

CS3350B, Winter 2018

Computer Architecture

Course Outline

Course Description

The goal of the course is to give students an understanding of modern computer architecture, with particular attention on how the underlying hardware of a computer system influences issues relating to application performance. To accomplish this, we will study the following topics:

- Abstraction of machine structures
- Performance metrics and profiling tools
- Hierarchical memory
- MIPS instruction set architecture and SPIM assembler and simulator
- Introduction to logic circuit design
- MIPS single cycle and multiple cycle CPU data-path and control
- Instruction level parallelism
- Multicore architecture and thread level parallelism
- GPU architecture

Prerequisites

CS2208, CS2210, CS2211, and either CS2209 or CS2101.

Anti-requisites: ECE 3375A/B.

Responsibility for checking prerequisites: Unless you have either the requisites 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.

Instructor

Marc Moreno-Maza
Email: moreno@csd.uwo.ca
Office: Middlesex College 327
Office hours: Tuesday, 13:30 - 15:20

Course Materials

There is no specific textbook for this course. Lecture notes, suggested readings and supplementary materials are available electronically on the course website (see below).

Course lecture notes will be made available in PDF on the course website. They are provided as a courtesy by the course instructor. Possessing (and even reading) these notes is not a suitable substitute for attending lectures.

Course Website

Students should check the [OWL web site](#) as well as [the course web site](#) of the class on a regular

basis for news and updates. These are the primary method by which information will be disseminated to all students in the class. The missing of critical information due to your failure to check the course website or OWL cannot be used as a basis for appeal.

Class Schedule

The three course hours, Tuesdays, 4:30am - 5:30pm and Thursdays 3:30pm - 5:30pm, take place in MC 105B.

Course Work Evaluation

The overall course grade, out of 100, will be calculated as follows:

- 4 in-class quizzes about key concepts and principles, each worth 5%, the sum of which will constitute 20% of the final grade;
- 4 assignments, each worth 10%, the sum of which will constitute 40% of the final grade;
- No midterm exam;
- the final exam worth 40%.

None of the components will be dropped, and it is not possible to have the components re-weighted unless they were legitimately missed.

It is Faculty of Science policy that a student who chooses to write a test or exam deems themselves fit enough to do so, and the student must accept the mark obtained. Claims of medical, physical, or emotional distress after the fact will not be considered.

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

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

Computer-marked, multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Late assignments cost 10% of the assignment mark per day late unless an extension has been granted. After a week has passed from the due-date no assignments will be accepted for marking.

To obtain a passing grade in the course, a student must obtain at least 50% on the final exam and the weighted average on the quizzes, assignments and final exam.

Every effort will be made to have homework assignments and quizzes marked and handed back within 2 weeks of the hand-in date. If we are unable to comply with our intended return dates, revised dates will be posted on the course website.

Tentative Assignment and Quiz Schedule

	Posted/Given	Due	Weight
Assignment 1	Th. Jan. 18	Fr. Feb. 2, midnight	10%
Quiz 1	Th. Jan. 25	in class	5%
Assignment 2	Th. Feb. 1	Fr. Feb. 16, midnight	10%
Quiz 2	Th. Feb. 8	in class	5%

Assignment 3	Th. Mar. 8	Fri. Mar. 23, midnight	10%
Quiz 3	Th. Mar. 15	in class	5%
Assignment 4	Th. Mar. 22	Fri. Apr. 6, midnight	10%
Quiz 4	Th. Mar. 29	in class	5%
Final Exam	TBA		40%

Assignment, Quiz and Exam Rules

- If for any reason the assignment and quiz schedule cannot be adhered to, the marks will be pro-rated.
- Assignment descriptions will be posted on the course website at least one week before the due date.
- Any changes, updates, and clarifications to assignments will also be posted on the website. It is your responsibility to monitor these pages closely.
- The submission of assignments is electronic using OWL.
- When a student submits an assignment for evaluation, this student automatically certifies that the material she/he has handed in is exclusively her/his own work.
- No electronic devices may be in the possession of students during quizzes and the Final Exam.
- The Final Exam and quizzes are close-book. A reference sheet (provided by the instructor) is allowed the Final Exam, but not for the quizzes.
- In case of questions regarding the marks, please note that no quizzes or exams will be accepted for re-marking later than two weeks after they have been marked. We reserve the right not to re-mark quizzes or exams that have been written in pencil.

Lecture attendance

All students are expected to attend all classes. A student found to be missing a large number of classes without acceptable reasons risks being denied a passing grade.

Missed Test or Final Exam

If you are unable to meet a course requirement (final exam or assignment due date) due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. This rule does not apply for quizzes; see below.

If you are a science student, the Academic Counselling Office of the Faculty of Science is located in WSC 191, and can be contacted at 519-661-3040 or scibmsac@uwo.ca. See their [web site](#).

A student requiring academic accommodation due to illness must use the Student Medical [certificate](#) when visiting an off-campus medical facility.

For further information, please consult the [university's medical illness policy](#), and the [university's policy on academic accommodation for student with disabilities](#).

There are no make-up tests or quizzes. If your faculty's Academic Counselling Office has approved your circumstances, the value of the missed test or quiz will be reallocated.

If you miss the Final Exam, contact your faculty's Academic Counselling Office as soon as possible. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation", follow [this link](#).

Ethical Conduct

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](#).

All assignments are individual assignments. You may discuss approaches to problems among yourselves. However, the actual details of the work (assignment coding, answers to concept questions, etc.) must be your individual effort. Assignments that are judged to be the result of academic dishonesty will, for the student's first offence. You are responsible for reading and respecting the Computer Science Department's policy on [Rules of Ethical Conduct](#) and [Scholastic Offenses](#).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in 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](#).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Accessibility

Please contact the course instructor if you require lecture or printed 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 ext. 82147 if you have questions regarding accommodation.

Mental Health

All students who are in emotional/mental distress should refer to [Mental Health@Western](#). for a complete list of options about how to obtain help.

Support Services

Learning-skills counsellors at the [Student Development Centre](#). 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 Winter/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

The [website](#) for Registrarial Services.
