



## **MACH 210 - Machine Technology 3 Course Outline**

**Approval Date:** 05/08/2007

**Effective Date:** 01/16/2018

### **SECTION A**

**Unique ID Number** CCC000276651

**Discipline(s)** Machine Tool Technology

**Division** Career Education and Workforce Development

**Subject Area** Machine Tool Technology

**Subject Code** MACH

**Course Number** 210

**Course Title** Machine Technology 3

**TOP Code/SAM Code** 0956.30 - Machine Tool Technology/Machinist\* / B -  
Advance Occupational

**Rationale for adding this course to  
the curriculum** Last course update 2007

**Units** 7

**Cross List** N/A

**Typical Course Weeks** 18

**Total Instructional Hours**

#### **Contact Hours**

**Lecture** 54.00

**Lab** 216.00

**Activity** 0.00

**Work Experience** 0.00

**Outside of Class Hours** 108.00

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**Total Contact Hours** 270

**Total Student Hours** 378

**Open Entry/Open Exit** No

**Maximum Enrollment**

**Grading Option** Letter Grade or P/NP

**Distance Education Mode of  
Instruction**

## SECTION B

### General Education Information:

## SECTION C

### Course Description

**Repeatability** May be repeated 0 times

**Catalog Description** An advanced course in the machine tool technology degree program. This course emphasizes skills in the operation of horizontal and vertical milling machines. Advanced milling operations include gear cutting, gear calculations, and the use of rotary tables, index heads and dividing heads and multiple-lead threading.

### Schedule Description

## SECTION D

### Condition on Enrollment

#### 1a. Prerequisite(s)

- MACH 111

1b. Corequisite(s): *None*

1c. Recommended: *None*

1d. Limitation on Enrollment: *None*

## SECTION E

### Course Outline Information

#### 1. Student Learning Outcomes:

- A. Work safely and accurately in a manufacturing environment.
- B. Perform accurate calculations related to gear cutting.
- C. Accurately measure machined parts with precision measurement instruments.
- D. Complete advanced operations on lathes and milling machines.
- E. Machine spur gears using milling machine and dividing head.

#### 2. Course Objectives: Upon completion of this course, the student will be able to:

- A. Accurately calculate formulas for sizing and cutting spur gears.
- B. Accurately measure gears with specialized precision measurement instruments.
- C. Complete advanced machining operations on the engine lathe and milling machine.
- D. Accurately cut a multiple-lead thread using the engine lathe.
- E.

#### 3. Course Content

- A. Safety in a manufacturing environment
- B. Advanced vertical milling machine operations
- C. Dimensional measurement
- D. Gear cutting calculations
- E. Gear cutting operations
- F. Advanced horizontal milling machine operations
- G.

#### 4. Methods of Instruction:

**Lab:**

**Lecture:**

**5. Methods of Evaluation:** Describe the general types of evaluations for this course and provide at least two, specific examples.

## Typical classroom assessment techniques

- Quizzes --
- Lab Activities --
- Final Exam --
- Mid Term --

### Additional assessment information:

Students will be given written weekly quizzes covering assigned reading and weekly lectures. (example: quizzes consisting of identification and multiple choice questions).

Students will be given a written midterm exam and a written final exam. (example: a midterm and a final exam consisting of multiple choice and identification questions).

Students will complete weekly lab assignments. (example: lab assignment #1, machining of a diametral pitch spur gear).

Letter Grade or P/NP

## 6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

### A. Reading Assignments

1. Students will be required to read their notes from lab lectures in order to perform their lab assignments (example: notes on lecture regarding lab assignment #1, machining of a diametral pitch spur gear).
2. Students will be required to read weekly assignments from the textbooks in preparation for lectures and for lab assignments (example: section on gear calculations, "Machine Tool Practices", Kibbe, et al. textbook).

### B. Writing Assignments

1. Students will be required to read the assigned portions of the textbook to determine the correct procedure for machining a part (example: section on gear cutting, "Machine Tool Practices", Kibbe, et al. textbook).
2. Students will be required to take notes on the procedures for completion of lab assignments (example: notes on lecture regarding lab assignment #1, machining of a diametral pitch spur gear).
3. Students will analyze the drawings given to them and formulate a strategy for machining the assigned part (example: drawing for machining a diametral pitch spur gear).

### C. Other Assignments

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## 7. Required Materials

### A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:

Author: Kibbe, Neely, Meyer, & White  
Title: Machine Tool Practice  
Publisher: Prentice-Hall  
Date of Publication: 2015  
Edition: 10th

Book #2:

Author: Oberg, Jones, Horton, & Ryffel  
Title: Machinery's Handbook  
Publisher: Industrial Press  
Date of Publication: 2016

Edition: 30th

**B. Other required materials/supplies.**