COURSE OUTLINE: MCH134 - MATERIALS & FASTENER

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	MCH134: MATERIALS AND FASTENERS
Program Number: Name	4039: MECH. ENG. TN-MANUFA 4040: MACHINE SHOP 4043: MECH ENG. TECHNOLOGY 5082: MECH.TECH.IND.MAINT.
Department:	MECHANICAL TECHNIQUES PS
Semesters/Terms:	20F, 21W
Course Description:	To provide students with a working knowledge of the theory behind the procedures that is used in the making and working with carbon steels, aluminum and its alloys, and other construction materials as well as knowledge and applications of fasteners. Practical lab and shop activities will be used to enhance and or demonstrate theoretical concepts where possible.
Total Credits:	2
Hours/Week:	2
Total Hours:	30
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.**	**4039 - MECH. ENG. TN-MANUFA** VLO 1 Complete all work in compliance with current legislation, standards, regulations and guidelines. VLO 3 Comply with current health and safety legislation, as well as organizational practices and procedures. 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 9 Manufacture, assemble, maintain and repair mechanical components according to required specifications. 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 3 Comply with current health and safety legislation, as well as organizational practices

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		and procedures.
	VLO 5	Use current and emerging technologies to support the implementation of mechanical and manufacturing projects.
	VLO 10	Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components.
	4043 - MECH ENG. TECHNOLOGY	
	VLO 1	Monitor compliance with current legislation, standards, regulations and guidelines.
	VLO 3	Monitor and encourage compliance with current health and safety legislation, as well as organizational practices and procedures.
	VLO 5	Use current and emerging technologies to implement mechanical engineering projects.
	VLO 9	Design, manufacture and maintain mechanical components according to required specifications.
	VLO 10	Establish and verify the specifications of materials, processes and operations for the design and production of mechanical components.
	5082 - MECH.TECH.IND.MAINT.	
	VLO 1	Complete all work in compliance with current legislation, standards, regulations and guidelines.
	VLO 3	Comply with current health and safety legislation, as well as organizational practices and procedures.
	VLO 5	Use current and emerging technologies to support the implementation of mechanical and manufacturing projects.
	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.
General Education Themes:	Science and Technology	
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:	Tests exams assignments labs presentations. 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. Smart watches, smart phones and similar devices are not allowed during tests or quizzes and must be removed. Smart phones are not acceptable for use as a calculator during a test or quiz.
Books and Required Resources:	Millwright Manual of Instruction by Michener Publisher: Government of British Colombia Millwright Manual of Study Guide by QPBC Publisher: Ministry of Finance ISBN: 7960002055 Machining Fundamentals by John R. Walker Edition: Tenth ISBN: 978-1-63563-208-8 Machining Fundamentals Workbook by John R. Walker Edition: Tenth ISBN: 978-1-63563-210-1
Course Outcomes and Learning Objectives:	

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Understand Metals and Alloys	1.1 Identify and describe properties of metals and alloys 1.2 Identify and describe the effects of temperature on metals and alloys. 1.3 Perform assignments to reinforce this knowledge
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Define the following properties of metals and alloys	2.1 Define and describe each of the following mechanical and physical .properties and / or terms: - Elasticity,

		- Yield Point / Strength, - Tensile ,Compressive, Shear, Bearing strength, - Conductivity, - Corrosion, - Ductility, - Malleability, - Hardness, - Impact Strength, and - Temperature effects.
	Course Outcome 3	**Learning Objectives for Course Outcome 3**
	3. Describe the purpose for adding the following to steel:	3.1 Carbon, 3.2 Sulphur, 3.3 Phosphorus, 3.4 Silicon, 3.5 Manganese, and 3.6 Copper. 3.7 Perform assignments or a presentation to reinforce this knowledge
	Course Outcome 4	**Learning Objectives for Course Outcome 4**
	4. Identify and describe the uses of non-metallic materials:	4.1 Identify the types, applications and qualities of fasteners including - Unified, - American, - National, - Acme, - Metric, and -Pipe thread systems 4.2 Identify and select bolts, nuts, clips, chemical fasteners and adhesives as well as their potential use and application 4.3 Describe methods of securing machinery and components using bolts, anchors, fasteners, grouting and epoxy resins 4.4 Perform practical and theory assignments to reinforce this knowledge

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	40%
Attendance & Participation	10%
Tests	50%

Date: September 2, 2020

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

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