

Course Outline

1. COURSE INFORMATION			
Session Offered	Winter 2024		
Course Name	Capstone Design Project I		
Course Code	PROCTECH 4TR1 - C02		
Date(s) and Time(s) of lectures	Monday 3:30PM - 6:20PM		
Program Name	Automation System Engineering Technology		
Calendar Description	This course requires students to research, design, develop and implement an independent project. The project plan and a model developed will be documented as a technical report and presented in a seminar.		
Instructor(s)	Dr. Tom Wanyama, P. Eng	E-Mail: wanyama@mcmaster.ca Office Hours & Location: Thursday 10:30 PM – 12:30 PM, ETB 516	
2. COURSE SPECIFICS			
Course Description	Students will work in groups of 2 or 3 to design and develop a plan to implement a technical project. By the end of the course, the students will have produced a detailed technical report describing the techniques, equipment, and timeline, among other aspects, to achieving their proposed technical implementation. The students will have weekly lab time dedicated to brainstorming design, and hardware/software experimentation and testing. The technical report will serve as a guide for the implementation of their final project which will commence in the second part of the course, PROC TECH 4TR3.		
Instruction Type	Code	Type	Hours per term
	C	Classroom instruction	
	L	Laboratory, workshop or fieldwork	26
	T	Tutorial	13
	DE	Distance education	
		Total Hours	39
Resources	ISBN	Textbook Title & Edition	Author & Publisher
	ISBN: N/A	N/A	N/A
	Other Supplies	Source	
	General information	Avenue to Learn , http://avenue.mcmaster.ca	
Prerequisite(s)	GENTECH 3MT3, PROCTECH 3CE3, 3MC3, 4SS3 and 3SD3 or SMRTTECH 3DE3 and registration in level IV of Automation Engineering Technology		
Corequisite(s)	None		
Antirequisite(s)	None		
Course Specific Policies	<ul style="list-style-type: none"> • Laboratory Organization: Students must clean up their work (table) station after the lab. Leaving equipment connected to the PC or powered, leaving cables lying on the floor, and leaving chairs not pushed under the table will result in a loss of 2 marks out of the 40 Logbook, Weekly Team Meetings, and participation. 		

- Attendance is mandatory. Failure to attend will result in course grade deduction or course failure if more than two sessions are missed.
- Each student will keep a log of work performed each week outside and inside the lab/classroom. The logbook will have the following information: project progress as compared to the plan, what tasks were accomplished and what was learned. The logbook will also contain any suggestions that were made and any action taken on them. The logbook must be signed by your instructor every week. The logbook will be used to assess the amount of work done outside the classroom environment as well as **your contribution to the project**. The logbook will also be assessed based on how much of its content is in the project plan presentation and in the project report. The logbook will be submitted to the instructor at the end of the semester along with your final report. A mark of 0% will be assigned for the logbook component of the assessment if a logbook is not submitted. **The logbook must be in a form of a physical book, typed work will not be accepted.**
- It is expected that each student will work on their project outside the assigned classroom/lab time. In this course, for every classroom hour spent, students are expected to spend three hours on “out of class” work. These activities will be recorded in the logbook as described above.
- Each student will submit two one-page self-assessments reports covering their performance and any areas for growth during the project. The student should reflect on the strengths, weaknesses, values, and accomplishments.
- Class presentations will be made by each group.
- Each group of students will submit a Mid Term Report which will include project design concepts & their viability, project background and plan, list of items with supplier names and prices for ordering, and other required items.
- Each group will submit a one-page sustainability report indication aspects such as the reusability and recyclability of the project's end-product, as well as the extent to which components have been sourced from previous projects. Student should explain how they considered and addressed the environmental impact of their project.
- Each group of students will submit a Final Report at the end of the semester. The evaluation of this report will be based on:
 - a) Project plan and system design, technical content, depth and comprehension, originality, mathematical and prototype models, model demonstration, technical calculations, economic analysis.
 - b) Background, report structure & format, written communication skills.
 - c) Literature references (internet, text & reference books, reports, and original journals).
 - d) Contribution by each group member.

	<ul style="list-style-type: none"> • Each group will present their project plan to the class and, possibly, industrial judges. The evaluation will be based on the project concept, its viability, technical depth, and results. This activity will occur in the 13th week of the semester. • Final written report and logbook must be submitted before the due time which will be indicated on A2L. • The late reports will result in 10% loss of marks per day, to a maximum of 5 days (including weekends and holidays), after which the report will receive a mark of zero.
<p>Departmental Policies</p>	<p>Students must maintain a GPA of 3.5/12 to continue in the program.</p> <p>In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of “out-of-class” work for every scheduled hour in class. “Out-of-class” work includes reading, research, assignments and preparation for tests and examinations.</p> <p>Where group work is indicated in the course outline, such collaborative work is mandatory.</p> <p>The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.</p> <p>Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.</p> <p>Instructor has the right to submit work to software to identify plagiarism.</p>
<p>3. SUB TOPIC(S)</p>	
<p>Week 1: Jan 8 - 12</p>	<p>Introduction, Project Choices</p>
<p>Week 2: Jan 15 - 19</p>	<p>Project Selection, Project Work, Submission of Preliminary Project Proposals</p>
<p>Week 3: Jan 22 - 26</p>	<p>Review of Preliminary Project Proposals, In-class Presentation of Project Planning/Ideation</p>
<p>Week 4: Jan 29 - Feb 2</p>	<p>Continued In-class Presentation of Project Planning/Ideation, Project Work</p>
<p>Week 5: Feb 5 - 9</p>	<p>Group Discussion, Project Work</p>
<p>Week 6: Feb 12 - 16</p>	<p>Group Discussion, Project Work</p>
<p>Week 7</p>	<p style="text-align: center;">Midterm Recess: February 19 - 23</p>
<p>Week 8: Feb 26 - Mar 1</p>	<p>Mid Term Presentation, Mid Term Report Submission and Review, Project Work</p>
<p>Week 9: Mar 4 - 8</p>	<p>Group Discussion, Project Work</p>
<p>Week 10: Mar 11 - 15</p>	<p>Group Discussion, Project Work</p>
<p>Week 11: Mar 18 - 22</p>	<p>Group Discussion, Project Work</p>
<p>Week 12: Mar 25 - 29</p>	<p>Project Work</p>
<p>Week 13: Apr 1 - 5</p>	<p>Project Work</p>

Week 14: Apr 8-10	Final Presentation, Final Report Submission and Review	
<p style="text-align: center;">Classes end: Wednesday, April 10th 2024</p> <p style="text-align: center;">Final Examination Period: Friday, April 12 to Saturday, April 25 All examinations MUST be written during the scheduled examination period.</p>		
<p>Note that this structure represents a plan and is subject to adjustment term by term. The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. <i>This lecture schedule is based upon current university and public health guidelines and may be subject to changes during the term. Any changes to the schedule or course delivery will be communicated on the course announcements section on Avenue to Learn. Please check the announcements prior to attending class.</i></p>		
4. ASSESSMENT OF LEARNING *including dates*		Weight
Initial Presentation and Proposal of Project Planning (week 3 or 4)		10%
Mid-term Report and Presentation (week 7)		15%
Logbook (10%), two individual self-assessment reports (20%), and a group sustainability report (10%)		40%
Final Project Plan Presentation (week 13)		15%
Final Report		20%
TOTAL		100%
<p>Percentage grades will be converted to letter grades and grade points per the University calendar.</p>		
5. LEARNING OUTCOMES		
<p>1. Design a technical project with real-world applications using sensors, actuators, computers or microprocessors with accompanied software logic and user interface.</p>		
<p>2. Test the hardware and software components of the proposed design to evaluate its feasibility for implementation using the provided laboratory equipment and time line.</p>		
<p>3. Understand the importance and necessity of team building and project management for complicated technical designs.</p>		
<p>4. Generate technical reports and proposals to illustrate design plans using sophisticated and accurate technical language in appropriate report formats.</p>		
<p>5. Deconstruct a technical problem into its constituent parts to systematically solve issues and incrementally move towards achieving an objective.</p>		
<p>6. Judge the relevance of a design for its practicality and necessity in real-world applications.</p>		
<p>7. Create clear and coherent presentation slides to illustrate the basic design features of the technical report. Also clearly communicate and verbalize the proposed concepts of the design.</p>		
6. COURSE OUTLINE – APPROVED ADVISORY STATEMENTS		
ANTI-DISCRIMINATION		
<p>The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.</p>		
<p>http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf</p>		
ACADEMIC INTEGRITY		

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. It is your responsibility to understand what constitutes academic dishonesty.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty: The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

AUTHENTICITY / PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com, please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

COMMUNICATIONS

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University

communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.

- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.
- Check the McMaster/Avenue email and course websites on a regular basis during the term.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, whether in person or online.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests. <http://www.mcmaster.ca/policy/Students-AcademicStudies/Studentcode.pdf>

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, including lectures by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.