COURSE OUTLINE: MCH144 - MACHINE SHOP PRACT I

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	MCH144: MACHINE SHOP PRACTICAL I
Program Number: Name	4039: MECH. ENG. TN-MANUFA 4040: MACHINE SHOP 5082: MECH.TECH.IND.MAINT.
Department:	MECHANICAL TECHNIQUES PS
Semesters/Terms:	19F, 20W, 20S
Course Description:	This course will focus on the students hands on ability and skill to safely operate and use various machines and hand tools used in the mechanical trades. Students will be applying their theoretical knowledge to performing layout and manufacturing components from drawings. Special attention will be placed on safe work habits and accurate measurement.
Total Credits:	4
Hours/Week:	4
Total Hours:	60
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Substitutes:	MCH133
This course is a pre-requisite for:	MCH145, 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 10 Verify the specifications of materials, processes and operations to support the design and production of mechanical components. **4040 - MACHINE SHOP** VLO 1 Complete all work in compliance with current legislation, standards, regulations and guidelines.

	VLO 2	Contribute to the application of 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	Support sustainability best practices in workplaces.
	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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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 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:	Passing Grade: 50%, D	
Other Course Evaluation &	Attendance:	

Assessment Requirements:

Students who do not attend a minimum of 75% (12) of the scheduled classes will be given an F grade for this course. After 3 missed classes students lose the full 20% for the Attendance/Housekeeping portion of marks.

Due to Safety concerns of this course, after 3 safety violations, the student will be removed from the class and receive an F grade.

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 by Walker
Publisher: Goodhear-Wilcox Edition: 9th

Machining Fundamentals Workbook by Walker
Publisher: Goodheart-Wilcox Edition: 9th

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Work safe in a shop environment whether running machines or doing bench work.	Potential Elements of the Performance: 1.1 Practice all shop safety rules. 1.2 Wear and use proper safety equipment. 1.3 Operate machines in a safe manner. 1.4 Practice safe working habits. 1.5 Protect themselves and others
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Use all of the various measuring tools to verify dimensions of machined parts.	Potential Elements of the Performance: 2.1 Use measuring tools such as scales, inside and outside micrometers, vernier calipers and Dial gauges. 2.2 Use transfer measuring tools such as inside and outside calipers, telescopic gauges, small hole gauges and dividers.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Perform basic layout using various tools and methods	Potential Elements of the Performance: 3.1 Perform layout using combination set, scales, protractors, height gauges, surface gauges and dividers. 3.2 Mark layout using scribers, prick and centre punches.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Safely operate various	4.1 Operate pedestal grinders.

	grinders used in industry.	4.2 Operate hand grinders. 4.3 Safely change grinding wheels. 4.4 Safely change grinding and cut-off discs 4.5 Safely dress grinding wheels.
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	5. Select and operate different types of drill presses.	5.1 Operate radial arm drill 5.2 Operate drill press
	Course Outcome 6	**Learning Objectives for Course Outcome 6**
	6. Safely operate various cutoff and band saws.	6.1 Operate horizontal band saw. 6.2 Operate vertical contour band saw. 6.3 Operate electric chop saw. 6.4 Inspect and change blades as required. 6.5 Select proper speeds and feeds.
	Course Outcome 7	**Learning Objectives for Course Outcome 7**
	7. Safely perform bench work.	7.1 Proper use and care of files. 7.2 Proper care and use of hack saws.
	Course Outcome 8	**Learning Objectives for Course Outcome 8**
	8. Safely operate metal cutting lathes using assorted work holding devices.	8.1 Use and care of 3 jaw and 4 jaw independent chucks. 8.2 Select different centres such as live, dead or bell. 8.3 Care and use of collet chucks and mandrels. 8.4 Setup and use steady and follower rests.
	Course Outcome 9	**Learning Objectives for Course Outcome 9**
	9. Safely perform various machining operations on the lathe.	9.1 Operate lathe performing facing, turning and boring. 9.2 Using calculations and formulas select proper speeds and feeds. 9.3 Using proper formulas perform threading and taper turning. 9.4 Safely perform knurling, grooving and parting off.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Attitude/ Attendance/ Housekeeping	20%
Projects	80%

Date: August 27, 2019

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