COURSE OUTLINE: MCH140 - MACHINE SHOP FUNDMTL

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Course Code: Title	MCH140: MACHINE SHOP FUNDAMENTALS
Program Number: Name	4005: PRE-TRADES TECHNOLGY
Department:	PRE-TRADES & TECHNOLOGY
Academic Year:	2024-2025
Course Description:	This course will allow the student to develop the skills required to operate the various machines and equipment necessary to work safely and productively in a machining, manufacturing and maintenance setting with a focus on building parts or making repairs in industry. Special attention will be placed on accurate measurement and inspection.
Total Credits:	4
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4005 - PRE-TRADES TECHNOLGY** VLO 1 Function at a level of mathematics suited to the student's post-secondary program aspirations. VLO 3 Enhance reading and writing skills to college entry standards. VLO 4 Develop effective learning and study skills. VLO 5 Develop effective career planning skills. VLO 6 Become familiar with the college study requirements. VLO 9 Work with others
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. 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 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:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	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. Due to the Safety concerns of this course, Students who do not attend a minimum of 80% (12 classes) of the scheduled classes will be given an F grade for this course.
Books and Required Resources:	Machining Fundamentals (text book) by John R. Walker Publisher: Goodheart-Wilcox Edition: tenth ISBN: 978 1 61960 209 0 Machining Fundamentals (workbook) by John R. Walker Edition: tenth ISBN: 978 1 61960 214 4 Safety Glasses Workboots

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 Use 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.
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 and vernier calipers. 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.Select and operate different types of drill presses and hand drills.	Potential Elements of the Performance: 4.1 Operate sensitive drill presses safely. 4.2 Select and operate pneumatic and electric hand drills and perform safe drilling. 4.3 Select proper size drills for drilling and tapping. 4.4 Sharpen a twist drill bit. 4.5 Perform operations such as drilling. 4.6 Perform safe work holding using clamps, vises, angle plates, vee blocks and parallels.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5.Safely operate various cutoff and band saws.	Potential Elements of the Performance: 5.1 Operate horizontal band saw. 5.2 Operate vertical contour band saw. 5.3 Inspect and change blades as required. 5.4 Select proper speeds and feeds for sawing.
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Safely use assorted hand tools.	Potential Elements of the Performance: 6.1 Select and use various wrenches (Screwdrivers, hex, torx etc.) 6.2 Select and use proper files, chisels, punches etc. 6.3 Identify worn or defective hand tools.
Course Outcome 7	**Learning Objectives for Course Outcome 7**
7. Safely operate metal cutting lathes using assorted work holding devices.	Potential Elements of the Performance: 7.1 Use and care of 3 jaw and 4 jaw independent chucks. 7.2 Select different centers such as live, dead or bell. 7.3 Care and use of collet chucks and mandrels. 7.4 Set-up work pieces using a dial indicator
Course Outcome 8	**Learning Objectives for Course Outcome 8**
8. Safely perform various machining operations on the lathe.	Potential Elements of the Performance: 8.1 Operate lathe performing facing and turning. 8.2 Using calculations and formulas select proper speeds and feeds. 8.3 Using proper formulas perform threading and taper turning. 8.4 Safely perform knurling, grooving and parting off. 8.5 Perform knurling, grooving and turning operations in a lathe.
Course Outcome 9	**Learning Objectives for Course Outcome 9**
9. Safely perform basic pneumatic operations using	Potential Elements of the Performance 9.1 Describe the basic components of a pneumatic system.

	Pneumatic Trainers.	9.2 Describe a simple pneumatic system. 9.3 Safely set-up and operate Pneumatic Trainer as per design.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Participation	15%
Projects	40%
Skills Sign Off	15%
Tests and Quizzes	30%

Date: August 9, 2024

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