Mechanical Engineering Technology

Mechanical Engineering Technology (A40320)

Degree Awarded

The Associate in Applied Science Degree - Mechanical Engineering Technology is awarded by the college upon completion of this program. This degree is accepted at some colleges and universities as the first two years of a 2 + 2 bachelors-level engineering technology program.

Admissions

- A high school diploma or equivalent is required. High school students preparing for an engineering technology program should complete courses in algebra, geometry and advanced mathematics. Skills and proficiencies should be developed in writing, computer literacy, and science.
- Placement tests in English and mathematics determine entry-level courses that match individual needs. Developmental Studies English and mathematics courses are available for students to build basic skills and knowledge.
- A counseling/orientation appointment follows placement testing.
- Many courses have prerequisites or co-requisites; check the Courses section for details.

Program Accreditation

The Associate in Applied Science in Mechanical Engineering Technology program at is accredited by the Engineering Technology Accreditation Commission of ABET, under the General Criteria and the Program Criteria for Mechanical Engineering Technology and Similarly Named Programs.

Notes

The Mechanical Engineering Technology curriculum at Central Piedmont features the use of CAD systems in the practical applications of both fundamental and highly specialized mechanical engineering technology principles. Students advance from basic courses to specialized mechanical engineering technology courses. These courses furnish concentrated study in the practical application of state-of-the-art technological knowledge and skills needed in today's high technology industry.

Completion of the program requires that students use college-level algebra, trigonometry, and physics in the application of scientific principles to technical problems.

Contact Information

The Mechanical Engineering Technology Program is in the Engineering Technologies Division. For additional information, visit the Mechanical Engineering Technology website or contact the Program Chair at 704.330.2772 ext. 3151.

General Education Requirements		
ENG 111	Writing and Inquiry	3.0
ENG 114	Professional Research & Reporting	3.0
or ENG 112	Writing and Research in the Disciplines	
or ENG 113	Literature-Based Research	
or COM 110	Introduction to Communication	
or COM 231	Public Speaking	
MAT 171	Precalculus Algebra	4.0
Select 1 of the following:		3.0
ART 111	Art Appreciation	
or ART 114	Art History Survey I	
or ART 115	Art History Survey II	
or DRA 111	Theatre Appreciation	
or HUM 120	Cultural Studies	
or HUM 130	Myth in Human Culture	
or MUS 110	Music Appreciation	
or MUS 112	Introduction to Jazz	
or PHI 215	Philosophical Issues	
or PHI 240	Introduction to Ethics	
or REL 110	World Religions	
Select 1 of the following:		3.0
ECO 251	Principles of Microeconomics	
or ECO 252	Principles of Macroeconomics	
or HIS 111	World Civilizations I	
or HIS 112	World Civilizations II	
or HIS 131	American History I	
or HIS 132	American History II	
or POL 120	American Government	
or PSY 150	General Psychology	
or SOC 210	Introduction to Sociology	
Major Requirements		
ACA 122	College Transfer Success	1.0
DFT 154	Intro to Solid Modeling	3.0
EGR 251	Statics	3.0
EGR 252	Strength of Materials	3.0
MEC 161	Manufacturing Processes I	3.0
MEC 180	Engineering Materials	3.0
MEC 265	Fluid Mechanics	3.0
PHY 151	College Physics I	4.0
DFT 151	CAD I	3.0
Other Major Requirements:		
ELC 131	Circuit Analysis I	4.0
MAT 172	Precalculus Trigonometry	4.0
MAT 271	Calculus I	4.0
MEC 111	Machine Processes I	3.0
MEC 275	Engineering Mechanisms	3.0
PHY 152	College Physics II	4.0
MEC 260	Fundamentals of Machine Design	3.0
Select 1 of the following: **Students interested in continuing to UNCC should take CHM 151**		2.0
CHM 151	General Chemistry I	
WBL 111	Work-Based Learning I	
WBL 112	Work-Based Learning I	
DFT 152	CAD II	
Total Credits		**69**

MEC 110. Introduction to CAD/CAM. 2.0 Credits. Class-1.0. Clinical-0.0. Lab-2.0. Work-0.0
This course introduces CAD/CAM. Emphasis is placed on transferring part geometry from CAD to CAM for the development of a CNC-ready program. Upon completion, students should be able to use CAD/CAM software to produce a CNC program.
Prerequisites: Take DFT 154

MEC 111. Machine Processes I. 3.0 Credits. Class-1.0. Clinical-0.0. Lab-4.0. Work-0.0
This course introduces shop safety, hand tools, machine processes, measuring instruments, and the operation of machine shop equipment. Topics include use and care of tools, safety, measuring tools, and the basic setup and operation of common machine tools. Upon completion, students should be able to manufacture simple parts to specified tolerance.

MEC 130. Mechanisms. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course introduces the purpose and action of various mechanical devices. Topics include cams, cables, gear trains, differentials, screws, belts, pulleys, shafts, levers, lubricants, and other devices. Upon completion, students should be able to analyze, maintain, and troubleshoot the components of mechanical systems.

MEC 155. Environmentally Benign Manufacturing. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course introduces environmental issues involving the generation and management of hazardous materials and wastes in manufacturing operations. Topics include the analysis of manufacturing trends, pollution minimization strategies, and the advantages of incorporating a sustainable approach to manufacturing. Upon completion, students should be able to discuss analysis and modification of industrial processes in manufacturing facilities toward a sustainable end.

MEC 161. Manufacturing Processes I. 3.0 Credits. Class-3.0. Clinical-0.0. Lab-0.0. Work-0.0
This course provides the fundamental principles of value-added processing of materials into usable forms for the customer. Topics include material properties and traditional and non-traditional manufacturing processes. Upon completion, students should be able to specify appropriate manufacturing processing for common engineering materials.

MEC 172. Introduction to Metallurgy. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course covers the production, properties, testing, classification, microstructure, and heat-treating effects of ferrous and non-ferrous metals. Topics include the iron-carbon phase diagram, ITT diagram, ANSI code, quenching, senescing, and other processes concerning metallurgical transformations. Upon completion, students should be able to understand the iron-carbon phase diagram, ITT diagram, microstructure images, and other phenomena concerning the behavior of metals.

MEC 180. Engineering Materials. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces the physical and mechanical properties of materials. Topics include materials testing, pre- and post-manufacturing processes, and material selection of ferrous and non-ferrous metals, plastics, composites, and non-conventional materials. Upon completion, students should be able to utilize basic material property tests and select appropriate materials for applications. This course covers the physical and mechanical properties of materials. Topics include testing, heat treating, ferrous and non-ferrous metals, plastics, composites, and material selection. Upon completion, students should be able to specify basic tests and properties and select appropriate materials on the basis of specific properties.
Prerequisites: Take ENG 111 ENG 112 or ENG 113

MEC 210. Applied Mechanics. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course is a study of forces, stresses, and strains acting upon mechanical components. Topics include static equilibrium; normal, shear, and bending stresses; mathematical and graphical solution techniques; and the relationship between stress and strain. Upon completion, students should be able to demonstrate proficiency in analyzing the forces, stresses, and strains common to applications in the workplace.
Prerequisites: Take PHY 131 PHY 151 or PHY 251

MEC 260. Fundamentals of Machine Design. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces the fundamental principles of machine design. Topics include simple analysis of forces, moments, stresses, strains, friction, kinematics, and other considerations for designing machine elements. Upon completion, students should be able to analyze machine components and make component selections from manufacturers' catalogs.
Prerequisites: Take MEC 180; Take DFT 154 or DFT 170

MEC 265. Fluid Mechanics. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course covers the physical behavior of fluids and fluid systems. Topics include fluid statics and dynamics, laminar and turbulent flow, Bernoulli's Equation, components, applications, and other related topics. Upon completion, students should be able to apply fluid power principles to practical applications.
Prerequisites: Take PHY 131 PHY 151 or PHY 251

MEC 267. Thermal Systems. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course introduces the fundamental laws of thermodynamics. Topics include work and energy, open and closed systems, and heat engines. Upon completion, students should be able to demonstrate a knowledge of the laws and principles that apply to thermal power.
Prerequisites: Take One: PHY 131 or PHY 151

MEC 270. Machine Design. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course covers the basic principles underlying design and selection of machine elements. Topics include stress analysis, selection of components, power transmission, and other design considerations. Upon completion, students should be able to identify and solve mechanical design problems by applying basic engineering principles.
Prerequisites: Take One Set: Set 1: EGR 250; Set 2: EGR 251 and EGR 252

MEC 275. Engineering Mechanisms. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course covers plane motion and devices used to generate plane motion. Topics include analysis of displacement, velocity, acceleration, gears, cams, and other mechanical systems. Upon completion, students should be able to graphically and mathematically analyze a plane motion system.
Prerequisites: Take MAT 122 or MAT 172