• Explore changing cultural attitudes about marriage and alternatives to marriage.
• Critically evaluate such issues as sexuality, partner choice, resolving marital issues, having and raising children, and combining work and family.
• Demonstrate understanding of the relationship between theories and research methods used in the scientific study of marriage and family.
• Describe some of the historical changes and current trends regarding the structural nature of the American family including the role of gender in relationships.
• Identify causes and consequences of relevant problems within contemporary families.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading.

SOCI 2319 - MINORITY STUDIES

This course studies minority-majority group relations, addressing their historical, cultural, social, economic, and institutional development in the United States. Both sociological and social psychological levels of analysis will be employed to discuss issues including experiences of minority groups within the context of their cultural heritage and tradition, as well as that of the dominant culture. Core concepts to be examined include (but are not limited to) social inequality, dominance/subordination, prejudice, and discrimination. Particular minority groups discussed may include those based on poverty, race/ethnicity, gender, sexual orientation, age, disability, or religion.

Upon successful completion, students will be able to:

• Explain how the concept of social inequality pertains to minority group status defined in terms of identities that may include social class, race/ethnicity, gender, sexual orientation, age, disability, or religion
• Differentiate between important concepts and theories of prejudice and discrimination including the effects of prejudice and discrimination on the everyday lives of minority group members in the context of social institutions
• Analyze the history of culture, experiences of inequality, and current life opportunities of various minority groups in the United States with contrasting reference to other countries
• Analyze minority group interactions in the United States focusing on immigration and migration patterns, assimilation processes, and adjustments to American life

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

SOCI 2326 - SOCIAL PSYCHOLOGY

Study of individual behavior within the social environment. May include topics such as the socio-psychological process, attitude formation and change, interpersonal relations, and group processes. Cross-listed as PSYC 2319

Upon successful completion, students will be able to:

• Explain how the concept of social inequality pertains to minority group status defined in terms of identities that may include social class, race/ethnicity, gender, sexual orientation, age, disability, or religion.
• Differentiate between important concepts and theories of prejudice and discrimination including the effects of prejudice and discrimination on the everyday lives of minority group members in the context of social institutions.
• Analyze the history of culture, experiences of inequality, and current life opportunities of various minority groups in the United States with contrasting reference to other countries.
• Analyze minority group interactions in the United States focusing on immigration and migration patterns, assimilation processes, and adjustments to American life.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:

• Must meet TSI College Readiness Standard for Reading.

AGCR 2313 - SOIL & WATER CONSERVATION MANAGEMENT

Study of physical and chemical soil deterioration and loss, water conservation, and principles for protection and maintenance of these resources. Topics include plant/water relationships, water conservation methods, basic terrace engineering principles, sediment loss, and land use plans.

Upon successful completion, students will be able to:
• Summarize the principles of soil and water conservation; explain soil loss potentials; develop treatment plans to protect soil resources
• Demonstrate water conservation, runoff, and water quality maintenance techniques; evaluate land use; and develop land use plans

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

SPAN 1411 - BEGINNING SPANISH I

Basic Spanish language skills in listening, speaking, reading, and writing within a cultural framework. Students will acquire the vocabulary and grammatical structures necessary to communicate and comprehend at the beginner level. Lab fees apply.

Upon successful completion, students will be able to:

• Engage in conversations using level-appropriate grammatical structures including narrating events that take place in the present and producing questions and responses on a variety of topics dealing with everyday life.
• Demonstrate understanding of level-appropriate spoken Spanish.
• Write simple sentences and organize them into short paragraphs.
• Read and comprehend level-appropriate texts. 5. Identify and discuss traditions, customs and values of the Hispanic world.
• Compare and contrast the traditions, customs and values of the Hispanic world with characteristics of their own culture.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

SPAN 1412 - BEGINNING SPANISH II

Continued development of basic Spanish language skills in listening, speaking, reading, and writing within a cultural framework. Students acquire the vocabulary and grammatical structures necessary to communicate and comprehend at the high beginner to low intermediate level. Lab fees apply.

Upon successful completion, students will be able to:

• Engage in conversations using level-appropriate grammatical structures including narrating events that take place in the past.
• Demonstrate understanding of level-appropriate spoken Spanish produced by Spanish speakers of diverse origins.
• Write simple to moderately complex sentences using level-appropriate grammatical structures and organize them into cohesive paragraphs.
• Read and comprehend level-appropriate authentic texts.
• Identify and discuss traditions, customs and values of the Hispanic world.
• Compare and contrast the traditions, customs and values of the Hispanic word with characteristics of their own culture.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

Prerequisites:

• SPAN 1411 - BEGINNING SPANISH I

Restrictions:

• 1-year high school Spanish, Span 1411, or approval by instructor.

SPAN 2311 - INTERMEDIATE SPANISH I

The consolidation of skills acquired at the introductory level. Further development of proficiency in listening, speaking, reading and writing. Emphasis on comprehension, appreciation, and interpretation of the cultures of the Spanish-speaking world. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Demonstrate comprehension of authentic spoken discourse produced by Spanish speakers of diverse origins.
• Produce oral Spanish comprehensible to native speakers using complex grammatical structures to narrate, describe and elicit information.
• Demonstrate increasing comprehension of authentic written texts in a variety of genres.
• Write descriptions and narratives at a low intermediate level using complex grammatical structures.
• Formulate cohesive paragraphs and short/simple essays.
• Describe cultural practices and products of the Spanish-speaking world drawing on authentic materials including literature and the visual arts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

• SPAN 1411 - BEGINNING SPANISH I
• SPAN 1412 - BEGINNING SPANISH II

Restrictions:

• 2 years high school Spanish, Span 1412, or approval by instructor.
SPAN 2312 - INTERMEDIATE SPANISH II

The consolidation of skills acquired at the introductory level. Further development of proficiency in listening, speaking, reading and writing. Emphasis on comprehension, appreciation, and interpretation of the cultures of the Spanish-speaking world.

Upon successful completion, students will be able to:

- Summarize authentic spoken discourse produced by Spanish speakers of diverse origins.
- Produce Spanish comprehensible to native speakers using complex grammatical structures to communicate analytical and interpretive information in both impromptu and prepared speech.
- Demonstrate increasing comprehension of authentic written texts in a variety of genres.
- Write evaluations and critiques at a high intermediate level using complex grammatical structures.
- Formulate cohesive paragraphs and essays.
- Interpret cultural practices and products of the Spanish-speaking world drawing on authentic materials including literature and the visual arts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

Prerequisites:

- **SPAN 1411** - BEGINNING SPANISH I
- **SPAN 1412** - BEGINNING SPANISH II
- **SPAN 2311** - INTERMEDIATE SPANISH I

Restrictions:

- 3 years of high school Spanish, Spanish 1411/1412/2311, or approval by instructor.

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SPAN 2315 - SPANISH FOR HERITAGE / NATIVE SPEAKERS

Builds upon existing oral proficiencies of heritage speakers of Spanish. Enhances proficiencies in the home-based language by developing a full range of registers including public speaking and formal written discourse. Emphasis on comprehension, appreciation, and interpretation of the cultures of the Spanish-speaking world.

Upon successful completion, students will be able to:

- Write dialogues, descriptions and narratives demonstrating: Correct orthography and punctuation. Cohesion between sentences. Appropriate register.
- Demonstrate an expanded vocabulary.
- Apply strategies for linking ideas in complex sentences.
- Identify similarities and differences among distinct varieties of Spanish.
- Give oral presentations in a formal register appropriate for professional and academic settings.
• Describe cultural practices and products of the Spanish-speaking world drawing on authentic materials including literature and the visual arts.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
Restrictions:
• Approval by instructor required.

SPCH 1315 - PUBLIC SPEAKING

Application of communication theory and practice to the public speaking context, with emphasis on audience analysis, speaker delivery, ethics of communication, cultural diversity, and speech organizational techniques to develop students' speaking abilities, as well as ability to effectively evaluate oral presentations. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Demonstrate an understanding of the foundational models of communication.
• Apply elements of audience analysis.
• Demonstrate ethical speaking and listening skills by analyzing presentations for evidence and logic.
• Research, develop and deliver extemporaneous speeches with effective verbal and nonverbal techniques.
• Demonstrate effective usage of technology when researching and/or presenting speeches.
• Identify how culture, ethnicity and gender influence communication.
• Develop proficiency in presenting a variety of speeches as an individual or group (e.g. narrative, informative or persuasive).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

SPCH 1318 - INTERPERSONAL COMMUNICATION

Application of communication theory to interpersonal relationship development, maintenance, and termination in relationship contexts including friendships, romantic partners, families, and relationships with co-workers and supervisors. Meets NCTC Core Curriculum Requirement

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0
SPCH 1321 - BUSINESS & PROFESSIONAL COMMUNICATION

Study and application of communication within the business and professional context. Special emphasis will be given to communication competencies in presentations, dyads, teams and technologically mediated formats. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

• Demonstrate communication competence and critical thinking through an understanding of the foundational communication models.
• Demonstrate essential public speaking skills in professional presentations.
• Demonstrate written and oral competencies as it relates to employment (including job searches, interviews, interpersonal interaction, conflict management, leadership and performance appraisals.)
• Apply essential dyadic and small group processes as they relate to the workplace.
• Utilize various technologies as they relate to competent communication.
• Demonstrate effective cross-cultural communication.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

CSME 1491 - SPECIAL TOPICS COURSE FACIALS AND RELATED THEORY

An overview of the skills necessary to perform a facial treatment service according to the Texas Department of Licensing and Regulations while following safety and sanitation laws and rules; practice different methods of temporary hair removal; introduction to the skills and knowledge necessary for the field of facials and skin care; and overview of cosmetics and the application of artificial eyelash strips.

Upon successful completion, students will be able to:

• Demonstrate the skills necessary to pass the facial treatment portion of the state board exam while following all safety and sanitation laws
• Demonstrate the different methods used for hair removal
• Practice the related skills of facials, skin care and applying makeup
• Demonstrate practical skills necessary to safely and effectively apply eyelash strips according to TDLR laws and rules.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 64.0
AGCR 1393 - SPECIAL TOPICS IN PLANT PROTECTION - INTEGRATED PEST MANAGEMENT

Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

SPCH 1311 - INTRODUCTION TO SPEECH COMMUNICATION

Introduces basic human communication principles and theories embedded in a variety of contexts including interpersonal, small group, and public speaking. Meets NCTC Core Curriculum Requirement.

Upon successful completion, students will be able to:

- Apply the principles of human communication including perception, verbal communication, nonverbal communication, listening, and audience analysis.
- Demonstrate how to establish and maintain relationships through the use of interpersonal communication.
- Apply small group communication skills including problem-solving, group roles, leadership styles, and cohesiveness.
- Develop, research, organize, and deliver formal public speeches.
- Recognize how to communicate within diverse environments.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

SRGT 1261 - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - INTRODUCTORY

A basic type of health professions work-based instruction that helps students synthesize new knowledge, apply previous knowledge, or gain experience managing the workflow. Practical experience is simultaneously related to theory. Close and/or direct supervision is provided by the clinical professional, faculty or preceptor, generally in a clinical setting. Clinical education is an unpaid learning experience.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry.
• Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

Grade Basis: P
Credit hours: 2.0

SRGT 1441 - SURGICAL PROCEDURES I

Introduction to surgical pathology and its relationship to surgical procedures. Emphasis on surgical procedures related to the general, OB/GYN, genitourinary, and orthopedic surgical specialities incorporating instruments, equipment, and supplies required for safe patient care.

Upon successful completion, students will be able to:

• Relate anatomy and pathology for selected procedures
• Demonstrate patient preparation; utilize instruments, equipment, and supplies
• Demonstrate case management skills, sequentially
• Identify outcomes and possible complications

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0
Prerequisites:

• HITT 1205 - MEDICAL TERMINOLOGY
• SRGT 1261 - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - INTRODUCTORY
• SRGT 1505 - INTRODUCTION TO SURGICAL TECHNOLOGY
• SRGT 1509 - FUNDAMENTALS OF PERIOPERATIVE CONCEPTS & TECHNIQUES
• VNSG 1420 - ANATOMY & PHYSIOLOGY FOR ALLIED HEALTH

SRGT 1442 - SURGICAL PROCEDURES II

Introduction to surgical pathology and its relationship to surgical procedures. Emphasis on surgical procedures related to the thoracic, peripheral vascular, plastic/reconstructive, EENT, cardiac, and neurological surgical specialities incorporating instruments, equipment, and supplies required for safe patient care. Lab fees apply.

Upon successful completion, students will be able to:

• Relate anatomy and pathology for selected procedures
• Demonstrate patient preparation; utilize instruments, equipment, and supplies
• Demonstrate case management skills
• Identify outcomes and possible complications for selected procedures
SRGT 1505 - INTRODUCTION TO SURGICAL TECHNOLOGY

Orientation to surgical technology theory, surgical pharmacology and anesthesia technological sciences, and patient care concepts.

Upon successful completion, students will be able to:

- Identify the physical, interpersonal, and ethical aspects of the perioperative environment
- Discuss basic concepts of surgical pharmacology and anesthesia
- Identify basic concepts of technological sciences
- Demonstrate patient care concepts

SRGT 1509 - FUNDAMENTALS OF PERIOPERATIVE CONCEPTS & TECHNIQUES

In-depth coverage of perioperative concepts such as aseptic principles and practices, infectious processes, wound healing, and creation and maintenance of the sterile field.

Upon successful completion, students will be able to:

- Demonstrate principles and practices of aseptic/sterile techniques
- Identify infectious processes and concepts of wound healing
- Create a sterile field utilizing basic case preparation
- Exhibit maintenance of the sterile field during procedures
SRGT 1661 - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - INTERMEDIATE

An intermediate type of health professions work-based instruction that helps students synthesize new knowledge, apply previous knowledge, or gain experience managing the workflow. Practical experience is simultaneously related to theory. Close and/or direct supervision is provided by the clinical professional (faculty or preceptor), generally in a clinical setting. Clinical education is an unpaid learning experience.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
- Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

Grade Basis: P
Credit hours: 6.0
Prerequisites:

- HITT 1205 - MEDICAL TERMINOLOGY
- SRGT 1261 - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - INTRODUCTORY
- SRGT 1505 - INTRODUCTION TO SURGICAL TECHNOLOGY
- SRGT 1509 - FUNDAMENTALS OF PERIOPERATIVE CONCEPTS & TECHNIQUES
- VNSG 1420 - ANATOMY & PHYSIOLOGY FOR ALLIED HEALTH

SRGT 1662 - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - ADVANCED

An advanced type of health professions work-based instruction that helps students synthesize new knowledge, apply previous knowledge, or gain experience managing the workflow. Practical experience is simultaneously related to theory. Close and/or direct supervision is provided by the clinical professional (faculty or preceptor), generally in a clinical setting. Clinical education is an unpaid learning experience.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
• Demonstrate legal and ethical behavior, safety practices, interpersonal and
teamwork skills, and appropriate written and verbal communication skills using the
terminology of the occupation and the business/industry.

**Grade Basis:** P
**Credit hours:** 6.0

**Prerequisites:**

- **HITT 1205** - MEDICAL TERMINOLOGY
- **SRGT 1261** - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - INTRODUCTORY
- **SRGT 1441** - SURGICAL PROCEDURES I
- **SRGT 1442** - SURGICAL PROCEDURES II
- **SRGT 1505** - INTRODUCTION TO SURGICAL TECHNOLOGY
- **SRGT 1509** - FUNDAMENTALS OF PERIOPERATIVE CONCEPTS & TECHNIQUES
- **SRGT 1661** - CLINICAL - SURGICAL/OPERATING ROOM TECHNOLOGIST - INTERMEDIATE
- **VNSG 1420** - ANATOMY & PHYSIOLOGY FOR ALLIED HEALTH

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**SRGT 1060 - STERILE PROCESSING TECHNICIAN**

Instruction on safeguarding patients from infection and disease controls and procedures
to produce a sterile clinical and operatory environment.

**Grade Basis:** L
**Lecture hours:** 140.0

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**TECA 1303 - FAMILY, SCHOOL & COMMUNITY**

A study of the child, family, community, and schools, including parent education and
involvement, family and community lifestyles, child abuse, and current family life
issues. Course content must be aligned as applicable with State Board for Educator
Certification Pedagogy and Professional Responsibilities standards and coincide with
the National Association for the Education of Young Children position statement related
to developmentally appropriate practices for children from birth through age eight.
Requires students to participate in field experiences with children from infancy through
age 12 in a variety of settings with varied and diverse populations. The course includes
a minimum of 16 hours of field experiences.

Upon successful completion, students will be able to:

- Identify characteristics and issues relating to diverse cultures and caregiving
  lifestyles.
- Analyze ways in which factors in the home and community (e.g. parent
  expectations, availability of community resources, community issues) impact
  learning, including an awareness of social and cultural factors to enhance
development and learning.
• Identify and apply strategies to maintain positive, collaborative relationships with diverse families (e.g. families with children with disabilities, poverty, single parent, cultural, homelessness, and dual-language learners).
• Investigate community/educational resources (e.g. dentist on wheels, library programs, GED programs, family education programs, Early Childhood Intervention Strategies) to empower families to support children’s development.
• Recognize signs of abuse and neglect and describe ways to work effectively with abused and neglected children and their families.
• Explain the importance of family involvement/home-school relationships in education.
• Explain the importance of maintaining codes of ethical conduct and legal issues when working with families, colleagues, and community professionals.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0

TECA 1311 - EDUCATING YOUNG CHILDREN

An introduction to the education of the young child, including developmentally appropriate practices and programs, theoretical and historical perspectives, ethical and professional responsibilities, and current issues. Course content must be aligned as applicable with State Board for Educator Certification Pedagogy and Professional Responsibilities standards and coincide with the National Association for the Education of Young Children position statement related to developmentally appropriate practices for children from birth through age eight. Requires students to participate in field experiences with children from infancy through age 12 in a variety of settings with varied and diverse populations and the course includes a minimum of 16 hours of field experiences.

Upon successful completion, students will be able to:

• Identify the features of a quality developmentally appropriate program for young children.
• Explain contributions of historical and contemporary professionals and theorists to the field of early childhood education.
• Analyze various early childhood programs and curricular models that have influenced practice.
• Describe current and future trends and issues in the field of education.
• Apply classroom observation and assessment skills to identify developmentally appropriate programs in diverse early childhood educational settings.
• Describe and adhere to professional code of legal and ethical requirements for educators.

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 48.0
TECA 1318 - WELLNESS OF THE YOUNG CHILD

A study of the factors that impact the well-being of the young child including healthy behavior, food, nutrition, fitness, and safety practices. Focuses on local and national standards and legal implications of relevant policies and regulations. Course content must be aligned as applicable with State Board for Educator Certification Pedagogy and Professional Responsibilities standards and coincide with the National Association for the Education of Young Children position statement related to developmentally appropriate practices for children from birth to age eight. Requires students to participate in field experiences with children from infancy through age 12 in a variety of settings with varied and diverse populations. Course includes a minimum of 16 hours of field experiences.

Upon successful completion, students will be able to:

- Describe the relationship between health, safety and nutrition.
- Describe the basic principles of healthy behavior and guidance practices that influence health promotion, safe practices and disease prevention for young children.
- Analyze principles of nutrition and the application to nutritional assessment.
- Identify policy and regulatory requirements for nutrition.
- Describe the role of physical fitness as it contributes to healthy behavior.
- Evaluate and make recommendations for modifications of regulations regarding child’s safety, safety procedures, and children’s environments for safety.
- Describe how physical, social, and emotional environments influence a child’s health.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

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TECA 1354 - CHILD GROWTH & DEVELOPMENT

A study of the physical, emotional, social, and cognitive factors impacting growth and development of children through adolescence.

Upon successful completion, students will be able to:

- Summarize principles of growth and development.
- Identify typical stages of cognitive, social, physical, language, and emotional development.
- Compare, contrast and apply theories of development in practice.
- Discuss the impact of developmental processes on educational practices.
- Identify the stages of play development (i.e. from solitary to cooperative) and describe the important role of play in young children’s learning and development.
- Identify the stages of play development (i.e. from solitary to cooperative) and describe the important role of play in young children’s learning and development.

Grade Basis: L
Credit hours: 3.0
TECM 1301 - INDUSTRIAL MATHEMATICS

Math skills applicable to industrial occupations. Includes fraction and decimal manipulation, measurement, percentage, and problem solving techniques for equations and ratio/proportion applications.

Upon successful completion, students will be able to:

• Convert between decimals and fractions
• Use measuring tools
• Calculate ratios and proportions in a technical application
• Transpose linear equations to solve for unknowns

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

RNSG 1327 - TRANSITION TO PROFESSIONAL NURSING

Content includes health promotion, expanded assessment, analysis of data, critical thinking skills and systematic problem solving process, pharmacology, interdisciplinary teamwork, communication, and applicable competencies in knowledge, judgment, skills, and professional values within a legal/ethical framework throughout the lifespan.

Grade Basis: L
Credit hours: 3.0

VNSG 1219 - PROFESSIONAL DEVELOPMENT

Study of the importance of professional growth. Topics include the role of the LVN in the multidisciplinary healthcare team, professional organizations, continuing education, delegating authority, resume writing, and job interviewing.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 32.0

VNSG 1227 - ESSENTIALS OF MEDICATION ADMINISTRATION

General principles of medication administration including determination of dosage, preparation, safe administration, and documentation of multiple forms of drugs. Instruction includes various systems of measurement.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 32.0
VNSG 1230 - MATERNAL - NEONATAL NURSING

Utilization of the nursing process in the assessment and management of the childbearing family. Emphasis on the bio-psycho-socio-cultural needs of the family during the phases of pregnancy, childbirth, and the neonatal period including abnormal conditions.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 32.0

VNSG 1234 - PEDIATRICS

Study of childhood diseases and childcare from infancy through adolescence. Focus on the care of the well and the ill child utilizing the nursing process.

Grade Basis: L
Credit hours: 2.0
Lecture hours: 32.0

VNSG 1323 - BASIC NURSING SKILLS

Mastery of entry level nursing skills and competencies for a variety of health care settings. Utilization of the nursing process as the foundation for all nursing interventions. Related aspects of nutrition, pharmacology, and medical terminology included. Lab fees apply.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 80.0
Lab hours: 32.0

VNSG 1331 - PHARMACOLOGY

Fundamentals of medications and their diagnostic, therapeutic, and curative effects. Includes nursing interventions associated with the various pharmacotherapeutic agents.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 48.0

VNSG 1360 - CLINICAL I

This course provides clinical experience in fundamental nursing skills. The nursing process is applied to provide individualized care designed to meet a client's particular needs. The geriatric client is the focus of care.

Grade Basis: L
Credit hours: 3.0
VNSG 1363 - CLINICAL II - SPRING ADMISSION

This course is offered in the summer semester for the January admission class. It provides a continuation of Clinical I with the emphasis on utilizing the nursing process in providing individualized care of the client in all stages of development. The principles of safety in medication administration and other care are closely monitored.

Grade Basis: L  
Credit hours: 3.0

VNSG 1400 - NURSING IN HEALTH & ILLNESS I

Introduction to general principles of growth and development, primary health care needs of the client across the life span, and therapeutic nursing interventions.

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 80.0

VNSG 1420 - ANATOMY & PHYSIOLOGY FOR ALLIED HEALTH

Introduction to the normal structure and function of the body, including an understanding of body systems in maintaining homeostasis. Principles of microbiology also included.

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 64.0

VNSG 1463 - CLINICAL II - FALL ADMISSION

This course is offered in the spring semester for the August admission class. It provides a continuation of Clinical I with the emphasis on utilizing the nursing process in providing individualized care of the client in all stages of development. The principles of safety in medication administration and other care are closely monitored.

Grade Basis: L  
Credit hours: 4.0

VNSG 1509 - NURSING IN HEALTH & ILLNESS II

Introduction to common health problems requiring medical and surgical interventions.

Grade Basis: L  
Credit hours: 5.0  
Lecture hours: 80.0
VNSG 2360 - CLINICAL III - FALL ADMISSION

This course is offered in the summer semester for the August admission class. It assists the student in the continued development of their knowledge and skill in the role and functions of the vocational nurse. It provides learning experiences in the clinical setting focusing on further refinement of the nursing process in caring for clients exhibiting health-illness continuum through the life span.

Grade Basis: L
Credit hours: 3.0

VNSG 2460 - CLINICAL III - SPRING ADMISSION

This course is offered in the fall semester for the January admission class. It assists the student in the continued development of their knowledge and skill in the role and functions of the vocational nurse. It provides learning experiences in the clinical setting focusing on further refinement of the nursing process in caring for clients exhibiting health-illness continuum through the life span.

Grade Basis: L
Credit hours: 4.0

VNSG 2510 - NURSING IN HEALTH & ILLNESS III

Continuation of Nursing in Health and Illness II. Further study of common medical-surgical health problems of the client.

Grade Basis: L
Credit hours: 5.0
Lecture hours: 80.0

WLDG 2432 - WELDING AUTOMATION

Overview of automated welding and cutting applications. Special emphasis on safe use and operation of equipment.

Upon successful completion, students will be able to:

• Set up, program, operate, and troubleshoot various automated welding and/or cutting equipment.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 96.0
WLDG 1323 - WELDING SAFETY, TOOLS & EQUIPMENT

An introduction to welding equipment and safety practices, including OSHA standards for industry. Note: WLDG 1323 applies to the Petroleum Technology program or may be taken as a stand alone course. It is not a part of the Welding Certificate or AAS Degree.

Upon successful completion, students will be able to:

- Apply welding safety practices, OSHA and the Hazardous Communications Act, and DS
- List hazards associated with welding equipment and processes
- Use and maintain tools and equipment
- Identify hazards associated with gases, fluxes, electrodes and equipment
- Explain different welding processes and their operation

Grade Basis: L  
Credit hours: 3.0  
Lecture hours: 32.0  
Lab hours: 32.0

HPRS 1202 - WELLNESS & HEALTH PROMOTION

An overview of wellness theory and its application throughout the life span. Focus is on attitude development, impact of cultural beliefs, and communication of wellness.

Grade Basis: L  
Credit hours: 2.0

WLDG 1407 - INTRODUCTION TO WELDING USING MULTIPLE PROCESSES

Basic welding techniques using some of the following processes: Oxy-fuel welding (OFW) and cutting, shielded metal arc welding (SMAW), gas metal arc welding (GMAW), and gas tungsten arc welding (GTAW).

Upon successful completion, students will be able to:

- Demonstrate machine set-up and complete welds and cutting operations
- Demonstrate basic shop safety
- Identify types of electrodes used in welding processes
- Identify various welding and cutting standards
- Demonstrate proper joint preparation techniques

Grade Basis: L  
Credit hours: 4.0  
Lecture hours: 32.0  
Lab hours: 96.0
WLDG 1427 - WELDING CODES

An in-depth study of welding codes and their development in accordance with structural standards, welding processes, destructive and nondestructive test methods.

Upon successful completion, students will be able to:

- Categorize major codes
- Identify welding procedures
- Identify welding and NDT symbols
- List responsibilities of inspectors
- Evaluate post-weld heat treatments and destructive testing
- List alloys and phases of metals
- State the effects of heating and cooling
- Apply pre-weld, in-process, and shop inspection standards
- Develop welding procedures
- Calculate preheat and post-weld heat treatments
- Identify NDT test methods and welding discontinuities

Grade Basis: L
Credit hours: 4.0
Lecture hours: 64.0

WLDG 1428 - INTRODUCTION TO SHIELDED METAL ARC WELDING (SMAW)

An introduction to the shielded metal arc welding process. Emphasis placed on power sources, electrode selection, oxy-fuel cutting, and various joint designs. Instruction provided in SMAW fillet welds in various positions.

Upon successful completion, students will be able to:

- Select electrodes and amperage settings for various thicknesses of materials and welding positions
- Define principles of arc welding
- Explain electrode classifications
- Perform SMAW operations in various positions using selected electrodes and different joint designs

Grade Basis: L
Credit hours: 4.0
Lecture hours: 48.0
Lab hours: 32.0

WLDG 1435 - INTRODUCTION TO PIPE WELDING

An introduction to welding of pipe using the shielded metal arc welding process (SMAW), including electrode selection, equipment setup, and safe shop practices. Emphasis on weld positions 1G and 2G using various electrodes.
Upon successful completion, students will be able to:

- Describe equipment and required pipe preparation and perform 1G and 2G welds using various electrodes

**Grade Basis:** L  
**Credit hours:** 4.0  
**Lecture hours:** 32.0  
**Lab hours:** 64.0

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**WLDG 1457 - INTERMEDIATE SHIELDED METAL ARC WELDING (SMAW)**

A study of the production of various fillets and groove welds. Preparation of specimens for testing in various positions.

Upon successful completion, students will be able to:

- Identify principles of arc welding  
- Describe arc welding operations of fillet and groove joints  
- Explain heat treatments of low alloy steels  
- Explain weld size and profiles  
- Prepare test plates  
- Perform fillet welds in the overhead position  
- Perform air carbon arc weld removal  
- Perform bevel groove welds with backing plates in various positions  
- Demonstrate use of tools and equipment

**Grade Basis:** L  
**Credit hours:** 4.0  
**Lecture hours:** 32.0  
**Lab hours:** 32.0

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**WLDG 2352 - ADVANCED FLUX CORED ARC WELDING**

Advanced concepts of flux cored arc welding of structural and fabricated steel products. Skill development in multi-pass fillet and v-groove welding.

Upon successful completion, students will be able to:

- Perform safety inspections of equipment and accessories  
- Perform multi-pass fillet and v-groove welds in various positions

**Grade Basis:** L  
**Credit hours:** 3.0  
**Lecture hours:** 48.0  
**Lab hours:** 32.0
WLDG 2380 - COOPERATIVE EDUCATION - WELDING TECHNOLOGY

Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience.

Upon successful completion, students will be able to:

- Apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry
- Demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skills, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry

Grade Basis: L
Credit hours: 3.0
Lecture hours: 16.0

WLDG 2413 - INTERMEDIATE WELDING USE MULTIPLE PROCESSES

Instruction using layout tools and blueprint reading with demonstration and guided practices with some of the following welding processes: oxy-fuel gas cutting and welding, shield metal arc welding (SMAW), gas metal arc welding (GMAW), flux-cored arc welding (FCAW), gas tungsten arc welding (GTAW), or any other approved welding process.

Upon successful completion, students will be able to:

- Identify proper safety equipment and tools and identify and select the proper welding process for a given application
- Demonstrate skills training using more than one approved welding process
- Demonstrate ability to analyze situations and make decisions using skills as taught concerning safety and electrode selections
- Select the most economic and practical welding process for the given task

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 96.0

WLDG 2447 - ADVANCED GAS METAL ARC WELDING (GMAW)

Advanced topics in Gas Metal Arc Welding (GMAW). Includes welding in various positions.

Upon successful completion, students will be able to:

- Demonstrate proficiency in various welding positions
• Describe safety rules and equipment use
• Describe the effects of welding parameters in GMAW
• Weld various joint designs and diagnose welding problems and perform visual inspection

Grade Basis: L
Credit hours: 4.0
Lecture hours: 32.0
Lab hours: 64.0

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