GENERAL EDUCATION CURRICULUM
Course Descriptions

Course No.	Course Title	Credits

ART 101 **Blueprint Reading for Welders** **2**

This course provides detailed information to help the students gain the skills that are required to read prints that are most common in the welding industry. Basic lines and view, dimensions, bill of materials and structural shapes are emphasized in this course. Accuracy of measurements and attention to detail will be stressed in the course. (ART)

ART 103 **Introduction to Print Reading and Shop Drawings** **1**

This course is designed to introduce the students to the basics of print reading and interpretation. The areas of focus include the lines types, symbols, views, title blocks, that are encountered when dealing with cabinetmaking and industrial prints. Sketching, materials, and finishes are also discussed. The course is intended to give the students an understanding of industrial prints and how their information is conveyed in both diagrammatic and sentential forms. (ART)

ART 105 **Blueprint / Schematic Reading** **3**

This course conveys to the students an understanding of the procedures for reading and interpreting industrial prints. The course includes related peripheral information that will enhance the students' understanding of the diversity that is characteristic of industrial prints. Many types of industrial prints and their applications will be covered during this course. (ART)

ART 110 **Contract Drawings** **3**

This course will introduce students to reading and understanding Contract Drawings for residential and commercial construction. This course will cover the composition of different industry drawings such as Residential House Plans, Commercial Architectural Plans, Civil Plans, Structural Plans, Plumbing Plans, HVAC Plans and Electrical drawings. Students will be instructed on what type of information these drawings contain and what purpose these drawings serve. (ART)

ART 115 **Web Programming, Client Side Scripting** **2**

The focus of this course includes but is not limited to the knowledge and techniques necessary to author industry standard web pages using HTML, XML, CSS, and Java script. Students will discover problems and develop solutions for a typical company web page, as well as the web page's installation, and will learn how to properly support both Windows Internet Information Server and Linux Apache Web Server platforms. Students will also learn about basic principles and methods used to work with databases. (ART, TECH | CAR, TC)

ART 116 **Web Programming, Client Side Scripting Lab** **1**

The focus of this lab includes but is not limited to the knowledge and techniques necessary to author industry standard web pages using HTML, XML, CSS, and Java script. Students will utilize web-programming languages to design and develop projects that can be debugged/executed in Internet browsers and via private server setups. Students will also utilize debugging tools to solve problems and implement solutions for a typical company web page, as well as the web pages installation and support on both Windows Internet

Information Server and Linux Apache Web Server platforms. Students will also utilize basic techniques used to debug database issues. (ART, TECH │CAR, TC)

ART 125 Art in Industry 2

This course introduces students of various divisions of study to 3D printing in an Art & Design setting. The students will be exposed to how the various industries represented at the college use 3D printing. Lecture topics will include adapting designs for the 3D printing process, creation of an iterative design, designing with texture, modification of primitive polyhedral shapes, and learning rules of 3D design. Students will be exposed to a variety of techniques, processes, materials, and technology commonly used in 3D printing. The students will create and print using a variety of 3D printers and learn post-processing techniques for how to achieve a desired finish on their projects. (ART, TECH │CAR, SQR, TC)

ART 126 Art in Industry Lab 1

This course is designed to accompany ART 125 Art in Industry. Students will create and print using a variety of 3D printers and learn post-processing techniques for how to achieve a desired finish on their projects. (ART, TECH │CAR, SQR, TC)

ART 127 Computer Aided Design 3

This course covers various aspects of computer-aided design may include but not limited to: how to read and produce engineer drawings, 2D sketches, extrusion (straight, tapered, revolved, and loft), creating patterns, threads, fillets and chamfers, high-resolution renderings, and simulation studies. (ART, TECH │TC)

ART 129 Introduction to Woodcraft and Design 2

The course involves the theoretical and practical knowledge in designing and fabrication of wooden products. Topics will include the fundamentals of functional design, basic woodworking skills, and safe use of hand and power tools. This course will explore different wood materials and assembly methods while focusing on conservation of natural resources. (ART │VED)

ART 130 Introduction to Woodcraft and Design Lab 1

This lab course complements the lecture portion of ART 129 Introduction to Woodcraft and Design and will focus on the hands-on practice of design, basic woodworking skills, and safe use of hand and power tools. (ART │VED)

ART 131 Prosthetics Design 3

This course covers the use of digital technology to design and fabricate prosthetics, splints, and supports. Topics of biomimicry, kinematics, computer-aided design, materials, and fabrication will be addressed. Students will design and create functioning prosthetics and splints in the class. (ART, TECH │TC, VED)

AVT 101 Fundamentals of Electricity and Electronics 3

Basic electricity theory is covered in this course including static and current electricity, basic electrical units, terminology and magnetism. Circuit components are discussed and complex DC circuits are analyzed using Ohm's Law and power formulas. Different methods of generating electrical energy are covered and laboratory projects include fabrication and testing of circuits containing a variety of components. A unit on the theory, testing and maintenance of batteries rounds out the DC phase of this course. Primary and secondary batteries including lead-acid and nickel-cadmium types are included. The AC

phase of the course involves mathematically analyzing inductive and capacitive circuits including power formulas. Solid-state devices are introduced and theory discussed. A final unit on testing and troubleshooting is covered in this course. The General curriculum subject included in this course and required by FAA-S-ACS-1 is General Subject A. Fundamentals of Electricity and Electronics; Sections AM.I.A.K1 thru AM.I.A.K27. (Co-requisite: AVT 102) (SCI, TECH │CAR, SQR, TC)

AVT 102 **Electronics Lab** **2**

This laboratory course incorporates the skills needed to apply information presented in AVT 101. Basic electricity theory is covered in this course including static and current electricity, basic electrical units, terminology and magnetism. Circuit components are discussed and complex DC circuits are analyzed using Ohm's Law and power formulas. Different methods of generating electrical energy are covered and laboratory projects include fabrication and testing of circuits containing a variety of components. A unit on the theory, testing and maintenance of batteries rounds out the DC phase of this course. Primary and secondary batteries including lead-acid and nickel-cadmium types are included. The AC phase of the course involves mathematically analyzing inductive and capacitive circuits including power formulas. Solid-state devices are introduced and theory discussed. A final unit on testing and troubleshooting is covered in this course. The General curriculum subject included in this course and required by FAA-S-ACS-1 is General Subject A. Fundamentals of Electricity and Electronics; Sections AM.I.A.R1 thru AM.I.A.R4 and AM.I.A.S1 thru AM.I.A.S14. (Co-requisite: AVT 102) (SCI, TECH │CAR, SQR, TC)

BIO 105 **Physiology and Anatomy** **3**

The structure and functions of the human body as related to biomedical instrumentation are the subject matter covered in this course. Major body systems are discussed, followed by correlations to the physiological variables to be measured and the basic principles of instrumentation that could be used. (SCI │CAR, SQR)

BIO 107 **Human Anatomy and Physiology I** **3**

This course is the first semester of a medically-oriented study of the structure and function of the human body. It is designed for students specializing in health-related and science programs. Topics include basic biochemistry; basic genetics; cells; tissues; and the integumentary, skeletal, muscular, endocrine and nervous systems. Successful completion of recent high school biology and chemistry courses is highly recommended. (SCI)

BIO 108 **Human Anatomy & Physiology I Lab** **1**

This lab is designed to enhance and reinforce topics covered in BIO107 lecture. Topics will include body organization, cell anatomy, histology and tissues organization, the integumentary system, the skeletal system, the muscular system, and the nervous system. In addition to the lab manual, this course will utilize McGraw Hill's Anatomy and Physiology Revealed (APR) which is a computerized system that enables students to explore the human anatomy and physiology through the use of a virtual dissection, histological review, and self-paced quizzing. (SCI, TECH │TC)

BIO 109 **Human Anatomy and Physiology II** **3**

This course is the second semester of a medically-oriented study of the structure and function of the human body. Topics include digestive, cardiovascular, respiratory, lymphatic, immune, urinary, reproductive systems and the inclusion of anatomical topography and transverse anatomy. (*Prerequisite:* BIO 107,108) (SCI)

BIO 110 **Human Anatomy & Physiology II Lab** **1**

This lab is designed to enhance and reinforce topics covered in BIO109 lecture. Topics will include the blood and circulation, the cardiovascular system, the lymphatic system and immunity, the respiratory system, the urinary system, the reproductive system, the digestive system, and the endocrine system, as well as human development and genetics and metabolic function and nutrition. In addition to the lab manual, this course will utilize McGraw Hill's Anatomy and Physiology Revealed (APR) which is a computerized system that enables students to explore the human anatomy and physiology through the use of a virtual dissection, histological review, and self-paced quizzing. **(***Prerequisite*: BIO 107,108) (SCI, TECH │TC)

BUS 101 **Introduction to Business** **3**

This course includes a survey of current business practices with an examination of the topics of management, ethics, organization, finance, marketing, and human resources function. Particular attention will be paid to examining the current economic environment. Students will also learn about basic personal income, household money management and financial planning skills as well as basic economic decision-making skills. (SOC │IL, VED)

BUS 105 **Electric Commerce (E-commerce)** **3**

Provides a history of the Internet and the online technology resources for ecommerce infrastructure, and strategies used by businesses to incorporate Internet marketing and distribute dynamic advertising opportunities in a global electronic market. This course will also cover the legal issues, economical influences, and practices, and define an online society utilizing e-commerce technology for a vast choice of transactions. Students will be required to complete case exercises that present business examples to associate real-world experience and understanding. Requirements to complete this course include students to develop e-commerce strategies, informative tutorials, and create e-commerce technologies for supported materials such as: advertisements, marketing concepts, ecommerce market analyses, and business services on the Internet. (SOC, TECH │IL, TC)

BUS 110 **Business Research & Reporting** **3**

This course focuses on the skills and techniques required to research, write and format professional business reports. Topics include locating technical specification, evaluating information, writing specifications, communicating specifications to others, formatting and presenting information. (COM, SOC │COMM, IL, TECH, TL)

CHM 101 **Fundamentals of Chemistry** **3**

This course emphasizes the fundamentals of basic chemistry. Students will learn the concept of atoms, molecules and compounds. Students will then apply this knowledge to the concepts including arrangement of the periodic table; chemical equations; stoichiometry; states of matter, concentrations, solutions, and pH (including acids and bases). (SCI │CAR, SQR)

CHM 102 **Fundamentals of Chemistry Lab** **1**

This course emphasizes the fundamentals of basic chemistry through the practical experimentation. Students will learn the concept of atoms, molecules and compounds. Students will then apply this knowledge to the concepts including arrangement of the periodic table; chemical equations and reactions; Stoichiometry; the gas laws,

concentrations, solutions, and pH (including acids and bases). (Corequisite: CHM101) (SCI │CAR, SQR)

COM 111 **Communication Theory** **3**

This course addresses specialized communication that helps readers and/or listeners respond to the challenges of corporate culture while being ethically and legally responsible. Class content focuses on acquiring the tools/strategies needed for effective workplace communication and creating effective workplace documents based on the understanding that different customers and audiences affect how information is conveyed. Students cannot take ENG 105 if they complete COM 111. (Prerequisite: ENG 101) (COM, HUM │COMM, VED)

COM 112 **Public Speaking** **3**

Stressed in this course is the importance of oral communication for understanding, evaluating, and explaining various occupationally-related conditions. The course content includes theory and practice in the organization, preparation, delivery, and evaluation of extemporaneous discourse. Each student completes a variety of types of speeches. (COM │COMM)

CPT 101 **Microcomputer I** **3**

This course is to provide a basic overview of microcomputer fundamentals and applications, including a study of word processing using Microsoft Word, spreadsheet applications using Microsoft Excel, presentations using PowerPoint, email using Outlook, as well as the integration of all the applications. The student is also exposed to basic computer operations, managing files, and a brief introduction to Sway, Edge, Office Mix, and OneNote. (TECH │TC)

CPT 210 **Microcomputer II** **3**

This course provides an overview of advanced Microsoft Suite applications, including Microsoft Word, Microsoft Excel, and Microsoft Access. The course will increase business and personal productivity through the use of microcomputer applications. (*Prerequisite*: CPT 101) (TECH │TC)

CSM 105 **Customer Service and Our World** **3**

This course explores the today's business landscape and the forces influencing culture and consumers including media, art, religion, socioeconomics, geopolitics, and literature. It provides a solid foundation for understanding customers and the philosophy of customer service from the perspective of several different industries. Students will utilize and observe service-first verbal and nonverbal communication skills while engaging in role play, case studies, and activities that will stress the importance of customer satisfaction. (COM, HUM, SOC │COMM, VED)

ECO 101 **Principles of Economics** **3**

This course covers the basic concepts of economics. Topics may include supply and demand, optimizing economic behavior, prices and wages, monetary system, interest rates, banking system, unemployment, inflation, taxes, government spending and international trade. Upon completion, students should be able to explain alternative solutions for economic problems faced by private and government sectors. (SOC │CAR, IL)

EET 161 **DC Electricity and Instrumentation** **2**

This course introduces the student to the theory and operation of basic DC circuits, circuit construction, operation and troubleshooting. Basic alternative energy technologies are introduced. The student will also receive instruction on soldering, digital multi-meter usage, and Ohm's Law applications for testing and troubleshooting electric circuits. Elements of proper disposal of batteries and other circuit components considered to be hazardous waste are included. *(Corequisite:* EET 162) (SCI, TECH │CAR, SQR)

EET 162 DC Electricity and Instrumentation Lab 1
This course applies the theory taught in EET 161 through hands on building and testing of basic electric circuits. The student will also gain practical experience in soldering, digital multi-meter usage, and Ohm's Law applications for testing and troubleshooting the electric circuits they build. Elements of proper disposal of batteries and other circuit components considered hazardous waste are emphasized throughout this course. *(Corequisite:* EET 161) (SCI, TECH │CAR, SQR)

EET 163 Alternating Current and Passive Devices 2
This course introduces the student to circuitry basic to AC electrical theory. It identifies the fundamental differences between AC and DC energy sources and circuit components. It also introduces oscilloscope usage, AC units, nomenclature and electromagnetism. The course will also cover inductors, transformers, and capacitors and their effects in AC circuits. Work place energy efficiency and conservation habits are included. The concepts of RCL circuits and their use as passive filters will be covered. *(Corequisite:* EET 164) (SCI, TECH │CAR, SQR)

EET 164 Alternating Current and Passive Devices Lab 1
This course applies the theory taught in EET 163 through hands on building and testing of basic AC circuits. The student will use oscilloscopes and digital meters to measure amplitude, frequency and phase of an AC signal. As the student progresses through the course, test equipment will be used to test transformers, inductive circuits, capacitive circuits, and passive filters. The student will also be introduced to troubleshooting techniques and have time to practice those techniques on circuits they build. *(Corequisite:* EET 163) (SCI, TECH │CAR, SQR)

ENG 101 English Composition I 3
This course develops writing competency through the students' construction of essays and an academic research paper. Outlining, mechanics, syntax, and format are stressed in all writing assignments. (COM │COMM, IL)

ENG 105 Industry Communication 3
This course addresses the written and oral communication required every day in industry and corporate culture regarding customers, peers, supervisors, and employees. Students learn how to express purpose, workplace ethics, and psychological empathy, among other concepts, in workplace communication pieces such as proper email etiquette, memos, and various types of letters. Students cannot take COM 111 if they complete ENG 105. (COM, HUM │COMM, VED)

ENT 101 Entrepreneurship I 3
This course acquaints the student with a realistic approach to the problems and concerns of starting a small business. An understanding of the economic and social environment within which the small business functions will be developed. The student will be familiarized with the writing of a business plan. (HUM, SOC │CAR, IL, VED)

HMN 101 **Introduction to Humanities** **3**

This course creates an appreciation for cultural values and differences as portrayed in music, painting, architecture, video and literature. When possible, examples that include multiple arts are studied. Diversity is stressed in all examples. (HUM | VED)

INT 299 **Internship** **4**

This course is designed to provide students with the opportunity to apply the knowledge and skills learned in previous coursework in an authentic industry setting. Students will further develop and enhance their career-readiness through supervised training in their discipline of interest. (CAR, VED)

MAT 100 **Applied Mathematics for Welders** **3**

This course is an examination of basic arithmetic, (adding, subtracting, multiplying, and dividing whole numbers, decimals and fractions) as well as percentages. This course also covers metric system measurements, computation of geometric measure and shapes, angular development and measurement, and including bends, stretch outs, economical layout and takeoffs. (MAT | CAR, SQR)

MAT 101 **College Algebra I and Trigonometry** **3**

This course covers linear equations and inequalities, ratio and proportions, basic operations involving algebraic, polynomial and rational expressions, exponent rules and factoring, an introduction to geometry, including perimeter, area and volume, right triangle trigonometry and radian measure. (MAT | CAR, SQR)

MAT 103 **Technical Math** **3**

Applied Technical Mathematics is designed to develop a student's math ability, by focusing on math skills that apply in today's work environment. Practical math skills are emphasized, as well as their connection to real world application. (MAT | CAR, SQR)

MAT 105 **Math for Transportation Division** **3**

This course provides a review of basic arithmetic concepts (addition, subtraction, multiplication, and division) as well as decimals, fraction, and formulas. Proper measurement and analyzing specifications are also covered. The course then moves into practical application of these math skills to real-world vehicle procedures, data, and specifications. (MAT | CAR, SQR)

MAT 110 **Trigonometry** **3**

This course investigates angles triangles, trigonometric functions and equations, radian and degree measurements, circular functions, graphs, identities, vectors, complex numbers, polar coordinates, parametric equations, and applications. (*Prerequisite*: MAT 101) (MAT | CAR, SQR)

MAT 121 **Introduction to Statistics** **3**

This course is intended to introduce students to the basic concepts of data collection, data analysis and statistical inference. Topics include an overview of observational and experimental study designs, graphical and numerical descriptive statistics, probability distributions for simple experiments and random variables, sampling distributions, confidence intervals and hypothesis testing for the mean and proportion in the one sample

case. The emphasis is on developing statistical reasoning skills and concepts. (MAT | CAR, SQR)

MAT 123 **Math for Carpenters** **1**

This course is an examination of basic arithmetic, (adding, subtracting, multiplying, and dividing whole numbers, decimals and fractions) as well as percent, formulas as it applies to the carpentry courses. This will also include costs, conversion of units, linear, square, cubic, and board measures. (MAT | CAR, SQR)

MAT 201 **College Algebra II and Trigonometry** **3**

This course covers systems of equations, solutions to quadratic and higher degree equations, roots and radicals, and oblique triangles. (*Prerequisite*: MAT 101) (MAT | CAR, SQR)

MAT 202 **Pre-calculus** **3**

The course investigates fundamentals of plane analytical geometry, conic sections, complex numbers and polynomial, rational, exponential, logarithmic, and trigonometric functions. (*Prerequisite*: MAT 201) (MAT | CAR, SQR)

MAT 205 **Medicine and Mathematics** **2**

The course is designed to help students with an interest in medicine learn how medications dosages are properly determined for a patient. This course can help students interested in medicine or health professions improve the skills needed for their future careers or goals. The course will explore concepts of drug dosing and calculations for the use of fractions, percentages, ratios, proportions and conversions as they relate to the medical world. Units within the apothecary and household systems will also be compared and issues with our interpretation of each system will be discussed. (*Prerequisite*: MAT 101) (MAT | CAR, SQR)

MTR 100 **Medical Terminology** **1**

This course is a survey of the terminology used routinely in the medical environment. It will begin with a learning of the common root words used in constructing medical terms and integrate commonly used medical acronyms and abbreviations. The information will be presented according to anatomical systems. The student will be responsible for knowing the written and auditory recognition of the terminology reviewed. (SCI)

PHY 101 **Introductory Physics** **3**

This course covers the fundamentals of basic physics. Students will understand the concepts of technical measurement, energy, force and vectors, equilibrium and friction, and uniform acceleration. (*Prerequisite*: MAT 101) (SCI | CAR, SQR)

PHY 120 **Physical Science** **3**

This course is a survey course of several of the fundamental scientific principles of chemistry, material science, and physics. The course will integrate atomic structure, chemical reactions, molecular composition and properties of materials (including metals), material strength testing, and application of forces, energy, heat, and gases. Demonstrations and hands-on labs will be used to illustrate concepts related to lecture materials. (*Prerequisite*: MAT 101 or MAT105)(SCI | CAR,SQR)

PSY 101 **General Psychology** **3**

This course introduces terms and concepts dealing with basic psychological research methods, human and animal behavior, life-span development, states of consciousness, learning, memory, intelligence, motivation, personality structure, stress and coping, behavior disorders, social pressures and cultures. Students are encouraged to apply critical thinking strategies through their participation in various discussions of psychological theories and concepts throughout this course. (SOC | CAR, VED)

PSY 105 **Industrial and Organizational Psychology** **3**

This course is designed to introduce students to major areas relevant to the behavior of corporate culture from the time they enter the labor force until retirement. This course focuses both on understanding the psychological bases of work behavior and on the organizational practices used to create a good fit between people's characteristics and work's demands. The goal of this course is to understand how businesses can be designed so that both efficiency and the quality of employee life are improved. Topics will include the history of Industrial and Organizational psychology, job analysis, psychological assessments, personal decisions, training and development, organizational change, teamwork, motivation, job satisfaction, leadership, work-family balance, work stress and health. (HUM, SOC | CAR, VED)

SCI 120 **Energy, the Environment, and Everyday Life** **3**

This course will introduce students to energy and thermodynamics and explore various sources of the energy we consume daily, including fossil fuels, renewable energy, and nuclear energy. Attention will be given to the pros and cons of these different energy types, and consideration of environmental impacts will be made. This course will require students to examine scientific data and think critically about energy use, participate in class discussions, and explore the impacts of energy on the local environment and culture. (HUM, SCI, SOC | CAR, VED)

SCI 150 **How It Works** **3**

This course will familiarize students with some basic principles of physics through their applications to selected everyday phenomena and technology. Students will conduct experiments with everyday objects and toys to illustrate topics. Topics include kinematics (motion), mechanics (forces), thermodynamics (heat), and electromagnetism. In learning the basic physics responsible for ordinary occurrences, students will develop a deeper understanding of how the physical world works and gain a new appreciation of everyday phenomena that are ordinarily taken for granted. This course is designed for non-science students with an interest in the naturalworld(SCI | CAR,SQR)

SCI 160 **Sustainability Design** **3**

This course will explain what "sustainability" is, the construction materials and methods used in sustainability design, how it relates to building design, and how culture impacts these materials and methods. Students also will examine how energy usage, energy conservation, and sustainability concepts are applied to practical construction methods and details used in drafting and design. (HUM, SCI | CAR, SQR, VED)

SCI 201 **Statics & Strength of Materials** **3**

This course is an examination of coplanar force systems, analysis of trusses, axial stress and strain, material properties, centroids, moment of inertia, stresses in beams, beam design, and torsion. (SCI | CAR, SQR)

SOC 101 **Introduction to Sociology** **3**

Sociology is a way to understand the world. This course is designed to introduce students to the basic principles of sociological inquiry. It includes analysis of social structures and social behavior, including culture and socialization, social institutions, race, class, gender, deviance and social change. Students will be exposed to the basic theoretical and methodological approaches of the discipline. An introduction to sociology will assist students in developing an approach that will allow them to think about and evaluate social situations and issues, thus, acquiring the sociological perspective. (SOC | CAR, VED)

SSS 101 **First-Year Experience** **1**

This course is designed to help first-year students transition to the college environment, reflect on their personal and academic goals, develop a better understanding of the learning process, and acquire essential skills for success in college and beyond. Topics include campus resources, academic and career planning, time management, personal finances, and current topics in health and wellness. Successful completion of SSS 101 is a graduation requirement for all 1- and 2-year students.

VMR 151 **Introduction to Vehicle Maintenance & Repair Technology** **2**

This course covers information on hand tools, machines, and equipment common to the vehicle maintenance field, general service procedures, lubricants, reference manuals, pre-delivery inspection of new and used vehicles and preventive maintenance procedures. This course is designed to prepare students to work properly with all of the for mentioned topics along with building safe and thorough work habits. (TECH | IL, TC)