

## Course Outline

### 1. COURSE INFORMATION

<b>Session Offered</b>	Fall 2017	
<b>Course Name</b>	Capstone Design Project	
<b>Course Code</b>	PROCTECH4TR3	
<b>Date(s) and Time(s) of lectures</b>	C01 – Thursday: 8:30 AM – 12:30 PM C02 – Thursday: 4:30 PM – 8:30 PM C03 – Thursday: 12:30 PM – 4:30 PM	
<b>Program Name</b>	Process Automation Technology	
<b>Calendar Description</b>	This course is a continuation of Technical Project I and it requires students to conduct further research, modify/refine project design, develop and implement the independent project proposal submitted as a part of the Technical Project I course. The project will be documented as a technical report and presented in a seminar.	
<b>Instructor(s)</b>	C01: Zhen Gao  C02: Tom Wanyama  C03: Mostafa Soliman	<i>E-Mail:</i> gaozhen@mcmaster.ca <i>Office Hours &amp; Location:</i> ETB/206 Tuesday 8:30 AM – 11:00 AM Thursday 3:30 PM – 4:30 PM Friday 12:30 PM – 4:30 PM <i>E-Mail:</i> wanyama@mcmaster.ca <i>Office Hours &amp; Location:</i> ETB/206 Thursday 12:30 PM – 2:30 PM <i>E-Mail:</i> solimm12@mcmaster.ca <i>Office Hours &amp; Location:</i> ETB/203 Monday: 3:00pm – 5:00pm Friday: 11:00am – 1:00pm

### 2. COURSE SPECIFICS

<b>Course Description</b>	<p>The main objective of this course is to teach students the concept of design optimization and implementation. The course is a continuation of Technical Project I and it requires the application of the knowledge gained in earlier courses to the design and implementation process. The familiarize students with the engineering design and implementation process, including:</p> <ul style="list-style-type: none"> <li>• System definition, synthesis, analysis.</li> <li>• Improve communication skills.</li> <li>• Promote organizational skills.</li> </ul> <p>Furthermore the course stresses the importance of other influences on design and implementation such as economics, reliability, performance, safety, ethics and social impacts.</p>		
<b>Instruction Type</b>	<b>Code</b>	<b>Type</b>	<b>Hours per term</b>
	C	Classroom instruction	
	L	Laboratory, workshop or fieldwork	36
	T	Tutorial	12
	DE	Distance education	
	<b>Total Hours</b>		48
<b>Resources</b>	<b>ISBN</b>	<b>Textbook Title &amp; Edition</b>	<b>Author &amp; Publisher</b>

	ISBN:	NA	
	Other Supplies	Source	
<b>Prerequisite(s)</b>	PROCTECH 4TR1 , 4IC3 , 4IT3 ; ENG TECH 4EE0 and registration in level IV of Process Automation Technology.		
<b>Corequisite(s)</b>			
<b>Antirequisite(s)</b>			
<b>Course Specific Policies</b>	<ol style="list-style-type: none"> <li>1. Each student will submit a Mid Term Report. The Mid Term report is required by the end of week 6 in the semester. The list of items that need ordering, if it all at this time should be submitted ASAP. The report should have the structure that would form the basis of the final report. Any change in the project scope as outlined in the 4TR1 course should be clearly identified.</li> <li>2. Each student will submit a Final Report* at the end of the semester. The evaluation of this report will be based on :a) project plan, its implementation and accomplishments,, technical content, depth and comprehension, originality, working demonstration, and problem solving skills; b) background, report structure &amp; format, &amp; written communication skills; and c) literature references (internet, text &amp; reference books, reports, &amp; original journals).</li> <li>3. Each student will present their project report to the class. The actual date for the presentation shall be communicated during the semester.</li> <li>4. Each student shall develop a plan for executing their part of the project. This plan shall be included in their learning portfolio that they shall post on Avenue-to-Learn by the end of the send week of the semester. In addition, each student will keep a log of work performed each week outside and inside the lab/class room. This task will be carried out in a hard covered record book used only for this course. The log book will have the following information: project progress as compared to the plan, what tasks were accomplished and what was learned. The log book will also contain any suggestions that were made and any action taken on them. This log will be submitted to your Prof. at the end of the semester along with your final report.</li> <li>5. It is expected that each student will also work on their project outside the assigned class room/lab time. These activities will be recorded in the logbook as described above.</li> <li>6. Without use of log book the final report will not be accepted.</li> <li>7. Each group shall make a short video of the project implementation. The video shall demonstration the operation of the implemented device. It shall not be longer than 3 minutes and it shall be played as part of the presentation.</li> <li>8. Late reports will result in 5% loss of marks per day. Submissions later than 10 days will be given a mark of zero.</li> <li>9. The departmental Safety Policy will be followed by the students while working in the lab.</li> </ol> <p>*The submitted reports after grading will become the property of the department and will not be returned to the students. The student will be able to view them after grading.</p>		
<b>Departmental Policies</b>	<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.</p>		

	<p>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>
<b>3. SUB TOPIC(S)</b>	
Week 1	Project Work & Consultation
Week 2	Project Work & Consultation
Week 3	Project Work & Consultation
Week 4	Project Work & Consultation
Week 5	Project Work & Consultation
Mid-term Recess: Monday, October 9 to Sunday, October 15, 2017	
Week 6	Project Work & Consultation, Midterm Report
Week 7	Project Work & Consultation
Week 8	Project Work & Consultation
Week 9	Project Work & Consultation
Week 10	Project Work & Consultation
Week 11	Project Work & Consultation
Week 12	Project Presentation
<p>Classes end: Wednesday, December 6, 2017</p> <p>Final examination period: Friday, December 8 to Thursday, December 21, 2017</p> <p>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.</p> <p>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.</p>	
<b>4. ASSESSMENT OF LEARNING *including dates*</b>	
Project Plan	10%
Mid Term Report	10%
Logbook	10%
Project Presentation	10%
Video Demonstration	10%
Final Report	50%
<b>TOTAL</b>	<b>100%</b>
Percentage grades will be converted to letter grades and grade points per the University calendar.	
<b>5. LEARNING OUTCOMES</b>	
1. Construct a technical project with real-world applications using sensors, actuators, computers or microprocessors with accompanied software logic and user interface.	
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.

3. Work in teams of three (or two or four under certain circumstances) to achieve a more sophisticated design than is possible working individually.
4. Understand the importance and necessity of team building and project management for complicated technical designs.
5. Generate technical reports and proposals to illustrate design plans using sophisticated and accurate technical language in appropriate report formats.
6. Deconstruct a technical problem into its constituent parts to systematically solve issues and incrementally move towards achieving an objective.
7. Judge the relevance of a design for its practicality and necessity in real-world applications.
8. Create clear and coherent video/slides presentation to illustrate the basic design features of the final implementation. Clearly communicate and verbalize the concepts of the design and its operation

## 6. POLICIES

### Anti-Discrimination

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.

[http://www.mcmaster.ca/policy/General/HR/Discrimination\\_Harassment\\_Sexual\\_Harassment-Prevention&Response.pdf](http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf)

### Academic Integrity

You are required to exhibit honestly and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

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.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, located at: <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf>.

The following illustrates only three forms of academic dishonesty:

1. Plagiarism. E.g. the submission of work that is not own or for which other credit has been obtained
2. Improper collaboration in group work
3. Copying or using unauthorized aids in tests and examinations.

### Requests for Relief for Missed Academic Term Work (Assignments, Mid-Terms, etc.)

The McMaster Student Absence Form is an on-line self-reporting tool for Undergraduate Students to report absences for:

- 1) Relief for missed academic work worth less than 25% of the final grade resulting from medical or personal situations lasting up to three calendar days:
  - Students may submit a maximum of one academic work missed request per term. It is the responsibility of the student to follow up with instructors immediately (within the 3 day period that is specified in the MSAF) regarding the nature of the accommodation. All work due in that time period however can be covered by one MSAF.
  - MSAF cannot be used to meet religious obligation or celebration of an important religious holiday, for that has already been completed or attempted or to apply for relief for any final examination or its equivalent.
- 2) For medical or personal situations lasting more than three calendar days, and/or for missed academic work worth 25% or more of the final grade, and/or for any request for relief in a term

where the MSAF has not been used previously in that term:

- Students must visit their Associate Dean's Office (Faculty Office) and provide supporting documentation.

### **E-Learning Policy**

Consistent with the Bachelor of Technology's policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue To Learn for this course. Materials will be posted by class for student download. It is expected that students will avail themselves of these materials prior to class. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail account, and program affiliation may become apparent to all other students in the course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about this disclosure please discuss this with the course instructor. Avenue can be accessed via <http://avenue.mcmaster.ca>.

### **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.

### **Turnitin (Optional)**

This course will be using a web-based service (Turnitin.com) to reveal plagiarism. Students submit their assignment/work electronically to Turnitin.com where it is checked against the internet, published works and Turnitin's database for similar or identical work. If Turnitin finds similar or identical work that has not been properly cited, a report is sent to the instructor showing the student's work and the original source. The instructor reviews what Turnitin has found and then determines if he/she thinks there is a problem with the work. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to <http://www.mcmaster.ca/academicintegrity/turnitin/students/>

### **Protection of Privacy Act (FIPPA)**

The Freedom of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades and all other personal information at all times. For example, the submission and return of assignments and posting of grades must be done in a manner that ensures confidentiality.

<http://www.mcmaster.ca/univsec/fippa/fippa.cfm>

### **Academic Accommodation of Students with Disabilities Policy**

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail [sas@mcmaster.ca](mailto:sas@mcmaster.ca). For further information consult McMaster's policy for Academic Accommodation of Students with Disabilities

<http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

Students must forward a copy of the SAS accommodation to the instructor of each course and to the

Program Administrator of the B.Tech. Program immediately upon receipt. If a student with a disability chooses NOT to take advantage of a SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. <http://sas.mcmaster.ca>

### **Student Code of Conduct**

The Student Code of Conduct (SCC) exists to promote the safety and security of all the students in the McMaster community and to encourage respect for others, their property and the laws of the land. McMaster University is a community which values mutual respect for the rights, responsibilities, dignity and well-being of others. The purpose of the Student Code of Conduct is to outline accepted standards of behavior that are harmonious with the goals and the well-being of the University community, and to define the procedures to be followed when students fail to meet the accepted standards of behavior. All students have the responsibility to familiarize themselves with the University regulations and the conduct expected of them while studying at McMaster University.

<http://judicialaffairs.mcmaster.ca/pdf/SCC.pdf> and <http://www.mcmaster.ca/policy/Students-AcademicStudies/StudentCode.pdf>