



**I. COURSE DESCRIPTION:**

The Research Report is intended to demonstrate that the student can function at the technology level. The topic may be of a design, experimental or investigative nature. Assessment will be the responsibility of the Mechanical Engineering Technology Department.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

**1. *Research Project***Potential Elements of the Performance:

- Create and understand the importance of an engineering project proposals
- Utilize and interpret Gantt charts/Perth charts while completing a major project
- Understand critical path analysis in regards to major projects and timelines
- Establish design solutions and appropriate documentation such as drawings, costing and benefit analysis
- Understand the ethical and moral obligations of an engineer and how that relates to the work that is completed
- Communicate ideas of a design solution and complete a presentation explaining the solution
- Demonstrate the ability to work within a group to complete a project in a defined timeframe

**III. TOPICS:**

1. Engineering Design Proposal
2. Simple Economics for Projects
3. Ethics for Engineers

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

*NONE*

**V. EVALUATION PROCESS/GRADING SYSTEM:**

<b>Type of Grading</b>	<b>Mark</b>	<b>Topics</b>
<b>Proposal (due end of week 4)</b>	<b>10%</b>	<b>An engineering project proposal will be submitted that defines the context, scope, duration, schedules and deliverables for the interim and final report</b>
<b>Interim Project Report (due end of week 9)</b>	<b>20%</b>	<b>Interim Project Report including problem definition, alternative proposed design solutions, costing, limitations, timelines for prototypes and construction</b>
<b>Final Design Report and prototype of applicable (due beginning of week 16)</b>	<b>30%</b>	<b>The final design report and all deliverables agreed to at the proposal stage will be submitted by the beginning of week 16.</b>
<b>Progress Reports with updated timelines (due end of week 7 and end of week 14)</b>	<b>10%</b>	<b>Progress reports will be completed and submitted at the beginning of week 7 and 14. The contribution of each student in the group must be clearly stated, along with a summary description of each aspect of the work completed and discussion of the overall progress. All group members must sign the progress reports.</b>
<b>Final Poster and Presentation (due beginning of week 16)</b>	<b>30%</b>	<b>A poster and presentation of the final solution will be completed for week 16. The poster will give a detailed outline of the problem, design solution and any relevant information associated with the design.</b>

The following semester grades will be assigned to students:

<b>Grade</b>	<b>Definition</b>	<i>Grade Point Equivalent</i>
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.	

## VI. SPECIAL NOTES:

### Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

## VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.

## APPENDIX



**MECHANICAL ENGINEERING  
TECHNOLOGY - 4043**  
*Research Project – MCH310*

## DISTRIBUTION OF HOURS

Sequence/Type	Topics	# of Hours
Lecture	History and Evolution of the engineering profession and The Engineering Proposal	3
Lecture	Project Management – GANNT Charts, PERTH Charts, Timelines, critical path analysis, Utilizing software for analysis data	6
Lecture	Economics – Costing Calculations and Benefit Justification, ROI	3
Lecture	Teams, Organization and Leadership	3
Lecture	Professionalism, Moral Reasoning and Ethics	3
Group Project Working Time		36
Presentation of Final Reports and Posters		8
	<b>Sub-Totals</b>	
	Lectures	16
	Research Lab	36
	Time	
	Presentations	8
	<b>TOTAL</b>	<b>60</b>
	<b>HOURS</b>	



**MECHANICAL ENGINEERING TECHNOLOGY - 4043**  
***Research Project – MCH310***

**COURSE PLAN** – (Based on the PowerPoint Presentations created for Sault College )

<b>Week/Hours</b>	<b>Topic/Chapter</b>	<b>Concepts Covered</b>
<b>Week 1 – 1.5 hour lecture</b>	<b>Introduction</b>	<b>INTRODUCTION</b> 1) History of Engineering Design 2) Engineering Design Proposal
<b>Week 2/3/4/5 – 6 hour lecture</b>	<b>Project Management: Project Definition, Timelines, analysis of data, presentations</b>	1) Teams to be selected by week 2 if required <b>PROJECT DEFINITION</b> 2) Outlining the problem in order to ensure the alternative designs for solution address the originally defined problem <b>TIMELINES</b> 3) The purpose and benefit of developing timelines for project design 4) GANNT Charts and PERTH Charts 5) Critical path analysis <b>DATA ANALYSIS</b> 6) Experimental analysis <b>PRESENTATIONS/REPORTS</b>
<b>Week 6/7 – 3 hour lecture and 4 hour group lab time</b>	<b>Project Economics: Costing, Economic Benefit (ROI, NPV, Simple pay back)</b>	
<b>Week 8/9 – 3 hour group lab time</b>	<b>Computer Labs and Shop Time</b>	****Submission of interim report required by end of week 9
<b>Week 10/11 – 1.5 hour Lecture and 1.5 hour group lab time</b>	<b>Team Organization:</b>	
<b>Week 12/13 – 1.5 hour Lecture and 1.5 hour group lab time</b>	<b>Professionalism, Moral Reasoning and Ethics</b>	
<b>Week 14/15 – 3 hour group lab time</b>	<b>Computer Labs and Shop Time</b>	
<b>Week 16 – 4 hour group Presentations</b>		Posters and final Reports to be completed by the beginning of week 16