Western Science

Department of Computer Science

- **CS 4490Z/4460Z - Thesis/Bioinformatics Thesis**
- **CS 3380F/G/Z – Project**

Course duration:

- **September to April (of the following year)**
- **Summer Thesis (cs4490/4460) or Project (cs3380)**

Course Outline – Sep. 2025 – Apr. 2026

(Course Outline for Summer 2026 – see later below)

Class time: 8:30 - 9:30am, Mondays
(Actual class days will be announced via BRIGHTSPACE. Otherwise, by online interaction.)

Course Coordinator

Course coordinator	Email	Office	Phone	Office Hours
Prof. Nazim Madhavji	madhavji <at> gmail <dot> com			By email appt.: Mon-Fri 9AM – 5 PM

Course Description

CS4490Z/4460Z

(For CS3380F/G/Z, please see later below)

This course provides students with an opportunity to work on a research project outside a particular course setting, with a faculty member at Western University as supervisor. The supervisor can be from any department at Western University. **Supervisors from another university will not be entertained.**

The topic of the thesis project can be in any field covered by the Dept. of Computer Science (CS) (and can intersect with non-computer science domains, e.g., engineering, sciences, law, social sciences, business, etc.). There are some guidelines in the project description template for the supervisor as to what constitutes a thesis in the CS field.

Students enrolled in bioinformatics (CS4460Z) are expected to focus on topics from the health domain apart from the CS content.

Finding a Supervisor and Preliminaries -- IMPORTANT

- Typically, many professors will submit their project descriptions to the coordinator in early September. These project descriptions will be made available to the class via OWL Brightspace.
- Students will then be asked to find their supervisor from the project descriptions received. However, if none of the submitted project descriptions match the student's interest, the student is permitted to find his/her supervisor from outside the set of project descriptions received.
    - In either case, it is the student's responsibility to inform the instructor that s/he has found a supervisor. FAILURE TO DO SO WILL RESULT IN AN INVALID PROJECT THAT WILL NOT BE GRADED AND THE STUDENT WILL RECEIVE A FAILURE GRADE.
    - A "match-making" spreadsheet will be posted on the cloud to facilitate the process.
- The research project description **must** come from the supervisor and not the student though the supervisor can involve the student in formulating the project description. The supervisor is accountable for the project description.
- Because this is a "thesis" course, a prime criterion for assessment is the **novelty** of the results. This should be reflected in the project described in the template by the supervisor.
- For student-found supervisors, the project template must be completed by the supervisor and uploaded by the supervisor to the OWL system. Access details will be provided to the supervisor.

The objective of the course is to give the student an opportunity to undertake a project that is less structured than assignments and requires the student to apply knowledge and skills learned from many different courses and create new knowledge and/or solutions. It is also an opportunity for the student to learn and demonstrate skills in independent study and research.

This course can be a defining point in a student's life in terms of learning foundational research and development skills and of wetting the feet for advanced research (e.g., graduate studies) and of making career choices.

The anticipated learning outcomes:

- Student gets to experience how to conduct research. This includes such issues as understanding the problem context; understanding related literature; defining research

questions; learning about research methodologies to be used; executing the research methodologies; creating a novel system or investigating a phenomenon from observations or data; performing comparisons with related literature; drawing conclusions; performing threat analysis; etc.
- Experience with writing a research proposal and a thesis.
- If working with a supervisor from a non-computer science (CS) area (e.g., health, sciences, social sciences, business, etc.) then the student should experience inter-disciplinary research (e.g., selecting or creating, and implementing an algorithm applied to non-CS areas for novel findings; or creating a novel system to tackle a problem in the non-CS areas).
- Experience with presenting and defending one's thesis.

The course suffix Z denotes that this course is an essay course, i.e., it has a significant writing component. There are progress reports, final report, as well as a presentation of the work accomplished at the end of the course.

Core Regulations

- The default scenario is that projects will be carried out individually. However, the CS Dept. reserves the right to take exceptional measures. Student requests for group thesis will not be entertained.
- The process of selection of a supervisor and commitment issues are in a separate document that are an integral part of these regulations. These will be shared with the class.
- The presentation AND the thesis will be graded by the supervisor as per the schedule set by the supervisor under the constraints of the course.
- **Further regulations (implicit or discovered in real-time):** There may be other issues that may crop up (during the course) that are not listed above. The course coordinator reserves the right to make the final decision on those issues and they may not be appealed.

Prerequisites

CS4490Z:
(2.0 courses from: Computer Science 3305A/B, 3307A/B/Y, 3331A/B, 3340A/B, 3342A/B, 3350A/B; plus registration in the Honors Specialization in Computer Science or (2.0 courses from: Computer Science 3305A/B, 3307A/B/Y, 3319A/B, 3331A/B, 3340A/B, 3357A/B; plus registration in the Honors Specialization in Information Systems)

CS4460Z:
Computer Science 3331A/B and 3340A/B; plus 1.5 courses from: Biochemistry 2280A, Chemistry 2213A/B,
Computer Science 3319A/B, 3346A/B; plus registration in an Honors Specialization in Bioinformatics.

Antirequisites: Computer Science 3380F/G/Z, 4460Z (if taking 4490Z), 4470Y, 4480Y, 4490Z (if taking 4460Z)

Note: *Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.*

CS3380F/G/Z

This is a supervised study involving a research paper, or the design and development of a software project with a novel component.

Antirequisite(s): Computer Science 4460Z, 4470Y, 4480Y, 4490Z.
Prerequisite(s): Permission from the department, plus: Computer Science 2212A/B/Y and registration in the Specialization or Major in Computer Science. To be permitted into this course, the student must have found a topic and a willing departmental supervisor before the end of the add period.

Regulations active for this course mirror those listed under cs4490/cs4460 above.

Course Texts

There are no required texts for this course. However, the student might like to check out one or more of the following references that help in proposal or thesis writing. (Please note that the following list is not updated annually and so should be taken as a starting point only.)

- Anon (2013) Proposals that work; a guide for planning dissertations and grant proposals, 6th ed. Reference & Research Book News 28 (5).
- Terrell, S. R. (2022) *Writing a proposal for your dissertation : guidelines and examples*. Second edition. New York, New York: The Guilford Press.
- Dawson, Christian W. (2009) Projects in Computing and Information Systems: a Student's Guide, Second Edition; Pearson Education Limited..
- Eco, U. (2015) How to write a thesis. Cambridge, Massachusetts: The MIT Press.
- Rudestam, K. E. & Newton, R. R. (1992) Surviving your dissertation : a comprehensive guide to content and process. Newbury Park, Calif: SAGE.
- Turabian, K. L. (2018) A Manual for Writers of Research Papers, Theses, and Dissertations, Ninth Edition: Chicago Style for Students and Researchers. 9th edition. University of Chicago Press.
- Roberts, C. & Hyatt, L. (2019) The dissertation journey : a practical and comprehensive guide to planning, writing, and defending your dissertation. Third Edition. Thousand Oaks, California: Corwin, a SAGE Company.

Course Webpage and BRIGHTSPACE

Class and project information, and announcements, will be posted on BRIGHTSPACE through the term. Students are expected to read this information on a regular basis.

Computing Facilities

Each student will have access to an account on the Computer Science Department undergraduate computing facility and abide by the department's Rules of Ethical Conduct

Note: *After-hours access to certain Computer Science lab rooms is by student card. If a student card is lost, a replacement card will no longer open these lab rooms, and the student must bring the new card to the Systems Group. Likewise, if a student card ceases to provide access where it should, it should be brought to the Systems Group as well.*

E-Mail Contact

We may need to send e-mail messages to the whole class, or to students individually. E-Mail will be sent to the UWO e--mail address assigned to students by Western Technology Services (WTS). It is each student's responsibility to read this e-mail on a frequent and regular basis.

Evaluation, Classes Schedule, Submission of Thesis and Project artefacts, and Presentation

There will be classes in-person or online only as announced (typically on BRIGHTSPACE) by the coordinator. It is anticipated that most of the communication between students and the coordinator will be done by email or through BRIGHTSPACE.

Due dates for various deliverables and the weights are indicated in the table below.

(Note: schedule subject to change)

Date	Activity/Event/Deliverables	Weight %
Monday 8th Sept., 2025	**CLASS**: Course introduction.	
9-12 Sept., 2025	**Submit your resume**. (Supervisors to have access to them for student selection)	
As scheduled	**Online:** If needed, project briefing by the supervisors (at the trailing-end of the student-prof matching process)	
Friday, 31st Oct., 2025	Supervisor Chosen by this date.	
(As announced)	**CLASS**: Thesis proposal explained. (What, Why, How, etc.)	
Within 2 weeks of finding a supervisor	**A regular meeting schedule (for both A and B terms) made with the supervisor and submitted to Brightspace**	**MINUS 10% for failing to do this on time.**

Monday, 5th Jan., 2026	**Submission**: Project proposal. ***	Completeness check **MINUS 10% for failing to submit on time.**
3 – 9 Nov. 2025	**Reading Week A Term**	
5th Jan., 2026	**Start of the B term**	
14 - 22 Feb. 2026	**Reading Week B Term**	
23rd Feb., 2026	**Submission**: Progress Report. ***	Completeness check **MINUS 10% for failing to submit on time.**
9th Apr., 2026	**Submission:** ALL project artefacts *** **(class ends)**	***IMPORTANT:*** *All project documentation, software artefacts (such as design, test cases, program code, etc.),research results are to be delivered to the* ***supervisor****.* ***Without this delivery, a mark of zero will be given for the course.***
30th Mar., 2026	**Submission**: Final Report i.e., Thesis).*** **(NO EXTENSION)**	50% Zero mark for failing to submit on time.
As scheduled by Supervisor	**Presentation**.***	50% Zero mark for failing to present at the scheduled time.

*** **EXTREMELY IMPORTANT**:

(1) **Mandatory deliverables:**

- **All deliverables (Proposal, Progress Report, and Final Report, Presentation, and project artefacts) are mandatory.**
- **The MAXIMUM grade attainable due to any missing deliverable is "C".**

(2) **Delivery date of the Final Report (i.e., Thesis):**

- **Please note that final report delivery date is FIRM (exception being through university's Accommodation consideration – see further below).**
- The thesis is to be delivered to BOTH the supervisor AND BRIGHTSPACE

(3) **Presentation of the thesis:**

- **A presentation is an EXAM.**
- **It must be made to the supervisor.**
- **It will be scheduled by the supervisor.**
- **It can be in-person or online, as decided by the supervisor.**

(4) **Delivery of the project artefacts:**

- All project **artefacts** (e.g., project documentation, code, results, etc.) are to be submitted to the **supervisor**.

Specification of the Project Deliverables

- Specification of the various project deliverables will be posted on BRIGHTSPACE. Please check announcements regularly.
- Any changes, updates, and clarifications to deliverables will also be posted on BRIGHTSPACE. It is your responsibility to monitor BRIGHTSPACE closely.

Use of Generative AI Tools

- The use of generative AI tools (e.g., ChatGPT, Copilot, Gemini, and others) is permitted only as follows:
  - First, create your own solution or description without any use of the AI tools.
  - Then, optionally, you can use AI tools to produce a competitive solution or description (or part thereof).
  - Thirdly, if you do use the AI tools for creating a partial or full solution then you must:
    - do a "**comparative analysis**" of your initial solution (see 1) against the AI generated solution (see 2).
    - **Document explicitly WHAT you have learnt** in the solution creation by using the AI tools.
- **NOTE: Using AI tools without carrying out step (3) above will result in reducing the mark of the deliverable concerned by 50%.**
  - **Recommendation: use external tools to LEARN and be better and not to CHEAT!**

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Summer Thesis or Project
CS 4490Z/4460Z
CS 3380F/G/Z

Core Regulations

- The student must first find a supervisor-prof. at Western **well before the end of the A Term (typically by the end of MARCH)**.
  - The proposed supervisor must confirm by email to the instructor that s/he agrees to supervise the student.
  - If successful, approval to enrol in the course for the summer thesis will be given.
- If a suitable supervising prof. is not found by the end of **MARCH**, **the student will not be permitted to enroll in the summer thesis course**.
- Only students enrolled in the summer thesis course will be able to conduct the summer thesis research.
- There are no lectures in the summer course.
- **All thesis-related advice is to be obtained from the supervisor**.
- It is the student's responsibility to create a meeting schedule in conjunction with the thesis supervisor.

- The student must submit a proposal to the supervisor and receive feedback from the supervisor.
- It is the student's responsibility to submit progress reports and the final report to the thesis supervisor.
- The student must handover all the research artefacts (software, documentation, etc.) to the supervisor.
- The thesis supervisor grades (a) the research thesis and (b) the thesis presentation.
- The thesis supervisor submits the overall final thesis mark to the course coordinator at the end of the Summer Term.
- The coordinator will submit the course grade to the university.
- Any situation deemed important but not covered by the core regulations above is subject to the coordinator's prerogative to handle exceptions which may not be appealed.

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Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

https://multiculturalcalendar.com/ecal/index.php?s=c-univwo.

Accommodation Policy

This policy sets out the parameters for students to be excused from academic responsibilities for extenuating circumstances (i.e., personal circumstances beyond the student's control that have a substantial but temporary impact on the student's ability to meet essential academic requirements). Students experiencing longer-term impacts on their academic responsibilities should consult Accessible Education. See:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf

Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals,

exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/.

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

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

You may wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (https://learning.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC, https://westernusc.ca/services/.