ENGPHYS 4A06
Design & Synthesis Project
Undergraduate Studies
Fall/Winter 2020/21
Course Outline

Current as of Mon 2020-08-31 23:54:19; see the course Forum for the most up-to-date version of this document

CALENDAR/COURSE DESCRIPTION

Engineering design capstone project synthesizing undergraduate Engineering Physics knowledge to select a meaningful real-world problem, and engineer a solution by mathematically modelling the impact of design decisions and implementing them physically as part of an engineering team.
Two labs (three hours each), one capstone project; both terms

PRE-REQUISITES AND ANTI-REQUISITES

Prerequisite(s): Registration in the final level of an Engineering Physics program
Antirequisite(s): IBEHS 4P06

INSTRUCTOR OFFICE HOURS AND CONTACT INFORMATION

Dr. Matt Minnick
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ext. 24546

Office Hours:
All the time asynchronously via the course forum
Live via course forum during class time
Use the forum! :-)

TEACHING ASSISTANT OFFICE HOURS AND CONTACT INFORMATION

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LAB TECHNICIAN

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COURSE WEBSITE/ALTERNATE METHODS OF COMMUNICATION

Course Forum: Microsoft Teams

COURSE INTENDED LEARNING OUTCOMES

By the end of 4A06 you will be able to:

1. **Link your undergrad theoretical knowledge to the real world** and **apply it to CDIO** (conceive, design, implement, and operate) **a physical device through an engineering design process**, including:
    a. Finding a real-world problem and conceiving of a solution to it, as well as the specifications required by that solution,
    b. Designing your solution through mathematical/physical modelling and incorporating engineering design principles,
    c. Implementing your design through iterations and rigorous testing, and
    d. Operating a device that solves the problem at the required specifications.
2. Work effectively in a team engineering work environment, including:
    a. Demonstrating commitment to your team's objectives through punctuality, attendance, accountability, and positive engagement with the project,
    b. Completing individual and team deliverables within both external and internal time constraints,
    c. Giving constructive team member feedback,
    d. Using team member feedback about yourself to improve, and
    e. Fostering a healthy working environment with your team.
3. Communicate information about your inventions in a modern engineering world, including
    a. In technical reports which document your engineering design process (PSRs and technical reports),
    b. In technical seminars (live demos),
    c. In a tradeshow format (expo),
    d. Via social media (creating a YouTube video presentations), and
    e. To yourself and a mentor via reflection on personal performance and skill development.

In order to achieve maximum success, you are encouraged to become a person who takes pride in knowing things and takes the initiative to learn things even when no one tells you to.

MATERIALS AND FEES

As-needed for development of your specific project. For standard projects up to $650 of department reimbursement funding is available for supplies per group. This is only available at the end of the course (i.e., in April), and only with presentation of receipts (so please keep your receipts!) Interested groups may optionally select more ambitious projects than this allows and in those cases are especially encouraged to work with a client who can provide extra reimbursement funds and/or enter design competitions to help fund their project.

COURSE FORMAT AND EXPECTATIONS

Capstone this year is in an entirely remote learning format. Students will work as engineering consulting teams of 3-5 (ideally 4) with their classmates on a project of their choosing that satisfies a client need. The client could be a professor looking for equipment or tools for their research lab, an industry member, a community member, or a hypothetical client (in which case the course instructor will act as client for the team). Students will complete project proposals and design work approved by the client.
Following project and design work approval, the client's contractor (which could be an external fabrication facility, Peter Jonasson and/or other McMaster technical staff, or even the student team themselves if possible & preferred) will help create and test the project prototype. This involves students working on and submitting assembly/manufacturing instructions, and documenting & commenting on the fabrication of the device, followed by documenting testing and the path for future improvements.

Finally, these deliverables are combined into a final report and video presentation to be delivered to independent industry judges at the final expo. In many cases Judges are shared across engineering departments (so the same judge who evaluates CAS & ECE projects would evaluate your projects and judge them by the same benchmarks).

PROJECT DELIVERABLES:

1. Project proposal (Final version should be finished Sep to October)
    a. Sections:
        i. Problem statement: from general aspect provided by owner to specific aspect that group will focus on
        ii. General solution description: merit function to evaluate alternatives and quantify desired solution characteristics
            1. Check that merit fn. satisfies edge cases, scaling, reality checks
        iii. Existing solutions and how they rank up in the merit function
        iv. Proposed project solution and its specs
            1. Check that solution with specs proposed is indeed an improvement given the general solution description
            2. Down to the level of proposed operating instructions to give a clear picture of the final device
            3. Specify instructions for how you'll test the finished device; specs should be observable to the end-user (not internal things)
        v. Proposed engineering design work, mathematical modelling, and breakdown into different aspects for different team-members
            1. Divide specs into different aspects: clear boundaries between them, clear specs for information that's passed from one aspect to the next.
    b. Needs owner approval that it makes sense and is what they're looking for in a solution
    c. Needs course admin approval (your TA & instructor). Course admin may reject a project for a variety of reasons, including but not limited to:
        i. the work breakdown is unfair and does not give enough design responsibility to each team-member,
        ii. the project description is too vague
        iii. the project has major safety issues
        iv. the project is infeasible for capstone given the timeframe and budget available
2. Engineering design work: Mathematical Modelling (Final version should be finished November to December)
    a. Individual; separate section needed for each team-member
    b. Contents:
        i. Literature review
        ii. Mathematical modelling: analyzing how things work / drawing conclusions
        iii. Engineering design decisions: justify everything; even if you chose the default, explain why it's appropriate. Optimize.
        iv. Can aid work with simulation results to make decisions
        v. Includes descriptions of final design for submitting to owner for approval that yes, this is what they wanted.
        vi. Needs to receive a passing grade for all team-members for them to progress and pass the course.
3. Assembly (manufacturing) instructions (Final version should be finished December to January)
    a. This section is submitted to the contractor

   b. Contents:
      i. Parts list;
      ii. machining drawings with all tolerances for manufactured components
      iii. Code to upload and instructions for doing so
   c. Contractor evaluates and gives feedback, asks questions.
4. Testing (Final version should be finished January to March)
   a. Initial testing instructions
      i. for contractor to carry out
      ii. Contractor carries out tests, provides feedback / results
   b. Reflection on test results; proposed path forward
   c. Second phase of debugging instructions / edits / rebuilds and new tests
      i. contractor carries out and provides results
   d. Team writes final results and reflection on status of how well it works, and path forward for future improvements
5. Expo (April)
   a. final report collects deliverables from the course into a single final document.
   b. Video presentation explaining the device's intent, engineering, current performance, and future improvements
   c. industry judges view video, have access to report to look at, and ask team questions to assess them.
   d. Using the same format for expo as rest of engineering, and in some cases, common judges across the faculty.

Notes: drafts of updates to individual parts (or subparts, or sub-subparts, etc.) of these deliverables are due weekly. You need to have each document approved (or approved with minor revisions) by your client or contractor (if applicable) and your TA prior to making progress on the next one.

COURSE SCHEDULE

Date	Homework Due	Rough Project Target
Mon 7 Sep		
Wed 9 Sep		
Fri 11 Sep	S1	Group Selection due (forum post)
Mon 14 Sep	Draft	Drafting partial project ideas
Wed 16 Sep	Review	
Fri 18 Sep	PSR	
Mon 21 Sep	Draft	Drafting complete project ideas
Wed 23 Sep	Review	
Fri 25 Sep	ITP	
Mon 28 Sep	Draft	Video pitches explored
Wed 30 Sep	Review	

Date	Homework Due	Rough Project Target
Fri 2 Oct	PSR	
Mon 5 Oct	Draft	Project Finalized
Wed 7 Oct	Review	
Fri 9 Oct	ITP	
Mon 12 Oct	***Midterm Recess***	
Wed 14 Oct		
Fri 16 Oct		
Mon 19 Oct	Draft	Working on Mathematical modelling
Wed 21 Oct	Review	
Fri 23 Oct	PSR	
Mon 26 Oct	Draft	Project name, logo,& description finalized
Wed 28 Oct	Review	
Fri 30 Oct	ITP	
Mon 2 Nov	Draft	
Wed 4 Nov	Review	
Fri 6 Nov	PSR	
Mon 9 Nov	Draft	Finalizing Design
Wed 11 Nov	Review	
Fri 13 Nov	ITP	
Mon 16 Nov	Draft	Project pitch video done; start taking dev footage if applicable
Wed 18 Nov	Review	
Fri 20 Nov	PSR	
Mon 23 Nov	Draft	Working on assembly instructions
Wed 25 Nov	Review	
Fri 27 Nov	ITP	
Mon 30 Nov	Draft	
Wed 2 Dec	Review	
Fri 4 Dec	PSR	
Mon 7 Dec	Draft	Send at lest first draft of assembly instructions to Contractor
Wed 9 Dec	Review	**Last day of class term 1**
	Exams & Winter Break	
Fri 8 Jan	ITP & S2	

Date	Homework Due	Rough Project Target
Mon 11 Jan	Draft	Finalizing assembly instructions
Wed 13 Jan	Review	
Fri 15 Jan	PSR	
Mon 18 Jan	Draft	
Wed 20 Jan	Review	
Fri 22 Jan	ITP	
Mon 25 Jan	Draft	*Working on Testing*
Wed 27 Jan	Review	
Fri 29 Jan	PSR	
Mon 1 Feb	Draft	
Wed 3 Feb	Review	
Fri 5 Feb	ITP	
Mon 8 Feb	Draft	*Iterarate on project in light of testing*
Wed 10 Feb	Review	
Fri 12 Feb	PSR	
Mon 15 Feb	***Midterm Recess***	
Wed 17 Feb		
Fri 19 Feb		
Mon 22 Feb	Draft	
Wed 24 Feb	Review	
Fri 26 Feb	ITP	
Mon 1 Mar	Draft	Finalizing testing reflections
Wed 3 Mar	Review	
Fri 5 Mar	PSR	
Mon 8 Mar	Draft	Writing future work
Wed 10 Mar	Review	
Fri 12 Mar	ITP	
Mon 15 Mar	Draft	Final video done
Wed 17 Mar	Review	
Fri 19 Mar	PSR	
Mon 22 Mar	Draft	Final report done
Wed 24 Mar	Review	
Fri 26 Mar	ITP	
Mon 29 Mar	Draft	
Wed 31 Mar	Review	
Fri 2 Apr	PSR	

Date	Homework Due	Rough Project Target
Mon 5 Apr	Project Due	
Wed 7 Apr		
Thu 8 Apr	Expo	Capstone expo, 10 AM - 4PM
Fri 9 Apr	S3 + Final Self & Peer Assessment	

ASSESSMENT

Schedule-Driven Grading (see "Weekly Deliverables"): 50%
Expo (see "Expo Industry Judging Rubric"): 50%

EXPO INDUSTRY JUDGING RUBRIC

Judges will assess your group's expo deliverables (report, video, presentation & questions) using the following metrics:

Originality
1. Originality: Novelty of the project object (vs. review of the known or existing). 1-5
2. What is the significance of the portion of the project designed/constructed by the students as opposed to purchased/acquired? 1-5
[Optional] Comments: _____

Presentation
1. Organization: Clear and logical flow of project overview. Poster should address Introduction, analysis, design, testing, and conclusion. 1-5
2. Knowledge of Subject: Background knowledge, clarity of explanations, clarity and brevity of answers to questions. 1-5
3. Visual Impact: Effectiveness of the visual presentation of project. 1-5
4. Illustrative Material: Demonstration of results, choice and perfection of illustrative material. 1-5
5. Clarity of Project: Clarity, grammar and spelling, match between the poster and audience. 1-5
[Optional] Comments: _____

Technical Content
1. Technical Level: Project's overall complexity – Industrial technology or University level (vs. Technical College or Technical School level). 1-5
2. Analytical Competence: Quantitative approach, use of calculus, numerical calculations, plotting and graphing. 1-5
3. Design Complexity: Evaluate the depth and breadth of design abstraction and creativity of solution. 1-5
4. Functionality: Results of testing, reliability, portability, etc. 1-5
[Optional] Comments: _____

Overall Impression
Considering all aspects (the importance and clarity of the project objective, the creativity, applicability, and success of the solution, and the quality and quantity of the engineering the team did to achieve it), rate the overall quality of this engineering capstone project as-presented

__/100
[Optional] Comments: _____

Independent Learning
Be able to critically evaluate and apply knowledge, methods and skills procured through self directed and self identified sources, including those that lie outside the nominal course curriculum.
Below Expectations (1) – Students made no independent effort to acquire significant outside skills/knowledge.
Marginal (2) – Students were able to identify appropriate sources for information, but did not acquire or apply them
Meets Expectations (3) – Students acquired a significant skill in one area outside normal curriculum and identified appropriate sources.
Exceeds Expectations (4) – Students acquired more than one significant skill in more than one area independently.
[Optional] Comments: _____

Depending on the project, you may take more or less time on various stages of this (e.g., some projects could have more extreme mathematical modelling less physical assembly).

Note: The expo is Thursday April 8th 2021 from 10AM-4PM.

WEEKLY DELIVERABLES

The project deliverables are on a long timeline, often requiring significant iteration and behind-the-scenes work to make happen. To help you gradually progress towards them, every week you will submit 3 things:

1. [Monday] A "next draft" of whatever project deliverable (or any level of subcomponent of it etc.) you'd like feedback on
2. [Wednesday] A review with suggestions for improvements of a peer's "next draft"
3. [Friday] Alternates between:
    a. A project status update
        i. What progress did you make for the project over the past two weeks?
        ii. Where is the project relative to its timeline?
        iii. What are your plans for the next two weeks to move it forward?
    b. ITP Metrics Peer Assessment (see "Purpose of Peer Feedback" below)
        i. If you had $100 to divide up between group members (and yourself) this week based on their progress, how much would you give to each?

Except for the ITP metrics peer assessment which is private (but seen anonymously by your groupmembers after you submit it), all deliverables are submitted publicly to the course forum as thread replies. All grading is pass/fail, where a pass is awarded if you submit the deliverable with due-diligence (not necessarily perfectly, but you've made an honest attempt at it) by the deadline.

You start at 100% in this category, and every missed deadline is after the first one (one automatic freebie; so no MSAF needed here, save it for another course because you're getting this one for free) is a 3% grade deduction (because this mark category is worth 50% of your final grade, losing 3% on it is equivalent to losing 1.5% of your final grade).
Exception 1: problems happen. If you submit something late (except where given an extension by an MSAF) you can either take the grade reduction (it's not the end of the world!) or work to overcome what went wrong that time and make up for it in the future by being at least 3 times as early as you were late on each of the next 3 deliverables

(the onus is on you to demonstrate this via appropriate screenshots etc. if you'd like to take advantage of this option).
Exception 2: We reserve the right to increase people's grade if they go above and beyond and submit truly outstanding work on a deliverable.

Notes: ideally you'll use GANTT charts to show where you are wrt being on-track or not, but you don't lose marks for not being on-track - this is because being behind isn't solved with mark loss but with secondary coaching and discussions, so it's more important to be honest about your project status and challenges.

You'll be responsible for scheduling regular meetings / correspondence with your client and TA throughout this process:

1. At least bi-weekly correspondence with your client as a group to prep for PSRs,
2. At least bi-weekly correspondence with your TA as a group to take up PSRs,
3. At least monthly one-on-one meetings with your TA to discuss the project and address any group dynamic issues or concerns.
    a. In urgent situations, you should feel free to schedule additional meetings with your TA, instructor, or client to address any of these points.

PURPOSE OF PEER FEEDBACK

The peer feedback is done for the following two main goals:

1. Encourage everyone to try. Prevent people from not contributing fairly and leaving everything to their group.
2. Help you find out where you could improve by getting honest feedback.

Because these goals depend on honesty, and honesty is impaired if you feel it would hurt your groupmembers' marks and you still need to work with them, these aren't tied to marks in any way. The numerics in the peer assessments (e.g., the dollar amount) are used as starting places for your own group discussions on how you can each improve. Only in extreme cases where someone is not contributing to a project will the course teaching team take remedial action, starting with a conversation with the group around what needs to happen to course-correct, and only if that doesn't happen will members who are not contributing risk being removed from the group and required to start their own project.

BONUS DELIVERABLES

Some optional things you could consider in the course are big boosts to your portfolio for the purpose of getting a job, and definitely good ways to make yourself score better with the industry judges at the end of the year. These include (but aren't limited to):

1. Being a finalist or winner of external design competitions (e.g., MEC / OEC / CEC, The Forge's Pitch Competition & Student Start-up Competition, Lion's Lair & Python's Pit, etc.)
2. Writing and Publishing Journal Articles of optimizations / extensive simulations etc. in the course of your design,
3. Filing Provisional Patents
4. Securing Industry Funding Partnerships / Other Investors for your project

Besides these intangible benefits of making your project look a lot better at the end of the year (and as you move beyond and apply for jobs), and the tangible benefits of these (in terms of prize / start-up money, patents, etc.),

work done towards these above and beyond the course deliverables can in some cases be used to make up for a missed deadline on a weekly deliverable.

ACCREDITATION LEARNING OUTCOMES

The Learning Outcomes defined in this section are measured for Accreditation purposes only and will not be directly taken into consideration in determining a student's grade in the course.

Outcomes	Indicators
Applies appropriate knowledge of math in engineering work	01.1 - Competence in Mathematics
Applies appropriate knowledge of natural science foundations in engineering work	01.2 - Competence in Natural Sciences
Applies appropriate knowledge of engineering science foundations in engineering work	01.3 - Competence in Engineering Fundamentals
Applies appropriate knowledge of specific Eng Phys foundations in engineering work	01.4 - Competence in Specialized Engineering Knowledge
Proposes proper merit functions, specifying constraints in projects	02.1 - Demonstrates an ability to identify reasonable assumptions (including identification of uncertainties and imprecise information) that could or should be made before a solution path is proposed.
Mathematically models solutions in the project in a way that reflects reality	03.2 - Selects appropriate model and methods and identifies assumptions and constraints.
Iterates on design process correcting assumptions to converge on a solution in reality	04.2 - Recognizes and follows engineering design principles including appropriate consideration of environmental, social and economic aspects as well as health and safety issues.
Specifies creative solutions for both choice of and solution to projects	04.3 - Proposes solutions to open-ended problems.
Follows health and safety procedures through design and with its solution	04.5 - Includes appropriate health and safety considerations
Demonstrates a knowledge of appropriate codes and standards applicable	04.6 - Determines and employs applicable standards and codes of practice.
Uses advanced design tools to solve engineering problems of relevance	05.3 - Creates, adapts, modifies and extends tools and techniques as appropriate to solve problems.
Maintains good working conditions in the team throughout the design project	06.2 - Develops and implements processes and methodologies to manage the effectiveness of a team both in terms of the quality of the work produced by the team as well as the inter-personal relationships within the team.
Is able to efficiently and professionally communicate with client throughout the process	07.3 - Constructs effective oral or written arguments as appropriate to the circumstances
Applies design thinking to fit the project into a real-world framework	09.2 - Addresses uncertainties in the prediction of interactions on society and the environment in a structured and transparent manner.
Keeps up with deadlines and budgets	11.2 - Plans and effectively manages time, resources, and scope

Extends knowledge by using undergrad knowledge as not an end, but a springboard on which to look beyond and seek new information as appropriate	12.1 - Critically evaluates and applies knowledge, methods and skills procured through self directed and self identified sources, including those that lie outside the nominal course curriculum.

For more information on Accreditation, please visit: https://www.engineerscanada.ca

EQUITY, DIVERSITY, AND INCLUSION

Every registered student belongs in this course. Diversity of backgrounds and experiences is expected and welcome. You can expect your Instructor to be respectful of this diversity in all aspects of the course, and the same is expected of you.

The Department of Engineering Physics is committed to creating an environment in which students of all genders, cultures, ethnicities, races, sexual orientations, abilities, and socioeconomic backgrounds have equal access to education and are welcomed and treated fairly. If you have any concerns regarding inclusion in our Department, in particular if you or one of your peers is experiencing harassment or discrimination, you are encouraged to contact the Chair, Associate Undergraduate Chair, Academic Advisor or to contact the Equity and Inclusion Office.

PHYSICAL AND MENTAL HEALTH

For a list of McMaster University's resources, please refer to the Student Wellness Centre.

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:

1. plagiarism, e.g. the submission of work that is not one's 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.

COURSES WITH AN ON-LINE ELEMENT

McMaster is committed to an inclusive and respectful community. These principles and expectations extend to online activities including electronic chat groups, video calls and other learning platforms.

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.

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.

COURSE POLICY ON MISSED WORK, EXTENSIONS, AND LATE PENALTIES

It is the students' responsibility to regularly check the course webpage (ATL) and forum for updates and announcements. Under normal circumstances, missed deadlines correspond to a reduction in grade as per the assessment section.

SUBMISSION OF REQUEST FOR RELIEF FOR MISSED ACADEMIC WORK

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".

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:
   - Use the McMaster Student Absence Form (MSAF) on-line self-reporting tool. No further documentation is required.
   - Students may submit requests for relief using the MSAF once per term.
   - An automated email will be sent to the course instructor, who will determine the appropriate relief. Students must immediately follow up with their instructors. Failure to do so may negate the opportunity for relief.
     a. Relief in this course means an extension on the due date of the deliverable(s) by 3 calendar days.
   - The MSAF cannot be used to meet a religious obligation or to celebrate an important religious holiday.
   - The MSAF cannot be used for academic work that has already been completed or attempted.

- An MSAF applies only to work that is due within the period for which the MSAF applies, i.e. the 3-day period that is specified in the MSAF; however, all work due in that period can be covered by one MSAF.
- The MSAF cannot be used to apply for relief for any final examination or its equivalent. See *Petitions for Special Consideration* above.

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 been used previously in that term:
   - Students must report to their Faculty Office to discuss their situation and will be required to provide appropriate **supporting documentation**.
   - If warranted, the Faculty Office will approve the absence, and the instructor will determine appropriate relief.

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.

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.