COURSE OUTLINE: MCH145 - MACHINE SHOP PRAC II

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	MCH145: MACHINE SHOP PRACTICAL II
Program Number: Name	4039: MECH. ENG. TN-MANUFA 4040: MACHINE SHOP 5082: MECH.TECH.IND.MAINT.
Department:	MECHANICAL TECHNIQUES PS
Semesters/Terms:	20W, 20S
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
Total Hours:	4
Prerequisites:	MCH121, MCH144
Corequisites:	There are no co-requisites for this course.
Substitutes:	MCH136
This course is a pre-requisite for:	MCH259
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4039 - MECH. ENG. TN-MANUFA** VLO 1 Complete all work in compliance with current legislation, standards, regulations and guidelines. VLO 2 Apply quality control and quality assurance procedures to meet organizational standards and requirements. VLO 3 Comply with current health and safety legislation, as well as organizational practices and procedures. VLO 4 Apply sustainability best practices in workplaces. VLO 5 Use current and emerging technologies to support the implementation of mechanical engineering projects. VLO 6 Analyze and solve mechanical problems by applying mathematics and fundamentals of mechanical engineering. VLO 7 Interpret, prepare and modify mechanical engineering drawings and other related technical documents. VLO 8 Contribute to the design and the analysis of mechanical components, processes and systems applying fundamentals of mechanical engineering. VLO 10 Verify the specifications of materials, processes and operations to support the design and production of mechanical components. VLO 11 Contribute to the planning, implementation and evaluation of projects.

VLO 12 Develop strategies for ongoing personal and professional development to enhance work performance.

4040 - MACHINE SHOP

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VLO 4 Support sustainability best practices in workplaces.

VLO 5 Use current and emerging technologies to support the implementation of mechanical and manufacturing projects.

VLO 6 Troubleshoot and solve standard mechanical problems by applying mathematics and fundamentals of mechanics.

VLO 7 Contribute to the interpretation and preparation of mechanical drawings and other related technical documents.

VLO 8 Perform routine technical measurements accurately using appropriate instruments and equipment.

VLO 10 Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components.

5082 - MECH.TECH.IND.MAINT.

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VLO 7 Contribute to the interpretation and preparation of mechanical drawings and other related technical documents.

VLO 8 Perform routine technical measurements accurately using appropriate instruments and equipment.

VLO 9 Assist in manufacturing, assembling, maintaining and repairing mechanical components according to required specifications.

VLO 10 Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components.

Essential Employability Skills (EES) addressed in this course:

EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.

EES 3 Execute mathematical operations accurately.

EES 4 Apply a systematic approach to solve problems.

	EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	
Other Course Evaluation & Assessment Requirements:	Each absence will reduce a portion of the attendance mark. 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.
Books and Required Resources:	Machining Fundamentals textbook by John R. Walker Publisher: Goodheart-Wilcox Edition: 9th ISBN: 978 1 61960 209 0 Scientific Calculator not cell phone) Safety Glasses Safety Boots

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for 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	- Working safely in a shop environment. - Use and care of measuring tools. - Safe setup and operation of lathes - Safe setup and operation of milling machines

Machine Shops. Focus will be on enhancing existing skills using lathes, milling machines and other machines used in the manufacture of components.	- Safe setup and operation of drill presses - Safely operate arbour press - Safely perform bench work and assembly
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Work safe in a shop environment whether running machines or doing bench work.	- Use all shop safety rules. - Wear and use proper safety equipment. - Operate machines in a safe manner. - Practice safe working habits.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Use all of the various measuring tools to verify dimensions of machined parts.	- 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	**Learning Objectives for Course Outcome 4**
Setup and Safely operate lathes.	- 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	**Learning Objectives for Course Outcome 5**
Setup and safely operate Milling Machines.	- 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	**Learning Objectives for Course Outcome 6**
Select and operate different types of drill presses.	- 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	**Learning Objectives for Course Outcome 7**
Safely operate arbour press.	- 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	**Learning Objectives for Course Outcome 8**

	Safely perform bench work and assembly.	- Assemble machined components - Make necessary adjustments to allow components to fit together - Verify accuracy of finished assembled components

Evaluation Process and Grading System:

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

Date: August 27, 2019

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