CIS*3260 F22 Software Design IV: Course Outline
Software Architecture and System Design

Lecturer:	Prof. Mark Wineberg		
Office Hours:	After class		
Email:	mwineber@ uoguelph.ca		
Lectures:	MINS, rm 300	–	Tues, Thurs 11:30 am to 12:20 pm
Labs:	*Section 1*: THRN, rm 2420	–	Tues 2:30 pm up to 5:20 pm
	Section 2: THRN, rm 2420	–	Wed 11:30 am up to 2:20 pm

The lab time will be a mixture of practical tutorials (e.g. how to code in Ruby), and common project meeting times.

Course Calendar Description

This course is a study of software architectures and system design methodologies. This will include advanced techniques for project management and experience evaluating software tools. The course has an applied focus and will involve software design and development experiences in teams, a literacy component, and the use of software development tools.

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:
http://www.uoguelph.ca/registrar/calendars/index.cfm?index

Course Topics

- OO Design (*in depth*)
- Structural UML
- OO Design Patterns
- Architectural Design
- Distributed Soft. Eng.
- Client-Server Design with MVC
- Component-based Soft. Eng.
- Service-Oriented Arch.

Group Project

This course includes a group project. For this project, you will participate in a group that designs an application (commonly an online two-player game using a client-server model that incorporates WebSocket technology to implement a traditional MVC architecture) which will be implemented by another group. Your group in turn will implement the design you will have obtained from another group.

Through this project you will experience the need to communicate your design clearly to others, support another team through the implementation process of your design, and effectively read and implement a design that you have not created.

Textbooks

Recommended

Head First Design Patterns (2nd *Ed*)	*Software Engineering* (10th *Ed*)
Eric Freeman, et.al.	Ian Sommerville
O'Reilly Media, 2020	Addison-Wesley, 2015

Course Website

Course material, news, announcements, and grades will be regularly posted to the CIS*3260 Courselink Website, accessible from the uoguelph.ca front page. You are responsible for checking the site regularly.

- *Lecture Information*: The formal class notes will be posted on the course website as soon as the instructor has time to make them available.
- *Labs and Tutorials*: Selected tutorial and lab materials will be posted on the course website as soon as the instructor has time to make them available.
- *Assessments*: Assignments, project and descriptions readings material will be distributed through the course website. All assignments project designs, and code will also be submitted through the course website or as described

Grading

[48%] Group Project

[4%]	RqE	Requirements & Entities Model	(*document, walkthrough, DoE*)
[8%]	AppD	Application Design	(*document, walkthrough, DoE*)
[8%]	CS_D	Client-Server Design	(*document, walkthrough, DoE*)
[12%]	DD	Detailed Design	(*document, walkthrough, DoE*)
[12%]	IM	Implementation	(*code, walkthrough, feedback on support & design, DoE*)
[4%]	IS	Implementation Support	(*support of implementation team, DoE*)

[30%] Assignments

[15%]	A1	Ruby	(*code and written answers*)
[15%]	A2	Rails	(*code and written answers*)

[6%] Readings

[3%]	CC1	Codeless Code P1	(*written*)
[3%]	CC2	Codeless Code P2	(*written*)

[16%] Tests

[8%]	Q1	Quiz 1	(*take home test*)
[8%]	Q2	Quiz 2	(*take home test*)

Your final grade is the weighted sum of all assessments shown above.
To pass the course you need *an overall grade of* 50% *or above.*

Project Distribution of Effort

For each milestone of the project, all individual grades x_j will be calculated using the formulae below,
where x is the group grade (out of 100%),
g is the number of members in the group, and
m_j is the group determined modifier ($0 \le m_j \le g$) for the individual

if	$1 < m_j \le g$	$x_j = x + 2 * (1 - x) * (m_j - 1) / g$	(*more work than the group average*)
if	$m_j = 1$	$x_j = x$	(*the group average amount of work*)
if	$0 \le m_j < 1$	$x_j = x * (1 + m_j) / 2$	(*less work than the group average*)

Modifier m_j is settled on by the group at the time of each walkthrough and should reflect the relative amount of work each student in the group did on that deliverable.

The total sum of all m_j must equal the number of members in the group. If it doesn't, the m_j values will be renormalized before the calculation is performed.

If the balance of the distribution of effort is too unequal (e.g., one student getting $m_j > 3$) the formula does not behave well. In those circumstances, the group will go into discussions with the instructor to come to an agreement on the individual grades that will be used.

Submission and Late Policy

Assignments/Codeless-Code Readings:

- Assignments and Readings are submitted through a Courselink dropbox link Friday at midnight, as noted in the timetable.
- There is a 1% late penalty per every 2 hours, up to Monday at 9:00am, after which the assignment/reading will be given a grade of zero.
    - For example, after 32 hours, if you originally received 34/40, i.e., 85%, your grade would become 85% * (100% - 16%) = 85% * 84% = 71.4%

Project milestones:

- A project milestone usually will incorporate documentation/code and a walkthrough with the group, either in person, or over a shared Zoom meeting.
- The group will be able to sign-up for the walkthrough on a first come, first serve basis.
- All documentation/code must be submitted prior to walkthrough or a grade of zero will be awarded for that milestone

Quizzes:

- Quizzes are written through the Courselink quiz tool
- Quizzes are released on the Monday of the week (9:00am) and closed on the Friday by midnight
- You can take the quiz anytime during the week
- Once started:
  - you have 36 hours to complete the quiz
  - you may enter and exit the quiz at any time before your 36 hours are over, (***unless Friday at midnight has passed, in which case you will not be allowed back in***)
  - this does not affect the time remaining for completion (*36 hours from the time you started … when signed out, the clock is still ticking*)
- If you do not take the quiz sometime during the week, you will be awarded zero for that quiz

Accommodation of Religious Obligations

- If you are unable to meet an in-course requirement due to religious obligations, please email the course email address **within two weeks of the start of the semester** to make alternate arrangements.
- See the undergraduate calendar for information on Academic Accommodation of Religious Obligations: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

If You Cannot Meet a Course Requirement

- If you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course in writing, with your name, id#, and e-mail contact.
- See the undergraduate calendar for information on regulations and procedures for Academic Consideration: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Class Delivery

Lectures

- All class lectures will be face-to-face, in MINS, Room 300, unless the campus is under lockdown for emergency health reasons, in which case lectures will be held remotely. If remote lectures are required, the lecture material will be presented by the instructor during class time over Zoom.

Labs

- Labs will be a mixture of practical "how-to" lectures, going over assignment and midterm answers, as well as TA hours. Again, if the campus is under lockdown for emergency health reasons, the labs may either be held through Zoom sessions during lab times, or cancelled, depending on the week.

Walkthroughs

- Project milestones are graded using walkthroughs with the instructor and/or the TA
- Walkthrough date and time:
  - they take place
    - outside of the lecture and lab times
    - during the week the project milestone is due
    - are typically an hour long, depending on the milestone
  - your group will sign up for a single time slot during the week
    - times will be posted and assigned using a first-come first-served basis
    - make sure the slot you sign up for allows all (or at least most) of the group to attend
- The walkthrough Zoom session will be recorded for review by the instructor or TA when grading the milestone. The Zoom recording can be requested by the Group to be shared among the group members but will not be released to anyone outside the group.

Recording of Materials

- Material recorded with permission, including any recorded lecture material provided by the instructor, is restricted for the use of the course, and may not be posted on any public space unless further permission is granted.

Timetable

	Due	Monday (< 9:00 am)	Friday (< midnight)
12-Sep	W1		
19-Sep	W2		
26-Sep	W3	**RE** *requirements / entity model*	**A1**
03-Oct	W4		
10-Oct	W5		
17-Oct	W6	**AppD** *application design*	**Q1**
24-Oct	W7		**A2**
31-Oct	W8		
07-Nov	W9	**CS_D** *client-server design*	**CC1**
14-Nov	W10	**DD** *detailed design / initial handoff*	
21-Nov	W11	**HO** *handoff finalized (no walkthrough)*	**CC2**
28-Nov	W12		**Q2**
05-Dec	E1		
12-Dec	E2	**IM** *implementation*	

Errata

Communication & Email Policy

- Major announcements will be posted to the course website and the discussion forums.
  It is your responsibility to check the course website regularly.
- As per university regulations, all students are required to check their <mail.uoguelph.ca> e- mail account regularly; e-mail is the official route of communication between the University and its students.

Instructor's Role and Responsibility to Students

- The instructor's role is to develop and deliver course material in ways that facilitate learning for a variety of students.
- Selected notes will be made available to students on the course website but are not intended to be stand-alone. During lectures, the instructor will expand and explain the content of notes and provide example problems that supplement posted notes.
- Scheduled classes, labs and group walk-throughs (*scheduled by mutual agreement outside of class/lab times*) will be the principal venue to provide information and general feedback for tests and assignments.

Students' Learning Responsibilities

- Students are expected to take advantage of the learning opportunities provided during lectures, labs and help sessions.
- Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor.
- Students who fall behind due to illness, work, or extra-curricular activities are advised to keep the instructor informed as early as possible. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if appropriate.

Academic Misconduct

Important Rules and Guidelines

- The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.
- University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. All students who take a SOCS course must pass the *Academic Integrity Self-Test*.
- For educational purposes, instructors impose conditions on assignments that may limit students' permission to collaborate with others or to utilize external sources (including, but not limited to, software, data, images, text, etc.).
    - Any permitted utilization must be done *with proper references*.
- Aiding and abetting is a punishable offence; students must be careful not to help others commit offences by giving out solutions or providing to access computer accounts.
- Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note:

- Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it.
- Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member.

Relevant Websites

- The Academic Misconduct Policy is detailed in the Undergraduate Calendar: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml
- The SOCS Academic Integrity Unit: http://moodle.socs.uoguelph.ca/course/view.php?id=2
  Login with your central login credentials. The key to use is "imhonest".