



MONROE COUNTY  
COMMUNITY COLLEGE

# Course Outcome Summary

## Required Program Core Course

## MDTC 242 Mechanical Design Capstone Project

### Course Information

Division	ASET
Contact Hours	90
Theory	30
Lab Hours	60
Total Credits	4

**Prerequisites** MDTC 226, MDTC 228

### Course Description

This course is a capstone experience for the final semester of the associate degree in Mechanical Design Technology. Students will demonstrate the collected knowledge, skills, and techniques acquired in previous courses by creating and presenting a representative design project to a panel of their peers, instructors, and/or representatives from industry. Emphasis is placed on the use of design principles and computer technology in planning, managing, and completing a design project. Team design projects will be integrated into the course.

**This course is a required core course for students pursuing an AAS in Mechanical Design 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. Effectively communicate technical ideas and problem-solving decisions with others.
- B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
- C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
- D. Use creativity in the design of mechanical components and systems.
- E. Recognize problems in mechanical design applications and develop appropriate solutions.
- F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.
- G. Recognize the need to stay current in the mechanical design career field.
- H. Demonstrate professional and ethical behavior.

### Course Outcomes

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

1. **Identify the various types of drill jigs used in production drilling applications.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - G. Recognize the need to stay current in the mechanical design career field.
2. **Identify the various types of fixtures used in production machining applications.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - G. Recognize the need to stay current in the mechanical design career field.



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3. **Describe supporting, locating, and clamping principles used in the design of jigs and fixtures.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - G. Recognize the need to stay current in the mechanical design career field.
4. **Design a drill jig utilizing industry standard tool design practices.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
  - D. Use creativity in the design of mechanical components and systems.
  - E. Recognize problems in mechanical design applications and develop appropriate solutions.
  - F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.
  - G. Recognize the need to stay current in the mechanical design career field.
5. **Design a milling fixture utilizing industry standard tool design practices.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
  - D. Use creativity in the design of mechanical components and systems.
  - E. Recognize problems in mechanical design applications and develop appropriate solutions.
  - F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.
  - G. Recognize the need to stay current in the mechanical design career field.
6. **Develop competence with a set of tools and methods for product design and development.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - G. Recognize the need to stay current in the mechanical design career field.
7. **Demonstrate the processes involved in creating a new product or modifying an existing product.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
  - D. Use creativity in the design of mechanical components and systems.
  - E. Recognize problems in mechanical design applications and develop appropriate solutions.
  - F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.
  - G. Recognize the need to stay current in the mechanical design career field.



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8. **Awareness of the role of multiple functions in creating a new product (e.g., marketing, finance, industrial design, engineering, production).**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - G. Recognize the need to stay current in the mechanical design career field.
9. **Awareness of the importance of system, process, and information integration in product development.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - G. Recognize the need to stay current in the mechanical design career field.
10. **Develop the ability to coordinate multiple, interdisciplinary tasks in order to achieve a common objective of launching a new product.**  
*Applies to Program Outcome*
  - A. Effectively communicate technical ideas and problem-solving decisions with others.
  - B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
  - C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
  - D. Use creativity in the design of mechanical components and systems.
  - E. Recognize problems in mechanical design applications and develop appropriate solutions.
  - F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.
  - G. Recognize the need to stay current in the mechanical design career field.

Date Updated: 4-14-19  
By: Dean R. Kerste