

**Central Carolina Community College
Program Planning Guide**

**Mechanical Engineering Technology
Credential: Diploma in Mechanical Engineering Technology D40320**

The Mechanical Engineering Technology curriculum prepares graduates for employment as technicians in the diversified mechanical and manufacturing engineering fields. Mechanical Engineering technicians assist in design, development, testing, process design and improvement, and troubleshooting and repair of engineered systems. Emphasis is placed on the integration of theory and hands-on application of engineering principles. In addition to coursework in engineering graphics, engineering fundamentals, materials and manufacturing processes, mathematics, and physics, students will study computer applications, critical thinking, planning and problem solving, and oral and written communication.

Graduates of the curriculum should find employment opportunities in the manufacturing or service sectors of engineering technology. Engineering technicians may obtain professional certification by application to organizations such as American Society for Quality Control (ASQC), Society of Manufacturing Engineers (SME), and National Institute for Certification in Engineering Technology (NICET).

Program Length: 3 semesters

Career Pathway Options: Associate in Applied Science in Mechanical Engineering Technology, Diploma in Mechanical Engineering Technology

Program Sites:

Lee Campus - Day Program

| Suggested Course Schedule: | | HOURS | | | Grade | Semester | Notes |
|-----------------------------------|--------------------------------|--------------|------------|---------------|--------------|-----------------|--------------|
| | | Class | Lab | Credit | | | |
| 1st Semester (Fall) | | | | | | | |
| CIS 110* | Introduction to Computers | 2 | 2 | 3 | | | |
| DFT 111 | Technical Drafting I | 1 | 3 | 2 | | | |
| MAC 121 | Introduction to CNC | 2 | 0 | 2 | | | |
| MEC 110 | Introduction to CAD/CAM | 1 | 2 | 2 | | | |
| MAT 121 | Algebra/Trigonometry I | 2 | 2 | 3 | | | |
| | | 8 | 9 | 12 | | | |
| 2nd Semester (Spring) | | | | | | | |
| DFT 151 | CAD I | 2 | 3 | 3 | | | |
| MEC 161 | Manufacturing Processes I | 3 | 0 | 3 | | | |
| MEC 161A | Manufacturing Proc I Lab | 0 | 3 | 1 | | | |
| | | 5 | 6 | 7 | | | |
| 3rd Semester (Summer) | | | | | | | |
| DFT 152 | CAD II | 2 | 3 | 3 | | | |
| ENG 111 | Expository Writing | 3 | 0 | 3 | | | |
| ENG 111A | Expository Writing Lab | 0 | 2 | 2 | | | |
| MEC 231 | CAM I | 1 | 4 | 3 | | | |
| | | 6 | 9 | 10 | | | |
| 4th Semester (Fall) | | | | | | | |
| DDF 211 | Design Process I | 1 | 6 | 4 | | | |
| DFT 154 | Introduction to Solid Modeling | 2 | 3 | 3 | | | |
| MEC 232 | CAM II | 1 | 4 | 3 | | | |
| | | 4 | 13 | 10 | | | |

*May substitute CIS 111 (nontransferable)

Total Semester Hours Credit: 39

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Course Descriptions Mechanical Engineering Technology

CIS 110 Introduction to Computers 2-2-3

This course introduces computer concepts, including fundamental functions and operations of the computer. Topics include identification of hardware components, basic computer operations, security issues, and use of software applications. Upon completion, students should be able to demonstrate an understanding of the role and function of computers and use the computer to solve problems. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

DDF 211 Design Process I 1-6-4

Local Prerequisite: DFT 152

This course emphasizes design processes for finished products. Topics include data collection from manuals and handbooks, efficient use of materials, design sketching, specifications, and vendor selection. Upon completion, students should be able to research and plan the design process for a finished product.

DFT 111 Technical Drafting I 1-3-2

This course introduces basic drafting skills, equipment, and applications. Topics include sketching, measurements, lettering, dimensioning, geometric construction, orthographic projections and pictorial drawings, sections, and auxiliary views. Upon completion, students should be able to understand and apply basic drawing principles and practices.

DFT 151 CAD I 2-3-3

Local Prerequisite: DFT 111 or Instructor Approval

This course introduces CAD software as a drawing tool. Topics include drawing, editing, file management, and plotting. Upon completion, students should be able to produce and plot a CAD drawing.

DFT 152 CAD II 2-3-3

Local Prerequisite: DFT 151

This course introduces extended CAD applications. Emphasis is placed upon intermediate applications of CAD skills. Upon completion, students should be able to use extended CAD applications to generate and manage drawings.

DFT 154 Introduction to Solid Modeling 2-3-3

Local Prerequisite: DFT 151

This course is an introduction to basic three-dimensional solid modeling and design software. Topics include basic design, creation, editing, rendering, and analysis of solid models and creation of multi view drawings. Upon completion, students should be able to use design techniques to create, edit, render, and generate a multi view drawing.

ENG 111 Expository Writing 3-0-3

Prerequisites: Take one set: RED 090 and ENG 090, ENG 095, or appropriate placement test scores.

Corequisites: ENG 111A

This course is the required first course in a series of two designed to develop the ability to produce clear expository prose. Emphasis is placed on the writing process including audience analysis, topic selection, thesis support and development, editing, and revision. Upon completion, students should be able to produce unified,

coherent, well-developed essays using standard written English. This course has been approved for transfer under the CAA and ICAA as a general education course in English Composition.

ENG 111A Expository Writing Laboratory 0-2-1

Prerequisites: Take one set: RED 090 and ENG 090, ENG 095, or appropriate placement test scores.

Corequisites: ENG 111

This writing laboratory is designed to apply the skills introduced in ENG 111. Emphasis is placed on the editing and revision components of the writing process. Upon completion, students should be able to apply those skills in the production of final drafts in ENG 111. The computer is used as a writing and design tool for this course.

MAC 121 Introduction to CNC 2-0-2

This course introduces the concepts and capabilities of computer numerical control machine tools. Topics include setup, operation, and basic applications. Upon completion, students should be able to explain operator safety, machine protection, data input, program preparation, and program storage.

MAT 121 Algebra/Trigonometry I 2-2-3

Prerequisite: Take one set: MAT 060 and MAT 070, MAT 060 and MAT 080, MAT 060 and MAT 090, MAT 095, MAT 120, MAT 121, MAT 161, MAT 171, MAT 175, or appropriate placement test scores.

This course provides an integrated approach to technology and the skills required to manipulate, display, and interpret mathematical functions and formulas used in problem solving. Topics include simplification, evaluation, and solving of algebraic and radical functions; complex numbers; right triangle trigonometry; systems of equations; and the use of technology. Upon completion, students should be able to demonstrate an understanding of the use of mathematics and technology to solve problems and analyze and communicate results.

MEC 110 Introduction to CAD/CAM 1-2-2

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.

MEC 161 Manufacturing Processes I 3-0-3

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 161A Manufacturing Proc I Lab 0-3-1

This course is a laboratory for MEC 161. Emphasis is placed on experiences that enhance the materials presented in MEC 161. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in MEC 161.

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MEC 231 Computer-Aided Manufacturing I 1-4-3

Prerequisite: MEC 110

This course introduces computer-aided design/manufacturing (CAD/CAM) applications and concepts. Topics include software, programming, data transfer and verification, and equipment setup. Upon completion, students should be able to produce parts using CAD/CAM applications.

MEC 232 Computer-Aided Manufacturing II 1-4-3

Prerequisite: MEC 231

This course provides an in-depth study of CAM applications and concepts. Emphasis is placed on the manufacturing of complex parts using computer-aided manufacturing software. Upon completion, students should be able to manufacture complex parts using CAM software.