Course Descriptions

Academic Success – Tutoring

Academic Success Courses

National Center for Aviation Training

Automotive

Auto Collision Repair
Grove Campus

8.4

Automotive Service Technology
Grove Campus

8.5

Automotive Transmission/Transaxle
Grove Campus

8.5

Automotive Service Technology
Grove Campus

8.5

Aviation

Advanced Aerostructures
National Center for Aviation Training

8.6

Aerospace Coatings & Paint Technology
National Center for Aviation Training

8.7

Aerospace Fiber Optics & Data Cable Installation
National Center for Aviation Training

8.7

Aerospace Quality Control
National Center for Aviation Training

8.7

Applied Science of Aviation Interiors
National Center for Aviation Training

8.8

Applied Science of Aviation Manufacturing
National Center for Aviation Training

8.9

Aviation Maintenance Technology
National Center for Aviation Training

8.11

Airframe
National Center for Aviation Training

8.11

Powerplant
National Center for Aviation Training

8.11

Aviation Maintenance Technology
National Center for Aviation Training

8.11

Avionics Technology
National Center for Aviation Training

8.13

Composite Technology
National Center for Aviation Training

8.14

Composite Fabrication
National Center for Aviation Training

8.14

Composite Repair
National Center for Aviation Training

8.14

Nondestructive Testing
National Center for Aviation Training

8.15

Introduction to Nondestructive Testing
National Center for Aviation Training

8.15

Advanced Nondestructive Testing
National Center for Aviation Training

8.15

Business and Technology

Administrative Office Technology (online)
www.watc.edu

8.16

Business Administration
Southside Education Center

8.17

Accounting
Southside Education Center

8.17

Banking & Finance
Southside Education Center

8.17

E-Marketing
Southside Education Center

8.17

Operations Management
Southside Education Center

8.17

Operations Management & Supervision
Southside Education Center

8.17

Six Sigma
Southside Education Center

8.17

Entrepreneurship
Southside Education Center

8.19

Design Technology

Architectural Design Technology
National Center for Aviation Training

8.20

Engineering Design Technology
National Center for Aviation Training

8.21

Interior Design
National Center for Aviation Training

8.23

General Education

General Education Courses

8.25

Health Sciences

Activity Director / Social Services Designee
Southside Education Center

8.30

Allied Health

8.30

Certified Medication Aide
Southside Education Center

8.30

Certified Nurse Aide
Southside Education Center

8.30

Dental Assistant
Southside Education Center

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Manufacturing and Engineering Technology

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Academic Success – Tutoring

**ASC 007  Self-Paced COMPASS™ Test Preparation 0 Cr Hrs**
Designed for those who have math, reading and writing skills, but would like to practice before taking the COMPASS® placement test, or designed for those who have taken the COMPASS math, reading and/or writing placement tests, to raise test scores for program admission. Graded Satisfactory / Unsatisfactory.

**ASC 008  Self-Paced TEAS® Test Preparation 0 Cr Hrs**
Designed for those who have math, reading and writing skills, but who would like to quickly practice before taking the TEAS placement test, or designed for those who have taken the TEAS math, reading, English and/or science placement tests, to raise test scores for program admission. Graded Satisfactory / Unsatisfactory.

Academic Success also facilitates general education Essential Basic Skills open-learning courses.

**EBS 102  Sentence Structure 1 Cr Hr**
Enables students to construct complete simple, compound and complex sentences by applying grammar concepts learned.

**EBS 103  Paragraph Writing 1 Cr Hr**
Enables students to write a focused, organized, supported paragraph without fragment, run-on or comma splice errors.

**EBS 113  Basic Mathematics 3 Cr Hrs**
Provides students with basic arithmetic computational skills including basic decimals, fractions, ratios and proportions and percents. Computation by scientific calculator is introduced, but emphasis is placed on computation by hand. This course does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement.

**Automotive**

**Auto Collision Repair**

**CED 101  Computer Essentials 2 Cr Hrs**
Develops students’ computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

**EBS 115  Pre-Algebra Math 3 Cr Hrs**
Arithmetic with fractions, decimals and percents. Introduction to the metric system. Provides applications to measurement and consumer math. This course does not count toward AS, AA, AGS or AAS degrees.

**EMP 100  Global Professional Standards 2 Cr Hrs**
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

**SPH 111  Interpersonal Communication 3 Cr Hrs**
Improves individual communication skills. By understanding the elements of effective communication, students are able to create environments that bring out the best in themselves and others. In addition, students learn how to better turn ideas and feelings into words, how to listen more effectively, respond more appropriately to what others have said and, most important of all, how to maintain and develop good interpersonal relationships with their families, their peers and fellow workers. Emphasis is placed on small-group activities, interviewing skills and verbal and non-verbal communication.

**TAC 101  Occupational Safety 1 Cr Hr**
Provides students with an appreciation and basic understanding of the safety rules and regulations that govern the transportation industry. Students learn and apply safe work habits in the use of hand and power tools as well as the handling, use and application of hazardous materials. Films, videos, field trips and guest speakers are used to supplement course.

**TAC 111  Structural Damage Analysis & Repair 8 Cr Hrs**
Includes frame inspection and repair on body-over-frame and unibody inspection measurement and repair. Students comply with personal and environmental safety practices and recognize that measuring, dimensioning and tolerance limits in unibody vehicles are critical to repairing these vehicles and that suspension/steering mounting points and engine power train attaching points are critical to vehicle handling, performance and safety. Also addresses the replacement of fixed glass and metal welding and cutting.

**TAC 112  Refinish I 6 Cr Hrs**
Students comply with personal and environmental safety practices and identify and take necessary precautions with hazardous operations. Introduces students to surface preparation, spray gun and related equipment operation, paint mixing, matching, applying, solving paint application problems, recognizing finish defects, causes and cures and final automobile detail. Prerequisite: TAC 101 Occupational Safety or administrator approval.
Automotive Service Technology

TAC 113 Nonstructural Damage Analysis & Repair 9 Cr Hrs
Students review damage reports and analyze damage to determine appropriate methods for overall repair. Instruction includes classroom and laboratory activities, panel repairs, replacements, adjustments, metal finishing, body filling, moveable glass, hardware and metal welding and cutting.

TAC 114 Steering, Suspension & Alignment 3 Cr Hrs
Involves the analysis, repair and replacement of suspension and steering components along with angles and pivot-point alignment involved in proper steering alignment.

TAC 116 Electrical Systems 2 Cr Hrs
Includes classroom and laboratory instruction on basic electricity, use of test equipment, schematic reading, general automotive electronics and the repair of electrical components commonly damaged during collision.

TAC 118 Refinish II 5 Cr Hrs
Continuation of TAC 112 Refinish I. Includes a large amount of time in laboratory instruction to develop spraying and polishing techniques including the development of a refinish plan, paint mixing and color matching. Prerequisite: TAC 112 Refinish I or administrator approval.

CED 115 Computer Applications 3 Cr Hrs
Develops students' computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

EBS 115 Pre-Algebra Math 3 Cr Hrs
Arithmetic with fractions, decimals and percents. Introduction to the metric system. Provides applications to measurement and consumer math. This course does not count toward AS, AA, AGS or AAS degrees.

EMP 100 Global Professional Standards 2 Cr Hrs
Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

TAS 121 Engine Repair 4 Cr Hrs
Includes classroom and laboratory instruction in the diagnosis, removal, repair and installation of automotive engine assemblies, along with diagnosis and repair of general automotive engine systems, cylinder head and value train systems, engine block assembly and lubrication and cooling systems.

TAS 122 Automotive Brake Systems 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, inspection, diagnosis and repair of hydraulic brake systems, drum and disc brakes, power brakes, miscellaneous and related braking systems such as wheel bearings, parking brakes, electrical, etc. and anti-lock brake systems.

TAS 123 Suspension & Steering Systems 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, diagnosis, adjustment and repair of automotive suspension and steering systems, including the diagnosis and repair of steering systems, suspension systems, wheels and tires and alignment concerns.

TAS 124 Electrical & Electronic Systems I 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, diagnosis, service and repair of automotive electrical/electronic systems, including the diagnosis, service and repair of the general electrical system, battery, the starting, charging and lighting systems, gauges, warning devices and driver information systems, horn and wiper/washer as well as other electrical/electronic accessories.

TAS 125 Electrical & Electronic Systems II 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, diagnosis, service and repair of automotive electrical/electronic systems, including the diagnosis, service and repair of the general electrical system, charging and lighting systems, gauges, warning devices and driver information systems, horn and wiper/washer as well as other electrical/electronic accessories.

TAS 126 Manual Transmission / Transaxle & Drive Train 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, inspection, diagnosis, adjustment and repair of manual drive trains and axles, including the diagnosis and repair of clutches, drive and half-shaft universal and constant velocity (CV), joints, rear axles and four-wheel drive components.

TAS 127 Automatic Transmissions Repair 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, diagnosis, adjustment and repair of automatic transmissions and transaxles, both on and off the vehicle and includes the disassembly of oil pumps, converters, gear trains, shafts, bushings, cases and friction and reaction units.

TAS 128 Heating & Air Conditioning 4 Cr Hrs
Includes classroom and laboratory instruction in the operation, diagnosis, adjustment and repair of automotive heating and air conditioning systems, including the diagnosis and repair of all related refrigerant system components, heating, ventilation and engine cooling systems. Provides training on refrigerant recovery and handling in accordance with strict federal government guidelines.

TAS 131 Engine Performance I 4 Cr Hrs
Includes classroom and laboratory instruction in operation, diagnosis, adjustment and repair of driveability concerns in the automotive engine system, including the diagnosis and repair of general engine performance systems, computerized engine control systems, ignition systems, fuel, air induction, exhaust systems and emissions standards.

TAS 132 Engine Performance II 4 Cr Hrs
Includes classroom and laboratory instruction in operation, diagnosis, adjustment and repair of driveability concerns in the automotive engine system, including the diagnosis and repair of general engine performance systems, computerized engine control systems, fuel, air induction, exhaust systems and emissions standards.

TAS 200 Advanced Electronic Transmission Diagnosis 3 Cr Hrs
Introduces automatic transmission hydraulic/mechanical and electronic diagnosis and repair. Topics include electronically controlled automatic transmissions, automatic transmission electrical and electronic problems and diagnosis and repair.
Aviation

Advanced Aerostructures

AER 132  Aerostructures Assembly  4 Cr Hrs
Provides instruction in the fundamentals of assembly, meeting set standards, safety issues, use of common aircraft sheetmetal tools, sealant application, math and aircraft blueprint reading. Students learn to identify fasteners, install and remove fasteners, assemble sheetmetal components and identify and maintain proper “skin” quality. Students receive classroom instruction and demonstration as well as shop demonstration and performance.

AER 133  Advanced Aerostructures  2 Cr Hrs
Provides instruction in the advanced skills of assembly, using set standards, safety issues, use of common aircraft sheetmetal tools, sealant application, math and aircraft blueprint reading. Students learn to identify fasteners, install and remove fasteners, assemble sheetmetal components and identify and maintain proper “skin” quality. Repair techniques and the more difficult applicable skills for aviation manufacturing are the focus of this course. Students receive classroom instruction and demonstration as well as shop demonstration and performance.

AVC 100  Aerospace Safety  1 Cr Hr
Provides an in-depth study of the human and safety practices required to work in aviation and manufacturing fields. Topics include an introduction to Occupational Safety and Health Administration (OSHA) regulations; safety tools, equipment and procedures; hazardous waste; and first aid and cardiopulmonary resuscitation.

AVC 101  Applied Shop Math  2 Cr Hrs
Focuses on skills required to complete common shop math problems including reading and interpreting part dimensions, checking part features and recording accurate measurements. The application of mathematical skills to the manufacturing environment is an integral part of the course.

AVC 102  Precision Instruments  1 Cr Hr
Provides students with the knowledge and skills needed to utilize precision measurement tools in the manufacturing and aerospace environments. Students learn to utilize the different types of tools, interpret the measurement results and apply the results to industry-specific scenarios.

AVC 106  Aerospace Blueprint Reading  2 Cr Hrs
Builds basic blueprint reading skills and leads to a systematic approach to reading aircraft blueprints. Students learn a systematic approach to reading aircraft blueprints through actual manipulation of working drawings.

EMP 100  Global Professional Standards  2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

Aerospace Coatings & Paint Technology

ACP 100  Introduction to Coatings & Paint Technology  3 Cr Hrs
The objective of this course is to discuss the fundamentals of paint composition, application, and processing. As such, basic ingredients of paint properties will be discussed. Paint selection, performance criteria, application methods, defects, problem resolution, future paint and raw materials needs will be discussed.

ACP 101  Surface Preparation & Coatings  4 Cr Hrs
This course is a study of surface preparation from various coating and painting applications on all interior and exterior aircraft components. The content includes safety procedures including hazardous waste, surface preparations techniques, material application techniques and effectively using industry based technologies.

ACP 102  Performance & Durability of Coatings  3 Cr Hrs
The objective of this course is to discuss facts and findings affecting performance and permanence of coatings. Topics include: methods of enhancing durability and permanence, properties and selection of raw materials processes leading to robust coatings, service – life prediction, and coating evaluation.

ACP 103  Color Technology  3 Cr Hrs
This course is a study of the fundamentals of visual color match evaluation and of color measurement for industrial color control. Students utilize industry appropriate technologies on projects that demonstrate proper lighting, observe testing, objective terminology for color difference and determination of tolerances. Students analyze measurement date of the same industrial sample of study correlation of visual to measured results.

ACP 104  Specialized Coating Processes  3 Cr Hrs
This course is a study in special coatings for aerospace structures. Topics include mixing, application and curing coating materials, environmental effects of coating materials and general and hazardous material handling safety. The course also covers equipment used in these processes.

ACP 105  Specialized Detailing  3 Cr Hrs
This course provides instruction in the equipment, material, and techniques used in the application of special paints. Emphasis will be placed on aircraft refinishing procedures. Topics include: safety; paint identification; equipment use and maintenance; color application; original finish sealing; panel-spot repair and blending; thinners, reducers, and additives; and composite materials, plastics, and rubber refinishing.

ACP 106  Aerospace Coatings & Materials  3 Cr Hrs
This course covers advanced technologies for coating materials and applications. Topics include: coating technologies that address aesthetics, durability, and environmental issues.

ACP 107  Aerospace Program Management  3 Cr Hrs
This course will introduce basic program management skills and techniques. Topics covered include: role of project management, communication, interpersonal skills, schedule management, interfacing with other units, project management software use, compliance reporting, and risk management.
Course Descriptions

ACP 110  Integrated Assembly Capstone Project  3 Cr Hrs
This course addresses the full spectrum of the Coating Technicians role within the industry. Problem solving strategies within a team concept will be emphasized. Industry and applied research projects will be assigned.

ACP 110  Technical Co-Operative Project  4 Cr Hrs
Students will work on a part-time basis in a job directly related to applied technologies. The employer and supervising instructor will evaluate students' progress. Upon course completion, students will be able to apply skills and knowledge in an employment setting.

AVC 100  Aerospace Safety  1 Cr Hr
Provides an overview of the materials and processes used in the industry and the major aircraft systems.

AVC 107  Fundamentals for Aerospace Manufacturing  1 Cr Hr
Provides an overview of the materials and processes used in the industry and the major aircraft systems.

AVC 108  Aircraft Systems & Components  4 Cr Hrs
Provides the aviation student with an in-depth knowledge of the major systems and components of the aircraft. Students begin by learning to read the schematics of the systems and then move on to the operation of each system.

EMP 100  Global Professional Standards  2 Cr Hrs
Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

Aerospace Fiber Optics & Data Cable Installation

SPH 111  Interpersonal Communication  3 Cr Hrs
Improves individual communication skills. By understanding dependent networking certification exam, Network + or the Electronics Technicians Association, International Certified Network Systems Technician certification. This course covers networking, local area networks (LAN), wide area networks (WAN), protocols, topologies, transmission media and security; and focuses on operating network management systems and implementing the installation of networks. It reviews cabling, connection schemes, the fundamentals of the LAN and WAN technologies, TCP/IP configuration and troubleshooting, remote connectivity and network maintenance and troubleshooting. Topics include basic knowledge of networking technology, physical layer, data layer, network layer, transporter layer, TCP/IP fundamentals, TCP/IP suite — utilities, remote connectivity, security, implementing the installation of network, maintaining and support the network and troubleshooting the network.

ASF 101  Introduction to Data Cabling  3 Cr Hrs
Introduces the fundamentals of copper data cabling communication systems from low data rates systems through gigabit and higher data rate systems. It provides detailed instruction on the theory, operation, installation, testing, troubleshooting and documentation of a copper data cabling installation. Hands-on instruction is provided in Category 5e, Category 6 and RG-6 installation, termination and testing.

ASF 102  Introduction to Fiber Optics  3 Cr Hrs
Introduces the fundamentals of fiber optic communication systems from low data rates systems through gigabit and higher data rate systems. It provides instruction in fiber optics and includes the history of fiber optics, principles of fiber optic transmission, basic principles of light, optical fiber construction and theory, optical fiber characteristics, safety, fiber optic cables, splicing, connectors, fiber optic light sources, fiber optic detectors and receivers, cable installation and hardware, fiber optic system design considerations, test equipment and link/cable testing. Hands-on instruction is provided in fiber optic connector installation, mechanical splicing, fusion splicing and testing.

ASF 103  Introduction to National Electric Code  2 Cr Hrs
Introduces the National Electrical Code (NEC) and focuses on the requirements for data and fiber optic cable installations. Emphasis is placed on grounding, bonding, cable identification, cable markings, cable types, cable substitution.
and resistance to fire.

**AVC 100 Aerospace Safety** 1 Cr Hr  
Provides an in-depth study of the human and safety practices required to work in aviation and manufacturing fields. Topics include an introduction to Occupational Safety and Health Administration (OSHA) regulations; safety tools, equipment and procedures; hazardous waste; and first aid and cardiopulmonary resuscitation.

**AVC 101 Applied Shop Math** 2 Cr Hrs  
Focuses on skills required to complete common shop math problems including reading and interpreting part dimensions, checking part features and recording accurate measurements. The application of mathematical skills to the manufacturing environment is an integral part of the course.

### Aerospace Quality Control

**AER 150 Assembly Overview I** 1 Cr Hr  
Provides students with a general overview of sheetmetal and composites. Working in a hands-on setting, students learn the basics of aircraft assembly while focusing on inspection techniques.

**AER 151 Electrical Overview** 2 Cr Hrs  
Provides the entry-level inspector with a well-rounded knowledge base in bonding, soldering and crimping. Learning the techniques and principles takes place in the classroom and laboratory settings.

**AER 153 Aerospace Blueprint Reading for Inspectors** 2 Cr Hrs  
Continues the study of aerospace blueprint applications with an emphasis on the role of inspection. Students learn advanced skills and apply blueprint reading skills to inspection scenarios.

**AER 159 Aircraft Familiarization for Inspectors** 3 Cr Hrs  
Provides a general familiarization of aircraft systems and processes. Topics include introduction to aircraft systems, aerospace regulations, Electrostatic Discharge (ESD), conformity and process improvement.

**AER 160 Aircraft Familiarization** 2 Cr Hrs  
Provides entry-level quality control technicians with the hands-on experience they need to expect and document aircraft systems and processes. Topics include an introduction to documentation procedures and verification of aircraft systems.

**AER 190 Integrated Capstone Project** 2 Cr Hrs  
Addresses the full spectrum of the quality control technician’s role within the industry. Problem-solving strategies in a team concept are emphasized. Industry and applied research projects are assigned.

**AER 191 Quality Control Technician Internship** 2 Cr Hrs  
Students intern on a part-time basis in a position directly related to applied technologies. The employer and supervising instructor evaluate students’ progress. Upon course completion, students are able to apply skills and knowledge in an employment setting.

### Applied Science of Aviation Interiors

**AVC 100 Aerospace Safety** 1 Cr Hr  
Provides an in-depth study of the human and safety practices required to work in aviation and manufacturing fields. Topics include an introduction to Occupational Safety and Health Administration (OSHA) regulations; safety tools, equipment and procedures; hazardous waste; and first aid and cardiopulmonary resuscitation.

**AVC 101 Applied Shop Math** 2 Cr Hrs  
Focuses on skills required to complete common shop math problems including reading and interpreting part dimensions, checking part features and recording accurate measurements. The application of mathematical skills to the manufacturing environment is an integral part of the course.

**AVC 102 Precision Instruments** 1 Cr Hr  
Provides students with the knowledge and skills needed to utilize precision measurement tools in the manufacturing and aerospace environments. Students learn how to utilize the different types of tools, interpret the measurement results and apply those results to industry specific scenarios.

**AVC 103 Geometric Dimensioning & Tolerancing** 1 Cr Hr  
Provides an understanding of the basic terms and principles of geometric dimensioning and tolerancing (GD&T). The course provides students with the skills and knowledge necessary to identify GD&T symbols and how to interpret those symbols.

**AVC 106 Aerospace Blueprint Reading** 2 Cr Hrs  
Builds basic blueprint reading skills and leads to a systematic approach to reading aircraft blueprints. Students learn a systematic approach to reading aircraft blueprints through actual manipulation of working drawings.

**EMP 100 Global Professional Standards** 2 Cr Hrs  
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

**AER 106 Aerospace Blueprint Reading** 2 Cr Hrs  
Builds basic blueprint reading skills and leads to a systematic approach to reading aircraft blueprints. Students learn a systematic approach to reading aircraft blueprints through actual manipulation of working drawings.
of geometric dimensioning and tolerancing (GD&T). The course provides students with the skills and knowledge necessary to identify GD&T symbols and how to interpret those symbols.

**AVC 104 Quality Control Concepts** 1 Cr Hr
Covers quality assurance principles including the history of the quality movement, group problem solving, data collection, control charts, statistical methods such as statistical process control (SPC), process capability studies and the concepts associated with lean manufacturing.

**AVC 105 Aircraft Familiarization** 1 Cr Hr
Provides an introduction to the world of aviation. Students are introduced to basic aerospace concepts including the history of flight, principles of flight, the role of regulation in the industry and the major aircraft systems.

**AVC 106 Aerospace Blueprint Reading** 2 Cr Hrs
Builds basic blueprint reading skills and leads to a systematic approach to reading aircraft blueprints. Students learn a systematic approach to reading aircraft blueprints through actual manipulation of working drawings.

**AVC 107 Fundamentals for Aerospace Manufacturing** 1 Cr Hr
Provides an overview of the materials and processes used in manufacturing high performance, lightweight and reliable structures for aerospace products. Emphasis is placed on process evaluation techniques that can be extrapolated to other system areas such as new products and new technology.

**AVC 108 Aircraft Systems & Components** 4 Cr Hrs
Provides the aviation student with an in-depth knowledge of the major systems and components of the aircraft. Students begin by learning to read the schematics of the systems and then move on to the operation of each system.

**AIN 100 Hand & Power Tools** 2 Cr Hrs
This course introduces students to the various hand and power tools used in the aviation industry specifically related to Aircraft Interiors.

**AIN 105 Regulatory Requirements** 1 Cr Hrs
The course is designed to prepare students for meeting the FAA requirements when working on the interior of an aircraft. The course outlines the procedures, manuals, regulations, and documents used in performing repairs, installations, and alterations on aircraft interiors. Hazardous material regulations and procedures are also addressed.

**AIN 110 Aircraft Interior Installer I** 4 Cr Hrs
This course provides basic construction techniques for sheet metal and composite fixtures used in aircraft interiors. Topics include machining of materials, fastener installation, forming, preservative coatings, layout and marking to facilitate fabrication or assembly.

**AIN 115 Aircraft Interior Installer II** 5 Cr Hrs
This course is designed to prepare the airframe for installation including attachment and fitting of insulation, soundproofing, carpeting, as well as wall and window panels. Procedures and techniques for finish and touchup painting are included in this course.

**AIN 120 Aircraft Interior Installer III** 6 Cr Hrs
This course is designed to prepare students for the final installation of interior fixtures and to prepare the aircraft for final inspection.

**AIN 125 Technical Co-Operative Project** 4 Cr Hrs
for Aviation Interior Installation
The course is designed to provide the student with practical hands-on experience working on Aircraft Interior Installations. Students will be required to work on a variety of projects in order to develop diagnostic skills, to reinforce and enhance classroom instruction. Students will work on a part-time basis in a job directly related to applied technologies. This course addresses the full spectrum of Aviation Interior Installers role with the industry. Problem solving strategies within a team concept will be emphasized. Industry and applied research projects will be assigned.

**AIN 130 Integrated Assembly Capstone Project** 4 Cr Hrs
This course addresses the full spectrum of the Aviation Interiors technician's role within the industry. Problem solving strategies within a team concept will be emphasized. Industry and applied projects will be assigned.

**CAT 122 CATIA Enovia DMU** 2 Cr Hrs
This course is intended for student who want to learn to view and analyze CAD data. It also covers the various analytical and navigational tools available within ENOVIA DMU. It will also show how functional dimensioning and tolerancing information can be viewed. Students are introduced to the product environment and the 2D viewer environment to view all types of data.

**EMP 100 Global Professional Standards** 2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

### Applied Science of Aviation Manufacturing

**AER 132 Aerostructures Assembly** 4 Cr Hrs
Provides students with the skills and knowledge to succeed in the aircraft manufacturing and service industry. Students receive classroom instruction and shop demonstration. Instruction includes the fundamentals of blueprint reading, precision measurement, communication and math skills, business operations and environmental health and safety. Instruction also includes the fundamentals of assembly, meeting manufacturing standards, use of common aircraft sheetmetal tools and sealant application. Students learn how to identify fasteners, install and remove fasteners, assemble sheetmetal components and identify and maintain proper “skin” quality.

**AER 133 Advanced Aerostructures** 2 Cr Hrs
Provides students with instruction in advanced assembly techniques including dimpling, repair, sealing, removal and replacement of fasteners and curved surfaces. Emphasis is placed on the demonstration and practicing of techniques in the laboratory setting.
AVC 100 Aerospace Safety 1 Cr Hr
Provides an in-depth study of the human and safety practices required to work in aviation and manufacturing fields. Topics include an introduction to Occupational Safety and Health Administration (OSHA) regulations; safety tools, equipment and procedures; hazardous waste; and first aid and cardiopulmonary resuscitation.

AVC 101 Applied Shop Math 2 Cr Hrs
Focuses on the skills required to complete common shop math problems including reading and interpreting part dimensions, checking part features and recording accurate measurements. The application of mathematical skills to the manufacturing environment is an integral part of the course.

AVC 102 Precision Instruments 1 Cr Hr
Provides students with the knowledge and skills needed to utilize precision measurement tools in the manufacturing and aerospace environment. Students learn to utilize the different types of tools, interpret the measurement results and apply those results to industry specific scenarios.

AVC 103 Geometric Dimensioning & Tolerancing 1 Cr Hr
Provides an understanding of the basic terms and principles of geometric dimensioning and tolerancing (GD&T). The course provides students with the skills and knowledge necessary to identify GD&T symbols and how to interpret those symbols.

AVC 104 Quality Control Concepts 1 Cr Hr
Covers quality assurance principles including the history of the quality movement, group problem solving, data collection, control charts, statistical methods such as statistical process control (SPC), process capability studies and the concepts associated with lean manufacturing.

AVC 105 Aircraft Familiarization 1 Cr Hr
Provides an introduction to the world of aviation. Students are introduced to basic aerospace concepts including the history of flight, principles of flight, the role of regulation in the industry and the major aircraft systems.

AVC 106 Aerospace Blueprint Reading 2 Cr Hrs
Builds basic blueprint reading skills and leads to a systematic approach to reading aircraft blueprints. Students learn a systematic approach to reading aircraft blueprints through actual manipulation of working drawings.

AVC 107 Fundamentals for Aerospace Manufacturing 1 Cr Hr
Provides an overview of the materials and processes used in manufacturing high performance, lightweight and reliable structures for aerospace products. Emphasis is placed on process evaluation techniques that can be extrapolated to other system areas such as new products and new technology.

AVC 108 Aircraft Systems & Components 4 Cr Hrs
Provides the aviation student with an in-depth knowledge of the major systems and components of the aircraft. Students begin by learning to read the schematics of the systems and then move on to the operation of each system.

AVT 101 Basic Electricity & Electronics 3 Cr Hrs
For beginning students who have little or no knowledge about fundamental concepts of electricity and electronics. It is helpful, however, if students have some basic knowledge of algebra and trigonometry. In covering fundamentals of electricity and electronics, this course focuses on essential topics for the technician and the all-important development of testing and troubleshooting skills for electronic circuits and systems.

AVT 102 Basic Electricity & Electronics Laboratory 4 Cr Hrs
Developed especially for use with the AVT 101 Basic Electricity & Electronics course. The experiments are coordinated with the text used in AVT 101. The experiments are presented starting with a review of mathematical concepts important for the understanding of the fundamental underlying principles of electricity and electronics. These experiments build on one another and provide validation of lessons learned in theory provided in AVT 101.

AVT 103 Introduction to Avionics 3 Cr Hrs
Covers major phases of avionics from navigation, communication and surveillance to sophisticated systems using state-of-the-art sensors and computations. Procedures and practices are also presented. The intent is to give students and/or technicians an overview of the entire avionics field, not just a single airborne or ground system. An important role of avionics and aviation is the abbreviations and acronyms used in the aviation industry. These are introduced and emphasis is placed on the most commonly used in today's environment.

AVT 104 Electrical & Electronics Laboratory 1 Cr Hrs
Designed to help students prepare to troubleshoot and repair wire harnesses and cannon plug repair.

CFT 101 Introduction to Composites 2 Cr Hrs
An introductory course into the materials and processes associated with polymer composite structures, components and design. Emphasis is placed on material properties, manufacturing process and safety. Hands-on laboratory activities supplement classroom content.

CFT 102 Composite Finish Trim 2 Cr Hrs
Provides students with an understanding of the processes and procedures used to finish trim composite parts. Topics include safety, documentation, tools, procedures and inspection.

CFT 103 Composite Assembly 2 Cr Hrs
Teaches the fundamentals of joining composite structures. Adhesive bonding as well as mechanical fasteners is covered. Safe procedures are emphasized. Hole preparation for mechanical fasteners and surface preparation for adhesive bondings are essential elements of this course. The course consists of theory and practical application through hands-on projects.

CFT 104 Composite Fabrication Methods & Applications 2 Cr Hrs
Fundamentals of composite structure fabrication methods and applications are covered including, hand lay-up, bonding, vacuum bagging and resin transfer molding. Emphasis is also placed on composite safety and inspection/testing of composite components.

EMP 100 Global Professional Standards 2 Cr Hrs
Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.
Aviation Maintenance Technology

AMT 105 Technical Mathematics 2 Cr Hrs
Studies multiple concepts in mathematics. Students obtain functional efficiency in ratios, proportions, areas, volumes, angular measurements, graphs, roots, squares, cubes and basic trigonometry.

AMT 107 Aircraft Drawings 1 Cr Hr
Studies the basics of blueprint drawings, and students practice obtaining desired information from blueprints. Includes types of drawings, lines, dimensions, tolerances, specifications, sketching techniques and graphic interpolation.

AMT 108 Aircraft Coverings 2 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to airframe coverings. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to the Airframe Subjects No. 4 and No. 5.

AMT 109 Physics 2 Cr Hrs
Provides basic information on principles, fundamentals and technical procedures of physics as they relate to an aircraft.

AMT 111 Materials & Processes 4 Cr Hrs
Allows students to identify plumbing lines by size and fitting, different tube forming processes and types of aircraft bolts and threaded fasteners. Students are able to demonstrate knowledge of torques, torque wrenches, control cables, rivets, seals, wipers and sealing compounds and acquire technical skills required for preventative maintenance inspections.

AMT 112 Assembly & Rigging 4 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft assembly and rigging. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to the airframe mechanic.

AMT 113 Basic Electricity 4 Cr Hrs
A fundamental treatment of electricity with emphasis on physical circuit components, direct current circuit analysis and related mathematics.

AMT 115 Weight & Balance 2 Cr Hrs
An introduction to Federal Aviation Administration required subjects relating to weighing of aircraft, the performance of weight and balance calculations and appropriate maintenance record entries.

AMT 116 Aircraft Instrument Systems 1 Cr Hr
Develops correct safety practices, comprehensive knowledge and technical skills required to performing maintenance procedures relevant to aircraft instrument systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 36 and No. 37.

AMT 117 Mechanics Privileges & Limitations 1 Cr Hr
Acquaints and exercises mechanic privileges within the limitations prescribed by Part 65 of the Federal Aviation Regulations Aviation Maintenance Technology manual.

AMT 119 Maintenance Publications, Forms & Records 2 Cr Hrs
Enables students to read, comprehend and apply information contained in Federal Aviation Administration and manufacturers’ aircraft maintenance specifications, data sheets, manuals, publications and related Federal Aviation Administration regulations. Teaches students how to write descriptions of work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records.

AMT 120 Airframe Inspection 3 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to airframe inspection. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subject No. 28.

AMT 123 Cleaning & Corrosion Control 1 Cr Hr
Provides basic information on identifying and selecting cleaning materials, inspecting, removing and treating aircraft corrosion and performing aircraft cleaning.

AMT 125 Fluid Lines & Fittings 1 Cr Hr
Provides basic information on principles, fundamentals and technical procedures relating to fuel, fuel systems, fluid lines and fittings.

AMT 127 Ground Operations & Service 2 Cr Hrs
Provides basic information on principles, fundamentals and technical procedures used in ground handling and support equipment as they relate to an aircraft. Students learn to demonstrate the correct and safe procedures for aircraft tie down, fueling, using auxiliary power units and identifying the different types of fire extinguishers and their proper applications.

AMT 131 General Review & Test 1 Cr Hr
Upon completion of Airframe or Powerplant, students complete the General Laser Grade written exam and complete the general oral and practical exam.

AMT 136 Propellers 4 Cr Hrs
Provides basic information on principles, fundamentals and technical procedures associated with propellers as they relate to the powerplant rating. Students learn how to inspect, check, service and repair propeller synchronizing and ice control systems; repair fixed-pitch, constant-speed and feathering propellers and propeller-governing systems; identify and select propeller lubricants; balance propellers; repair propeller control system components; and repair aluminum alloy propeller blades.

AMT 151 Aircraft Electrical Systems 6 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft electrical systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 48, No. 49 and No. 50.

AMT 153 Hydraulic & Pneumatic Power Systems 2 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to hydraulic and pneumatic power systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 30, No. 31 and No. 32.
AMT 155 Aircraft Landing Gear Systems 4 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft landing gear systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subject No. 29.

AMT 159 Aircraft Fuel Systems 2 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft fuel systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 41, No. 42, No. 43, No. 44, No. 45, No. 46 and No. 47.

AMT 161 Fire Protection Systems 1 Cr Hr
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to fire protection systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 54 and No. 55.

AMT 163 Ice & Rain Control Systems 1 Cr Hr
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to ice and rain control systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subject No. 53.

AMT 165 Cabin Atmosphere Control Systems 2 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to cabin atmosphere control systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 33, No. 34 and No. 35.

AMT 167 Aircraft Welding 2 Cr Hrs
Topics address repair procedures for steel, magnesium, brass and aluminum materials used in aircraft assembly and selection and application of appropriate methods of welding, brazing and soldering steel, magnesium, brass and aluminum.

AMT 169 Communication & Navigation Systems 2 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft communication and navigation systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 38, No. 39 and No. 40.

AMT 173 Position & Warning Systems 1 Cr Hr
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft position and warning systems. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to the Airframe mechanic.

AMT 177 Wood Structures 1 Cr Hr
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to airframe wood structure. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to the airframe mechanic.

AMT 179 Aircraft Sheetmetal & Non-Metallic Structures 8 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to airframe aircraft sheetmetal structures. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to the Airframe mechanic.

AMT 183 Aircraft Finishes 2 Cr Hrs
Develops correct safety practices, comprehensive knowledge and technical skills required to perform maintenance procedures relevant to aircraft finishes. The curriculum is designed to meet specific Federal Aviation Administration regulations that pertain to Airframe Subjects No. 7, No. 8 and No. 9. Academic standard for passing this class is a minimum of 70 percent for the written and practical project exams.

AMT 186 Airframe Review & Test 4 Cr Hrs
Students apply for Airframe certification, complete the Airframe Laser Grade written exam and the Airframe oral and practical exam.

AMT 200 Reciprocating Engines 11 Cr Hrs
Enables students to inspect and repair radial engines; overhaul reciprocating engines; inspect, check, service and repair opposed and radial engines and reciprocating engine installations; troubleshoot and remove reciprocating engines; and perform powerplant conformity and airworthiness inspections.

AMT 202 Engine Inspection 2 Cr Hrs
Enables students to perform powerplant conformity and airworthiness inspections.

AMT 203 Powerplant Ignition Systems 3 Cr Hrs
Enables students to overhaul magneto and ignition harness, repair engine ignition and starting system components, inspect, check, service, troubleshoot and repair reciprocating and turbine engine ignition systems and pneumatic starting system components.

AMT 204 Engine Fuel Systems 1 Cr Hr
Enables students to inspect, check, service, troubleshoot and repair engine fuel systems and components.

AMT 206 Auxiliary Power Units 1 Cr Hr
Enables students to inspect, check, service and troubleshoot turbine-driven auxiliary power units and provide basic information on principles, fundamentals and technical procedures involving auxiliary power units as they relate to the powerplant rating.

AMT 207 Fuel Metering Systems 4 Cr Hrs
Enables students to overhaul aircraft carburetors, repair engine fuel metering system components, inspect, check, service, troubleshoot repair and adjust turbine engine fuel-metering systems and electronic engine fuel controls and reciprocating engine fuel metering systems.

AMT 208 Engine Electrical Systems 2 Cr Hrs
Provides students with the basic information to install, check, service and repair engine electrical system components, electrical wiring, controls, switches, indicators and protective devices.
AMT 211 Powerplant Cooling Systems 1 Cr Hr
Enables students to repair engine cooling system components and inspect, check, troubleshoot, service and repair engine cooling systems.

AMT 213 Powerplant Lubrication Systems 3 Cr Hrs
Enables students to learn to identify and select correct lubricants for aircraft use, repair engine lubrication system components and inspect, check, service, troubleshoot and repair engine lubrication systems.

AMT 217 Induction Systems 1 Cr Hr
Covers the basics of induction and airflow systems. Students learn to inspect, check, troubleshoot, service and repair engine ice and rain control systems, heat exchangers, superchargers and turbine engine airflow and temperature control systems as well as carburetor air intake and induction manifolds.

AMT 219 Powerplant Exhaust Systems 2 Cr Hrs
Enables students to learn to repair engine exhaust system components, inspect, check, troubleshoot, service and repair engine exhaust systems and engine thrust reverser systems and related components.

AMT 223 Powerplant Fire Protection Systems 1 Cr Hr
Provides basic information on principles, fundamentals and technical procedures in the engine fire-protection system as it relates to the powerplant rating. Students learn to inspect, check, service, troubleshoot and repair engine fire-detection and extinguishing systems.

AMT 225 Powerplant Instrument Systems 1 Cr Hr
Enables students to troubleshoot, service, inspect and repair electrical and mechanical fluid rate-of-flow indicating systems and engine temperature, pressure and revolutions per minute (RPM) indicating systems.

AMT 227 Turbine Engines 9 Cr Hrs
Enables students to overhaul, install, troubleshoot and remove turbine engines. Students inspect unducted fans; check, service and repair turbine engines and turbine engine installations; and perform powerplant conformity and airworthiness inspections.

AMT 231 Powerplant Test & Review 4 Cr Hrs
Students apply for Powerplant certification, complete the Powerplant Laser Grade written exam and complete the Powerplant oral and practical exams.

Avionics Technology

AVT 100 Technical Mathematics 3 Cr Hrs
Provides technical math principles.

AVT 101 Basic Electricity & Electronics 3 Cr Hrs
For the beginning student who has little or no knowledge about fundamental concepts of electricity and electronics. It is helpful, however, if the student has some basic knowledge of algebra and trigonometry. In covering fundamentals of electricity and electronics, this course focuses on essential topics for the technician and the all-important development of testing and troubleshooting skills for electronic circuits and systems.

AVT 102 Basic Electricity & Electronics Laboratory 4 Cr Hrs
Developed especially for use with AVT 101 Basic Electricity & Electronics course. The experiments coordinate with text used in AVT 101. The experiments are presented starting with a review of mathematical concepts important for the understanding of the fundamental underlining principles of electricity and electronics. These experiments build on one another and provide validation of lessons learned in theory provided in AVT 101.

AVT 103 Introduction to Avionics 3 Cr Hrs
Covers major phases of avionics from navigation, communication and surveillance to sophisticated systems using state-of-the-art sensors and computations. Procedures and practices are also presented. The intent is to give students and/or technicians an overview of the entire avionics field, not just a single airborne or ground system. An important role of avionics and aviation are the abbreviations and acronyms used in the aviation industry. These are introduced and emphasis is placed on the ones most commonly used in today’s environment.

AVT 105 Avionics Systems & Troubleshooting 2 Cr Hrs
Helps students increase their knowledge and acquire the hands-on skills to work in the avionics field and work toward a Federal Communications Commission general class radiotelephone license. Students develop the safety procedures and competencies needed to apply the principles of avionics operation and maintenance required of avionics technicians.

AVT 106 Avionics Systems & Troubleshooting Laboratory 2 Cr Hrs
Helps students increase their knowledge and acquire the hands-on skills to work in the avionics field and work toward an Federal Communications Commission general class radiotelephone license. Students develop the safety procedures and competencies needed to apply the principles of avionics operation and maintenance required of avionics technicians.

AVT 107 Basic Communications Electronics 3 Cr Hrs
Helps students increase their knowledge and acquire the hands-on skills to work in the avionics field and work toward a Federal Communications Commission general class radiotelephone license. Students develop the safety procedures and competencies needed to apply the principles of electronics that are required of avionics technicians.

AVT 108 Wiring & Cannon Plug Laboratory 2 Cr Hrs
Designed to help students prepare to troubleshoot and repair wire harnesses and cannon plug repair.

AVT 110 Aircraft Electrical, Communication & Navigation Systems (Part 1) 3 Cr Hrs
Studies aircraft electrical, communication and navigation systems. Topics include install, check and service airframe electrical wiring, controls, switches, indicators and protective devices; inspect, check, troubleshoot, service and repair alternating and direct current electrical systems; repair and inspect aircraft electrical system components, crimp and splice wiring to manufacturer's specifications and repair pins and sockets of aircraft connectors; inspect, check and troubleshoot autopilot servos and approach coupling systems; inspect, check and service aircraft electronic communication and navigation systems including VHF passenger address interphones and static discharge devices, aircraft VOR, ILS LORAN, radar beacon transponders, flight management computers and GPWS; inspect and repair
antenna and electronic equipment installations; and inspect, check and troubleshoot constant speed and integrated speed drive generators.

**AVT 111 Aircraft Electrical, Communication & Navigation Systems (Part 1) Laboratory 3 Cr Hrs**

Studies aircraft electrical, communication and navigation systems. Topics include install, check and service airframe electrical wiring, controls, switches, indicators and protective devices; inspect, check, troubleshoot, service and repair alternating and direct current electrical systems; repair and inspect aircraft electrical system components, crimp and splice wiring to manufacturer’s specifications and repair pins and sockets of aircraft connectors; inspect, check and troubleshoot autopilot servos and approach coupling systems; inspect, check and service aircraft electronic communication and navigation systems including VHF passenger address interphones and static discharge devices, aircraft VOR, ILS LORAN, radar beacon transponders, flight management computers and GPWS; inspect and repair antenna and electronic equipment installations; and inspect, check and troubleshoot constant speed and integrated speed drive generators.

**AVT 112 Aircraft Electrical, Communication & Navigation Systems (Part 2) 3 Cr Hrs**

Studies aircraft electrical, communication and navigation systems. Topics include install, check and service airframe electrical wiring, controls, switches, indicators and protective devices; inspect, check, troubleshoot, service and repair alternating and direct current electrical systems; repair and inspect aircraft electrical system components, crimp and splice wiring to manufacturer’s specifications and repair pins and sockets of aircraft connectors; inspect, check and troubleshoot autopilot servos and approach coupling systems; inspect, check and service aircraft electronic communication and navigation systems including VHF passenger address interphones and static discharge devices, aircraft VOR, ILS LORAN, radar beacon transponders, flight management computers and GPWS; inspect and repair antenna and electronic equipment installations; and inspect, check and troubleshoot constant speed and integrated speed drive generators.

**AVT 113 Aircraft Electrical, Communication & Navigation Systems (Part 2) Laboratory 3 Cr Hrs**

Studies aircraft electrical, communication and navigation systems. Topics include install, check and service airframe electrical wiring, controls, switches, indicators and protective devices; inspect, check, troubleshoot, service and repair alternating and direct current electrical systems; repair and inspect aircraft electrical system components, crimp and splice wiring to manufacturer’s specifications and repair pins and sockets of aircraft connectors; inspect, check and troubleshoot autopilot servos and approach coupling systems; inspect, check and service aircraft electronic communication and navigation systems including VHF passenger address interphones and static discharge devices, aircraft VOR, ILS LORAN, radar beacon transponders, flight management computers and GPWS; inspect and repair antenna and electronic equipment installations; and inspect, check and troubleshoot constant speed and integrated speed drive generators.

**AVT 115 Basic Communications Electronics Laboratory 4 Cr Hrs**

Helps students increase their knowledge and acquire the

**Composite Technology**

**AVC 100 Aerospace Safety 1 Cr Hr**

Provides an in-depth study of the human and safety practices required to work in aviation and manufacturing fields. Topics include an introduction to Occupational Safety and Health Administration (OSHA) regulations; safety tools, equipment and procedures; hazardous waste; and first aid and cardiopulmonary resuscitation.

**AVC 101 Applied Shop Math 2 Cr Hrs**

Focuses on the skills required to complete common shop math problems including reading and interpreting part dimensions, checking part features and recording accurate measurements. The application of mathematical skills to the manufacturing environment is an integral part of the course.

**AVC 102 Precision Instruments 1 Cr Hr**

Provides students with the knowledge and skills needed to utilize precision measurement tools in the manufacturing and aerospace environment. Students learn to utilize the different types of tools, interpret the measurement results and apply those results to industry specific scenarios.

**AVC 103 Geometric Dimensioning & Tolerancing 1 Cr Hr**

Provides an understanding of the basic terms and principles of geometric dimensioning and tolerancing (GD&T). The course provides students with the skills and knowledge necessary to identify GD&T symbols and how to interpret those symbols.

**AVC 105 Aircraft Familiarization 1 Cr Hr**

Provides an introduction to the world of aviation. Students are introduced to basic aerospace concepts including the history of flight, principles of flight, the role of regulation in the industry and the major aircraft systems.
AVC 106  Aerospace Blueprint Reading  2 Cr Hrs
Builds basic blueprint reading skills and leads to a systematic approach to reading aircraft blueprints. Students learn a systematic approach to reading aircraft blueprints through actual manipulation of working drawings.

AVC 108  Aircraft Systems & Components  4 Cr Hrs
Provides the aviation student with an in-depth knowledge of the major systems and components of the aircraft. Students begin by learning to read the schematics of the systems and then move on to the operation of each system.

CAT 122  CATIA Enovia DMU  2 Cr Hrs
This course is intended for student who want to learn to view and analyze CAD data. It also covers the various analytical and navigational tools available within ENOVIA DMU. It will also show how functional dimensioning and tolerancing information can be viewed. Students are introduced to the product environment and the 2D viewer environment to view all types of data.

CED 101  Computer Essentials  2 Cr Hrs
Develops students’ computer literacy and keyboarding skills and meets the needs of students in associate degree programs and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

CFT 101  Introduction to Composites  2 Cr Hrs
An introductory course for the materials and processes associated with polymer composite structures, components and design. Emphasis is placed on material properties (resins and fibers), manufacturing processes and safety. Some hands-on laboratory activities supplement classroom content.

CFT 106  Composite Finish Trim  2 Cr Hrs
Gives students the skills necessary to safely apply the trim and finishing tools used with composite materials. Teaches how to use trim fixtures, grinding and sanding tools, routers, cutoff wheels, band saw and other power tools. The finish component includes the preparation and application of surfacing products, surface coats, bonding primers, etc. Painting of composite surfaces is taught also.

CFT 107  Composite Assembly  2 Cr Hrs
Teaches the fundamentals of joining composite structures, covers adhesive bonding and mechanical fastening and emphasizes safe procedures. Hole preparation for mechanical fastening and surface preparation for adhesive bonding are essential elements of this course. The course consists of theory and practical application through hands-on projects.

CFT 130  Composite Fabrication Methods & Applications  2 Cr Hrs
Covers fundamentals of composite structure fabrication methods and applications including hand lay-up, bonding, vacuum bagging and resin transfer molding. Emphasis is also placed on composite safety and inspection/testing of composite components.

CFT 140  Composite Inspection  2 Cr Hrs
Provides students with an understanding of the inspection process during repair procedures. Students learn the role of repair technicians in the inspection process while obtaining hands-on experience in basic Nondestructive Inspection (NDI) testing techniques. Emphasis is placed on the importance of documentation in the inspection of repair.

CFT 141  Disassemble & Damage Removal Techniques  3 Cr Hrs
Provides student with the knowledge required to safely and effectively prepare a part for repair. In the laboratory setting, students learn to effectively remove finish and disassemble and remove damaged composite material. Special attention is paid on developing students’ tactile skills in all of these areas.

CFT 142  Composite Repair  4 Cr Hrs
Provides students with the knowledge and techniques used in structural repairs of aircraft made with composite materials. Students complete multiple industry-based projects designed to challenge their skills with both wet lay-up and pre-preg materials.

CFT 143  Complex Composite Repairs  3 Cr Hrs
Provides students with hands-on experience working with nonstructural composite repairs. Instruction includes learning how to solve problems presented in non-production atmospheres in relation to composite repairs. Students also review case studies and problem-solving models.

CFT 144  Electrical Bonding Repair  1 Cr Hr
Provides students with the knowledge and skills used in electrical bonding composite repair. Students learn theory and application using secondary bonding techniques.

EMP 100  Global Professional Standards  2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

Nondestructive Testing

NDT 100  Penetrant Inspection  2 Cr Hrs
Students master the competencies associated with liquid penetrant testing at Level I and Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 101  Magnetic Particle Inspection  3 Cr Hrs
Students master the competencies associated with the magnetic particle testing method at Level I and Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 102  Radiographic Testing Method I  3 Cr Hrs
Students master the competencies associated with radiographic testing at Level I. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 103  Radiographic Testing Method II  3 Cr Hrs
Students master the competencies associated with radiographic testing at Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 104  Materials & Processes for NDT Technology  3 Cr Hrs
Explains the basic principles of material manufacturing processes, discontinuities and defects as related to the
major nondestructive testing methods. This course is an introduction to penetrant liquid, Magnetic Particle Inspection Level I, Eddy Current, Radiographic Testing Method and Ultrasonic Testing Method courses. This course gives students an overview of nondestructive testing disciplines with regard to identifying defects and proper nondestructive inspection application.

NDT 110  Eddy Current Level I  3 Cr Hrs
Students master the competencies associated with electromagnetic (eddy current) testing at Level I. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 111  Eddy Current Level II  3 Cr Hrs
Students master the competencies associated with electromagnetic (eddy current) testing at Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 112  Ultrasonic Testing Method Level I  3 Cr Hrs
Students master the competencies associated with Ultrasonic Testing Methods at Level I. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 113  Ultrasonic Testing Method Level II  3 Cr Hrs
Students master the competencies associated with Ultrasonic Testing Methods at Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

NDT 114  Visual Inspection  3 Cr Hrs
Students master the competencies associated with visual inspection. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work parallels lecture materials from the classroom.

Business and Technology

Administrative Office Technology (online)

ACC 105  Fundamentals of Accounting  3 Cr Hrs
Designed for students who want a working knowledge of accounting, but not to the extent as a person working primarily in the accounting field. Although the basic accounting principles are learned and applied, the course, in comparison to Principles of Accounting I, covers a smaller amount of material at a somewhat slower pace. Recommended for students with no previous accounting background.

BUS 104  Introduction to Business  3 Cr Hrs
A study of various types of business organizations and the relationships of business to government and management to labor. Management’s perspective of production, marketing, personnel, finance and transportation is a constant consideration.

BUS 106  Office Procedures  3 Cr Hrs
Prepares students to handle situations in an office setting. Students learn office management skills including communication, diversity and organization skills.

BUS 121  Business Communications  3 Cr Hrs
Provides knowledge and application of written and oral communications found in business situations. Topics include writing and speaking fundamentals.

BUS 125  Business Law  3 Cr Hrs
A basic introductory law course covering the legal and social environment within which business operates, including the structure, processes and procedures of the American legal system. A substantial portion of the course is devoted to contracts.

BUS 130  Personal Finance  3 Cr Hrs
Designed for non-business majors as well as for business majors. Course concerned with efficient management of money as a primary requirement for successful personal life. Aids individuals in establishing and maintaining credit, using a budget, safeguarding and investing savings and arranging personal insurance.

BUS 200  Principles of Management  3 Cr Hrs
Explores the basic management functions of planning and controlling pertaining to the type of business for which students are preparing to work. The basic management theories, functions and aspects of various types of business are studied.

CED 107  Database & File Management  3 Cr Hrs
Provides students with opportunities to study the rules of record management and is an introduction to Microsoft Access 2007. Students who complete this course should have sufficient background to organize recordkeeping and perform sort, queries and manage databases in Microsoft Access 2007.

CED 108  Word Processing  3 Cr Hrs
Emphasizes an intensive use of word processing software to create and revise business documents. Topics include
equipment and supplies maintenance and usage, work area management, word processing software and productivity.

CED 115 Computer Applications 3 Cr Hrs
Introduces students to the fundamental concepts and operations necessary to use computers. Emphasis is placed on basic functions and familiarity with computer use. Topics include computer terminology, introduction to the Windows environment, networking, word processing, spreadsheets and databases.

ECO 105 Principles of Macroeconomics 3 Cr Hrs
Explores the fundamental aspects of the United States economy including growth, fiscal and monetary policies, unemployment, inflation, national debt, money and the Federal Reserve System. National and international policy topics are discussed.

ECO 110 Principles of Microeconomics 3 Cr Hrs
Attention is given to the methods of producing the goods and services that the economy provides. The following areas are explored: supply, demand, pricing, scarcity, business firms, business anti-trust and public interest, incomes, wages and salaries, income distribution, taxes and tax reform.

PHL 110 Ethics 3 Cr Hrs
A practical approach to recognizing, understanding and solving ethical problems individual in today's society. Basic concepts of applied ethical theories in moral philosophy and reasoning are examined using critical-thinking and responsible decision-making skills.

Business Administration

ACC 104 Computerized Accounting 3 Cr Hrs
Emphasizes a fundamental understanding of corporate and cost accounting. Topics include accounting for a corporation, statement of cash flows, cost accounting, budgeting and long-term liabilities. Laboratory work demonstrates theory presented in class.

ACC 130 Managerial Accounting 3 Cr Hrs
Studies management tools for business decision making, including the evaluation of financial condition and performance of business. Emphasis is given to the process of formulating and utilizing sound accounting data to evaluate alternatives involved in managerial decision-making necessary for planning, executing and controlling a business enterprise. Prerequisite: Minimum grade of C in ACC 170 Principles of Accounting II.

ACC 152 Payroll Accounting 3 Cr Hrs
Provides an understanding of the laws that affect a company's payroll structure and practical application skills in maintaining payroll records. Topics include payroll tax laws, payroll tax forms, payroll and personnel records, computing wages and salaries, taxes affecting employees and employers and analyzing and journalizing payroll transactions. Provides first-hand experience in calculating payroll, completing payroll taxes and preparing records and reports. Topics include payroll tax entries, preparing payroll registers and maintaining employees' earnings records using computerized software.

ACC 160 Principles of Accounting I 3 Cr Hrs
Helps students develop a basic understanding of accounting theory, concepts and procedures. It provides a foundation for further study for students seeking a career in accounting or business administration or for students entering the occupational field.

ACC 170 Principles of Accounting II 3 Cr Hrs
A continuation of ACC 160 Principles of Accounting I. Studies corporations including organization and operations; stockholders' equity, earnings and dividends; long-term assets and liabilities, investments, income tax and their effect on business decisions; and assessing a company's financial performance.

BAF 103 Finance 3 Cr Hrs
Provides an introduction to financial markets, institutions and management in contemporary society. Emphasis is placed on developing an understanding of the financial markets in which funds are traded, the financial institutions participating in facilitating the trade of such funds and the financial principles and concepts behind sound financial management. Topics include financial systems of the United States, business financial management and financing other sectors of the economy.

BAF 105 Introduction to US Financial System 3 Cr Hrs
Emphasizes the relevance of monetary instruments, intermediaries and the central banks as they impact local, state, national and international economics. Topics include history and evolution of financial institutions; monetary instruments and flow; and central banking, operation and policies.

BAF 121 Introduction to Bank Management 3 Cr Hrs
Introduces and applies the components of the continuous development in bank structure and changes in the financial services offered to consumers and businesses. This is a study of the factors that must be achieved to compete in today's marketplace.

BMT 101 Optimize Your Website—Beginning Search Engine Optimization 1 Cr Hr
Provides an understanding of how search engine optimization techniques can be used to improve a Web site and increase its traffic. Emphasis is on understanding how search engines work, the search engine operation (SEO) process, tools and techniques on how you can optimize your Web site.

CED 115 Computer Applications 3 Cr Hrs
Introduces students to the fundamental concepts and operations necessary to use computers. Emphasis is placed on basic functions and familiarity with computer use. Topics include computer terminology, introduction to the Windows environment, networking, word processing, spreadsheets and databases. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

BMT 105 Online Advertising—Beginning Google AdWords 1 Cr Hr
Provides an understanding of how to plan and create a successful online advertising campaign using Google AdWords. Emphasis is on understanding how the AdWords system works, how campaigns should be structured and how keyword lists and ads are developed. Also introduces Google Analytics and conversion tracking and explains the billing cycle.

BMT 110 Blogging for your Business 1 Cr Hr
Provides an understanding of how to plan and create a
successful blogging campaign. Promoting your business by delivering marketing messages in the form of a blog can help attract and retain customers. Blogging can be part of an online marketing campaign, which is a critical skill for today’s business owner and business student.

**BMT 115** Beginning E-Mail Marketing 1 Cr Hr
Provides an understanding of how to plan an e-mail marketing campaign. Examines best practices for sending e-mail messages; discusses deliverability, tracking, list building and Controlling the Assault of Non-Solicited Pornography and Marketing (CAN-SPAM) compliance issues.

**BMT 120** Social Media Madness 1 Cr Hr
Provides an understanding of what social media is and how it can be used in marketing your business. Examines ways to engage social media to promote a product, brand or identity.

**BUS 104** Introduction to Business 3 Cr Hrs
Studies various types of business organizations and the relationships of business to government and management to labor. Management's perspective of production, marketing, personnel, finance and transportation is a constant consideration.

**BUS 125** Business Law 3 Cr Hrs
A basic introductory law course covering the legal and social environment within which businesses operate, including the structure, processes and procedures of the American legal system. A substantial portion of the course is devoted to contracts.

**BUS 130** Personal Finance 3 Cr Hrs
Designed for non-business majors as well as for business majors. Course concerned with efficient management of money as a primary requirement for successful personal life. Aids individuals in establishing and maintaining credit, using a budget, safeguarding and investing savings and arranging personal insurance.

**BUS 140** Principles of Marketing 3 Cr Hrs
Production and marketing of goods and services are the essence of economic life in any society. All organizations perform these two basic functions to satisfy their commitments to society, their customers and their owners. Marketing examines the problems of transferring title and moving goods from producer to consumer, buying, selling, storing, transporting, standardizing, financing, risk-bearing and supplying market information. The free enterprise and the government's contribution, retailing and international marketing are discussed at length.

**BUS 200** Principles of Management 3 Cr Hrs
Explores the basic management functions of planning and controlling that pertain to the type of business for which student is preparing to work on a career basis. The basic management theories, functions and aspects of various types of business are studied.

**ECO 105** Principles of Macroeconomics 3 Cr Hrs
Explores the fundamental aspects of the United States economy including growth, fiscal and monetary policies, unemployment, inflation, national debt, money and the Federal Reserve System. National and international policy topics are discussed.
members on Six Sigma projects. Not only do these Yellow Belts gain the skills necessary to identify, monitor and control profit-eating practices in their own processes, but they are also prepared to feed that information to Green Belts and Black Belts working on larger system projects.

**PSS 101 Six Sigma Green Belt Methods 3 Cr Hrs**
Designed to help adult learners understand Six Sigma concepts and be able to apply their knowledge to real problems. It also addresses the challenges of change management and data management.

**PSS 105 Six Sigma Green Belt Statistics 3 Cr Hrs**
Students develop an in-depth understanding of how computers and statistical software are essential components in the business world and society in general for exploring data in-depth, using data simulation, screening data for errors, manipulating data, performing transformations and focusing on the use of the computer and statistical software as a valuable productivity and data analysis tool.

**PSS 115 Six Sigma Black Belt Methods 3 Cr Hrs**
Incorporates data and statistical analysis into a project-based workflow that allows businesses to make intelligent decisions about where and how to incorporate improvements.

**PSS 120 Six Sigma Black Belt Experimentation 3 Cr Hrs**
& Transfer Function
Students will learn how to manipulate data with statistical tools to transform it into valuable information (numeric and/or graphic). This data will be incorporated into a project.

### Entrepreneurship

**ACC 130 Managerial Accounting 3 Cr Hrs**
Studies management tools for business decision-making, including the evaluation of financial condition and performance of business. Emphasis is given to the process of formulating and utilizing sound accounting data to evaluate alternatives involved in managerial decision-making necessary for planning, executing and controlling a business enterprise. **Prerequisite:** Minimum grade of C in ACC 170 Principles of Accounting II.

**ACC 160 Principles of Accounting I 3 Cr Hrs**
Helps students develop a basic understanding of accounting theory, concepts and procedures. It provides a foundation for further study for students seeking a career in accounting or business administration or for students entering this occupational field.

**ACC 170 Principles of Accounting II 3 Cr Hrs**
A continuation of ACC 160 Principles of Accounting I. A study of corporations that includes organization and operations; stockholders’ equity, earnings and dividends; long-term assets and liabilities, investments, income tax and their efforts on business decisions; and assessing a company’s financial performance.

**BUS 104 Introduction to Business 3 Cr Hrs**
Studies various types of business organizations and the relationships of business to government and management to labor. Management’s perspective of production, marketing, personnel, finance and transportation is a constant consideration.

**BUS 125 Business Law 3 Cr Hrs**
A basic introductory law course covering the legal and social environment within which businesses operate, including the structure, processes and procedures of the American legal system. A substantial portion of the course is devoted to contracts.

**BUS 130 Personal Finance 3 Cr Hrs**
Designed for non-business majors as well as for business majors. Course concerned with efficient management of money as a primary requirement for successful personal life. Aids individuals in establishing and maintaining credit, using a budget, safeguarding and investing savings and arranging personal insurance.

**BUS 140 Principles of Marketing 3 Cr Hrs**
Production and marketing of goods and services are the essence of economic life in any society. All organizations perform these two basic functions to satisfy their commitments to society, their customers and their owners. Marketing examines the problems of transferring title and moving goods from producer to consumer, buying, selling, storing, transporting, standardizing, financing, risk-bearing and supplying market information. The free enterprise and the government’s contribution, retailing and international marketing are discussed at length.

**BUS 200 Principles of Management 3 Cr Hrs**
Explores the basic management functions of planning and controlling that which pertains to the type of business for which the student is preparing to work on a career basis. The basic management theories, functions and aspects of various types of business are studied.

**CED 115 Computer Applications 3 Cr Hrs**
Introduces students to the fundamental concepts and operations necessary to use computers. Emphasis is placed on basic functions and familiarity with computer use. Topics include computer terminology, introduction to the Windows environment, networking, word processing, spreadsheets and databases.

**ECO 105 Principles of Macroeconomics 3 Cr Hrs**
Explores the fundamental aspects of the United States economy including growth, fiscal and monetary policies, unemployment, inflation, national debt, money and the Federal Reserve System. National and international policy topics are discussed.

**ECO 110 Principles of Microeconomics 3 Cr Hrs**
Attention is given to the methods of producing the goods and services that the economy provides. The following areas are explored: supply, demand, pricing, scarcity, business firms, business anti-trust and public interest, incomes, wages and salaries, income distribution, taxes and tax reform.

**ENT 110 Introduction to Entrepreneurship 3 Cr Hrs**
Familiarizes students with the world of small business. Students are introduced to the concepts needed to seek out business opportunities as well as the tools needed to evaluate successful ventures. Considerable attention is given to the concepts of planning, financing and marketing new businesses.

**ENT 115 Entrepreneurship II 3 Cr Hrs**
The marketplace has changed dramatically over the last 20 years. To compete and grow, small businesses must do...
more than just give lip service to putting the customer at the center of the business. Students learn the different paths to business ownership, how to effectively market new products, management strategies for the 21st century and how to plan financially for a business.

**OPM 115  Introduction to Project Management**  3 Cr Hrs
Focuses on a holistic approach to project management. The content deals with planning, scheduling, organizing and controlling projects such as product development, construction, information systems, new businesses and special events. The course includes major topics of strategy, priorities, organization, project tools and leadership. Primary class emphasis is on the project management process and tools, which is becoming more important in today’s world. Mastery of key tools and concepts could give students a significant competitive advantage in the marketplace.

**PSS 100  Six Sigma Yellow Belt**  1 Cr Hr
Introduces the fundamentals of Six Sigma to individual process owners and operators who can then act as team members on Six Sigma projects. Not only do these Yellow Belts gain the skills necessary to identify, monitor and control profit-eating practices in their own processes, but they are also prepared to feed that information to Green Belts and Black Belts working on larger system projects.

**PSS 101  Six Sigma Green Belt Methods**  3 Cr Hrs
Helps adult learners understand Six Sigma concepts and be able to apply their knowledge to real problems. It also addresses the challenges of change management and data management.

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### Design Technology

#### Architectural Design Technology

**CAT 101  CATIA Part Design & Sketcher**  4 Cr Hrs
Covers the creation of solid parts without complex contours. Students are introduced to the part environment of CATIA V5 and learn how to work between sketcher and parts design workbenches to create individual parts.

**CED 101  Computer Essentials**  2 Cr Hrs
Develops students’ computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

**CED 115  Computer Applications**  3 Cr Hrs
Develops students’ computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

**EBS 120  Elementary Algebra**  3 Cr Hrs
Introduction to variables, properties of real numbers, polynomials, solving linear and quadratic equations and graphing linear equations. This course does not count toward AS, AA, AGS or AAS degrees. Prerequisite: Minimum grade of C in EBS 115 Pre-Algebra or satisfactory course placement assessment scores.

**EMP 100  Global Professional Standards**  2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

**ENG 101  Composition I**  3 Cr Hrs
Improves the reading and writing skills of students. The emphasis is on fundamental principles of written English in structurally correct sentences, paragraphs and expository themes. Critical analysis of essays is used to aid in developing students’ thinking, support of thesis and style. Students are introduced to the basic components of research by writing a documented essay in Modern Language Association (MLA) style. Prerequisites: Satisfactory assessment score and/or minimum of 20 on ACT, or a grade of C or above and a passing grade on the post test in EBS 110 English are required for enrollment. High school students should have senior standing to enroll in ENG 101 Composition I.

**MCD 112  Industrial Materials & Processes**  2 Cr Hrs
Includes instruction in materials, measurement, specifications, design principles, hardware and fasteners, vocabulary, machine fabrication, geometric dimensioning and tolerancing, Machinery’s Handbook, surface finishes and an understanding of the fabrication practices used in manufacturing and construction.
MCD 113 Technical Drafting 3 Cr Hrs
Includes instruction in sketching and lettering, use and care of drafting equipment, geometric construction, multi-views, basics of isometrics, oblique projection and a study of drafting technology and American National Standards Institute (ANSI) standards. Students draw introductory drawings to scale.

MCD 114 Architectural Drafting & Design 3 Cr Hrs
Includes instruction in freehand drawing, basic residential planning, creative design, dimensioning, working details, light construction principles, building systems and blueprint development, learning construction terminology, applying ANSI Standards, local codes and drawing prints to industry standards. Prerequisite: MCD 116 Introduction to CAD or instructor approval.

MCD 115 Machine Drafting & Design 3 Cr Hrs
Includes instruction in creative design, geometric construction, auxiliaries, dimensioning, sectioning, isometrics, obliques, specifications and notes, manufacturing engineering techniques and Machinery’s Handbook. Includes developing prints of working drawings, researching trade periodicals, learning machine terminology, using ANSI Standards and basic manufacturing blueprint development. Prerequisites: MCD 113 Technical Drafting and MCD 121 Descriptive Geometry or instructor approval.

MCD 116 Introduction to CAD 5 Cr Hrs
Introduces computer-aided drafting (CAD) and examines the hardware that makes up a CAD workstation. It also covers the Microsoft Windows operating system that enables the equipment to function as a unit. The course shows how to use AutoCAD to set up drawings and construct lines, circles, arcs, other shapes, geometric constructions and text. Students use display and editing techniques to obtain information about their drawings and work with drawing files. This course also introduces recommended drafting standards for students to use for properly preparing drawings with AutoCAD.

MCD 121 Descriptive Geometry 3 Cr Hrs
Students use computers to study descriptive geometry as it applies to drafting, and they determine true length of lines, true shapes of planes and apply descriptive geometry to real problems. Students also create flat pattern layouts to form three-dimensional shapes. Prerequisite: MCD 116 Introduction to CAD or instructor approval.

MCD 122 Architectural CAD 4 Cr Hrs
Students use computers for architectural detailing problems, working with foundation details, wall sections, roof details and stairway details. Using the computer, students draw a set of plans for a house of their own design. Prerequisite: MCD 114 Architectural Drafting and Design or instructor approval.

MCD 124 Advanced AutoCAD 4 Cr Hrs
Explores the three-dimensional construction and viewing capabilities of AutoCAD. Topics covered include a review of point coordinate entry system and the user coordinate system (UCS). Spherical and cylindrical coordinate entry, 3-D viewing and display techniques, construction of 3-D solid primitives, 2-D regions, solid-modeling composites and surfaces are also introduced. The use of multiple viewports for 3-D constructions and creating 2-D layouts are covered. Visual styles and rendering are also discussed. Prerequisite: MCD 115 Machine Drafting and Design or instructor approval.

MCD 132 Basic Chief Architect/Architectural Desktop 3 Cr Hrs
Students use computers to learn how to utilize three-dimensional software to design houses. This course provides instruction in how to use the software and draw walls, windows, doors, foundations and roofs. Prerequisite: MCD 114 Architectural Drafting and Design or instructor approval.

MCD 134 Advanced Chief Architect/Architectural Desktop 3 Cr Hrs
Students use computers to learn how to utilize three-dimensional software to design houses. This course provides instruction in how to add interior furniture, terrains, elevations, working drawings, presentation drawings and how to use the camera functions. Prerequisite: MCD 132 Basic Chief Architect or instructor approval.

MCD 135 Drafting Technology Internship 4 Cr Hrs
Introduces students to the application and reinforcement of drafting and employability principles in an actual job setting. This internship acquaints students with realistic work situations and provides insights into a drafting job. Topics include appropriate work habits, acceptable job performance, application of drafting/CAD knowledge and skills, interpersonal relations and development of productivity. Prerequisite: Instructor approval.

MCD 205 Residential Drafting 3 Cr Hrs
Introduces architectural drawing skills necessary to produce a complete set of construction drawings given floor plan information. Topics include footing, foundation and floor plans; interior and exterior elevations; sections and details; window, door and finish schedules; site plans; and specifications.

MTH 101 Intermediate Algebra 3 Cr Hrs
Simplifying algebraic expressions. Solving equations and word problems involving linear and quadratic polynomials, rational expressions, rational exponents and radicals. Graphing linear and quadratic functions. Students must furnish their own TI-83 or TI-84 PLUS graphing calculators. This course does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement. Prerequisites: Minimum grade of C in EBS 120 Elementary Algebra or satisfactory course placement assessment scores.

Engineering Design Technology
CAT 101 CATIA Part Design & Sketcher 4 Cr Hrs
Covers the creation of solid parts without complex contours. Students are introduced to the parts environment of CATIA V5 and learn how to work between sketcher and parts design workbenches to create individual parts.

CAT 102 CATIA Drafting 4 Cr Hrs
Covers the creation of engineering drawings. Students are introduced to the drafting environment of CATIA V5 and learn how to create drawings from parts and products.

CAT 105 CATIA Assembly Design 4 Cr Hrs
Covers the use of multiple parts to create an assembly. It also covers the various analytical and navigation tools that are
available within an assembly. Students are introduced to the product environment of CATIA V5 and learn how to work with multiple parts between the Assembly Design, Digital Mock-Up (DMU) Space Analysis and DMU Navigator workbenches.

**CAT 110**  
**CATIA Wireframe & Surfaces**  
4 Cr Hrs  
Extension of the part environment covers the use of wireframe and surface geometry to create complex contours. Cores concentrate on the tools available and how to integrate this geometry back into a solid part.

**CAT 115**  
**CATIA Prismatic Machining**  
4 Cr Hrs  
This course is the beginning manufacturing course. This course covers the machining operations involved in 3-axis milling. Students will be introduced to the process environment of CATIA V5 and learn how to work between the process, part and product environments.

**CAT 120**  
**CATIA ENOVIA LCA**  
3 Cr Hrs  
Provides students with a thorough background in the Enterprise Innovation via Life Cycle Applications. Students learn to utilize the ENOVIA system to manage a product from initial conceptual drawings, through 3-D modeling, to retirement of the product.

**CED 101**  
**Computer Essentials**  
2 Cr Hrs  
Develops students' computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

**CED 115**  
**Computer Applications**  
3 Cr Hrs  
Develops students' computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment.  
**Prerequisite:** Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

**CWG 110**  
**Welding Applications**  
4 Cr Hrs  
Provides instruction in the major welding and cutting operations. Students develop knowledge and skills to identify and safely operate a variety of welding and cutting machines/equipment including arc welding, MIG welding, TIG welding, oxy-acetylene welding and cutting and shearing operations.

**EMP 100**  
**Global Professional Standards**  
2 Cr Hrs  
Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

**MCD 110**  
**Principles of Tool Design**  
2 Cr Hrs  
Provides an understanding of the general methods of tool design with emphasis on jigs and fixtures. Instruction and projects enable students to develop ideas into practical specifications for modern manufacturing methods.

**MCD 112**  
**Industrial Materials & Processes**  
2 Cr Hrs  
Includes instruction in materials, measurement, specifications, design principles, hardware and fasteners, vocabulary, machine fabrication, geometric dimensioning and tolerancing, Machinery's Handbook, surface finishes and an understanding of the fabrication practices used in manufacturing and construction.

**MCD 113**  
**Technical Drafting**  
3 Cr Hrs  
Includes instruction in sketching and lettering, use and care of drafting equipment, geometric construction, multi-views, basics of isometrics, oblique projection and a study of drafting technology and ANSI Standards. Students draw introductory drawings to scale.

**MCD 114**  
**Architectural Drafting & Design**  
3 Cr Hrs  
Includes instruction in freehand drawing, basic residential planning, creative design, dimensioning, working details, light construction principles, building systems and blueprint development, learning construction terminology, applying ANSI Standards, local codes and drawing prints to industry standards.  
**Prerequisite:** MCD 116 Introduction to CAD or instructor approval.

**MCD 115**  
**Machine Drafting & Design**  
3 Cr Hrs  
Includes instruction in creative design, geometric construction, auxiliaries, dimensioning, sectioning, isometries, obliques, specifications and notes, manufacturing engineering techniques and Machinery's Handbook. Includes developing prints of working drawings, researching trade periodicals, learning machine terminology, using ANSI Standards and basic manufacturing blueprint development.  
**Prerequisites:** MCD 113 Technical Drafting and MCD 121 Descriptive Geometry or instructor approval.

**MCD 116**  
**Introduction to CAD**  
5 Cr Hrs  
Introduces computer-aided drafting (CAD) and examines the hardware that makes up a CAD workstation. It also covers the Microsoft Windows operating system that enables the equipment to function as a unit. The course shows how to use AutoCAD to set up drawings and construct lines, circles, arcs, other shapes, geometric constructions and text. Students use display and editing techniques to obtain information about their drawings and work with drawing files. This course also introduces recommended drafting standards for students to use for properly preparing drawings with AutoCAD.

**MCD 121**  
**Descriptive Geometry**  
3 Cr Hrs  
Students use computers to study descriptive geometry as it applies to drafting, and they determine true length of lines, true shapes of planes and apply descriptive geometry to real problems. Students also create flat pattern layouts for form three-dimensional shapes.  
**Prerequisite:** MCD 116 Introduction to CAD or instructor approval.

**MCD 124**  
**Advanced AutoCAD**  
4 Cr Hrs  
Explores the three-dimensional construction and viewing capabilities of AutoCAD. Topics covered include a review of point coordinate entry and the user coordinate system (UCS). Spherical and cylindrical coordinate entry, 3-D viewing and display techniques, construction of 3-D solid primitives, 2-D regions, solid-modeling composites and surfaces are also introduced. The use of multiple viewports for 3-D constructions and creating 2-D layouts are covered. Visual styles and rendering are also discussed.  
**Prerequisite:** MCD 115 Machine Drafting and Design or instructor approval.

**MCD 140**  
**Drafting Technology Internship**  
4 Cr Hrs  
Introduces students to the application and reinforcement of drafting and employability principles in an actual job setting. This internship acquaints students with realistic work situations and provides insights into a drafting job. Topics...
include appropriate work habits, acceptable job performance, application of drafting/CAD knowledge and skills, interpersonal relations and development of productivity. **Prerequisite:** Instructor approval.

**MCD 145 Electrical Design & Fabrication** 3 Cr Hrs
Uses industry-based software to design electronics circuits. Students study electronic engineering drawings required for various electronics circuits. Printed circuit board design and fabrication are covered.

**MCD 201 Geometric Dimensioning & Tolerance** 3 Cr Hrs
An in-depth study develops a basic working knowledge in geometric dimensioning and tolerancing (GD&T). It is delivered per the American Society of Mechanical Engineers (ASME) Y14.5M, 1994 standard. This program has been presented and refined over the past 25 years and covers what personnel need to know to work in an industrial environment on a daily basis. The course includes emphasis on all the basics, such as the rules, measurement theory, the datum reference frame, form, orientation, profile and positional tolerancing. The program materials contain a variety of computer color-animated graphics, video clips and plastic models that allow students to clearly understand the concepts.

**MCD 204 Civil Drafting** 3 Cr Hrs
Emphasizes drawing assignments related to the most common mapping and civil site planning design problems. Topics include loan and boundary surveys, as-built plans, plan and profile drawings, cross-sections, earth-work determination and grade determination.

**MMG 142 Manual Lathe** 6 Cr Hrs
Includes theory and laboratory instruction about basic lathe operations, safety and use and care of hand and machine tools. Addresses basic lathe operations such as turning, facing, drilling, tapping and tool grinding.

**MMG 143 Manual Mills** 6 Cr Hrs
Includes both theory and laboratory instruction of basic manual mill operations, safety, use and care of hand tools and machine operation and set-ups.

**MMG 144 CNC Mills** 6 Cr Hrs
Introduces the actual machine set-up utilizing various clamping vises and fixtures along with computer numerical control (CNC) machine operation methods and techniques necessary to produce a variety of discrete parts on the CNC mills.

**MMG 147 Principles of Machining I** 2 Cr Hrs
Introduces students to basic metal-working concepts, including metal-cutting fundamentals, identification and use of hand and cutting tools, various machine tool operations and the use and care of precision measuring instruments. Course is a preliminary to matching laboratory courses and addresses the safe use of machine and hand tools.

**MTH 101 Intermediate Algebra** 3 Cr Hrs
Covers simplifying algebraic expressions; solving equations and word problems involving linear and quadratic polynomials, rational expressions, rational exponents and radicals; and graphing linear and quadratic functions. This course requires that students furnish their own TI-83 or TI-83 PLUS graphing calculator and purchase specific online course software. **Prerequisites:** Minimum grade of C in EBS 115 Pre-Algebra or satisfactory course placement assessment scores.

This course does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement.

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**Interior Design**

**INT 100 Accessories** 1 Cr Hr
An introduction to decorative accessories that focuses on the components of display for effective visual presentation. This course utilizes the principles and techniques that are common to display work in interiors and various businesses. The main emphasis is on design and color principals, hangers and materials used for arrangement and display and safety issues.

**INT 101 Interior Design Fundamentals** 2 Cr Hrs
An introduction to the fundamentals of design through the exploration of design elements and principles. Topics include fundamentals of traffic flow patterns, color rendering, space planning and problem-solving skills that are used in interior design. This course includes research, creating illustration boards and honing presentation skills.

**INT 105 Blueprint Reading for Interior Design** 2 Cr Hrs
An introduction to blueprints for interior construction and service systems. Students learn basic mechanical drawings, architectural drawings and symbol and abbreviation identification used in blueprints. By using an architectural scale, students learn to plot floor plans. Construction documents, time management and communication with architects and contractors are included in this course.

**INT 110 Color Theory** 2 Cr Hrs
Introduces the use of color for interior design. Emphasis is on color theory, psychology of color and how it affects the brain and moods and application of color in interior environments and lighting conditions. Included is the vocabulary of color, color temperatures, the principles of the color wheel and how to use it. With the use of paint, values and tones are mastered.

**INT 120 Materials & Resources I** 3 Cr Hrs
By the end of the semester, students know various soft materials and treatments necessary for designing interior spaces, the functions of each and their appropriate uses. Students should feel confident in researching design products. Each student starts a reference library of local and national vendors.

**INT 125 Materials & Resources II** 2 Cr Hrs
By the end of this semester, students know various hard treatments necessary for designing interior spaces, the functions of each and their appropriate uses. Students should feel confident in researching design products. Each student starts a reference library of local and national vendors.

**INT 130 Painted & Faux Finishes I** 3 Cr Hrs
An introduction to the techniques used to produce painted finishes on furniture and interior walls. Topics include the history of faux finishing, color mixing, technology of paint, materials used for creating faux finishes and specific issues related to wall glazing, ragging, sponging, strie, wood graining, textured granites, stones and other techniques.

**INT 135 Painted & Faux Finishes II** 3 Cr Hrs
Helps students increase their knowledge of painted and faux finishes. Various types of paints, glazes, brushes and other faux tools are utilized in this course. It also introduces students to basic business practices for painted and faux finishing.
bookkeeping and pricing for techniques. Upon completion of the course, students are able to produce a wide variety of finishes such as marble, wood graining and semiprecious stones through paint applications. Venetian plasters and raised plaster techniques are introduced in this section. Students are also trained in interior design principles and have an exposure to business practices of faux and painted finishing.

INT 145 History of Furniture & Architecture I 3 Cr Hrs
Provides students with the historical foundation of architecture and furniture, furniture styles, accent pieces and accessories from Egyptian through Medieval periods. Students learn chronologies, key terms, designer contributions and ruer influence on furniture and architectural elements in a time-line manner. Through hands-on experience with furniture and actually creating pieces of art-styled furnishings, they comprehend what is involved in furniture making.

INT 150 History of Furniture & Architecture II 3 Cr Hrs
Provides students with the historical foundation of architecture and furniture, furniture styles, accent pieces and accessories from Renaissance through Post Modern periods. Students learn chronologies, key terms, designer contributions and ruer influence on furniture and architectural elements in a time-line manner. Through hands-on experience with furniture and actually creating pieces of art-styled furnishings, they comprehend what is involved in furniture making.

INT 155 Lighting Technologies 3 Cr Hrs
An introduction to the basics of lighting technologies used in interior design, color, lighting styles and lighting fixtures. Students learn to read lamp indicators, calculate lumens and foot-candles and proper heights and usage for various lighting techniques. An understanding of light analysis, residential and commercial lighting, lighting design, lighting applications and requirements for various types of lighting are studied. Developments of lighting and electrical layouts on floor plans are inclusive in this course.

INT 160 Design Studio I 3 Cr Hrs
Provides long- and short-term projects that address real-life design situations. It develops competencies in solving design problems and teamwork. Technical and conceptual concerns, color theory, lighting technology, scale, materials selection and creative design articulation through presentation and illustrations are critical elements for this class. Deployment of invoicing techniques, material selection and working with a budget are emphasized in this course.

INT 165 Design Studio II 2 Cr Hrs
Provides long- and short-term projects that address real-life design situations. It develops competencies in solving design problems and teamwork. Technical and conceptual concerns, color theory, lighting technology, scale, materials selection and creative design articulation through presentation and illustrations are critical elements for this class. Development of invoicing techniques, material selection and working with a budget are emphasized in the course. Students work with real-time case studies. (Students may be invited to participate in events such as The Symphony Show House Design, judge in the Wichita Area Building Associations’ Parade of Homes or shadow designers with a project.)

INT 170 Business Practices & Portfolio Development 3 Cr Hrs
Covers client contracts, presentation skills, resource development, business and legal forms and business management and laws pertaining to interior design. A professional personal portfolio is refined in this class for employment purposes. A professional résumé is included as part of the portfolio package. Students obtain background knowledge necessary for successful business practices for interior design.

INT 175 Seminars for Interior Design 2 Cr Hrs
Helps students increase their knowledge concerning professional development through resources and artistic exploration. This course is held outside the classroom in real-world settings. Tours of museums, building of architectural interest and local vendors and showrooms are the target of this course. Students develop networking skills and create a resource library for future use in the field of interior design.

INT 185 Mentorship for Interior Design 3 Cr Hrs
This course is designed to help the student increase their knowledge in an in-depth application and reinforcement of interiors and employability principles in an actual job setting. Mentorship allows the student to get involved with on the job applications that require full time commitment. The student will be evaluated by the use of written performance evaluations. Application of interior principles, problem solving, adaptability to job setting, uses of personal skills, development of constructive work habits and ethics, practice confidentially, development of productively and job performance through practice.

INT 190 Drafting for Interiors 2 Cr Hrs
An introduction to drafting for interior construction and service systems. Students learn basic mechanical drawings, architectural drawings and symbol and abbreviation identifications used in drafting blueprints. By using an architectural scale, students learn to plot floor plans. Construction documents, time management and communication with architects and contractors are included in this course.

INT 196 Interior Design Codes & Standards 3 Cr Hrs
Designed to focus on the most current and widely used building, fire, electrical and plumbing codes as required by the industry. Included are working with code officials, documenting large and small projects, single-family homes, historical and existing buildings and new construction.

INT 201 Floral Design 4 Cr Hrs
An introduction to floral arrangements that focuses on the components of display for effective visual presentation. This course utilizes the principles and techniques that are common to display work in interiors and various businesses. The main emphasis is on design and color principals, tools and materials used for floral arrangement and display and safety issues.

INT 215 Kitchen & Bath Design 3 Cr Hrs
Helps students develop the special considerations necessary to design and plan kitchens and baths. Topics include the study of the basic principles of kitchen and bath design, planning, proper function and layout, accurate measuring techniques, specification documentation, theme and historical design.

INT 225 Advanced Kitchen & Bath Design 3 Cr Hrs
Helps students develop advanced knowledge in the design of kitchens and baths. The application of the National Kitchen and Bath Association’s Guidelines of Planning Standards and Safety Criteria for residential kitchens and bathrooms,
including universal design concepts, are covered. Topics include the use of building codes, safety criteria, universal and accessibility criteria and ergonomics.

**INT 235 Computer Technologies for Kitchen & Bath Design**  
3 Cr Hrs  
Helps students develop advanced skills necessary to design and present kitchen and bath solutions through the use of current industry software applications. Project design is done completely on computer.

**INT 245 Internship for Kitchen & Bath Design**  
3 Cr Hrs  
Helps students develop in-depth application and reinforcement of kitchen and bath employability principles through working in an approved industry environment. This internship allows students to become involved in intensive on-the-job kitchen and bath applications that require full-time concentration, practice and follow through. The Kitchen & Bath Design internship is implemented through written performance evaluations.

**MCD 116 Introduction to CAD**  
5 Cr Hrs  
Introduces computer-aided drafting (CAD) and examines the hardware that makes up a CAD workstation. It also covers the Microsoft Windows operating system that enables the equipment to function as a unit. The course shows how to use AutoCAD to set-up drawings and construct lines, circles, arcs, other shapes, geometric constructions and text. Students use display and editing techniques as well to obtain information about their drawings and work with drawing files. This course also introduces recommended drafting standards for students to use for properly preparing drawings with AutoCAD.

**MCD 132 Basic Chief Architecture/Architectural Desktop**  
3 Cr Hrs  
Students use computers to learn how to utilize three-dimensional software to design houses. This course provides instruction in how to use the software and draw walls, windows, doors, foundations and roofs. Prerequisite: MCD 114 Architectural Drafting and Design or instructor approval.

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**General Education**

**ACC 105 Fundamentals of Accounting**  
3 Cr Hrs  
Designed for students who want a working knowledge of accounting, but not to the extent as a person working primarily in the accounting field. Although the basic accounting principles are learned and applied, the course, in comparison to Principles of Accounting I, covers a smaller amount of material at a somewhat slower pace. Recommended for students with no previous accounting background.

**ACC 120 Accounting with Computers**  
3 Cr Hrs  
Students generate transactions and complete accounting procedures of a sole proprietorship, a partnership and a corporation using computerized accounting software. Students review software features for various types of businesses.

**ACC 130 Managerial Accounting**  
3 Cr Hrs  
Studies management tools for business decision making, including the evaluation of financial condition and performance of business. Emphasis is given to the process of formulating and utilizing sound accounting data to evaluate alternatives involved in managerial decision-making necessary for planning, executing and controlling a business enterprise. Prerequisite: Minimum grade of C in ACC 170 Principles of Accounting II.

**ACC 152 Payroll Accounting**  
3 Cr Hrs  
Provides an understanding of the laws that affect a company's payroll structure and practical application skills in maintaining payroll records. Topics include payroll tax laws, payroll tax forms, payroll and personnel records, computing wages and salaries, taxes affecting employees and employers and analyzing and journalizing payroll transactions. Provides first-hand experience in calculating payroll, completing payroll taxes and preparing records and reports. Topics include payroll tax entries, preparing payroll registers and maintaining employees' earnings records using computerized software.

**ACC 160 Principles of Accounting I**  
3 Cr Hrs  
Helps students develop a basic understanding of accounting theory, concepts and procedures. It provides a foundation for further study for students seeking a career in accounting or business administration or for students entering the occupational field.

**ACC 170 Principles of Accounting II**  
3 Cr Hrs  
A continuation of ACC 160 Principles of Accounting I. Studies corporations including organization and operations; stockholders’ equity, earnings and dividends; long-term assets and liabilities, investments, income tax and their effort on business decisions; and assessing a company's financial performance.

**ALH 101 Medical Terminology**  
3 Cr Hrs  
Presents basic principles of medical word-building. The study develops competencies in the basic elements forming medical words, categorizing major suffixes and group prefixes. Anatomical, physiological and pathological terms are reviewed so students better understand special medical procedures. This is the introductory course in medical terminology and is intended for all who desire knowledge in this subject.

**ALH 105 First Aid & CPR**  
3 Cr Hrs  
Covers cause, prevention and first aid care of life-threatening
respiratory and cardiac emergencies and non-life threatening emergencies for infant, child and adults as outlined by the American Red Cross.

**ALH 110  Principles of Nutrition** 3 Cr Hrs

Studies the health of the individual as related to food and its assimilation in the human body. Principles of normal nutrition, food values and adequate nutrient allowances for growth and maintenance is examined.

**ALH 115  Pharmacology** 3 Cr Hrs

This course will provide the basic pharmacology principles with an emphasis on a broad discussion of the primary medications in each of the pharmaceutical classification categories. This course is designed to meet the pharmacology needs of students enrolled in pre-allied health majors and would be beneficial for others in the allied health field who desire a greater understanding or pharmacological principles related to diseases, effects of drugs on different systems of the body, interaction of drugs, side effects, contraindications and effectiveness in relation to dosages.

**ALH 130  Emergency Preparedness for Health Professionals** 1 Cr Hrs

This course is designed to provide health care professionals with an orientation for their possible future roles in disaster response and the importance of staying within the scope of practice of the profession. Students will be prepared to meet the expectations of their employers, to volunteer effectively, and to be confident and safe responders.

**ALH 135  Spanish Language for Health Care Providers** 1 Cr Hrs

This course is designed to provide health care providers with basic and practical knowledge of the Spanish language as applied in the medical field. Students will be prepared to facilitate medical care delivery to their Spanish speaking clients. Emphasis will be placed on ability to communicate and develop a vocabulary according to the needs of each participant.

**ART 100  Art Appreciation** 3 Cr Hrs

Develops a personal appreciation of art. By combining a study of concepts and artists’ works, students improve their judgment and ability to understand art critically.

**BAF 103  Finance** 3 Cr Hrs

Provides an introduction to financial markets, institutions and management in contemporary society. Emphasis is placed on developing an understanding of the financial markets in which funds are traded, the financial institutions participating in facilitating the trade of such funds and the financial principles and concepts behind sound financial management. Topics include financial systems of the United States, business financial management and financing other sectors of the economy.

**BAF 105  Introduction to US Financial System** 3 Cr Hrs

Emphasizes the relevance of monetary instruments, intermediaries and the central banks as they impact local, state, national and international economics. Topics include history and evolution of financial institutions; monetary instruments and flow; and central banking, operation and policies.

**BIO 100  Biology Review** 1 Cr Hr

Introduces materials covered in BIO 110 Principles of Biology. Recommended for students planning to take BIO 150 Human Anatomy & Physiology or BIO 160 Microbiology who have not had a life science course within the past five years, or students wishing to prepare for BIO 110 Principles of Biology.

**BIO 110  Principles of Biology** 5 Cr Hrs

An introduction to the biological concepts included in the General Education Biology Core Competencies. This includes understanding the nature of science, levels of organization, bioenergetics, reproduction and inheritance and the mechanisms of change. Laboratory stresses the process of scientific invesTIGation and observation of biological processes.

**BIO 150  Anatomy & Physiology** 5 Cr Hrs

A detailed study of the structure and function of the human body. Laboratory work includes tissue examination, basic physiological experiments and structural identification of all organ systems.

**BIO 160  Microbiology** 5 Cr Hrs

An introduction to microorganisms and their morphology, physiology, genetics and distribution. Emphasis is placed on the relationship of microorganisms to disease and the human immune responses. Techniques involving staining, culturing, identifying and biochemistry are considered in laboratory. Prerequisites: Must complete one of the following: BIO 110 Principles of Biology, BIO 100 Biology Review or successful completion of a life science laboratory class within the past five years. Suggested Prerequisite: CHM 110 General Chemistry.

**BUS 104  Introduction to Business** 3 Cr Hrs

Studies various types of business organizations and the relationships of business to government and management to labor. Management’s perspective of production, marketing, personnel, finance and transportation is a constant consideration.

**BUS 106  Office Procedures** 3 Cr Hrs

Prepares students to handle situations in an office setting. Students learn office management skills including communication, diversity and organization skills.

**BUS 121  Business Communications** 3 Cr Hrs

Business Communications is designed to cover the communication skills that are necessary in a high-technology global business environment. These skills include competencies in written and oral communication; an awareness of international, legal, and ethical issues; the ability to work collaboratively on group projects; and proficiency in using microcomputers.

**BUS 125  Business Law** 3 Cr Hrs

A basic introductory law course covering the legal and social environment within which business operates, including the structure, processes and procedures of the American legal system. A substantial portion of the course is devoted to contracts.

**BUS 130  Personal Finance** 3 Cr Hrs

Designed for non-business majors as well as for business majors. Course concerned with efficient management of money as a primary requirement for successful personal life. Aids individuals in establishing and maintaining credit, using a budget, safeguarding and investing savings and arranging personal insurance.
BUS 140  Principles of Marketing  3 Cr Hrs
Production and marketing of goods and services are the essence of economic life in any society. All organizations perform these two basic functions to satisfy their commitments to society, their customers and their owners. Marketing examines the problems of transferring title and moving goods from producer to consumer, buying, selling, storing, transporting, standardizing, financing, risk-bearing and supplying market information. The free enterprise and the government's contribution, retailing and international marketing are discussed at length.

BUS 160  Human Relations  3 Cr Hrs
Designed to help employees and supervisors gain human relations skills needed for success at their work sites. The case method is used to analyze situations in which actual job relations are presented.

BUS 200  Principles of Management  3 Cr Hrs
Explores the basic management functions of planning, controlling organizing and directing an organization. The basic management theories, functions and aspects of various types of business are studied.

CED 101  Computer Essentials  2 Cr Hrs
Develops students' computer literacy and keyboarding skills and meets the needs of students in associate degree programs and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

CED 115  Computer Applications  3 Cr Hrs
Introduces students to the fundamental concepts and operations necessary to use computers. Emphasis is placed on basic functions and familiarity with computer use. Topics include computer terminology, introduction to the Windows environment, networking, word processing, spreadsheets and databases. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

CED 120  Advanced Computer Applications  3 Cr Hrs
Enhances students' computer literacy and meets the needs of students in associate degree and/or certificate programs. Students learn from hands-on experiences, advanced skills in word processing, spreadsheet applications, database management and graphical presentations in the Windows environment. Prerequisite: CED 115 Computer Applications or acceptable prior experience with Microsoft Word, Excel, Access and PowerPoint.

CHM 100  Chemistry Review  1 Cr Hr
Introduces basic concepts covered in CHM 125 Chemistry I. It is recommended for students who want to enroll in Chemistry I or a higher-level chemistry course the following semester. It is not recommended for those taking CHM 110 General Chemistry.

CHM 110  General Chemistry  5 Cr Hrs
An introduction to chemistry that includes the study of matter, atoms, molecules, chemical arithmetic, chemical reactions, gas laws, acids and bases, organic chemistry and laboratory experimentation. Prerequisite: EBS 120 Elementary Algebra or a higher level math course with a grade of C or better, completed within the past five years, or a math ACT score of 18 or better or an equivalent assessment score.

CHM 125  Chemistry I  5 Cr Hrs
An introduction to inorganic chemistry with emphasis on atomic structure, molecular bonding and structure, the periodic table, kinetic theory, changes of state, solutions and concentrations, chemical reactions and oxidation reduction and fundamental organic chemistry. Prerequisite: CHM 110 General Chemistry or high school chemistry within the last five years and high school advanced algebra or MTH 101 Intermediate Algebra with a C or better within the last five years. Can take MTH 112 College Algebra concurrently.

CHM 135  Chemistry II  5 Cr Hrs
A continuation of CHM 125 Chemistry I. A presentation of the properties of solutions, chemical kinetics, equilibrium, acid-base theory, thermodynamics, coordination chemistry, organic and biochemistry and electrochemistry. Includes laboratory experimentation.

EBS 100  Reading Foundations  3 Cr Hrs
This course will enable the student to develop his/her reading skills by practicing the essential elements of good reading comprehension. The course will be delivered by two methods: instructor-led and independent study.

EBS 101  College Reading Skills  3 Cr Hrs
Develops students' reading skills necessary for successful completion of postsecondary coursework. Instruction is based on application of research-based reading strategies to authentic college texts. It is required that any student scoring in the range of 0–60 on the COMPASS reading assessment enroll in this course. This course does not count toward AS, AA, AGS or AAS degrees.

EBS 102  Sentence Structure  1 Cr Hr
Enables students to construct complete simple, compound and complex sentences by applying grammar concepts learned.

EBS 103  Paragraph Writing  1 Cr Hr
Enables students to write a focused, organized, supported paragraph without fragment, run-on or comma splice errors.

EBS 105  Becoming a Master Student  3 Cr Hrs
Students learn effective study skills that enable them to be academically successful. Students learn how to make application of these skills in a course of study. The course covers time management, goal setting, listening, note taking, test strategies and online learning. It is recommended that any student who has a GPA of 2 or lower upon initial enrollment or after their first semester of college coursework enroll in this class. This course does not count toward AS, AA, AGS or AAS degrees.

EBS 110  English  3 Cr Hrs
Designed to equip students for success in the writing required during academic endeavors. Review of grammar is individualized and self-paced. Writing assignments include a number of paragraphs and major essays. To demonstrate readiness for and to be allowed to enroll in ENG 101 Composition I, students must pass this course with a grade of C or above and pass the final exam. This course does not count toward AS, AA, AGS or AAS degrees.

EBS 113  Basic Arithmetic  3 Cr Hrs
Provides students with basic arithmetic computational skills including basic decimals, fractions, ratios and proportions and percents. Computation by scientific calculator is introduced, but emphasis is placed on computation by hand. This course
does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement.

**EBS 114 Pre-Algebra with Review** 5 Cr Hrs
Arithmetic with fractions, decimals and percents. Introduction to the metric system. Provides applications to measurement and consumer math. This course does not count toward AS, AA, AGS or AAS degrees.

**EBS 115 Pre-Algebra** 3 Cr Hrs
Arithmetic with fractions, decimals and percents. Introduction to the metric system. Provides applications to measurement and consumer math. This course does not count toward AS, AA, AGS or AAS degrees.

**EBS 120 Elementary Algebra** 3 Cr Hrs
Introduction to variables, properties of real numbers, polynomials, solving linear and quadratic equations and graphing linear equations. This course does not count toward AS, AA, AGS or AAS degrees. **Prerequisite:** Minimum grade of C in EBS 115 Pre-Algebra or satisfactory course placement assessment scores.

**ECO 105 Principles of Macroeconomics** 3 Cr Hrs
Explores the fundamental aspects of the United States economy including growth, fiscal and monetary policies, unemployment, inflation, national debt, money and the Federal Reserve System. National and international policy topics are discussed.

**ECO 110 Principles of Microeconomics** 3 Cr Hrs
Attention is given to the methods of producing the goods and services that the economy provides. The following areas are explored: supply, demand, pricing, scarcity, business firms, business anti-trust and public interest, incomes, wages and salaries, income distribution, taxes and tax reform.

**ENG 101 Composition I** 3 Cr Hrs
Improves the reading and writing skills of students. Emphasis is on fundamental principles of written English in structurally correct sentences, paragraphs and expository themes. Critical analysis of essays is used to aid in developing students’ thinking, support of thesis and style. Students are introduced to the basic components of research by writing a documented essay in Modern Language Association (MLA) style. **Prerequisites:** Satisfactory assessment score and/or minimum of 20 on ACT or a grade of C or above and a passing grade on the post-test in EBS 110 English are required for enrollment. High school students should have senior standing to enroll in ENG 101 Composition I.

**ENG 120 Composition II** 3 Cr Hrs
Through a study of poetry, short story, drama and essays as literary forms, this course furthers students’ writing skills. This course also improves research techniques through writing an in-depth research essay in Modern Language Association (MLA) style. It emphasizes accuracy and fluency in expressing sound ideas in class discussions, assignments and essays. **Prerequisites:** Completion of ENG 101 Composition I with a grade of C or above. High school students should have senior standing to enroll in ENG 120.

**ENT 110 Introduction to Entrepreneurship** 3 Cr Hrs
The purpose of this course is to familiarize students in the world of small business. Students will be introduced to the concepts needed to seek out business opportunities as well as the tools needed to evaluate successful ventures. Considerable attention will be given to the concepts of planning, financing and marketing new businesses.

**ENT 115 Entrepreneurship II** 3 Cr Hrs
The marketplace has changed dramatically over the last 20 years. To compete and grow, small businesses must do more than just give lip service to putting the customer at the center of the business. Students learn the different paths to business ownership, how to effectively market new products, management strategies for the 21st century and how to plan financially for a business.

**MGT 106 Introduction to Human Resources** 3 Cr Hrs
Comprehensive view of human resources within an organization. Students examine the human resource functions of strategic human resource management, workforce planning, recruitment and selection, human resource development (training and development), total rewards (compensation and benefits), employee and union relations and risk management (health, safety and security). Emphasis is on understanding how human resource management contributes to an organization’s strategic direction and enhances the organization’s competitiveness.

**MTH 101 Intermediate Algebra** 3 Cr Hrs
Simplifying algebraic expressions. Solving equations and word problems involving linear and quadratic polynomials, rational expressions, rational exponents and radicals. Graphing linear and quadratic functions. Students must furnish their own TI-83 or TI-84 PLUS graphing calculators. This course does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement. **Prerequisites:** Minimum grade of C in EBS 120 Elementary Algebra or satisfactory course placement assessment scores.

**MTH 102 Intermediate Algebra With Review** 5 Cr Hrs
Covers the same topics as EBS 120 Elementary Algebra and MTH 101 Intermediate Algebra. Students meet twice a week instead of once a week. Students must furnish their own TI-83 or TI-84 PLUS graphing calculators. This course does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement. **Prerequisites:** Minimum grade of C in EBS 115 Pre-Algebra or satisfactory course placement assessment scores.

**MTH 111 College Algebra** 3 Cr Hrs
An introduction of algebraic functions and some transcendental functions with application in business and life, natural and social sciences. Topics include solving equations, zeros, rational functions, matrices, exponentials and logarithms and systems. Additional topics are included as time permits. Students must furnish their own TI-83 or TI-83 PLUS graphing calculators. **Prerequisites:** A minimum grade of C in MTH 101 Intermediate Algebra or satisfactory course placement assessment or 21 ACT math score.

**MTH 112 College Algebra** 3 Cr Hrs
Trigonometric functions using the unit circle and right angle trigonometry, graphing applications, analytic trigonometry, vectors, trigonometric complex number applications, parametric and polar equations. Students must furnish their own TI-83 or TI-83PLUS graphing calculators. **Prerequisites:** Minimum grade of C in MTH 111 College Algebra with Review or MTH 112 College Algebra or 23 ACT math score.
MTH 115 Pre-Calculus 5 Cr Hrs
An introduction to function theory, algebraic and trigonometric functions and selected topics such as matrices, probability and statistics. Students must furnish their own TI-83 or TI-84 PLUS graphing calculators. Prerequisites: Minimum grade of C in MTH 111 College Algebra with Review or MTH 112 College Algebra or 23 ACT math score.

MTH 120 Elementary Statistics 3 Cr Hrs
An introduction to frequency distributions, measures of central tendency, sampling distributions, T-test and chi-square test, hypothesis testing and correlation coefficients. This course requires that students furnish their own TI-83 or TI-84 PLUS graphing calculator. Prerequisite: Minimum grade of C in MTH 112 College Algebra.

MTH 125 Calculus I 5 Cr Hrs
Differentiation and integration of the algebraic, logarithmic and exponential functions. Applications to physical, social, life and business sciences. Students must furnish their own TI-83 or TI-84 Series graphing calculators. Prerequisites: Minimum grade of a C in MTH 113 Trigonometry, or a C in MTH 112 College Algebra with recent trigonometry in high school or satisfactory course placement assessment or 25 ACT math score.

MTH 150 Calculus II 5 Cr Hrs
An extension of MTH 125 Calculus I with topics to include advanced integration techniques, sequences and series, length, area and volumes. Application includes business and life, natural and social sciences. Students must furnish their own TI-83 or TI-84 PLUS graphing calculators. Prerequisites: A minimum grade of a C in MTH 125 Calculus I.

PED 110 Lifetime Fitness 1 Cr Hr
Exposes students to facts about and experiences in dealing with motor, physical, physiological, psychological and nutritional aspects of the human being and the responsibility to maintain fitness during a life span.

PHL 110 Ethics 3 Cr Hrs
A practical approach to recognizing, understanding and solving ethical problems confronting individuals in today's society. Basic concepts of applied ethical theories in moral philosophy and reasoning are examined using critical thinking and responsible decision-making skills.

PSY 101 General Psychology 3 Cr Hrs
A general introduction to the scientific study of human behavior as it applies to daily living. Course includes history, basic theories and biological bases of behavior, development, cognitive processes, individual awareness, motivation, emotion, personal adjustment and social psychology.

PSY 111 Principles of Sociology 3 Cr Hrs
An introductory study to acquaint students with the influence of human social behavior. Sociology studies the processes and patterns of individuals and group interaction by acquainting students with the development, characteristics and functioning of human groups, the relationships between groups and group influences on individual behavior. It includes the study of how social relationships are created, maintained and changed.

SPH 101 Public Speaking 3 Cr Hrs
Covers fundamental basics to all good private and public speaking experiences and elements in voice production and improvement, bodily movement, confidence, poise and understanding of all types of public speeches. Required of all transfer curricula.

SPH 111 Interpersonal Communication 3 Cr Hrs
Improves individual communication skills. By understanding the elements of effective communication, students are able to create environments that bring out the best in themselves and others. In addition, students learn how to better turn ideas and feelings into words, how to listen more effectively, respond more appropriately to what others have said and, most important of all, how to maintain and develop good interpersonal relationships with their families, their peers and fellow workers. Emphasis is placed on small-group activities, interviewing skills and verbal and non-verbal communication.
Health Sciences

Activity Director / Social Services Designee

GRA 116 Activity Director/Social Services Designee 3 Cr Hrs
Activity Director: Teaches certified nurse aides (CNA) in long-term care settings how to plan and implement a comprehensive activity program based on the physical and psychosocial needs of residents.

Allied Health

ALH 105 First Aid & CPR 3 Cr Hrs
Covers cause, prevention and first aid care of life-threatening respiratory and cardiac emergencies and non-life-threatening emergencies for infant, child and adults as outlined by the American Red Cross.

Certified Medication Aide

MDU 010 Medication Aide Update 1 Cr Hr
Provides the continuing education required every two years by the Kansas Department of Health and Environment for renewal of the medication aide certificate. Prerequisite: GRA 101 Certified Nurse Aide and GRA 119 Medication Aide.

GRA 119 Medication Aide 5 Cr Hrs
Focuses on the knowledge and skills needed for safe medication administration in long-term care facilities. Graduates are eligible to take the Kansas certification examination to become certified medication aides. Prerequisite: GRA 101 Certified Nurse Aide or Kansas Certified Nurse Aide certification.

Certified Nurse Aide

CNU 010 Certified Nurse Aide Update 1 Cr Hr
Provides the continuing education required every two years by the Kansas Department of Health and Environment (KDHE) for renewal of the certified nurse aide (CNA) certificate when CNA is not gainfully employed. Prerequisite: GRA 101 Certified Nurse Aide.

GRA 101 Certified Nurse Aide 5 Cr Hrs
Prepares students to be caregivers in nursing homes while working under the supervision of licensed nurses. Includes classroom instruction, laboratory and clinical experience. Program meets Kansas State Department of Health and Environment guidelines. Graduates may take the state examination to become a certified nurse aide.

Dental Assistant

CED 101 Computer Essentials 2 Cr Hrs
Develops students’ computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

DAS 102 Fundamentals in Dental Assisting I 3 Cr Hrs
Introduces the profession of dental assisting, which includes educational requirements, functions and credentials of dental health team members, ethics and legal aspects of dentistry, dental terminology, basic dental business office skills and communication skills. Prerequisite: Admission to Dental Assistant program.

DAS 107 Anatomy for Dental Assistants 1 Cr Hr
Covers basic structures and functions of human body systems with emphasis on the head and neck. The primary and permanent teeth are studied in detail with respect to macroscopic anatomy, development, eruption, positional and occlusal relationships. Includes tooth drawing and placement of restorations in mannequin teeth. Prerequisite: Admission to Dental Assistant program.

DAS 108 Dental Health Education 2 Cr Hrs
Covers basic study of nutrition and diet and their relationship to oral health with emphasis on dental health education, the philosophy of preventive dentistry, personal oral hygiene and dental disease. Basic skills of oral hygiene instruction, fluoride treatments and coronal polishing of the teeth are implemented. Prerequisites: Admission to Dental Assistant program and concurrent registration in DAS 112 Dental Materials I and DAS 115 Chairside Assisting I.

DAS 111 Fundamentals in Dental Assisting II 2 Cr Hrs
Covers dental terminology and spelling; dental charting; introductory business office procedures, including greeting and receiving patients, telephone techniques, filing and patient record management, appointment scheduling and recall. Prerequisite: Completion of DAS 102 Fundamentals in Dental Assisting.

DAS 112 Dental Materials I 3 Cr Hrs
Covers identification of materials used in general dentistry; physical and chemical properties, functions and classifications. Includes principles of safety and aseptic technique involved in working with materials and equipment and laboratory practice with impression materials and gypsum products. Prerequisites: Admission to Dental Assistant program and concurrent enrollment in DAS 115 Chairside Assisting I and DAS 119 Dental Anatomy.

DAS 115 Chairside Assisting I 4 Cr Hrs
Introduces students to dental equipment, hand and rotary instruments and basic duties and responsibilities of the chairside assistant, such as seating and dismissing the patient, oral evacuation, retraction and instrument transfer. Introduces students to principles of microbiology, disease transmission, standard precautions and infection control techniques according to Occupational Safety and Health Administration (OSHA) and American Dental Association (ADA) guidelines. Prerequisites: Admission into the Dental Assistant program and concurrent enrollment in DAS 112 Dental Materials I and DAS 119 Dental Anatomy.

DAS 118 Dental Radiology I 2 Cr Hrs
Covers basic principles of diagnostic radiology, equipment, radiation characteristics, radiation biology, protective measures and regulations, bisecting angle and paralleling techniques, extraoral radiology and anatomical landmarks. Instruction and laboratory techniques include exposure, processing, mounting and evaluating dental films using the Dxttr mannequin. Prerequisites: Admission to the Dental Assistant program and concurrent enrollment in DAS 107 Anatomy for
**Course Descriptions**

DAS 119 Dental Anatomy  2 Cr Hrs  
Covers the development of the oral cavity, teeth and supporting structures. The primary and permanent teeth are studied in detail as well as the major anatomic landmarks of the head and neck. Includes tooth drawing and placement of restorations in manikin teeth. Prerequisites: Admission into the Dental Assistant program and completion or concurrent enrollment in DAS 107 Anatomy for Dental Assistants.

DAS 125 Dental Science I  2 Cr Hrs  
Provides students with knowledge of medical emergencies that may arise in the dental setting. Students are expected to recognize signs and symptoms of specific emergencies to assist in the delivery of the suggested treatment. CPR for the health-care professional, basic first aid and skills in taking and recording vital signs will be are taught. Pharmacology for the dental assistant and theoretical application of nitrous oxide is also included. Prerequisites: DAS 107 Anatomy for Dental Assistants and DAS 135 Chairside Assisting II.

DAS 129 Dental Science II  1 Cr Hr  
Studies disease processes, especially those involving the oral cavity. Prerequisites: DAS 107 Anatomy for Dental Assistants, DAS 119 Dental Anatomy and concurrent enrollment in DAS 155 Chairside Assisting IV.

DAS 132 Dental Materials II  2 Cr Hrs  
Continuation of DAS 112 Dental Materials I. Laboratory practice with dental cements, waxes, resins and restorative materials. Custom trays, dies, articulated models and temporary crowns are fabricated. Prerequisite: Completion of DAS 112 Dental Materials I.

DAS 135 Chairside Assisting II  3 Cr Hrs  
Continuing practice of clinical dental assisting skills plus study of dental anesthesia, restorative dentistry with practice in application of matrix bands, dental dams and fixed prosthodontics. Prerequisite: Completion of DAS 115 Chairside Assisting I.

DAS 138 Dental Radiology II  2 Cr Hrs  
Continuation of DAS 118 Dental Radiology I with more intensive experience in exposing, processing and mounting intraoral x-ray films using the Dxttr mannequin and patients. Students are closely supervised and an evaluation is made of each completed survey. Radiographic safety and infection control procedures are emphasized. Prerequisite: DAS 118 Dental Radiology I.

DAS 142 Dental Office Procedures  2 Cr Hrs  
Provides instruction in additional business office procedures: supplies and inventory, expenses and disbursements, banking procedures, recording fees charged and paid, collections, computer applications in the dental office and dental insurance. Job-seeking skills are also included. Prerequisites: DAS 111 Fundamentals in Dental Assisting II and concurrent enrollment in DAS 145 Chairside Assisting III and DAS 155 Chairside Assisting IV.

DAS 143 Dental Materials III  1 Cr Hr  
Continuation of Dental Materials I and II. This course includes identification of materials used in general dentistry and dental laboratory procedures. Proper manipulation of materials, their uses and correct storage are practiced. Various laboratory procedures including waxing, investing and casting of a crown, construction of baseplates and bite rims, bleaching trays and an orthodontic retainer are practiced. Students are instructed in and expected to demonstrate the safe operation of laboratory equipment. Prerequisites: DAS 132 Dental Materials II and concurrent enrollment in DAS 145 Chairside Assisting III.

DAS 144 Clinical Experience I  4 Cr Hrs  
Opportunity to apply and practice the principles and procedures studied in the formal academic program. In private practice dental offices (both general practice and specialty offices), government clinics and public health facilities, students demonstrate the principles of chairside assisting, dental laboratory procedures and dental office procedures. Prerequisites: Concurrent enrollment in DAS 125 Dental Science I, DAS 138 Dental Radiology II, DAS 143 Dental Materials III and DAS 145 Chairside Assisting III.

DAS 145 Chairside Assisting III  1 Cr Hr  
Continuation of Chairside Assisting I and II. This course provides a foundation for assisting in the dental specialties of oral and maxillofacial surgery, endodontics and removable prosthodontics. Procedures, instruments and materials involved in these areas are studied. Prerequisites: DAS 135 Chairside Assisting II and concurrent enrollment in DAS 143 Dental Materials III.

DAS 155 Chairside Assisting IV  1 Cr Hr  
Continuation of Chairside Assisting I, II and III. This course provides a foundation for assisting in the dental specialties of periodontics, orthodontics, dentofacial orthopedics and pediatric dentistry. Procedures, instruments and materials involved in these areas are studied. Prerequisites: DAS 145 Chairside Assisting III and concurrent enrollment in DAS 143 Dental Materials III.

DAS 156 Clinical Experience II  4 Cr Hrs  
In private practice dental offices (both general practice and specialty offices), government clinics and public health facilities, students demonstrate the principles of chairside assisting, dental laboratory procedures and business office procedures. Scheduled clinical seminars provide opportunities to review and discuss experiences and procedures. Prerequisites: Concurrent enrollment in DAS 129 Dental Science II, DAS 138 Dental Radiology II, DAS 142 Dental Office Procedures, DAS 143 Dental Materials III and DAS 155 Chairside Assisting IV.

DAS 214 Supragingival Scaling  4 Cr Hrs  
Designed for experienced dental assistants to expand their skills in preventive dentistry with didactic, laboratory and clinical instruction in supragingival scaling and polishing. Includes review of dental anatomy and terminology, radiography and infection control, as well as didactic instruction in nutrition, periodontal disease, dental caries, oral hygiene instruction, topical fluoride, principles of instrumentation, communication skills and risk management. Prerequisites: Graduate of an accredited dental assistant program and CDA and six months of experience as a dental assistant or three years employment as a dental assistant within the last five years or departmental consent.
**Emergency Medical Technician—Basic**

**EMS 105  Emergency Medical Technician—Basic  10 Cr Hrs**
Prepares students to perform minimum entry-level emergency care in the out-of-hospital environment. Emphasis includes recognizing the nature and seriousness of the patient's condition, administering appropriate emergency medical care, lifting, moving and positioning the patient to minimize discomfort and prevent further injury and how to perform these duties safely and effectively. At the end of this course, successful students are eligible to sit for Kansas certification testing as an Emergency Medical Technician-Basic.

**Home Health Aide**

**GRA 104  Home Health Aide  2 Cr Hrs**
Prepares the certified nurse aide (CNA) to care for clients in community and home settings. Graduates may take the Kansas certification examination to become a home health aide (HHA). Prerequisite: GRA 101 Certified Nurse Aide or Kansas Certified Nursing Aide certification.

**IV Therapy**

**ALH 160  IV Therapy for LPNs  3 Cr Hrs**
Prepares LPNs to perform activities as defined in KAR 60-16-102 (b). Presents knowledge, skills and competencies in administration of IV fluid therapy. Approved by the Kansas State Board of Nursing. Prerequisite: LPN with proof of license. Contact practical nurse department chair for additional information.

**Medical Assistant**

**ALH 101  Medical Terminology  3 Cr Hrs**
Designed to present basic principles of medical word building. The study develops competencies in the basic elements forming medical words, categorizing major suffixes and group prefixes. Anatomical, physiological and pathological terms are reviewed so students better understand special medical procedures. This is the introductory course in medical terminology and is intended for all who desire knowledge in this subject.

**EMP 100  Global Professional Standards  2 Cr Hrs**
Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

**MEA 101  Professional Issues *  2 Cr Hrs**
Focuses on the basic concepts in the professional practice of medicine and the role and function of the medical assistant. Students discuss personal and professional characteristics and legal and ethical standards for medical assistants, explore professional and personal therapeutic communications and address time management and goal setting. Prerequisite: Admission to Medical Assistant program.

**MEA 111  Patient Care I  5 Cr Hrs**
Introduces basic clinical skills necessary for medical assistants. Presents aseptic practices for the medical office and studies patient interaction, such as interviewing, obtaining, evaluating and documenting vital signs and assisting with basic physical exams and testing. Prerequisites: Admission to Medical Assistant program and completion or concurrent registration in MEA 110 Human Body or Anatomy and Physiology with a laboratory component.

**MEA 113  Administrative Aspects I *  3 Cr Hrs**
Teaches the administrative skills of the health-care team member. Skills include effective telephone techniques, scheduling patients for appointments, management of facilities, record management and use of office equipment. Prerequisites: Admission to Medical Assistant program and documentation showing concurrent enrollment or completion of a college-level computer course within the last five years.

**MEA 115  Insurance Billing and Coding *  3 Cr Hrs**
Educates the health-care team member on the mechanics of submission of electronic/paper insurance claim forms and current industry coding for medical office treatments and procedures. Prerequisites: Admission to Medical Assistant program and completion or concurrent registration in MEA 113 Administrative Aspects for Medical Assistant I. Insurance Billing and Coding may also be taken as an open-enrollment course with instructor's approval.

**MEA 117  Pharmacology *  5 Cr Hrs**
Focuses on the medical assistant's role in the calculation, preparation and administration of various medications. Studies administration of topical, oral and buccal medications; return demonstrations are required. Prerequisites: Admission to Medical Assistant program and completion or concurrent registration in MEA 111 Patient Care I.

**MEA 120  Diagnostic Procedures  2 Cr Hrs**
Focuses on the specialized procedures associated with the human body. Students perform pulmonary function testing, electrocardiograms and learn basic EKG interpretation. Prerequisites: Successful completion of all Medical Assistant program first-semester coursework and competencies. Diagnostic Procedures may also be taken as an open-enrollment course, with instructor's approval.

**MEA 121  Patient Care II  5 Cr Hrs**
Focuses on expanding the knowledge gained in MEA 111 Patient Care I and MEA 117 Pharmacology for Medical Assistants. Explores more complex and independent procedures performed by medical assistants. Minor surgical procedures, physical therapy, sterile procedures, emergency procedures and medication administration by injection and intravenously are addressed. Return demonstration and competency are required. Prerequisites: Successful completion of all Medical Assistant program first-semester coursework and competencies.

**MEA 123  Administrative Aspects II  1 Cr Hr**
This upper-level course combines previous coursework as an introduction to the expanded role of the medical assistant as the medical office manager. Students design and produce patient information documents. Students perform proofreading on a variety of medical document seen in the medical office. Professional communications, job-seeking and interviewing skills are expanded through résumé writing and the creation of job descriptions applicable to the Medical Assistant. Prerequisites: Successful completion of all Medical
BIO 150 Anatomy & Physiology 5 Cr Hrs  
A detailed study of the structure and function of the human body. Laboratory work includes tissue examination, basic physiological experiments and structural identification of all organ systems.

MEA 125 Clinical Laboratory Procedures * 4 Cr Hrs  
Addresses the role and function of the professional in the clinical laboratory setting. Topics include safety, Clinical Laboratory Improvement Act of 1988 (CLIA-88) government regulations and quality assurance in the laboratory. Students learn concepts and perform procedures in the different departments of the laboratory, including specimen collection and performance of CLIA-88 low- and/or moderate-complexity testing. Students demonstrate competencies in a wide variety of techniques used to collect, process and test specimens. Prerequisites: Successful completion of all Medical Assistant program first-semester coursework and competencies.

MEA 131 Externship in Medical Assisting 6 Cr Hrs  
The application phase of the Medical Assistant program gives students opportunities to apply and practice the principles and procedures learned while participating in supervised, non-remunerative externship experiences in physicians’ offices and clinics. Students are expected to adapt to individual medical office’s rules and routines. Evaluation is based on student’s preparation for duties, active participation, attendance and professionalism. Guidelines and participation requirements specific to the externship are explained. Prerequisites: Successful completion of all Medical Assistant program first-semester coursework and competencies. Minimum grade of C in all second-semester coursework that has been completed or is running concurrently with MEA 131 Externship in Medical Assisting.

* Kansas Workforce Education Curriculum (KWEC) state curriculum.

MEA 210 Advanced Procedures in Medical Assisting 4 Cr Hrs  
Provides the graduate Medical Assistant an opportunity to expand current knowledge and expertise in specialized testing areas and in assisting with the performance of more complex clinical duties.

**Medical Coding**

ALH 101 Medical Terminology 3 Cr Hrs  
Presents basic principles of medical word building. The study develops competencies in the basic elements forming medical words, categorizing major suffixes and group prefixes. Anatomical, physiological and pathological terms are reviewed so that students better understand special medical procedures. This is the introductory course in medical terminology and is intended for all who desire knowledge in this subject.

BIO 100 Biology Review 1 Cr Hr  
Introduces materials covered in BIO 110 Principles of Biology. It is recommended for students planning to take BIO 150 Human Anatomy and Physiology or BIO 160 Microbiology, those who have not had a life science course within the past five years or students wishing to prepare for BIO 110 Principles of Biology.

BIO 150 Anatomy & Physiology 5 Cr Hrs  
A detailed study of the structure and function of the human body. Laboratory work includes tissue examination, basic physiological experiments and structural identification of all organ systems.

MEC 101 Insurance Billing & Coding for the Physician's Office 4 Cr Hrs  
Prepares students with the mechanics and skills to submit electronic/paper insurance claim forms after applying current industry coding for medical office treatments and procedures.

**Personal Training**

ALH 105 First Aid & CPR 3 Cr Hrs  
Covers cause, prevention and first aid care of life-threatening respiratory and cardiac emergencies and non-life threatening emergencies for infant, child and adults as outlined by the American Red Cross.

PTR 100 Introduction to Personal Training 3 Cr Hrs  
Provides students with the information necessary for designing, implementing and managing successful training programs. Students fulfill the criteria necessary to obtain the National Strength and Conditioning Association’s NSCA-CPT certification.

PTR 101 Principles of Strength & Conditioning 3 Cr Hrs  
Provides students with the information necessary to design and implement successful strength and conditioning programs through assessment and analysis of fitness and sports movement.

PTR 102 Introduction to Exercise Science 3 Cr Hrs  
An introductory course that examine the philosophical, historical and psycho-social origin of the fields of exercise science and health promotion. Current issues and future directions are also explored.

PTR 103 Kinesiology & Biomechanics 3 Cr Hrs  
Increases students’ knowledge of the structure and function of skeletal and muscular systems as well as the mechanical principles related to motor performance in sports and exercise.

PTR 104 Nutrition for the Athlete 3 Cr Hrs  
Addresses nutrition as it applies to the everyday athlete, weight management/weight loss, common diets, dietary supplements, ergonomic aids and eating disorders. Contents focus on the knowledge, skills, abilities for nutrition and weight management established by the American College of Sports Medicine and National Strength and Conditioning Association.

PTR 105 Exercise Program Design & Instruction 3 Cr Hrs  
Provides students with the information necessary for designing, implementing and managing successful training programs. Students fulfill the criteria necessary to obtain the National Strength and Conditioning Association’s NSCA-CPT certification.

PTR 106 Fitness Assessment & Evaluation 3 Cr Hrs  
Focuses on the knowledge, skills and abilities required to become proficient in performing a variety of exercise tests and prescribe appropriate exercise for aerobic capacity, muscular strength and endurance, body composition, flexibility and other parameters of physical fitness.

PTR 107 Methods for Enhancing Physical Performance 3 Cr Hrs  
Teaches students how to implement performance enhancement methodologies and practices using basic sports mechanics and exercise physiology. Students are able to train individuals in speed, agility, power, balance, coordination and endurance and design programs appropriate to their clientele.
### Phlebotomy

**PBT 160  Concepts of Phlebotomy**  
4 Cr Hrs  
Develops students’ interpersonal and technical skills that are required for competent blood specimen collection in hospital and outpatient settings. Includes classroom lecture to develop medical terminology and basic understanding of laboratory specimen collection techniques and methods. Emphasis is given to professional behavior, proper patient identification and procedures for a variety of sample collection methods. A grade of C or better is required in this course to be eligible for enrollment in MLT 170 Phlebotomy Clinical Internship.  
**Prerequisite:** Meet requirements for Health Sciences programs.

**PBT 161  Phlebotomy Laboratory**  
4 Cr Hrs  
Develops the laboratory skills required of a phlebotomist. Students apply current laboratory safety and infection control practices while performing clinical laboratory specimen collection and processing. Simulated laboratory practice of phlebotomy skills includes utilizing artificial arms to start and progresses to real (student) arms. Reinforces material related to the clinical practice of phlebotomy. A grade of C or better is required in this course to be eligible for enrollment in MLT 170 Phlebotomy Clinical Internship.  
**Prerequisite:** Taken concurrently with MLT 160 Concepts of Phlebotomy.

**PBT 170  Phlebotomy Clinical Internship**  
4 Cr Hrs  
Supervised phlebotomy experience in a health-care facility. Students are assigned to affiliated clinical laboratories. Provides students with opportunity to apply knowledge and skills in performing clinical phlebotomy procedures.

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### Practical Nurse

**PNR 120  KSPN Foundations of Nursing**  
4 Cr Hrs  
Utilizes the nursing standards of practice based on biology, psychosocial, spiritual and cultural principles to meet the needs of clients throughout the lifespan. Emphasis is placed on basic nursing skills, patient safety and therapeutic communication. Concepts and skills are enhanced in subsequent courses.

**PNR 122  Pharmacology**  
3 Cr Hrs  
Introduces the principles of pharmacology, drug classifications and the effects of selected medications on the human body. The nursing process is used as the framework for ensuring safe and effective nursing care for clients across the lifespan.

**PNR 121  KSPN Foundations of Nursing Clinical**  
2 Cr Hrs  
Explores the art and science of nursing in this clinical course. Emphasis is placed on the nursing process, cultural and spiritual awareness, communication, data collection, performance of basic nursing skills and documentation. Principles of safe medication administration are introduced.

**PNR 123  KSPN Medical Surgical Nursing I**  
4 Cr Hrs  
Focuses on the effects of disorders of selected systems throughout the lifespan and applies the nursing process in meeting basic needs. Health promotion and maintenance, rehabilitation and continuity of care are emphasized. The role of the practical nurse is incorporated throughout.

**PNR 124  KSPN Medical Surgical Nursing I Clinical**  
3 Cr Hrs  
Simulated and actual care situation of selected systems throughout the life span, utilizing acute and long-term care settings. Emphasis is placed on critical-thinking and clinical decision-making skills.

**PNR 125  KSPN Medical Surgical Nursing II**  
4 Cr Hrs  
Focuses on the effects of disorders of selected systems throughout the lifespan and applies the nursing process in meeting basic needs. Prevention, rehabilitation and continuity of care are emphasized. The role of the practical nurse is incorporated throughout.

**PNR 126  KSPN Medical Surgical Nursing II Clinical**  
3 Cr Hrs  
Uses simulated and actual care situations of selected systems throughout the lifespan, utilizing acute and long-term care settings. Emphasis is placed on critical-thinking and clinical decision-making skill development. Principles of leadership for the practical nurse are implemented, as well as multi-tasking management skills for transition as a practical nurse.

**PNR 130  KSPN Maternal Child Nursing**  
2 Cr Hrs  
Focuses on pre- and post-natal maternal nursing care, as well as the care of children from infancy to adolescence. Emphasis is given to normal reproduction and frequently occurring biological, cultural, spiritual and psychosocial needs of the child-bearing and child-rearing family.

**PNR 131  KSPN Maternal Child Nursing Clinical**  
1 Cr Hrs  
Applies concepts from PNR 130 KSPN Maternal Child
Nursing. Emphasis is placed on the nursing process and meeting the basic needs of the maternal child client.

PXR 132 KSPN Gerontology Nursing 2 Cr Hrs
Explores issues related to the aging adult using the nursing process as the organizing framework. Also discusses the impact of ageism, alterations in physiological and psychological functioning and the role of the practical nurse in caring for older adult clients.

PXR 134 Role Development 1 Cr Hr
Expands the leadership and management skills necessary for personal and career growth and development. Assignment, delegation, teamwork and conflict management are emphasized. Provides opportunities to acquire additional knowledge in areas of concern. Builds on areas of strength to improve chances of being successful on the National Council Licensure Examination (NCLEX-PN).

PXR 135 KSPN Mental Health Nursing 2 Cr Hrs
Explores basic concepts and trends in mental health nursing. Therapeutic modalities and client behavior management are discussed. Emphasis is placed on using the nursing process and meeting the basic human needs of the mental health client.

Rehabilitative Aide

GRA 108 Rehabilitative Aide 2 Cr Hrs
Provides the certified nurse aide additional training to assist physical and occupational therapists in long-term care settings. Prerequisite: GRA 101 Certified Nurse Aide or Kansas Certified Nurse Aide certification.

Surgical Technology

ALH 101 Medical Terminology 3 Cr Hrs
Presents basic principles of medical word-building. The study develops competencies in the basic elements forming medical words, categorizing major suffixes and group prefixes. Anatomical, physiological and pathological terms are reviewed so students better understand special medical procedures. This is the introductory course in medical terminology and is intended for all who desire knowledge in this subject.

ALH 115 Pharmacology 3 Cr Hrs
This course will provide the basic pharmacology principles with an emphasis on a broad discussion of the primary medications in each of the pharmaceutical classification categories. This course is designed to meet the pharmacology needs of students enrolled in pre-allied health majors and would be beneficial for others in the allied health field who desire a greater understanding or pharmacological principles related to diseases, effects of drugs on different systems of the body, interaction of drugs, side effects, contraindications and effectiveness in relation to dosages.

BIO 150 Anatomy & Physiology 5 Cr Hrs
A detailed study of the structure and function of the human body. Laboratory work includes tissue examination, basic physiological experiments and structural identification of all organ systems.

BIO 160 Microbiology 5 Cr Hrs
An introduction to microorganisms and their morphology, physiology, genetics and distribution. Emphasis is placed on the relationship of microorganisms to disease and the human immune responses. Techniques involving staining, culturing, identifying and biochemistry are considered in laboratory. Prerequisites: Must complete one of the following: BIO 110 Principles of Biology, BIO 100 Biology Review or successful completion of a life science laboratory class within the past five years. Suggested Prerequisite: CHM 110 General Chemistry.

CED 115 Computer Applications 3 Cr Hrs
Develops students’ computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

CPR 001 CPR for Healthcare Providers 1 Cr Hrs
Covers cause, prevention and first aid care of life-threatening respiratory and cardiac emergencies and non-life-threatening emergencies for infants, children and adults as outlined by the American Red Cross.

SGT 101 Introduction to Surgical Technology 4 Cr Hrs
Introduces the roles and functions of surgical team members and operating room organization. Presents legal and ethical issues, division of duties, hospital organization and management, medical terminology, basic communication skills and interpersonal relationships. Prerequisite: Admission to Surgical Technology program.

SGT 115 Surgical Procedures I 3 Cr Hrs
Coordinates study of theoretical and practical applications of various surgical procedures. Emphasis is placed on pathology, a methodical approach to surgical procedures and preparation and application of aseptic techniques with extensive laboratory experience to develop critical skills that are required to function in the operating-room environment. Prerequisites: Completion or concurrent registration in SGT 120 Principles and Practices in Surgical Technology, SGT 105 Microbiology for Surgical Technology, SGT 107 Pharmacology for Surgical Technology and SGT 111 Patient Care I.

SGT 119 Surgical Technology Clinical Experience I 4 Cr Hr
Allows students to participate in supervised, non-remunerative clinical experiences in hospital operating rooms with emphasis on general surgical procedures. Prerequisites: Completion or concurrent registration in SGT 111 Patient Care I and SGT 115 Surgical Procedures I.

SGT 120 Principles and Practices in Surgical Technology 5 Cr Hrs
Presents basic principles and practices necessary to prepare students for clinical experiences. Aseptic techniques and supplies, equipment, sterilization, disinfection and decontamination are major components of the course. Includes rotations through central processing, preoperative care and transportation areas. Prerequisites: Completion or concurrent registration in SGT 101 Introduction to Surgical Technology and SGT 105 Microbiology for Surgical Technology.

SGT 125 Surgical Procedures II 4 Cr Hrs
Continuation of SGT 115 Surgical Procedures I. Studies more specialized surgeries to expand the knowledge of supplies, equipment and steps involved in more complex surgeries. Prerequisites: Concurrent registration in SGT 121 Patient Care II
and SGT 129 Clinical Experience II.

SGT 129  Surgical Technology Clinical Experience II  4 Cr Hrs
Students are assigned to supervised, non-remunerative clinical practice in hospital operating rooms approximately 24 hours per week. Emphasis is placed on clinical specialties, such as general, gynecology, genito/urinary and EENT with rotations through endoscopy and labor and delivery. Prerequisites: Concurrent registration in SGT 121 Patient Care II and SGT 125 Surgical Procedures II.

SGT 130  Surgical Technology Clinical Experience III  3 Cr Hrs
Students are assigned to supervised, non-remunerative clinical practice in hospital operating rooms approximately 24 hours per week. Emphasis is placed on clinical specialties, such as orthopedics and neurosurgery with rotations through post-anesthesia rooms. Prerequisites: Concurrent registration in SGT 121 Patient Care II and SGT 125 Surgical Procedures II.

SGT 140  Principles & Practices in Surgical Technology Lab  3 Cr Hrs
Students will demonstrate concepts necessary to prepare students for clinical experience. Aseptic technique and supplies and equipment are major components of this course.

Manufacturing and Engineering Technology

Air Conditioning Technology

ACR 100  Refrigeration Fundamentals  3 Cr Hrs
Introduces basic concepts and theories of refrigeration. Topics include the laws of thermodynamics, pressure and temperature relationships, heat transfer, refrigerant identification, the refrigeration cycle and safety.

ACR 101  Principles & Practices of Refrigeration  4 Cr Hrs
Introduces the use of refrigeration tools, materials and procedures needed to install, repair and service refrigeration systems. Topics include refrigeration tools; piping practices; service valves; leak testing; refrigerant recovery, recycling and reclamation; evacuation; charging; and safety. Prerequisite: ACR 100 Refrigeration Fundamentals.

ACR 105  Electrical Circuits & Wiring Diagrams  4 Cr Hrs
Provides instruction in identifying, installing and testing commonly used electrical components in an air conditioning system. Topics include pressure switches, overload devices, transformers, magnetic starters, other commonly used controls, diagnostic techniques, installation procedures and safety. Prerequisite: ACR 103 Electrical Fundamentals.

ACR 107  Air Conditioning Systems  3 Cr Hrs
Introduces fundamental theory and techniques needed to identify major components and functions of air conditioning systems. Instruction is given on types of air conditioning systems and use of instrumentation. Topics include types of AC systems, heat-load calculation, properties of air, psychrometrics, duct design, air filtration and safety principles. Prerequisite: ACR 102 Refrigeration Systems Components.

ACR 110  Gas Heating Systems  3 Cr Hrs
Introduces principles of combustion and service requirements for gas heating systems. Topics include service procedures, electrical controls, piping, gas valves, venting, code requirements, principles of combustion and safety. Prerequisites: ACR 102 Refrigeration Systems Component, ACR 106 Electric Control Systems and Installation and MAT 101 General Mathematics.

ACR 111  Heat Pumps & Related Systems  3 Cr Hrs
Provides instruction on the principles, application and operation of a residential heat pump system. Topics include installation procedures, servicing procedures, electrical components, geothermal ground source energy supplies, dual fuel, troubleshooting, valves and safety. Prerequisites: ACR 102 Refrigeration Systems Components and ACR 106 Electrical Control Systems and Installation.

ACR 115  Electricity & Electronics for the HVACR Service Technician  4 Cr Hrs
Emphasizes fundamentals of electricity and electronics with application to heating, ventilating, air conditioning and refrigeration equipment. Provides hands-on instruction in electrical-mechanical applications. Ohm’s and Watt’s laws
are studied, along with magnetic principles, inductance and capacitance in circuits. Identification and construction of series, parallel and combination circuits are explored through laboratory experiments. This course also covers common single-phase and small three-phase electric motors. Presentations focus on basic motor theory, common types of motors, starting components and protection devices. Diagnostic skills for motor troubleshooting and replacement are also developed.

ACR 120 Building Control Systems I 3 Cr Hrs
Provides instruction on the installation and service of residential air conditioning systems, as well as basic building controls. Topics include installation procedures, service, split-systems, add-on systems, packaged systems and safety.

ACR 125 EPA Certification 1 Cr Hr
Prepares students for the certification exam required by federal and state governments and the heating, ventilation, air conditioning and refrigeration (HVAC/R) industry. Students focus on Environmental Protection Agency (EPA) refrigerant-handling exams and Industry Competency Exams (ICE).

ACR 130 HVAC Design 4 Cr Hrs
Discusses heat energy, conditions of human comfort, psychrometric chart and plotting various air conditions. Calculations of heat transfer into and out of a residential structure are instructed using terms, concepts, measurements and calculations of moving air. This course is designed to develop and exercise students’ ability to perform heat loss and gain calculations.

ACR 135 Internship in HVACR 5 Cr Hrs
Students participate in an industry-related assignment associated with the heating, ventilation, air conditioning and refrigeration systems. All work assignments must be approved by a faculty advisor.

ACR 140 Sheetmetal 3 Cr Hrs
Introduces basic concepts and theories of duct fabrication and installation used in the heating, ventilation and air conditioning (HVAC) industry. Topics include the techniques and formulas used to lay out a variety of ducting connections and air returns. Students calculate air flows and volume for both primary and return lines. Shearing and forming of sheetmetal is used in fabricating basic duct systems.

CED 101 Computer Essentials 2 Cr Hrs
Develops students’ computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

CED 115 Computer Applications 3 Cr Hrs
Develops students’ computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

CWG 110 Welding Applications 4 Cr Hrs
Provides instruction in the major welding and cutting operations. Students develop knowledge and skills to identify and safely operate a variety of welding and cutting machines/equipment including arc welding, MIG welding, TIG welding, oxy-acetylene welding and cutting and shearing operations.

EMP 100 Global Professional Standards 2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

MTH 112 College Algebra 3 Cr Hrs
An introduction of algebraic functions and some transcendental functions with application in business and life, natural and social sciences. Topics include solving equations, zeros, rational functions, matrices, exponentials and logarithms and systems. Additional topics are included as time permits. Students must furnish their own TI-83 or TI-83 PLUS graphing calculators. Prerequisites: A minimum grade of C in MTH 101 Intermediate Algebra or satisfactory course placement assessment or 21 ACT math score.

SAF 100 OSHA Construction Safety I 1 Cr Hrs
This course provides a fundamental understanding of OSHA Safety for the Construction Industry. Students who successfully complete the course will be issued a Department of Labor (DOL) 10 hour card.

**Machining Technology**

CAT 101 CATIA Part Design & Sketcher 4 Cr Hrs
Covers the creation of solid parts without complex contours. Students are introduced to the part environment of CATIA V5 and learn how to work between sketcher and parts design workbenches to create individual parts.

CAT 105 CATIA Assembly Design 4 Cr Hrs
Covers the use of multiple parts to create an assembly. It also covers the various analytical and navigation tools that are available within an assembly. Students are introduced to the product environment of CATIA V5 and learn how to work with multiple parts between the assembly design, digital mock-up (DMU) space analysis and DMU navigator workbenches.

CAT 115 CATIA Prismatic Machining 4 Cr Hrs
Covers the machining operations involved in three-axis milling. Students are introduced to the process environment of CATIA V5 and learn how to work between the process, part and product environments.

CAT 124 CATIA Surface Machining 3 Cr Hrs
A continuation in the manufacturing environment. This course covers the more advanced machining operations involved in full three-axis and multi-axis machining. Students learn how to integrate the manufacturing tools available in prismatic machining, surface machining and advanced machining.

CAT 115 Computer Applications 3 Cr Hrs
Develops students’ computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.
CWG 110 Welding Applications  4 Cr Hrs
Provides instruction in the major welding and cutting operations. Students develop knowledge and skills to identify and safely operate a variety of welding and cutting machines/equipment including arc welding, MIG welding, TIG welding, oxy-acetylene welding and cutting and shearing operations.

EBS 115 Pre-Algebra  3 Cr Hrs
Arithmetic with fractions, decimals and percents. Introduction to the metric system. Provides applications to measurement and consumer math. This course does not count toward AS, AA, AGS or AAS degrees.

EMP 100 Global Professional Standards  2 Cr Hrs
Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

MCD 201 Geometric Dimensioning & Tolerance  3 Cr Hrs
An in-depth study develops a basic working knowledge in geometric dimensioning and tolerancing (GD&T). It is delivered per the American Society of Mechanical Engineers (ASME) Y14.5M, 1994 standard. This program has been presented and refined over the past 25 years and covers what personnel need to know to work in an industrial environment on a daily basis. The course includes emphasis on all the basics, such as the rules, measurement theory, the datum reference frame, form, orientation, profile and positional tolerancing. The program materials contain a variety of computer color-animated graphics, video clips and plastic models that allow students to clearly understand the concepts.

MMG 102 Blueprint Reading I  2 Cr Hrs
Gives instruction in the universal language of drawing interpretation from which information is conveyed for the manufacture of parts and assemblies.

MMG 142 Manual Lathes  6 Cr Hrs
Includes theory and laboratory instruction about basic lathe operations, safety and use and care of hand and machine tools. Addresses basic lathe operations such as turning, facing, drilling, tapping and tool grinding.

MMG 143 Manual Mills  6 Cr Hrs
Includes theory and laboratory instruction of basic manual mill operations, safety and use and care of hand and machine tools and machine operation and set-ups.

MMG 144 CNC Mills  6 Cr Hrs
Introduces the actual machine set-up utilizing various clamping vises and fixtures along with computer numerical control (CNC) machine operation methods and techniques necessary to produce a variety of discrete parts on the CNC mills.

MMG 147 Principles of Machining I  2 Cr Hrs
Introduces students to basic metal-working concepts, including metal-cutting fundamentals, identification and use of hand and cutting tools, various machine tool operations and the use and care of precision measuring instruments. Course is a preliminary to matching laboratory courses and addresses the safe use of machine and hand tools.

MMG 152 CNC Lathes  6 Cr Hrs
Introduces students to two-axis computer numerical control (CNC) lathe machining. The theory of operations is developed in classroom with application of the program accomplished on industry type machines. Students are able to set up the machine and know the terminology of coordinates. Cutter paths, angle cutting and linear cutting are studied.

MMG 255 Machining Internship  4 Cr Hrs
This internship course offers students opportunities to be employed in their field with a 40-hour work week to expand their work experience related to their field of study.

Manufacturing Engineering Technology

CAT 101 CATIA Part Design & Sketcher  4 Cr Hrs
Covers the creation of solid parts without complex contours. Students are introduced to the parts environment of CATIA V5 and learn how to work between sketcher and parts design workbenches to create individual parts.

CAT 105 CATIA Assembly Design  4 Cr Hrs
Covers the use of multiple parts to create an assembly. It also covers the various analytical and navigational tools that are available within an assembly. Students are introduced to the product environment of CATIA V5 and learn how to work with multiple parts between the Assembly Design, digital mock-up (DMU) Space Analysis and DMU Navigator workbenches.

CAT 115 CATIA Prismatic Machining  4 Cr Hrs
Covers the machining operations involved in three-axis milling. Students are introduced to the process environment of CATIA V5 and learn how to work between the process, parts and product environments.

CAT 122 CATIA ENOVIA DMU  2 Cr Hrs
Intended for students who want to learn to view and analyze CAD data. It also covers the various analytical and navigational tools available within ENOVIA DMU. It also shows how functional dimensioning and tolerancing information can be viewed. Students are introduced to the product environment and the 2-D viewer environment to view all types of data.

CWG 110 Welding Applications  4 Cr Hrs
Provides instruction in the major welding and cutting operations. Students develop knowledge and skills to identify and safely operate a variety of welding and cutting machines/equipment including arc welding, MIG welding, TIG welding, oxy-acetylene welding and cutting and shearing operations.

EMP 100 Global Professional Standards  2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

IND 105 Applied Electricity AC/DC  3 Cr Hrs
Provides an overview of applied electricity for technical and industrial applications. Topics include electrical units and principles, applied DC circuits, applied AC circuits,
common transformers, single-phase circuits, three-phase circuits, introduction to troubleshooting and common industrial motors/motor controls. The course emphasizes basic electrical terminology and associated problem solving in electrical technology. Competencies are reinforced with practical hands-on laboratory exercises and use of electrical meters.

**IND 109 Basic Industrial Programmable Logic Controls** 3 Cr Hrs
This course introduces operational theory, systems terminology, PLC installations, and programming procedures for programmable logic controls. Emphasis is placed on PLC programming, connections, installations, and start-up procedures. Topics include: PLC hardware and software, PLC functions and terminology, PLC installation and set up, PLC programming basics, relay logic instructions, timers and counters, connecting field devices to I/O cards, and PLC safety procedures.

**IND 122 Industrial Fluid Power** 3 Cr Hrs
Provides instruction in fundamental concepts and theories for safely operating hydraulic components and pneumatic systems. Topics include: hydraulic theory, suction side of pumps, actuators, valves, pumps/motors, accumulators, symbols and circuitry, fluids, filters, pneumatic theory, compressors, pneumatic valves, air motors and cylinders and safety.

**MCD 116 Introduction to CAD** 5 Cr Hrs
Introduces computer-aided drafting (CAD) and examines the hardware that makes up a CAD workstation. It also covers the Microsoft Windows operating system that enables the equipment to function as a unit. The course shows how to use AutoCAD to set up drawings and construct lines, circles, arcs, other shapes, geometric constructions and text. Students use display and editing techniques as well to obtain information about their drawings and work with drawing files. This course also introduces recommended drafting standards for students to use for properly preparing drawings with AutoCAD. This course also examines dimensioning, blocks and attributes, section views, isometric drawings, multiview layouts, annotative objects, external references and sheet sets. Students learn how to use AutoCAD to dimension drawings, create section lines and graphic patterns, design symbols and attributes for multiple uses and create sheet sets. Student drawings are plotted or printed. This course also covers recommended drafting standards and practices for students to use for properly preparing drawings with AutoCAD.

**MET 101 Fundamentals of Quality Control** 3 Cr Hrs
This course will provide students with a fundamental understanding of quality improvement. Topics will include history of the movement, impact on industry, major components and tools of quality control as well as future trends. Students will have the opportunity to apply what they learn to industry based scenarios.

**MET 105 Quality Assurance** 3 Cr Hrs
This course is an overview of the fundamental aspects of quality assurance. Topics include quality organizations, product design systems, material controls, ISO 9100 and AS9100, and cost of quality and management concepts.

**MET 110 Manufacturing Processes I** 3 Cr Hrs
Introduces basic industrial manufacturing processes employing material removal technologies. Topics include material removal processes, automated machining concepts, computer numerical control (CNC) and manual programming, Laborory work parallels class work.

**MET 111 Environmental Health & Safety** 3 Cr Hrs
This course covers workplace environmental health and safety issues. Emphasis is placed on identifying and managing and effective EHS systems.

**MET 115 Statistical Quality Control** 3 Cr Hrs
This course is designed to introduce students to the concepts, methodologies and theories used in the field of organizational development. Topics include leadership, teams, communication, and change.

**MET 125 Designs of Experiments** 3 Cr Hrs
These courses will analyze the method and application of experiment design. Learning opportunities will include a review of common design experiment, learning to create design plans and using ANOVA tables. Student will apply concepts learned in an industry based scenario in which they design, plan and implement an original experiment.

**MET 140 Quality Auditing** 3 Cr Hrs
In this course students will learn the elements of quality audit as it applies to an manufacturing environment. Topics will include terminology, sampling, preparing for audit, performing the audit and reporting and follow up.

**MET 145 Organizational Behavior** 3 Cr Hrs
This course is designed to introduce students to the concepts, methodologies and theories used in the field of organizational development. Topics include leadership, teams, communication, and change.

**MET 147 Statistical Quality Control** 3 Cr Hrs
This course is designed to introduce the concepts of statistical quality control. Students will study statistical methods to improve product quality. Topics include methods and philosophy of statistical process control, basic concepts of SPC, and control charts for variables and attributes.

**MET 160 Engineering Materials & Testing** 3 Cr Hrs
Introduces basic industrial manufacturing processes employing material shaping, joining, and assembly technologies. Topics include: casting, molding, and related processes; particulate processing for metals and ceramics; metal forming and sheet metal working; gauging; joining and assembly processes; non-destructive examination; and surface processing operations. Laboratory work parallels class work.

**MET 170 Facilities Planning** 3 Cr Hrs
This course will provide students with the ability utilize data to develop effective production and service facilities. Topic will include work measurement, material handling, material flow analysis and methods analysis.

**MET 172 Manufacturing Production Management** 3 Cr Hrs
This course is designed to provide an introduction to the planning and control of production systems. Topics will include forecasting, inventory systems, production sequencing and scheduling. Students will apply classroom concepts to industry based project.

**MMG 102 Blueprint Reading I** 2 Cr Hrs
Gives instruction in the universal language of drawing interpretation from which information is conveyed for the manufacture of parts and assemblies.

**MMG 144 CNC Mills** 6 Cr Hrs
Introduces the actual machine set-up utilizing various clamping vises and fixtures along with computer numerical control (CNC) machine operation methods and techniques.
necessity to produce a variety of discrete parts on both machining centers and turning centers.

**MMG 147 Principles of Machining I**  
2 Cr Hrs  
Introduces students to basic metal-working concepts including metal-cutting fundamentals, identification and use of hand and cutting tools, various machine tool operations and the use and care of precision measuring instruments. Course is a preliminary to matching laboratory courses and addresses the safe use of machine and hand tools.

**Welding**

**CED 101** Computer Essentials  
2 Cr Hrs  
Develops students’ computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.

**CED 115** Computer Applications  
3 Cr Hrs  
Develops students’ computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: Students are encouraged to complete a self-assessment to determine skill set prior to enrolling in this course.

**CWG 101 Occupational Safety / Welding**  
1 Cr Hr  
Provides students with an appreciation and basic understanding of the safety rules and regulations that govern the construction industry. Students learn and apply safe work habits in the use of hand and power tools as well as the handling, use and application of hazardous materials. Films, videos, field trips and guest speakers supplement course.

**CWG 102 Print Reading I / Welding**  
2 Cr Hrs  
Gives instruction in the universal language of drawing interpretation from which information is conveyed for the manufacture of parts and assemblies.

**CWG 103 Print Reading II / Welding**  
1 Cr Hr  
Gives instruction in the universal language of drawing interpretation from which information is conveyed for the manufacture of parts and assemblies. Prerequisite: CWG 102 Print Reading I / Welding and concurrent registration in any welding laboratory course.

**CWG 110 Welding Applications**  
4 Cr Hrs  
Provides instruction in the major welding and cutting operations. Students develop knowledge and skills to identify and safely operate a variety of welding and cutting machines/equipment including arc welding, MIG welding, TIG welding, oxy-aceylene welding and cutting and shearing operations.

**CWG 141 Oxy-Acetylene Welding & Cutting**  
2 Cr Hrs  
Includes lecture and laboratory and teaches students to set up and operate oxy-acetylene welding and cutting equipment with emphasis on safety.

**CWG 142 SMAW–Shielded Metal Arc Welding**  
7 Cr Hrs  
Includes lecture and laboratory and teaches students the proper set up and operation of various types and brands of arc welders. Laboratory time includes demonstrations and practice time for students to acquire arc-welding skills used in industry.

**CWG 143 GMAW–Gas Metal Arc Welding**  
7 Cr Hrs  
Includes lecture and laboratory and teaches the fundamentals of setting up and adjusting various MIG welding machines. Students practice American Welding Society basic joint designs and positions of welds and attain the skills necessary to gain entry-level employment in gas metal arc welding.

**CWG 145 Fabrication & Design**  
2 Cr Hrs  
Applies the basic principles gained for fabrication of various student or WATC campus-related projects. Prerequisite: Any welding laboratory course or administrator approval.

**CWG 147 GTAW–Gas Tungsten Arc Welding**  
7 Cr Hrs  
Provides instruction in the field of gas tungsten arc welding. Students develop skills needed to be employed in the welding areas of aluminum and steel.

**CWG 149 Materials & Testing**  
2 Cr Hrs  
Provides knowledge and skills in the areas of metallurgy and weld testing. Teaches the different uses and testing procedures for steel, stainless steel, aluminum and various alloys. Emphasizes welds approved for testing by the American Welding Society. Prerequisite: Concurrent registration in any welding laboratory course or administrator approval.

**CWG 242 SMAW D1.1 Qualification**  
4 Cr Hrs  
Assists students in preparing to take the shielded metal arc welding (SMAW) qualification test. Students follow all safety procedures related to the various tools and equipment involved in this course. They understand the qualification and code system for structural qualification; identify, measure, cut and prepare the material required for this qualification; and learn the skills for structural welding. Students have time in class to practice these skills in preparation for the structural certification test(s). Completion of this course does not ensure qualification. Prerequisite: CWG 142 Shielded Metal Arc Welding or administrator approval.

**CWG 243 GMAW D1.1 Qualification**  
4 Cr Hrs  
Assists students in preparing to take the gas metal arc welding (GMAW) qualification test. Students follow all safety procedures related to the various tools and equipment involved in this course; understand the qualification and code system for structural qualification; identify, measure, cut and prepare materials required for this qualification; and learn the skills for structural welding. Students have time in class to practice these skills in preparation for the structural qualification test(s). Completion of this course does not ensure qualification. Prerequisite: CWG 143 Gas Metal Arc Welding or administrator approval.

**CWG 250 API 1104 Qualification**  
4 Cr Hrs  
Assists students in preparing to take the pipe certification test. Students follow all safety procedures related to the various tools and equipment involved in this class. They understand the certification and code system for pipe certification. They also identify, measure, cut and prepare the pipe required for this certification. They learn the skills for structural welding cross-country gas and oil lines and have time to practice these skills in preparation for the pipe certification test.

**EBS 115 Pre-Algebra**  
3 Cr Hrs  
Arithmetic with fractions, decimals and percents. Introduction
to the metric system. Provides applications to measurement and consumer math. This course does not count toward AS, AA, AGS or AAS degrees.

**EMP 100 Global Professional Standards**  
2 Cr Hrs  
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

**MMG 142 Manual Lathes** 6 Cr Hrs  
Includes theory and laboratory instruction about basic lathe operations, safety and use of hand and machine tools. Addresses basic lathe operations such as turning, facing, drilling, tapping and tool grinding.

**MMG 143 Manual Mills** 6 Cr Hrs  
Includes theory and laboratory instruction of basic manual mill operations, safety and use and care of hand tools and machine operation and set-ups.

**MMG 152 CNC Lathes** 6 Cr Hrs  
Introduces students to two-axis computer numerical control (CNC) lathe machining. The theory of operations is developed in classroom with application of the program accomplished on industry-type machines. Students are able to set up the machine and know the terminology of coordinates. Cutter paths, angle cutting, linear and circular interpolation are studied.

**ALH 101 Medical Terminology** 3 Cr Hrs  
Presents basic principles of medical word building. The study develops competencies in the basic elements forming medical words, categorizing major suffixes and group prefixes. Anatomical, physiological and pathological terms are reviewed so that students better understand special medical procedures. This is the introductory course in medical terminology and is intended for all who desire knowledge in this subject.

**CNU 010 Certified Nurse Aide Update** 0 Cr Hr  
Provides continuing education required by the Kansas Department of Health and Environment (KDHE) for renewal of the certified nurse aide (CNA) certificate when person is not gainfully employed as a CNA. **Prerequisite: GRA 101 Certified Nurse Aide.**

**ALH 110 Principles of Nutrition** 3 Cr Hrs  
A study of the health of the individual as related to food and its assimilation in the human body. Principles of normal nutrition, food values and adequate nutrient allowances for growth and maintenance are examined.

**ALH 160 IV Therapy for LPNs** 3 Cr Hrs  
Prepares LPNs to perform activities as defined in KAR 60-16-102(b). Presents knowledge, skills and competencies in administration of IV fluid therapy. Approved by the Kansas State Board of Nursing. **Prerequisite: LPN with proof of license. Contact Practical Nurse department chair for additional information.**

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**Online Learning – The Virtual College**

**Online Learning Courses**

Note: Online offerings vary each semester. Please check the WATC online schedule for most current information at www.watc.edu.

**ACC 105 Fundamentals of Accounting** 3 Cr Hrs  
For students who want a working knowledge of accounting, but not to the extent as would the person working primarily in the accounting field. Although the basic accounting principles are learned and applied, the course, in comparison to Principles of Accounting I, covers a smaller amount of material at a somewhat slower pace. Recommended for students with no previous accounting background.

**ACC 160 Principles of Accounting I** 3 Cr Hrs  
Helps students develop a basic understanding of accounting theory, concepts and procedures. It provides a foundation for further study for students seeking a career in accounting or business administration or for students entering the occupational field.

**ACC 170 Principles of Accounting II** 3 Cr Hrs  
A continuation of ACC 160 Principles of Accounting I. Studies corporations including organization and operations; stockholders’ equity, earnings and dividends; long-term assets and liabilities, investments, income tax and their effort on business decisions; and assessing a company’s financial performance.
ART 100  Art Appreciation  3 Cr Hrs
Develops a personal appreciation of art. By combining a study of concepts and artists' works, students improve their judgment and ability to understand art critically.

AVC 100  Aerospace Safety  1 Cr Hr
Provides an in-depth study of the human and safety practices required to work in aviation and manufacturing fields. Topics include an introduction to Occupational Safety and Health Administration (OSHA) regulations; safety tools, equipment and procedures; hazardous waste; and first aid and cardiopulmonary resuscitation.

AVC 101  Applied Shop Math  2 Cr Hrs
Focuses on skills required to complete common shop math problems including reading and interpreting part dimensions, checking part features and recording accurate measurements. The application of mathematical skills to the manufacturing environment is an integral part of the course.

BIO 100  Biology Review  1 Cr Hr
Introduces materials covered in BIO 110 Principles of Biology. It is recommended for students planning to take BIO 150 Human Anatomy and Physiology or BIO 160 Microbiology, those who have not had a life science course within the past five years or students wishing to prepare for BIO 110 Principles of Biology.

BIO 110  Principles of Biology  5 Cr Hrs
An introduction to the biological concepts included in the General Education Biology Core Competencies. This includes understanding the nature of science, levels of organization, bioenergetics, reproduction and inheritance and the mechanisms of change. Laboratory stresses the process of scientific investigatation and observation of biological processes.

BMT 115  Beginning E-Mail Marketing  1 Cr Hr
Provides an understanding of how to plan an e-mail marketing campaign. Examines best practices for sending e-mail messages; discusses deliverability, tracking, list building and Controlling the Assault of Non-Solicited Pornography and Marketing (CAN-SPAM) compliance issues.

BMT 120  Social Media Madness  1 Cr Hr
Provides an understanding of what social media is and how it can be used in marketing your business. Examines ways to engage social media to promote a product, brand or identity.

BUS 102  Intermediate Document Processing  4 Cr Hrs
Develops keyboarding speed and accuracy with further mastery of correct keyboarding techniques. Students attain a minimum typing speed of 40 words per minute with a maximum of five errors on a five-minute timed keyboarding test. Topics include building speed and accuracy, formatting and producing business documents, language arts and proofreading. Laboratory practice parallels class instruction. Prerequisite: BUS 101 Beginning Document Processing.

BUS 104  Introduction to Business  3 Cr Hrs
Acquaints students with the nature and scope of business, its component parts, how business is owned, organized and managed. Emphasis is upon environmental forces and historical conditions that have influenced the growth of business from its early years to the present day.

BUS 105  Database Management  2 Cr Hrs
Emphasizes use of database management software packages to access, manipulate and create file data. Topics include data entry, data access, data manipulation, database creation and file documentation. Prerequisite: CED 101 Computer Essentials.

BUS 106  Office Procedures  2 Cr Hrs
Emphasizes essential skills required for the business office. Topics include office protocol, time management, travel and meeting arrangements. Prerequisite: BUS 101 Beginning Document Processing.

BUS 108  Word Processing  3 Cr Hrs
Emphasizes an intensive use of word processing software to create and revise business documents. Topics include equipment and supplies maintenance and usage, work area management, word processing software and productivity. Prerequisites: CED 101 Computer Essentials and/or BUS 101 Beginning Document Processing.

BUS 120  Business Math  3 Cr Hrs
Emphasizes mathematical concepts found in business situations. Topics include basic mathematical skills, mathematical skills in business-related problem solving, mathematical information for documents, graphs and mathematical problems using electronic calculators (not to include the touch method). Prerequisite: Program admission competency levels.

BUS 121  Business Communications  3 Cr Hrs
For non-business majors as well as for business majors. Course concerned with efficient management of money as a primary requirement for successful personal life. Aids individuals in establishing and maintaining credit, using a budget, safeguarding and investing savings and arranging personal insurance.

BUS 122  Business Math  3 Cr Hrs
Provides an understanding of how to plan an e-mail marketing campaign. Examines best practices for sending e-mail messages; discusses deliverability, tracking, list building and Controlling the Assault of Non-Solicited Pornography and Marketing (CAN-SPAM) compliance issues.

BUS 130  Personal Finance  3 Cr Hrs
Provides knowledge and application of written and oral communications found in business situations. Topics include writing fundamentals and speaking fundamentals. Prerequisite: BUS 120 Business English.

BUS 140  Project Management & Leadership  3 Cr Hrs
Gives students the basic understanding of how to become a successful project manager. They learn how to initiate, plan, execute, monitor and close projects. They also learn how to use Microsoft Project 2007 to track projects.

BUS 150  Advanced Word Processing  3 Cr Hrs
Provides instruction in advanced word processing. Topics include advanced word processing concepts and applications and proofreading. Prerequisites: BUS 108 Word Processing and BUS 120 Business English.

CED 101  Computer Essentials  2 Cr Hrs
Develops students' computer literacy, keyboarding skills and meets the needs of students in associate degree and technical certificate programs. Students learn from hands-on experiences, basic skills in file management utilities, word processing, spreadsheets and graphical presentations in the Windows environment.
CED 115 Computer Applications 3 Cr Hrs
Develops students’ computer literacy and meets the needs of students in associate degree programs. Students learn from hands-on experiences basic skills in file management utilities, word processing, spreadsheets, database management and graphical presentations in the Windows environment. Prerequisite: CED 115 Computer Applications or acceptable prior experience with Microsoft Word, Excel, Access and PowerPoint.

CED 120 Advanced Computer Applications 3 Cr Hrs
Enhances students’ computer literacy and meets the needs of students in associate degree and/or certificate programs. Students learn from hands-on experiences, advanced skills in word processing, spreadsheet applications, database management and graphical presentations in the Windows environment. Prerequisite: CED 115 Computer Applications, or acceptable prior experience with Microsoft Word, Excel, Access and PowerPoint.

CHM 100 Chemistry Review 1 Cr Hr
Introduces basic concepts covered in CHM 125 Chemistry I. It is recommended for students who want to enroll in Chemistry I or a higher level chemistry course the following semester. It is not recommended for those taking CHM 110 General Chemistry.

CHM 110 General Chemistry 5 Cr Hrs
An introduction to chemistry that includes the study of matter, atoms, molecules, chemical arithmetic, chemical reactions, gas laws, acids and bases, organic chemistry and laboratory experimentation. Prerequisite: EBS 120 Elementary Algebra or a higher level math course with a grade of C or better, completed within the past five years, or a math ACT score of 18 or better or an equivalent assessment score.

CED 120 Advanced Computer Applications 3 Cr Hrs
Enhances students’ computer literacy and meets the needs of students in associate degree and/or certificate programs. Students learn from hands-on experiences, advanced skills in word processing, spreadsheet applications, database management and graphical presentations in the Windows environment. Prerequisite: CED 115 Computer Applications, or acceptable prior experience with Microsoft Word, Excel, Access and PowerPoint.

CHM 100 Chemistry Review 1 Cr Hr
Introduces basic concepts covered in CHM 125 Chemistry I. It is recommended for students who want to enroll in Chemistry I or a higher level chemistry course the following semester. It is not recommended for those taking CHM 110 General Chemistry.

CHM 110 General Chemistry 5 Cr Hrs
An introduction to chemistry that includes the study of matter, atoms, molecules, chemical arithmetic, chemical reactions, gas laws, acids and bases, organic chemistry and laboratory experimentation. Prerequisite: EBS 120 Elementary Algebra or a higher level math course with a grade of C or better, completed within the past five years, or a math ACT score of 18 or better or an equivalent assessment score.

CNU 010 Certified Nurse Aide Update 0 Cr Hr
Provides the continuing education required every two years by the Kansas Department of Health and Environment (KDHE) for renewal of the certified nurse aide (CNA) certificate when CNA is not gainfully employed. Prerequisite: GRA 101 Certified Nurse Aide.

CRJ 101 Introduction to Criminal Justice 3 Cr Hrs
Introduction to the historical backgrounds, agencies and processes, purposes and functions of the system. Covers the ethics, administration and legal problems of the criminal justice system.

ECO 105 Principles of Macroeconomics 3 Cr Hrs
Explores the fundamental aspects of the United States economy including growth, fiscal and monetary policies, unemployment, inflation, national debt, money and the Federal Reserve System. National and international policy topics are discussed.

ECO 110 Principles of Microeconomics 3 Cr Hrs
Attention is given to the methods of producing the goods and services that the economy provides. The following areas are explored: supply, demand, pricing, scarcity, business firms, business anti-trust and public interest, incomes, wages and salaries, income distribution, taxes and tax reform.

EMP 100 Global Professional Standards 2 Cr Hrs
Provides a study of human relations and professional development in today’s rapidly changing world that prepares students for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement and professional image skills.

ENG 101 Composition I 3 Cr Hrs
Improves the reading and writing skills of students. The emphasis is on fundamental principles of written English in structurally correct sentences, paragraphs and expository themes. Critical analysis of essays is used to aid in developing students’ thinking, support of thesis and style. Students are introduced to the basic components of research by writing a documented essay in Modern Language Association (MLA) style. Prerequisites: Satisfactory assessment score and/or minimum of 20 on ACT, or a grade of C or above and a passing grade on the post test in EBS 110 English are required for enrollment. High school students should have senior standing to enroll in ENG 101 Composition I.

ENG 120 Composition II 3 Cr Hrs
Through a study of poetry, short story, drama and essays as literary forms, this course furthers students’ writing skills. This course also improves research techniques through writing an in-depth research essay in Modern Language Association (MLA) style. It emphasizes accuracy and fluency in expressing sound ideas in class discussions, assignments and essays. Prerequisite: Completion of ENG 101 Composition I with a grade of C or above. High school students should have senior standing to enroll in ENG 120.

ENT 110 Introduction to Entrepreneurship 3 Cr Hrs
Introduces students to the concepts needed to seek out business opportunities as well as the tools needed to evaluate successful ventures. Considerable attention is given to the concepts of planning, financing and marketing new businesses.

GRA 101 Certified Nurse Aide 1 Cr Hr
Prepares the certified nurse aide (CNA) to care for clients in community and home settings. Graduates may take the Kansas certification examination to become a home health aide (HHA). Prerequisite: GRA 101 Certified Nurse Aide or Kansas Certified Nursing Aide certification.

GRA 101 Home Health Aide 2 Cr Hrs
Prepares the certified nurse aide (CNA) to care for clients in community and home settings. Graduates may take the Kansas certification examination to become a home health aide (HHA). Prerequisite: GRA 101 Certified Nurse Aide or Kansas Certified Nursing Aide certification.

INT 100 Accessories 1 Cr Hr
An introduction to decorative accessories that focuses on the design of display for effective visual presentation. This course utilizes the principles and techniques that are common to display work in interiors and various businesses. The main emphasis is on design and color principals, hangers and materials used for arrangement and display and safety issues.

MTH 101 Intermediate Algebra 3 Cr Hrs
Covers simplifying algebraic expressions; solving equations and word problems involving linear and quadratic polynomials, rational expressions, rational exponents and radicals; and graphing linear and quadratic functions. This course requires that students furnish their own TI-83 or TI-83 PLUS graphing calculator and purchase specific online course software. Prerequisites: Minimum grade of C in EBS 115 Pre-Algebra or satisfactory course placement assessment scores. This course does not count toward AS, AA, AGS or AAS degrees to fulfill a math requirement.
MTH 112  College Algebra  3 Cr Hrs
An introduction of algebraic functions and some transcendental functions with application in business and life and natural and social sciences. Topics include solving equations, zeros, rational functions, matrices, exponentials and logarithms and systems. Additional topics are included as time permits. This course requires that students furnish their own TI-83 or TI-83PLUS graphing calculator and purchase specific online course software. Prerequisites: A minimum grade of C in MTH 101 Intermediate Algebra or MTH 102 Intermediate Algebra with Review or satisfactory course placement assessment or 21 ACT math score.

MTH 113  Trigonometry  3 Cr Hrs
Covers trigonometric functions using the unit circle and right angle trigonometry, graphing applications, analytic trigonometry, vectors, trigonometric complex number applications, parametric and polar equations. This course requires that students furnish their own TI-83 or TI-83PLUS graphing calculator and purchase specific online course software. Prerequisites: A minimum grade of C in MTH 111 College Algebra with Review or MTH 112 College Algebra or 23 ACT math score.

PED 110  Lifetime Fitness  1 Cr Hr
Exposes students to facts about, and experiences in, dealing with, motor, physical, physiological, psychological and nutritional aspects of the human being. The course outlines the responsibility to maintain fitness during a life span.

PHL 110  Ethics  3 Cr Hrs
A practical approach to recognizing, understanding and solving ethical problems confronting individuals in today’s society. Basic concepts of applied ethical theories in moral philosophy and reasoning are examined using critical-thinking and responsible decision-making skills.

PHS 110  Physical Science  5 Cr Hrs
A non-technical course intended for students who are majoring in fields other than science. The application of scientific knowledge to daily life activities is emphasized by examining the fundamental principles in physics, chemistry, geology and astronomy utilizing the scientific method.

PNR 111  Principles of Nutrition  3 Cr Hrs
Presents basic principles of nutritional needs and application of these principles in the maintenance and restoration of health. Emphasis is placed on the essential nutrients and how they may be obtained in both normal and therapeutic diets. Prerequisite: Course must be taken prior to admission into the Practical Nurse program.

PSY 101  General Psychology  3 Cr Hrs
Explores the principal proponents of psychological theories by using accepted methods of scientific inquiry. Topics include behavior, learning theories, cognitive processes, intelligence, sensation, motivation, maturation, personality, psychological disorders and their treatments/therapies.

PSY 120  Developmental Psychology  3 Cr Hrs
A study of individual development from conception through death. This includes the general areas of biological, physical, cognitive, social, emotional and personality development at each stage of life. Prerequisite: PSY 101 General Psychology.

PSY 130  Human Growth & Development  3 Cr Hrs
Provides an overview of the theories, methods and content in the field of child development. The framework for this course has four major dimensions: a) basic theoretical and research issues; b) development from an interdisciplinary perspective; c) interaction of life experiences and human change; d) applying this understanding to the real world.