Western University – Faculty of Engineering

ES1050 Foundations of Engineering Practice

Course Syllabus 2022-2023

Contents

1 Purpose of the Course

At the end of the course students will be able to model professional engineering behaviour and work in teams to execute all parts of a systematic design process, including seeking and critically examining information identifying and addressing knowledge gaps and communicating effectively with clients and other stakeholders.

2 Calendar Description

Introduction to the principles and practices of professional engineering. Team-based design projects provide context for developing research, critical thinking, and problem-solving skills along with professional behaviour. Includes elements of need recognition, conceptualisation, prototyping, and engineering design to satisfy commercial specifications. Emphasis on creativity, teamwork, time management, communication, and engineering skills necessary to practice in any engineering discipline.

Prerequisites: None. Co-requisites: None. Anti-requisites: None.

Weekly Contact Hours: 2 hrs Lecture (Workshop), 2 hrs (Design) Laboratory, 2 hrs Tutorial

CEAB Academic Units: Engineering Design 50%, Engineering Science 25%,
Complementary studies (Teamwork and Oral & Written Communication) 25%

Course Site: https://owl.uwo.ca/portal/site/ace49e30-0e97-430f-b23b-7ec165ed6bc9

Text: No required text. Lecture notes and supporting course information will be posted to OWL or shared through dedicated course MS Team sites. Students will be required to contribute monetarily towards the construction of prototypes for team projects, as necessary.

Reference Material: Suggested readings and resources will be posted to OWL.

Units: Both SI and FPS unit systems may be used in lectures, tutorials, and all assessments.

3 Course Learning Outcomes

The purpose of ES1050 is to teach and develop in students the knowledge and skills necessary to:

- Work in a (multi-disciplinary) team,
- Communicate with all project stakeholders,
- Apply the engineering design process, and
- Creative thinking to resolve open-ended design problems.

Essentially, the Foundations of Engineering Practice.

Reframed in terms of attributes recognised by the Canadian Engineering Accreditation Board, ES1050 teaches and develops the following skills and knowledge (in rough order of emphasis):

1. Design: An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural and societal considerations.
    a. Demonstrate ability to frame a complex, open-ended design problem in engineering terms
    b. Demonstrate ability to generate a diverse set of candidate engineering design solutions
    c. Demonstrate ability to select candidate engineering design solutions for further development
    d. Demonstrate ability to advance an engineering design to a defined end state - completion
2. Individual and Teamwork: An ability to work effectively as a member and leader in teams preferably in a multidisciplinary setting
    a. Demonstrates ability to perform responsibly.
    b. Demonstrate ability to contribute to team goals
    c. Demonstrate ability to evaluate peer and self-performance based on team effectiveness.

3. Communication Skills: An ability to communicate complex engineering concepts within the profession and with society at large. Such ability includes reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.
    a. Demonstrate ability to follow instructions (listening and reading for comprehension).
    b. Demonstrate ability to articulate ideas in writing using appropriate technical language, and effective graphical tools.
    c. Demonstrate the ability to communicate orally using appropriate materials, language, non-verbal communication and effective graphical tools.

Other skills and knowledge will be taught at an introductory level to ensure students are suitably equipped to face the challenges project work entails:

1. Project management: Introduction to Gantt Charts and their application in managing project timelines and deliverables.
2. Engineering Tools: Build foundational capabilities to use:
    a. Excel to organise, process, predict and present data and analysis supporting conclusions or decisions
    b. Onshape to represent, assemble and describe solids or custom objects and assemblies for design review or production
3. Professionalism: An introduction to the professional nature of engineering and its adherence to a code of ethics, accountability, and equity, including responsibility to the society, the environment, and clients.
4. Life-long learning: The ability to recognise a limitation in knowledge or skills and to seek out learning or resources to overcome those limitations.

4 Course Delivery, Workload Expectations and Contact Hours

ES1050 will be delivered in a weekly cycle as a combination of; a 2-hour workshop-style Lecture to learn specific, mostly individual, skills and a 2-hour (design) Lab where student teams work on design projects.

Sections	Description	Expected Time
001-006	Lecture (Workshop-Style) – activity-based / experiential learning – Often requires reviewing material in advance	Prep: 15 min Live: 2 hrs
011-027	(Design) Lab – team-based learning – students will be placed in teams of 5-6 for each term to complete an open-ended design challenge	Prep: ~15 min Live: 2 hrs
031-036	Tutorial Sessions – Fridays 16:30-18:30 – used to hold course related tutorials, timed assessments or by teams to work on their projects.	Live: 2 hrs as required
Weekly	Outside Class – Team design projects and Lecture skills development will require time outside scheduled class periods – requirements strongly correlated to your team organisation and project progress and will thus vary over the year	Study / project work: Avg 2-3 hrs Range of 1-5 hrs/wk
		Total: Avg. ~6 hrs **Range: 4-11 hrs**

Students will be assigned to a) one Lecture section, b) one Lab section and c) one Tutorial Session.

4.1 Lectures (Workshop-Style) (2-hours, Tuesdays, Sections 001-006)

Lectures introduce and develop specific skills required for engineering practice as listed in the Learning Outcomes section above. Skills learned in Lectures are expected to be applied in completing team-based design projects (dominantly worked on in the Labs).

Lectures are delivered in flipped or blended formats. This means **students are frequently expected** to **review online material** and **complete** comprehension assessments or preparatory work **before** the sessions where lesson material is applied or practiced.

If a lockdown occurs, instructors will host the Lecture sessions synchronously online using MS Teams.

4.2 (Design) Labs (2-hours, Sections 011-027)

Laboratories are the primary instructional spaces for teams to work together on their projects with mentorship and guidance provided by their Design Lab Instructors and TAs. Students will be placed into teams of approximately five within the Labs, one team for the Fall and one for the Winter terms. In these teams, students will be required to complete two major design projects over the course of the year and other learning activities.

Face-to-face Lab sessions will be held EVERY WEEK of the year unless otherwise announced. For safety reasons all students will be expected to observe any university health guidelines or mandates. If a lockdown occurs, instructors will host the Lab sessions synchronously online using MS Teams and student Teams will work in their private MS Teams channels with TAs and Instructors joining student meetings online to review progress and challenges.

Student teams are responsible for scheduling working times outside the course schedule to complete any work not completed in Lab sessions.

4.3 Tutorial Sessions

The instructor team will do its best to keep the workload imposed on students by the course reasonable. Friday 16:30-18:30 Tutorials will be used to provide supported time to complete work arising in the week's activities. **Tutorial times will also be used to enable external guests (particularly clients for the Winter project) to address the entire cohort or sections simultaneously.** Tutorials will be scheduled as required and will be announced in advance. Students are EXPECTED to come prepared to Lectures and make effective use of these Tutorials to complete course exercises and build individual skills in a timely fashion.

5 Instructors

Name	Email	Responsibility	Time
Course Coordinator			
Dr. John Dickinson, P.Eng.	jdickin5@uwo.ca	All	
Lecture Instructors		**Workshop**	
Dr. John Dickinson, P.Eng.	jdickin5@uwo.ca	001	Tue 9:30
Dr. Jacob Reeves, EIT	jreeves5@uwo.ca	002	Tue 9:30
Kevin McGuire, P.Eng.	kmcgui5@uwo.ca	003	Tue 14:30
Chris Urbaniak, P.Eng.	chris.urbaniak@uwo.ca	004	Tue 14:30
Chris Urbaniak, P.Eng.	chris.urbaniak@uwo.ca	005	Tue 12:30
Dr. John Dickinson, P.Eng.	jdickin5@uwo.ca	006	Tue 12:30
Lab Instructors		**Sections**	
Dr. Jacob Reeves, EIT	jreeves5@uwo.ca	011	Tu 12:30
Dr. Duane Jacques, EIT	djacque4@uwo.ca	012	Tu 14:30
Joseph Santarelli, M.Eng.	jsantare@uwo.ca	013	We 19:30
Dr. Jon Southen, P.Eng.	jsouthen@uwo.ca	014	Tu 12:30
Dr. Naomi Klinghoffer	nklingh@uwo.ca	015	Tu 14:30
Dr. Gleb Meirson	gmeirson@uwo.ca	016	We 17:30
Chris Urbaniak, P. Eng.	curbani@uwo.ca	017	Th 08:30
Minha Ha, M.A.	mha4@uwo.ca	018	Th 10:30
Dr. Emily Lalone, EIT	elalone2@uwo.ca	019	Th 13:30
Dr. John Dickinson, P.Eng.	jdickin5@uwo.ca	020	Th 08:30
Dr. Jon Southen, P.Eng.	jsouthen@uwo.ca	021	Th 18:30
Dr. John Dickinson, P.Eng.	jdickin5@uwo.ca	022	Th 13:30
Ibrahim Ibrahim, EIT	iibrah6@uwo.ca	023	We 19:30
Dr. Angela Mawdsley, P. Eng.	amawdsl@uwo.ca	024	Th 18:30
Minha Ha, M.A.	mha4@uwo.ca	025	Tu 19:00
Safwat Ramadan, P.Eng.	sramada6@uwo.ca	026	Tu 19:00
Dr. Duane Jacques, EIT	djacque4@uwo.ca	027	Th 10:30
Joseph Santarelli, M.Eng.	jsantare@uwo.ca	028	We 17:30
Ibrahim Ibrahim, EIT	iibrah6@uwo.ca	029	Tu 19:00
Safwat Ramadan, P.Eng.	sramada6@uwo.ca	030	Th 8:30

Individual Lab Instructors will advise as to additional office hours.

Section scheduling details can be found at:
https://studentservices.uwo.ca/secure/timetables/mastertt/ttindex.cfm

6 Course Resources, Forums and Virtual Platforms

6.1 Learning Resources

Students will regularly use the following course resources/platforms:

OWL Course Site	• Navigate the course including the upcoming course schedule (calendar tool) • Release all course announcements • Access pre-Lecture lessons, activities, and quizzes and post-Lecture activities • Get and individual and team assignments • Access support materials for Lectures, design projects, and the Labs.
Microsoft Teams	• Receive instructional content for Lab activities • Collaborate (meet, share files, message …) on team projects • Attend Lecture and Lab Sessions if they have to be moved online
Course Forum (on Teams)	• The OWL Announcements MS Teams channel will echo course announcements to simplify asking questions about announcements' contents. • The Q and A channel supports all other course related Q and A dialog. Students are encouraged to answer each other whenever possible. **See below for details.**
Gradescope	• Submit most individual and project deliverables, request regrades

6.2 MS Teams Use

As noted in the table above, ES1050 uses dedicated MS Teams Channels to host course forums for Q & A activities, including requests for clarification on any announcements. Unlike OWL, Teams facilitates reacting or responding to posts, searching for previous posts and configuration of notification frequency. With 800+ students, **individual instructors will not generally respond to personal email**:

- Answers are probably relevant to more the just one person and should be shared to be fair
- Other students often already have the answer and can respond far faster than instructors
- Duplicate questions, effort and confusion can be avoided **IF people check for existing responses before posting**

The following structure will be implemented in MS Teams (students will be included in only those Sites and Channels relevant to them):

Team or Team Channel	Purpose
Team: ES1050 22-23 (everyone)	Host course wide resources (files, videos, announcements, discussion forums).
Channel: OWL Announcements	Echoes course wide announcements, allows reply-to functionality only, Purpose: support requests for clarification on announcements.
Channel: Q and A	Purpose: General course wide Q and A – relevant to many students

Team or Team Channel	Purpose
Channels: Winter Projects (each student will have access to only 1)	Each winter project team will be working on one of multiple different design projects (with clients) in the Winter. Specific channels will be created to support Q and A, other project resources and collaboration with only students on those projects included.
Team: ES1050 Lab ## 22-23 (each student assigned to 1 site)	Host site for each Lab Section (##). Acts as the parent Team Site for private student project team channels. Allows us to pivot online if there is a shutdown.
Channel: SXTY (X: Lab Section, Y: team ID students can access only 1)	Private channels for all student teams to hold all files, chats, messaging, host virtual meetings and support virtual engagement in case of a shutdown or illness.

ES1050 is a team learning experience. Students are encouraged to support each other's learning by asking good questions and giving good answers in the forums. Course questions or requests for clarification must be posted in the appropriate forum to be responded to and will be ignored if sent directly to instructor's email addresses. **Private/confidential messages (e.g. about marks, individual academic accommodations …) can be sent to instructors through MS Team Chat functionality or by email.** Instructors reserve the right to edit, remove messages or copy over select parts of private chats that are generally relevant to the course student body.

7 Methods of Evaluation

ES1050 is a full year course and thus has twice the grading weight as most single term courses on your transcript. To keep this weighting clear the grading breakdown for the course is calculated out of 200.

TABLE 1: COURSE MARK BREAKDOWN TABLE

Category	Expected Elements	Weight
Individual Assignments	Excel Basics, Solid Modelling, Project Mgmt, MS Word Formatting, Project Research	30
Ind. Teamwork	Peer Rating participation, ratings and individual reflections	45
Ind. Design Process	Detailed and insightful reflections on aspects of design process	40
Fall Project - Team	Minutes, Performance tracking, other completed design artifacts	30
Winter Project - Team	Minutes, engineering prob. Def., prototypes, presentations, design documentation, outcome assessment and showcase participation	55
Bonus Opportunities		
	Group Experiences Surveys (all 4)	<=4
	SmartStart	<=2
	Endorsed Events (individually weighted, total capped at 4%)	<=8
Total		**200**

Mandatory Course Elements:

Successful completion of ES1050 requires demonstrating at least a minimum level of competence or capability in multiple areas. To pass the course students are required to:

1. Get an overall passing grade in the course
2. Get a passing mark for their Individual Teamwork components
3. Get a passing mark for their Individual Design Process components
4. Complete and submit a Western WHMIS Training Certificate – worth 2 marks (1%) in individual assessments if completed by the end of September (details will be posted on OWL) or 0 if completed later
5. Complete Level 1 Shop Training – worth 2 marks (1%) in individual assessments if completed by the end of September (details will be posted on OWL) or 0 if completed later

Note: Failure to meet requirements 2 or 3 will result in the student's course grade being set as equal to their grade for the failed required component (i.e. their current overall teamwork or design process grade).

Note: Failure to complete either or both of requirements 4 or 5 will result in the student's grade being set to the minimum of their current grade or 48% until the requirements are satisfied.

7.1 Fall Project

- Students are assigned to teams of ~5-6 for the term.
- Reduced weighting to allowing time to develop team and design skills in a lower risk situation.
- Teamwork marks are awarded individually and are based on 1) Participating in the team feedback surveys, 2) Individual teamwork reflections, and 3) Averaged team feedback assessment ratings.
- Design Process marks are awarded individually and are based on individual student's design critique portfolios assembled over the term.
- Project Deliverables marks are awarded to the team as a whole for completing project deliverables.
- Lab Instructors reserve the right to adjust teamwork marks based on their own observations and team documentation.

7.2 Winter Project

The Winter Project proceeds in a similar fashion as the Fall Project but efforts are made to assign students to new teams based on student expression of interest toward the designated project areas. Working with different people in a new team further develops teamwork skills. The Winter Project is expected to include work for clients and is worth more to allow students to earn marks based on their more advanced, yet still developing, Team, Design and Communication skills.

7.3 Individual Assessments

Individual exercises associated with the Lecture sections are designed so that students can acquire, practice, and receive feedback on skills and knowledge required to successfully contribute to team design projects and their future practice. Model solutions for these exercises will be released approximately 1 week after the exercises are released. **Students are responsible for doing the exercises, vetting their understanding of the material using the model solutions and getting assistance where needed.**

Summative assessments may be organised during course time (generally tutorial time) to assess, under time limited conditions, the student's mastery of the lesson material.

7.4 Normalisation of Marks

To ensure consistency between Lab sections, marks for projects and assignments may be normalised. The procedure for normalizing marks will be made available, if necessary.

7.5 Regrade Requests

Regrade requests may **NOT** be submitted until after 24-hours following the release of marks for an assessment. Use this time to make sure you understand the feedback you were given before asking for a regrade. Regrade requests will only be accepted within a 7-day period following the first 24-hours after marks are returned (i.e. days 2 through 8).

7.6 Late Submissions

It is the student's responsibility to ensure that all assignments are submitted to the specified location on or before the specified due date. **Assignments will be accepted up to an hour late with a flat penalty of 20% of the assignment mark**. Assignments submitted over an hour late will not be accepted without official accommodations.

7.7 Bonus Mark Opportunities

7.7.1 Group Experiences Research Surveys

ES1050 partners with the Group Experiences Lab (GEL) of the Psychology department to deliver team skills training and complete teamwork related research studies. Four team surveys will be administered by the GEL during the year and participation in these surveys can earn up to 2% in bonus marks.

7.7.2 Endorsed Engineering Events

Engineering Competitions and Events are periodically organised with the blessing of the Faculty of Engineering. Bonus marks may be offered for participation in some of these that are determined to be well aligned with the course learning objectives. The Western Engineering Competition, goLead, are some of these for the 2022-23 Academic year. To encourage students to focus and invest in events of real interest to them and not try to do everything, the bonus available for these events will be capped at 4% (8/200).

7.8 Use of English

In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests and examinations for the improper use of English. Additionally, poorly written work may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

7.9 Academic Dishonesty

University policy states that cheating, including **plagiarism**, is a scholastic offence. The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, in the relevant section of the Academic Handbook:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where

appropriate and by proper referencing such as footnotes or citations. Penalties for plagiarism on reports will start with, but are not limited to, partial or complete loss of marks on the assignment.

All required papers may be subject to submission for textual similarity review to commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents on the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between the University of Western Ontario and Turnitin.com (http://www.turnitin.com).

7.10 Attendance

Any student who fails to attend 80% of a course component, or in the opinion of the Instructor, is absent too frequently from Lectures, Labs, or other course instructional sessions shall be removed from their project team and be required to meet with the Course Coordinator. The meeting will review the reasons for the student's absences and establish consequences and any conditions that must be satisfied for the student to return to active participation in team elements of the course.

The outcome of the meeting will be summarized and communicated to the Assistant Dean, First Year Studies, to be included in the student's file. On the recommendation of their Lab Instructor, and with the permission of the Assistant Dean, First Year Studies, the student can be debarred from further participation in the course and from sharing in any marks from ongoing team project work.

Student's choosing to self-report absences for academic considerations as outlined in https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf must ensure they do not fall below attendance thresholds set to ensure fair team contributions and are strongly recommended to discuss any needs for prolonged or multiple absences with their Lab instructor and/or the Undergraduate Office.

Some activities cannot be made-up if missed, including community partner meetings, specialized Lectures or Lab sessions. If the missed session had course grading elements associated with it, students are expected to communicate with their Lab instructor (for Lab related activities) or course coordinator (for all other activities) to address grading expectations.

7.11 Sickness and Other Problems

Students should immediately notify their Lab Instructor by private communication if they have any problems that could affect their performance in the course. Immediate notification is required to ensure teamwork components of the course are not adversely affected. If the Lab Instructor does not respond within 1 business day students should contact the course coordinator or the Undergraduate Services Office, SEB 2097. Where appropriate, the problems should be documented. The student should seek advice from their Lab Instructor about how to deal with the problem as it relates to their performance and their team's performance in the course.

For more information concerning medical accommodations, see the relevant section of the Academic Handbook: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

For more information concerning accommodations for religious holidays, see the relevant section of the Academic Handbook: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

8 Student Conduct & Behaviour

Students are expected to **arrive at course sessions on time**, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. **Please turn off your cell phone before coming to a class, tutorial, quiz or exam.** On the premises of the University or at a University-sponsored program, students must abide by the Code of Student Conduct:
https://www.uwo.ca/univsec/pdf/board/code.pdf

8.1 Notification

Students are responsible for checking their university email account (**@uwo.ca**) and the course announcement channels regularly to receive notices posted by the Instructors regarding the ES 1050 course. When communicating with instructors by email, students are **required** to use their university email account.

8.2 Consultation

Students are encouraged to discuss problems with their Teaching Assistants (TAs) and/or Lab Instructor during Lab or Team Meeting sessions. Additional consultations will be arranged for students to meet Lab Instructors and Teaching Assistants upon request.

Students are expected to use the appropriate course MS Teams channels to ask any general course content related questions (e.g. logistics, assessment clarifications, variations or alternate approaches, …) and **to only** use private chats and emails to address private issues (e.g. course marks, accommodations …). Students are strongly encouraged to support each other in the forums and course instructors will moderate and correct responses in the forum for the benefit of all students. Last minute questions (24 hours before a deadline) about assignments will not be addressed by instructional members.

Unprofessional behavior in forums, online or in class spaces, including posting of abusive, inappropriate, or otherwise objectional content, will be cause for any or all of the following: being called to explain their actions with instructors or the course coordinator, loss of Contribution marks, being banned from participating in discussion forums, documentation of the infraction being added to the student's record, referral to the Assistant Dean and further penalties as outline in the University Code of Student Conduct.

8.3 Accessibility and Support Services

Please contact the course coordinator if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Support Services:
Office of the Registrar, http://www.registrar.uwo.ca/
Student Development Centre, http://academicsupport.uwo.ca/
Engineering Undergraduate Services, http://www.eng.uwo.ca/undergraduate/
USC Student Support Services, http://westernusc.ca/services/

Students who are in emotional/mental distress should refer to Mental Health @ Western, https://uwo.ca/health/psych/, for a complete list of options about how to obtain help.

8.4 Device Use

Laptops or mobile devices can support your learning in this course, but they can also be a source of distraction for you and other students around you when physically collocated. Please turn off all sound notifications before you enter face-to-face sessions. You are welcome to use your devices for course-related activities such as taking

notes, researching lecture topics, collaborating on group projects, viewing documents in OWL, and communicating with other students about the course material. You are not permitted to use these devices for any non-course-related activities. During activities that do not require these devices, such as group discussions, you are expected to close or put them away. If you have concerns or comments about how the use of laptops or mobile devices is affecting your learning during the course, please make an appointment to talk with the course coordinator.

8.5 Recordings

The course intellectual content belongs to the instructors and/or the Faculty of Engineering. The recording of audio, video or pictures by students is strongly discouraged for privacy reasons. Recordings made with instructor's permission are strictly limited for use in study for this course and may not be shared without express permission. Any recording of course activities taken by course instructors will only be used to improve course delivery, instructional content or feedback to students, unless otherwise notified. This may include, but is not limited to, a) videos of student presentations for presentation skills feedback, b) pictures of project displays or deliverables for instructional feedback and c) pictures or video of Lecture activities for illustrating future instructional material.

Photos and videos will be taken at major course events to promote public engagement at future events, to promote Western University's Engineering program, and to improve instructional materials for future course iterations. *Student's wishing to discuss the collection and use of recordings during course activities should contact the course coordinator.*

Remote Learning Session Recordings: Some of the remote learning sessions for this course may be recorded to support students' study of the material and evaluations where synchronous participation in the course element is not possible or reliable. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. *Please contact the instructor if you have any concerns related to session recordings.*

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor. Students are not allowed to disclose any recordings or their content to anyone not participating in the course without written authorisation from the instructor.

9 Course Revisions

The instructors reserve the right to adjust course content and/or delivery if required to meet faculty, program and course academic objectives or to respond to unanticipated events.

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The overall grading scheme will not change. Any remaining assessments will be conducted online at the discretion of the course instructor.

10 Year Over Year Changes

To improve the learning outcomes of this course the following course changes have been made: (list is not exhaustive)

- Revised and clarified competency-based evaluation and minimal performance requirements for Teamwork Skills and Design Process skills (see Section 7) are applied
- Simplification of course use of OWL and MS Teams to deliver the course communications.
- New Fall and Winter Projects