COURSE OUTLINE: MCH504 - RESEARCH PROJECT I

Prepared: Kevin Sloss
Approved: Corey Meunier, Dean, Technology, Trades, and Apprenticeship

Course Code: Title	MCH504: RESEARCH PROJECT I
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. In Research Project I, students prepare a detailed project schedule, meet weekly with faculty and industry advisors, prepare weekly progress reports, and deliver a formal technical project proposal. Students begin work on the project in this course in preparation for project completion in Research Project II.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	MCH603
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 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 5 Use current and emerging technologies to implement mechanical engineering projects. 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 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	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.

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 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.
Books and Required Resources:	Designing Engineers by Mc Cahan, Anderson, Kortschot, Weiss, Woodhouse Publisher: Wiley Edition: 2015 ISBN: 978-0-47093949-9

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
#1.Develop a project concept for a new product, improved product, or an investigation with solution for an industrial/employer/engineering problem.	1.1 Identify the product, improvement, or issue. 1.2 Identify the market 1.3 Summarize the function 1.4 Differentiate between the attributes or functions that make the product new, improved, or will solve the engineering issue 1.5 Investigate design/solution options

	1.6 Justify option choice
Course Outcome 2	**Learning Objectives for Course Outcome 2**
#2.Produce a detailed project proposal (written and oral)	2.1 Investigate the project scope 2.2 Examination of information, research, preliminary drawings component research, project timelines, and projected project costs 2.3 Compile an analysis/outcome of your concept 2.4 Document the project objectives 2.5 Identify material/part sources 2.6 Prepare written proposal to instructor and oral presentation to peers
Course Outcome 3	**Learning Objectives for Course Outcome 3**
#3.Prepare a project schedule	3.1 Generate a project schedule using software as specified b the instructor that will be used in Research Project II
Course Outcome 4	**Learning Objectives for Course Outcome 4**
#4.Design the product, improvement, engineering solution in CAD software	4.1 Develop and draw the design concept using CAD software 4.2 Identify (as applicable) materials, applicable design standards, stress analysis, manufacturing processes (i.e. welding, heat treating, type of finish, etc.), bill of materials, and non-destructive testing requirements 4.3 Compile a production ready drawing package for the proje
Course Outcome 5	**Learning Objectives for Course Outcome 5**
#5.Prepare Progress Report	5.1 Prepare and provide progress reports to instructor and industry advisors (if applicable)

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Drawing Package	30%
Progress Reports	10%
Project Concept	20%
Project Schedule	20%
Written / Oral Proposal	20%

Date: September 10, 2024

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