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. 2024 – Apr. 2025

(Course Outline for Summer 2025 – see later below)

Class time: 8:30 - 9:30am, Mondays, [redacted]
(Actual class days will be announced via BRIGHTSPACE; they will not take place by default)

Course Instructor

Instructors	Email	Office	Phone	Office Hours
Dr. Nazim Madhavji (Course Coordinator)	madhavji <at> gmail <dot> com	[redacted]		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 other universities may be considered on a case-by-case basis (e.g., if there is no faculty member at Western who is conducting research in the general "Discipline" within which the student's research interests lie). However, this will require a Western professor as a proxy that the student must find and acknowledge openly with the instructor of this course. All supervisory communications will be with the proxy only. Assessment will be by the proxy.)

The topic of the thesis project can be in any field covered by the Dept. of Computer Science (and can intersect with non-computer science domains, e.g., engineering, sciences, law, social sciences, business, etc.).

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

Finding a Supervisor and Preliminaries -- IMPORTANT

- Typically, many professors will submit their project descriptions to the instructor 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 projects 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.
- The research project title and description **must** come from the supervisor and not the student though the supervisor can involve the student in formulating **novel** research questions or ideas for creating a **novel** system.
- Because this is a "thesis" course, a prime criteria 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 which is less structured than assignments and/or which 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 demonstrate skills in independent study and research.

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 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 measure is that projects will be carried out individually. However, the 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 thesis will be graded by the supervisor.
- The presentation will be assessed by both the supervisor and the instructor into a unified mark.
- 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 instructor 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 the Combined Honors BSc Computer Science/Juris Doctor (JD) Program) 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, 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 writing and/or thesis writing:

- 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 BRINGHTSPACE 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 Information Technology Services (ITS), i.e. your e-mail address @uwo.ca. It is each student's responsibility to read this e-mail on a frequent and regular basis, or to have it forwarded to an alternative e-mail address if preferred. See the ITS website for directions on forwarding e-mail.

However, you should note that e-mail at ITS (your UWO account) and other e-mail providers may have quotas or limits on the amount of space they can use. If you let your e-mail accumulate there, your mailbox may fill up and you may lose important e-mail from your instructors. Losing e-mail that you have forwarded to an alternative e-mail address is not an excuse for not knowing about the information that was sent.

Wherever you receive e-mail, be sure to configure your spam filter to allow e-mail from the instructor's e-mail address given above. Otherwise, important messages could get trapped by your spam filter and missed. This is also not an excuse for not knowing about information that has been sent.

Classes Schedule and Projects

There will be classes only as announced (typically on BRIGHTSPACE) by the instructor. It is anticipated that most of the communication between students and the course instructor 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 %
9 Sept., 2024	**CLASS**: Course introduction.	
9-13 Sept., 2024	**Submit your resume**. (Supervisors to have access to them for student selection)	
As scheduled	**CLASSes**: Project briefing by the supervisors.	

30 Oct.	Supervisor Chosen	
(As announced)	**CLASS**: Thesis proposal explained. (What, Why, How, etc.)	
30 Nov.	**Submission**: Project proposal. ***	Completeness check
Oct. 12–20	**Reading Week A Term** (incl. Thanksgiving on 14 Oct)	
6 Jan., 2024	**Start of the B term**	
17-21 Feb.	**Reading Week B Term** (incl. Family Day)	
3 Feb.	**Submission**: Progress Report. ***	Completeness check
4th Apr.	**Class Ends** *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.*	
4th Apr.	**Submission**: Final Report.***	50
As scheduled	Presentation.***	50

***** EXTREMELY IMPORTANT:**
(1) All deliverables (Proposal, Progress Report, and Final Report and Presentation) are mandatory.

(2) Please note that final report delivery date and presentation date (TBA) are FIRM (exception being through university accommodation). The MAXIMUM grade attainable due to any missing deliverable is "C".

(3) Presentations:

- **A presentation is an EXAM. Please make sure that you present your thesis at the scheduled date and time. No internet or other technical or employment reasons, family trips, or other non-approved reasons that preclude you from making your presentation will be acceptable.**
- **All presentations will be online. (Schedule and related details to be announced via BRIGHTSPACE.)**

Late Submissions or Presentations

- Please note that late submissions of deliverables will **not be accepted**. Thus, submit what you have ON TIME. Please note that this is a serious thesis submission or presentation, not an ordinary course assignment.

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.

Submission of Deliverables

- **IMPORTANT**: All project artefacts (e.g., project documentation, code, results, etc.) is to be submitted to the supervisor.
- **FINAL REPORT:** The thesis is to be delivered to BOTH the supervisor AND the course instructor (BRIGHTSPACE).

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

Core Regulations

- The student must first find a suitable supervising 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 the thesis advice is the responsibility of 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 instructor at the end of the Summer Term.
- The instructor will submit the course grade to the university.
- Any situation deemed important but not covered by the core regulations above is subject to the instructor'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 Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf.

Academic Policies

The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.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/.