



COURSE OUTLINE

MCH145

Prepared: Neal Moss Approved:

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| Course Code: Title | MCH145: MACHINE SHOP PRACTICAL II |
| Program Number: Name | 4039: MECH. ENG. TN-MANUFA |
| Department: | MECHANICAL TECHNIQUES PS |
| Semester/Term: | 18W |
| Course Description: | This course will continue to build on the study of shop machines, safety, and tool care, measurements and layout, bench work and hard tools, material identification, heat treatment and testing, basic lathe, saws, drill presses, grinder, and milling machine, theory and practices, speeds, feeds, tapers, and threads. |
| Total Credits: | 4 |
| Hours/Week: | 4 |
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| Prerequisites: | MCH121, MCH144 |
| Substitutes: | MCH136 |
| This course is a pre-requisite for: | MCH259 |
| General Education Themes: | Science and Technology |
| Course Evaluation: | |
| Other Course Evaluation & Assessment Requirements: | -1% per Hour (Late = 1 Hour) Each absence will reduce this portion of the attendance mark by 33%. If the student accumulates 3 absences in the semester, a meeting will be scheduled with the Dean of this program. Continued enrollment in this program will be decided by the Dean, the Coordinator and the instructor of this program. |
| | Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 |

D 50 - 59% 1.00
F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
S Satisfactory achievement in field /clinical placement or non-graded subject area.
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR Grade not reported to Registrar's office.
W Student has withdrawn from the course without academic penalty.

Evaluation Process and Grading System:

| Evaluation Type | Evaluation Weight |
|----------------------------|-------------------|
| Attendance and Safety | 20% |
| Attitude and Participation | 10% |
| Projects | 70% |

Books and Required Resources:

Machining Fundamentals textbook by John R. Walker
Publisher: Goodheart-Wilcox
ISBN: 978 1 61960 209 0
Scientific Calculator (not cell phone)

Safety Glasses

Safety Boots

Course Outcomes and Learning Objectives:

Course Outcome 1.

COURSE DESCRIPTION:

This course is a continuation of Machine Shop Practical I. The student will continue to develop the skills required to safely setup and operate various machines used in Machine Shops. Focus will be on enhancing existing skills using lathes, milling machines and other machines used in the manufacture of components.

Learning Objectives 1.

1. Working safely in a shop environment.
2. Use and care of measuring tools.
3. Safe setup and operation of lathes
4. Safe setup and operation of milling machines
5. Safe setup and operation of drill presses
6. Safely operate arbour press
7. Safely perform bench work and assembly

Course Outcome 2.

1. Work safe in a shop environment whether running machines or doing bench work.

Learning Objectives 2.

Potential Elements of the Performance:

- Use all shop safety rules.
- Wear and use proper safety equipment.
- Operate machines in a safe manner.
- Practice safe working habits.

Course Outcome 3.

2. Use all of the various measuring tools to verify dimensions of machined parts.

Learning Objectives 3.

Potential Elements of the Performance:

- Use measuring tools such as scales, inside and outside micrometers and vernier calipers.
- Use transfer measuring tools such as inside and outside calipers, telescopic gauges, small hole gauges and dividers.

Course Outcome 4.

Setup and Safely operate lathes.

Learning Objectives 4.

Potential Elements of the Performance:

- Use four jaw chucks for centering work
- Select correct speeds and feeds
- Select proper pitches using quick change gear box
- Understand and cut threads using different methods and pitches

Course Outcome 5.

4. Setup and safely operate Milling Machines.

Learning Objectives 5.

Potential Elements of the Performance:

- Setup milling machines using various work holding methods
- Select proper speeds and feeds and verify correct cutter rotation
- Perform various operations such as squaring stock
- Learn about keys and keyways and how to successfully setup and cut

Course Outcome 6.

5. Select and operate different types of drill presses.

Learning Objectives 6.

Potential Elements of the Performance:

- Operate sensitive and radial arm drill presses safely.
- Select proper size drills for drilling and tapping.
- Perform operations such as drilling, reaming, and counter boring.
- Perform safe work holding using clamps, vises, angle plates, vee blocks and parallels.

Course Outcome 7.

6. Safely operate arbour press.

Learning Objectives 7.

Potential Elements of the Performance:

- Using an arbour press correctly install bushings or bearings
- Learn about internal keyways and how to cut them using an arbour press

Course Outcome 8.

7. Safely perform bench work and assembly.

Learning Objectives 8.

Potential Elements of the Performance:

- Assemble machined components
- Make necessary adjustments to allow components to fit together
- Verify accuracy of finished assembled components

Date:

Monday, December 18, 2017

Please refer to the course outline addendum on the Learning Management System for further information.