Engineering Technology: Program Outline

Program Goal

The overall program goal for the A.S. in Engineering Technology Degree is to prepare students for entry-level positions as engineering technicians.

Program Outcomes	Courses	Evidence of Learning
Demonstrate effective written and interpersonal communication skills	ENG100: English Composition	Written essays, multiple-choice exams
	ENG101: Foundation Skills in Writing	Written essays, multiple-choice exams
Demonstrate a high level of inquiry, analytical, and problem-solving skills	MAT222: Precalculus	Multiple-choice lesson exams, proctored final exam
	MET170: Engineering Mechanics	Multiple-choice lesson exams, proctored final exam
	EET115: Electrical/Electronics Theory	Multiple-choice lesson exams
Demonstrate effective quantitative skills	MAT101: Math for STEM	Multiple-choice lesson exams, proctored final exam
	MAT115: Intermediate Algebra	Multiple-choice lesson exams, final exam
	MAT222: Precalculus	Multiple-choice lesson exams, proctored final exam
Demonstrate proficient computer and information literacy skills	CSC104: Essential Computer Skills	Multiple-choice lesson exams, graded projects
	MET202: Drafting with AutoCAD	Multiple-choice lesson exams, graded projects
	EST215: AutoCAD Applications – Engineering Technology	Multiple-choice lesson exams, graded projects
Demonstrate an understanding of the liberal arts, natural sciences, and social sciences	Arts and Humanities Electives (student chooses two three-credit courses): • HUM102: Art Appreciation • HUM104: Music Appreciation • ENG115: Introduction to Literature	Multiple-choice lesson exams, graded projects, proctored final exam
	Social Science Elective (student	Multiple-choice lesson exams, final

Program Outcomes	Courses	Evidence of Learning
	chooses two three-credit courses): • SSC130: Essentials of Psychology • BUS121: Economics I • SSC125: Introduction to Sociology	exam
	SCI167: Physical Science	Multiple-choice lesson exams, proctored final exam
Recognize the work habits and characteristics that are demonstrated by successful technicians, including the codes and standards that technicians must know	MET100: Orientation to Engineering Technology	Multiple-choice lesson exams
Read and interpret various types of technical drawings, including those used in engineering applications, and understand the basics of computer-aided design (CAD)	EST100: Introduction to Technical Drawings	Multiple-choice lesson exams
	MET202: Drafting with AutoCAD	Multiple-choice lesson exam, graded drafting projects
	EST210: AutoCAD Applications—Engineering Technology	Multiple-choice lesson exams, graded drafting projects
Develop engineering graphics, utilizing orthographic projections, dimensioning, sectioning, tolerance, and threads	MET202: Drafting with AutoCAD	Multiple-choice lesson exam, graded drafting projects
	EST210: AutoCAD Applications—Engineering Technology	Multiple-choice lesson exams, graded drafting projects
Identify various types of electric motors and describe how they are controlled; list the steps to use when troubleshooting electric motors and controllers	EET115: Electrical/Electronics Theory	Multiple-choice lesson exams
	IET232: Programmable Logic Controllers (Technical Elective)	Multiple-choice lesson exams
	MET240: Electro Mechanical Control Technology (Technical Elective)	Multiple-choice lesson exams
Explain the methods, laws, and procedures used in engineering mechanics, including the branches of statics, dynamics, kinematics, and kinetics	MET170: Engineering Mechanics	Multiple-choice lesson exams, proctored final exam
Identify manufacturing systems and processes, and recognize different materials used in manufacturing and engineering applications	EST110: Manufacturing Materials and Processes	Multiple-choice lesson exams, proctored final exam
	MET300: Precision Machining Operations	Multiple-choice lesson exams, graded project

Program Outcomes	Courses	Evidence of Learning
	MET248: Industrial Plastics (Technical Elective)	Multiple-choice lesson exams, proctored final exam
Describe total quality management (TQM), materials and inventory management, inspection plans, measuring tools that collect quality data, and various statistical process control methods	MET221: Quality Control Systems	Multiple-choice lesson exams, proctored final exam
	MET300: Precision Machining Operations	Multiple-choice lesson exams, graded project
	IET237: Materials Management and Inventory Control (Technical Elective)	Multiple-choice lesson exams, proctored final exam
List the steps and materials used in the tool design process, including the design of work-holding devices, jigs, presses, dies, and gages	MET241: Tool Design 1 (Technical Elective)	Multiple-choice lesson exams, proctored final exam
	MET242: Tool Design 2 (Technical Elective)	Multiple-choice lesson exams, proctored final exam
Understand the basic concepts of pneumatic systems and how they compare and contrast with hydraulic systems; identify the concepts related to the delivery of compressed air	EST200: Fluid Power (Technical Elective)	Multiple-choice lesson exams
Recognize important safety facts and practices associated with electrical, chemical, fire, material-handling, and machine hazards	MET300: Precision Machining Operations	Multiple-choice lesson exams, graded project
	IET243: Industrial Safety (Technical Elective	Multiple-choice lesson exams, proctored final exam
Understand the fundamentals of designing machine elements, including developing an awareness of procedures and materials, identifying how forces and stresses affect materials, and recognizing machine components	MET300: Precision Machining Operations	Multiple-choice lesson exams, graded project
	MET231: Mechanical Design 1 (Technical Elective)	Multiple-choice lesson exams
	MET232: Mechanical Design 2 (Technical Elective)	Multiple-choice lesson exams
Describe the operation of a number of pieces of manufacturing equipment and how they're used in the design of a final product	MET300: Precision Machining Operations	Multiple-choice lesson exams, graded project

Program Structure

SEMESTER 1		CREDITS
MET100	Orientation to Engineering Technology	1
MAT101	Math for STEM	3
ENG101	Foundation Skills in Writing	3
CSC104	Computer Applications	3
EST100	Introduction to Technical Drawings	3
SCI167	Physical Science	3
	Total	**16**
SEMESTER 2		
EST110	Manufacturing and Material Processes	3
MAT115	Intermediate Algebra	3
MET202	Drafting with AutoCAD	3
ENG100	English Composition	3
EET115	Electrical/Electronics Theory	3
	Total	**15**
SEMESTER 3		
MET170	Engineering Mechanics	3
MET221	Quality Control Systems	3
MAT222	Precalculus	3
Arts and Humanities Elective (Choose two)		6
ENG115	Introduction to Literature	
HUM102	Art Appreciation	
HUM104	Music Appreciation	
	Total	**15**
SEMESTER 4		
EST210	AutoCAD Applications–Engineering Technology	3
Technical Elective (Choose two)		6
EST200	Fluid Power	
IET232	Programmable Logic Controllers	
IET237	Materials Management and Inventory Control	
IET243	Industrial Safety	

MET231	Mechanical Design 1	
MET232	Mechanical Design 2	
MET240	Electromechanical Control Theory	
MET243	Tool Design	
MET248	Industrial Plastics	
Social Science Elective (Choose two)		6
BUS121	Economics 1	
SSC125	Introduction to Sociology	
SSC130	Essentials of Psychology	
MET300	Precision Machining Operations	3
	Total	**18**

Course Descriptions and Objectives

MET100: Orientation to Engineering Technology

The development of engineering and engineering technology; technical mathematics; use of a scientific calculator.

- Identify skills needed to be a confident and independent online learner
- Categorize the infrastructure used in building automation, active traction control, web, and fire alarm systems
- Analyze the processes of generating electricity, transporting natural gas, and designing fire sprinkler systems

MAT101: Math for STEM

In this course, you'll learn the essential math skills necessary for future success in an AS technology program. The course of study includes a review of basic math functions, including trades-based examples, the metric system, formulas, introductory algebra, applied geometry, and some practical applications of trigonometry.

- Define basic math skills to solve real-world skilled trades–related problems
- Illustrate your ability to effectively use the metric system
- Identify your knowledge of formulas to solve problems
- Identify algebraic concepts to solve problems
- Solve perimeter, area, and volume for a variety of geometrical shapes
- Define basic trigonometry functions such as sine and cosine to perform trades-related calculations

ENG101: Foundation Skills in Writing

This course provides an overview of writing styles for technology applications. Students will review basic grammar, including parts of speech, active and passive voices, sentence structure, and paragraph construction. The course also includes practical information on writing memos and emails and organizing material.

- Describe the process of writing, as well as the parts of speech and how to use them
- Explain various types of punctuation, rules for capitalization and spelling, and documenting sources for research
- Construct complete, correct sentences and well-organized, coherent paragraphs
- Recognize how to plan, develop, revise, and present your work
- Prepare for the various kinds of writing most likely needed for a job

CSC104: Computer Applications

Microsoft® Office allows people to create documents, spreadsheets, presentations, and databases. This course will teach you how to use three popular tools from the Microsoft® Office Suite— Word™, Excel®, and PowerPoint®. In this course, you'll learn how to use Word™ to create and edit text documents, insert figures and tables, and format pages for a variety of uses. You'll then learn how to use Excel® to organize and format data, including charts, formulas, and more complex tables. Next, you'll learn how to use PowerPoint® to create and deliver slide shows. Finally, you'll complete a graded project, which will test the skills acquired in Word™, Excel®, and PowerPoint®.

- Create various Microsoft® Word™ documents

- Produce a thorough Microsoft® Excel® spreadsheet
- Identify the basic skills needed to use Microsoft® PowerPoint®
- Synthesize what you've learned by integrating Word™, Excel®, and PowerPoint®

EST100: Introduction to Technical Drawings

This course provides students with an overview of visual communication skills necessary to successfully complete the wide range of courses in technology programs that require learning to read and interpret technical drawings. Students learn print reading, interpretation of symbols and abbreviations, dimensioning, tolerancing, and the application of these skills to actual print reading. The course also contains an overview of computer-aided drawing and its role in modern technology.

- Describe perspective drawing, projection drawing, and features of mechanical parts
- Differentiate between the various concepts of dimensioning and tolerancing
- Point out the various symbols and abbreviations used in technical drawings
- Categorize the purposes of CAD technology and the different elements in it
- Distinguish between the different sketching methods and their importance
- Analyze the geometries and print-reading applications involved in various drawings and prints
- Categorize the various types, layouts, specifications, and codes in construction drawings

SCI167: Physical Science

Principles that define and govern the physical universe as we know it; chemistry; physics, earth and space sciences.

- Explain mechanics and properties of matter
- Describe heat and its effects on matter
- Analyze sound
- Apply the principles of chemistry
- Describe light
- Determine what scientific principles apply to electricity and electronics

EST110: Manufacturing and Material Processes

This course covers a comprehensive collection of manufacturing and materials processing techniques. Students learn the historical perspectives and basic science of manufacturing and its related materials, specific manufacturing methods as they are applied to specific materials, and the theory of the automation of today's manufacturing environment, productivity and quality improvement systems.

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MAT115: Intermediate Algebra

Algebra is the mathematical language used to interpret and represent patterns in numbers by using variables, expressions, and equations. Algebra is an essential tool used in business, science, and computer technology. Throughout this course, you'll be introduced to algebraic concepts, along with real-world application problems from a variety of fields. In addition to providing a springboard to the discovery of underlying mathematical properties, these applications illustrate the importance of mathematics in your world..

- Demonstrate effective quantitative skills
- Solve algebraic equations, linear equations, inequalities, and absolute value equations
- Solve and graph linear equations and inequalities
- Solve polynomials
- Apply algebraic operations to rational expressions and rational equations

- Solve problems involving radicals and complex numbers
- Solve quadratic equations, rational inequalities, nonlinear equations, and nonlinear inequalities
- Calculate exponential and logarithmic functions
- Solve binomial expansions, sequences, and arithmetic and geometric series
- Prepare for the final exam

MET202: Drafting with AutoCAD

Computer-aided drafting and design systems; AutoCAD® menus and features; file and entity creation; drawing organization; displaying, modifying, and annotating drawings; data exchange and output methods.

- Identify the procedures of creating simple line drawings through the fundamentals of drawing window
- Prepare drawing layers in AutoCAD
- Classify the procedures of creating a drawing template through various commands in the AutoCAD
- Show the methods of creating and modifying plot layouts and scale viewpoints through commands
- Categorize how to create tables, text, and fields through various commands
- Summarize the procedures of polylines in drawing complex shapes and objects
- Point out the methods of creating groups and blocks in AutoCAD
- Categorize the functions of AutoCAD DesignCenter in context to attributes, blocks, and tool palettes
- Prepare a 3D wireframe box model
- Show how the polysolid, pyramid, torus, and cone shapes are drawn in AutoCAD
- Create a drawing using various AutoCAD tools and settings

ENG100: English Composition

This course teaches the skills and techniques of effectively developing, drafting, and revising college-level essays toward a specific purpose and audience: active reading, prewriting strategies, sentence and paragraph structure, thesis statements, varied patterns of development (such as illustration, comparison and contrast, and classification), critical reading toward revision of structure and organization, editing for standard written conventions, and use and documentation of outside sources. Students submit two prewriting assignments and three essays (process analysis, comparison and contrast, and argumentation)

- Use writing skills to construct well-written sentences and active reading skills to understand and analyze text
- Develop paragraphs using topic sentences, adequate detail, supporting evidence, and transitions
- Contrast the revising and editing steps of the writing process
- Analyze post–World War II effects on the economic and political structures around the world
- Distinguish between different patterns of development
- Write a process analysis essay using prewriting, drafting, revising, and editing skills
- Recognize how to determine the reliability of secondary sources and to give proper credit to sources referenced in an essay

EET115: Electrical and Electronics Theory

This course provides a foundation in electrical and electronics terminology, theory, and concepts essential for students in a wide range of technology programs. Students learn the basic principles of electricity and the fundamental applications of Ohm's law to circuit analysis, as well as magnetism and electromagnetism, and alternating current theory and circuit applications. The student also learns theory and applications of most basic components, devices, and machines including capacitors, inductors, batteries, DC and AC motors, conductors, insulators and basic rectification devices.

- Describe the nature of electricity
- Explain circuits and Ohm's Law
- Define types and usage of capacitors and inductors in a DC circuit
- Analyze the properties and applications of magnetism, electromagnetism, and electromagnetic induction in various electrical components
- Analyze the types and the properties of various conductors, insulators, and batteries
- Analyze the various properties of alternating current in single-phase and polyphase systems
- Categorize the various fundamentals of the alternating current circuits
- Show the various functions of inductors in series and parallel RL circuits
- Categorize the functions of capacitors in AC and DC circuits
- Compare the operations of different types of capacitors and the functions of its various components
- Point out the operation of various types of alternators as well as their components
- Analyze the functions of various systems associated with the distribution of electrical energy
- Compare the intricacies of various functions of semiconductor diodes, thyristors, semiconductor ratings, and rectifier circuits

MET170: Engineering Mechanics

Branches of engineering mechanics; free-body diagrams; kinematics; force-mass acceleration method; impulse momentum; collision of two bodies.

- Analyze the fundamentals, concepts, and theories associated with engineering mechanics
- Point out the concepts and principles of forces, friction, and bodies at rest
- Distinguish between the characteristics of translation, rotation, and motion
- Point out the various computing methods of engineering mechanics

MET221: Quality Control Systems

Establishing quality systems; interpreting conventional and GD&T system drawings; setting up and using inspection tools and equipment; developing part acceptance procedures; statistical process control (SPC) fundamentals and practical applications.

- Analyze the methods used by technicians to manage, maintain, and inspect total quality
- Categorize the elements of engineering drawings and the methods involved in them
- Point out the basic measuring tools used in the industry

- Categorize the basic measuring methods used in the industry
- Differentiate between the ways in which the various advanced methods and tools help the industry
- Point out the ways in which a sampling plan benefits an industry
- Analyze the ways in which technicians use SPC to control the output of a process

MAT222: Precalculus

This course covers precalculus concepts that all college students need as prerequisites to calculus and other related courses required in many undergraduate majors. Specific topics include exponents, logarithms, sequences, series, trigonometric functions, analytic trigonometry, systems of equations and inequalities, matrices, conic sections, polar coordinates, and limits.

- Point out the process of solving exponential, logarithmic, and trigonometric equations
- Categorize the process of converting angles from radians to degrees and vice versa
- Analyze the fundamentals of verifying trigonometric identities
- Point out the use of right-angle trigonometry to solve problems
- Show the multiple techniques to solve linear equations and inequalities
- Compare the fundamentals of parabolas, hyperbolas, and ellipses
- Analyze the basic concepts of derivatives

ENG115: Introduction to Literature

This course will allow you to develop your critical thinking skills and broaden your knowledge of the main genres of literature—fiction, poetry, and drama.

- Explain how to effectively read fiction for both knowledge and enjoyment
- Identify different styles and forms of poetry
- Use what you've learned in this course to discuss, write about, and understand literature
- Prepare a critical interpretation of fiction or poetry based on what you've learned in this course
- Discuss how literary dramas differ from fiction and poetry
- Identify different strategies of critical literary analysis

HUM102: Art Appreciation

In this course, the student will gain an understanding of artistic media, historical periods and artistic movements, the roles of the artist and the viewer, and the principles of art criticism.

- Define the language, visual elements, and principles of design of art
- Identify two-dimensional media
- Identify three-dimensional media
- Explain the evolution of art from ancient Mediterranean cultures through eighteenth-century Europe
- Identify features and popular examples of art throughout the history of African, Asian, Pacific, and American cultures

- Compare the genres of the Modern and Postmodern eras of art from around the world

HUM104: Music Appreciation

In this course, the student will understand how to appreciate music and learn about the roles of the composer and the listener, the principles of music theory and instrumentation, musically significant historical periods, and varying styles of music.

- Identify the building blocks of music a composer can use to create a piece, such as rhythm, melody, harmony, texture, form, and timbre
- Differentiate between the music of the baroque era and the musical styles of previous time periods
- Recognize the major characteristics of classical music, including form, melody, and instrumentation
- Describe the musical trends and innovations that occurred during the romantic era
- Relate musical styles of the early twentieth century to comparable movements in art and literature
- Explain the evolution of American popular music in the twentieth century
- Recognize the influence of world music on modern western composition
- Write an essay researching composers' influence in their respective genres

EST210: AutoCAD Applications: Engineering Technology

In this course, you'll learn the standard rules and practices used to generate detailed parts drawings and assemblies, and how to apply AutoCAD software to the actual execution of the drawing process. You'll also learn to visualize objects in the views that are required for orthographic projections, rules for correct dimensioning and tolerancing, and where to locate dimensional information for standard machine elements.

- Point out the basics of AutoCAD and the methods used to create orthographic projections
- Analyze the requirements needed to use AutoCAD for implementing sectioning and dimensioning drawings
- Distinguish between the methods used to create advanced drawing techniques, tolerancing, and threads
- Analyze the procedures and features required to create assembly and pictorial drawings
- Create a set of drawings using AutoCAD for the mentioned scenarios to show your skills

EST200: Fluid Power

This course is a comprehensive overview of hydraulics and pneumatics, including the basic scientific principles and concepts necessary for understanding the operation and applications of hydraulic and pneumatic components and systems. Students learn power system controls, system schematics, and essential troubleshooting practices.

- Point out the various constituents and the operations associated with hydraulic power systems
- Categorize the various types of actuators, pumps, and hydraulic motors
- Report the various utilizations of conductors, conditioners, and fluids in hydraulic systems
- Analyze the various types of pressure control valves, flow control valves, and directional control valves
- Point out the usage of symbols and graphics in the different components of hydraulic systems
- Categorize the functionalities of fluid power instruments and the maintenance of hydraulic systems

- Show the properties of different types of compressors and auxiliary equipment
- Categorize the compressor system according to its installation process, design fundamentals, operation, and troubleshooting
- Analyze the concept of fluid power and fluid flow as well as the pneumatic components
- Point out the requirements, installations, troubleshooting, and safety procedures of the pneumatic systems
- Report the various pneumatic control systems as well as the components of system integration

IET232: Programmable Logic Controllers

A factory assembly line, an amusement park ride, and a dishwasher have one important thing in common: they all use programmable logic controllers (PLCs) in their operations. A digital computer used to automate electromechanical processes, the PLC was invented in 1968 for the American automotive manufacturing industry. A PLC can handle multiple inputs and outputs, operate in a wide temperature range, and resist electrical noise, vibration, and impact. It's an example of a real-time system, since output results must be produced in response to input conditions within a limited time. Though a relatively recent invention, the PLC has revolutionized many aspects of modern industry.

- Distinguish the various hardware components, systems, and codes used in PLCs
- Analyze the basic functions of programming and wiring diagrams in PLCs
- Point out the fundamentals of programming timers and counters in PLCs
- Analyze the functioning of programming control instructions and data manipulation in PLCs
- Categorize the various functioning of arithmetic operations, sequencer, and shift register instructions in PLCs
- Analyze the installation process and troubleshooting of PLC as well as the control process systems

IET237: Materials Management and Inventory Control

Production scheduling, planning, and MRP; capacity management (CRP); production activity control; demand forecasting; inventory processes; warehousing and materials handling; just-in-time planning; product-quality control; total-quality management (TQM)

- Analyze the stages of production scheduling with emphasis on material management, production, MPS, and MRP
- Recognize the importance of CRP and PAC in relation to MRP
- Categorize the uses and applications of an inventory management system
- Show the functions of advanced processes in inventory with importance to distribution, production, and JIT
- Analyze the importance of quality management and product control in determining the success of businesses

IET243: Industrial Safety

Procedures for handling various materials; operating different kinds of machinery; performing job tasks safely; survey of the regulations designed to improve industrial safety.

- Analyze the structure of workplace safety and the methods to curb them
- Point out the types of chemical hazards, their safety measures and prevention processes

- Distinguish between the various catastrophes caused by fire and the methods used for stopping them
- Categorize the safety measures and equipment associated with welding and cutting systems
- Report the various safety measures involved in working with electricity
- Show the various safety measures required in the handling of materials
- Point out the various hazards associated with machines and the importance of control equipment
- Categorize the importance of using quality electrical equipment and its related safety measures

MET231: Mechanical Design 1

Stress analysis; work, energy, and power; design stress; moment diagrams; friction; lubrication systems; ball and roller bearings.

- Identify different mechanical systems as well as the principles and materials that must be applied in their design
- Explain the different types of machine loading and stresses
- Describe how loading leads to mechanical failure and how loading affects rotating shafts
- Recognize the different types of fasteners and the factors that contribute to their strength

MET232: Mechanical Design 2

Shaft design and seals; fasteners; couplings; welding and weld designs; belting; power screws; gears; cams; flywheels; fluid power; governors; professional registration.

- Describe the design and use of springs and bearings
- Describe and distinguish different types of gears
- Differentiate other elements used in mechanical design
- Consider geometric tolerances in mechanical design

MET240: Electromechanical Control Theory

As a control systems technician, you'll need to understand how electronic systems are combined to deliver acceptable data signals to computers. This course is designed to help you learn the fundamentals of instrumentation as well as control system components and operation. The information in your textbook will provide you with a solid foundation in the operating principles of industrial instrumentation devices, the control systems they serve, and so on.

You'll learn how a control system works, and how instrumentation provides the control system with the information for operation. You'll study specific types of systems, including those that use fluid analyzers. You'll continue to study signal transmission topics before finishing your program with a detailed look at several specific control-system applications.

- Analyze the various types of instrumentation and control systems
- Categorize tools and requirements of pressure and level measurement
- Identify the purpose, importance, and tools of flow and position measurement
- Describe the various types of analyzers and their purposes
- Categorize the various types of signal transmission and communication

- Distinguish between the components of automatic control systems and their purposes
- Differentiate between the various types of valves and other control-system actuators
- Differentiate between the methods and tools of controlling safety systems
- Analyze the different instrumentation and control applications

MET243: Tool Design

In the course, the word tool refers to devices used in manufacturing industries. These devices, or tools, include cutting tools, jigs, fixtures, gages, and so on. The specific types of tools used in a particular manufacturing plant depend on the product the plant produces. Tool design involves the definition of a need for a tool, analysis of that need, collection of data for the design, preliminary design, final design, toolmaking, application, and testing. To be a tool designer, a person needs a working knowledge of the following major subject areas: mathematics (algebra, trigonometry, and geometry), engineering drawing, manufacturing processes, machine tools, and properties of engineering materials. Today, tool designers use computers to prepare tool drawings and to design tools.

- Analyze the structure of the tool designing process and the elements involved in it
- Identify the factors ruling the selection of workholding devices in the process of designing
- Categorize the steps needed in designing fixtures and jigs
- Distinguish between the pressworking tools and the various processes where they are used in their design
- Explain the principles of bending, forming, drawing, and forging in the designing of dies
- Identify the various principles involved in the designing of gages
- Categorize the methods of tool design

MET248: Industrial Plastics

Students receive an introduction to the basic chemical principles that are relevant to the plastics industry. They will understand the properties and uses for various types of plastics, how to test and identify the plastic's properties, and the effects of introducing certain additives. The course also includes a discussion of manufacturing processes, such as molding, machining, finishing, material selection, process control and extruding.

- Discover the nineteenth century and present-day plastics industry, including the development of polymers
- Describe the importance of basic statistics and testing on the plastics industry
- Examine the major influences of ingredients and different plastics on machining and finishing
- Discuss the processes for molding and extrusion with plastics
- Discuss laminating, reinforcing, and casting processes in plastics
- Discuss thermoforming, expansion, and coating processes in plastics
- Discuss fabrication, decoration, and radiation processes in plastics
- Examine the considerations in designing plastics products

BUS121: Economics 1

This course will provide an overview of macroeconomics and the modern market economy. Law of supply and demand, cost of living, monetary systems, international factors, and short run economic fluctuations will be examined and discussed.

- Explain economic systems and the economic perspectives
- Identify the key factors in macroeconomics and how economists use them to study
- Explain the macroeconomic models and fiscal policies
- Explain money, banking, and financial policy
- Explain the extending analysis of aggregate supply, current issues in theory and policy, and international economics
- Analyze foreign exchange and investment and the effects each nation's economy has on another nation's economy

SSC125: Introduction to Sociology

In this introduction to the field of sociology, you'll learn about social structure, forms of power, and social relationships, as well as deviance, crime, and social control. You'll explore issues of identity and inequality regarding class, race, ethnicity, sex, gender, and sexuality. Social institutions including the family, religion, education, work, and the media are examined, as well as the topics of health, politics, social movements, globalization, and social change.

- Examine foundational concepts and theories of sociology and recognize how they inform research
- Analyze the ways in which culture, social structure, and power influence daily life
- Evaluate the effects of socialization, interaction, deviance, and social control on human behavior
- Develop an essay reflecting on the importance of cultural traditions amid increasing globalization
- Examine the ways in which class, race, gender, and sexuality influence identity and inequality
- Distinguish the various social institutions and issues in the current global system
- Develop an essay examining the ways in which social inequality informs social change and movements

SSC130: Essentials of Psychology

This course covers biology and behavior, consciousness, memory, thought and language, intelligence, personality and gender, stress, and community influences.

- Explain various states of consciousness, learning theories, and thought processes and development
- Summarize the nature of human motivation and development, the human development cycle, and approaches to understanding and assessing personality
- Prepare an essay on the topic of conditioning, memory, or motivation and emotion
- Recognize psychological disorders and available treatments
- Explain social psychology as it relates to attitudes, influences, behaviors, and stress
- Use critical thinking skills to determine the likely causes of behaviors of individuals and groups discussed in case studies

MET300: Precision Machining Operations

In this course you'll learn the basic concepts of milling programs, various lathe operations and safety requirements, and the major components of machining centers.

- Point out the procedures for using various precision measuring instruments
- Categorize the functions of micrometers, indicators, and gages
- Analyze the tools used during material testing, machine and job setup, manufacturing production, and inspection
- Point out the basic principles of grinding operations
- Point out the fundamentals of milling machines
- Analyze the general terminologies associated with lathe operations
- Point out the fundamentals of external lathe operations and turning operations
- Define areas of heating, ventilation, and air conditioning
- Prepare a set of three AutoCAD drawings of HVAC layouts

Note: The titles of your learning materials may be different from those listed on your program outline. There is no need to call your instructor about these differences. While the titles of certain learning materials may differ, the educational content is the same. All learning materials are designed to give you the finest education in your field. If youneed instructional assistance, however, be sure to call for help. We reserve the right to revise the program of study and the instructional materials and to substitute for the items of equipment offered.