COURSE OUTLINE: MCH603 - RESEARCH PROJECT II

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Approved: Corey Meunier, Dean, Technology, Trades, and Apprenticeship

Course Code: Title	MCH603: RESEARCH PROJECT II
Program Number: Name	4043: MECH ENG. TECHNOLOGY
Department:	MECHANICAL TECHNIQUES PS
Academic Year:	2024-2025
Course Description:	In the two Research Project courses, students complete an independent technical project. These courses mirror working conditions that are frequently encountered in industry, that is, they are a self-directed, comprehensive study of a specific topic in the student`s field, one not covered in other courses. Research Project II is a continuation of Research Project I, where students continue to work on their project, meet with faculty and industry advisors, and prepare written progress reports. Students also learn the theory necessary for the preparation, writing, and oral defence of a formal technical report. Students do a presentation of the formal technical report on their completed project.
Total Credits:	4
Hours/Week:	4
Total Hours:	56
Prerequisites:	MCH504
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.**	**4043 - MECH ENG. TECHNOLOGY** VLO 1 Monitor compliance with current legislation, standards, regulations and guidelines. VLO 2 Plan, co-ordinate, implement and evaluate quality control and quality assurance procedures to meet organizational standards and requirements. VLO 3 Monitor and encourage compliance with current health and safety legislation, as well as organizational practices and procedures. VLO 4 Develop and apply sustainability best practices in workplaces. VLO 5 Use current and emerging technologies to implement mechanical engineering projects. VLO 6 Analyze and solve complex mechanical problems by applying mathematics and fundamentals of mechanical engineering. VLO 7 Prepare, analyze, evaluate and modify mechanical engineering drawings and other related technical documents. VLO 8 Design and analyze mechanical components, processes and systems by applying fundamentals of mechanical engineering. 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.

	VLO 11	Plan, implement and evaluate projects by applying project management principles.
	VLO 12	Develop strategies for ongoing personal and professional development to enhance work performance.
	VLO 13	Apply business principles to design and engineering practices.
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 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:	Passing Grade: 50%, 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.	
Course Outcomes and Learning Objectives:		

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Project Management	1.1 Prepare and provide progress reports to instructors and

		industry advisors (if applicable) 1.2 Address variations to project schedule with solutions to getting back on schedule 1.3 Ensure project scope is adhered to 1.4 Manage project costs using a tracking tool (i.e. excel)
	Course Outcome 2	**Learning Objectives for Course Outcome 2**
	2. Fabricate the Product	2.1 Identify and use the necessary personal protective equipment required for each manufacturing function 2.2 Manufacture each part, subassembly, and assembly in accordance with the drawing package developed in Research Project 1 2.3 Utilize the appropriate tools and methods required for project construction 2.4 Requisition the required materials and parts 2.5 Apply suitable NDT methods to test and document that the manufactured part(s) meet the required tolerances 2.6 Test the design, trouble shoot, and adjust as necessary to ensure project success
	Course Outcome 3	**Learning Objectives for Course Outcome 3**
	3. Prepare a written report	3.1 Prepare written report in accordance with instructor requirements. 3.2 Prepare Final cost summary 3.3 Revise and update final drawings as necessary
	Course Outcome 4	**Learning Objectives for Course Outcome 4**
	4. Defend Project Results	4.1 Present the finished product to instructors, peers, and industry advisors 4.2 Outline project experience 4.3 Describe fabrication and assembly process 4.4 Defend project outcome against original project scope 4.5 Comment on test results and provide recommendations for future designs

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Oral Report	15%
Product Fabrications	50%
Project Management	15%
Written Report	20%

Date: November 12, 2024

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