



MONROE COUNTY
COMMUNITY COLLEGE

Course Outcome Summary

Required Program Core Course

MECH 231 (CAD/CAM Milling II)

Course Information

Division	ASET
Contact Hours	60
Total Credits	3

Prerequisites **MECH 201**

Course Description

This course will build on the CAD/CAM Milling I course in the program. The course covers the latest Mastercam toolpath generation with two- and three-dimensional mechanical part geometry. Import functions for wireframe, solids and complex surfacing will be used. Projects will be more advanced and cover associativity, level management and post processors choice. Students will design and run toolpath and use set up functions with best economical production process planning. Also covered will be dynamic high-speed machining (HSM). Appropriate terminology is to be used and theory and practice of safe work methods will be emphasized.

This course is a required core course for students pursuing an AAS in Product and Process Technology.

Program Outcomes Addressed by this Course:

Upon successful completion of this course, students should be able to meet the program outcomes listed below:

- A. Demonstrate safe operation and practices of equipment.
- B. Specify proper Personal Protective Equipment (PPE) required for applicable work environments.
- C. Identify the complete design and the process, from concept to completion.
- D. Identify the major functions of a manufacturing system, their characteristics, relationship to design, process routing and lean manufacturing.
- E. Demonstrate computer competency required for CAM applications including CNC programming, set up, data transmission and the use of CAD/CAM editing software.
- F. Analyze, apply and qualify engineering specifications for parts machined, prototyped or fabricated.
- G. Analyze, design and add or remove material for physical systems in emerging fields, including medical applications, alloyed metals, composites and exotic materials.
- H. Plan, design and implement the sequence of operations including tooling, machines, time studies, automation and robotic integrated manufacturing.



Course Outcomes

In order to evidence success in this course, the students will be able to:

1. Design two- and three-dimensional wire frames.
Program outcomes linked:
 - A. Demonstrate safe operation and practices of equipment.
 - B. Specify proper Personal Protective Equipment (PPE) required for applicable work environments.
 - C. Identify the complete design and the process, from concept to completion.
 - D. Identify the major functions of a manufacturing system, their characteristics, and relationship to design, process routing and lean manufacturing.
 - E. Demonstrate computer competency required for CAM applications including CNC programming, set up, data transmission and the use of CAD/CAM editing software.
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2. Manage views, levels and entities from print specifications to wireframe model.
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3. Create boundaries and stock for two- and three-dimensional toolpaths.
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 - D. Identify the major functions of a manufacturing system, their characteristics, and relationship to design, process routing and lean manufacturing.
 - E. Demonstrate computer competency required for CAM applications including CNC programming, set up, data transmission and the use of CAD/CAM editing software.
 - F. Analyze, apply and qualify engineering specifications for parts machined, prototyped or fabricated.
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4. Create various exclusive rough and finish parameter for toolpaths.
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 - D. Identify the major functions of a manufacturing system, their characteristics, and relationship to design, process routing and lean manufacturing.
 - E. Demonstrate computer competency required for CAM applications including CNC programming, set up, data transmission and the use of CAD/CAM editing software.
 - F. Analyze, apply and qualify engineering specifications for parts machined, prototyped or fabricated.
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5. Use the verify function for most efficient toolpaths, checking for overcut, undercut and collision.
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6. Create menus, save, load, edit and modify programs using the program manager.
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7. Edit software for code generation and transfer of correct post processor toolpaths.
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8. Create correct toolpaths for project completion.
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9. Demonstrate care and operate machines and equipment adopting recognized safety practices.
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10. Set up a CNC machine, using the correct tooling, fixtures, work zero, tool offsets, and parameters to receive numerical control data.

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- D. Identify the major functions of a manufacturing system, their characteristics, and relationship to design, process routing and lean manufacturing.
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Date Updated: 3/13/2020

By: Troy Elliott