Overview

Welcome to CSC258H – Computer Organization. This course is a transistor-to-assembly survey of modern computers. The goals of this course are to introduce you to the practical considerations of implementing a theoretical computing model and to provide you with experience working at the interface between hardware and software.

We will begin the term by obtaining an intuition about transistor-level design and will study how physical devices are abstracted using a mathematical model (boolean logic). We will use this model to describe the primary components of a modern processor and will build a simple processor using these components. Finally, we will place our processor in the larger context of a modern computer with a memory hierarchy and will examine how the compiler toolchain connects the underlying hardware with the high-level languages we like to use.

Contact Information

Instructor	Andrew Petersen
Lecture and	L0101: Mon 3:10-5:00 (DV2080)
	L0102: Tue 3:10-5:00 (IB345)
Practicles	Various times, Wed and Thu (DH2010, 2020, and 2026)
Website	Via the Portal or `https://mcs.utm.utoronto.ca/~peters43/258/`
Office Hours	Mon 1:30-2:45, Tue 10-12, and Fri 10-11 and 2-3 (DH3096)
Email	andrew [dot] petersen [at] utoronto.ca

Discussion Board

The course has a discussion board that should be your first stop for CSC258 information. Everyone can post questions (and answers), and you're welcome to discuss the recommended exercises there.

The discussion board is required reading. You are responsible for all announcements made in lecture and on the discussion board. I will also occasionally send urgent course announcements and feedback to the email address you have registered with the registrar, so be sure to read your email frequently.

The board could become very active, so to make it easier for everyone to find answers to their questions, please use good forum etiquette. Use informative titles for your posts, so that people can find relevant information. Read the posts already on the board before posting a question so that you don't post a duplicate. Finally, be professional in tone and behaviour. If your post duplicates previous questions or violates forum etiquette, it may be removed to keep the board organized.

Email

Please use email for personal issues and the discussion board to ask general course-related questions. An informative subject line like "CSC258: the labs give me a headache" really helps. I try to respond to email by the end of the next day. However, due to volume, it may take longer, especially on weekends and near due dates.

Anonymous Feedback

If you wish to provide feedback to the instructor, an anonymous feedback link is available through the course webpage. Since the sender cannot be determined, comments sent through the feedback system are considered public, and they may receive a response at the beginning of class or on the discussion board. Specific questions about content will generally be ignored; the discussion board or office hours are a better forum.

Topics

Week of ...	**Topic**
Jan 8	Course Intro and Number Systems
Jan 15	Transistors and Boolean Logic
Jan 22	Logic Design
Jan 29	Computational Devices
Feb 5	Registers
Feb 12	State-based Logic
Feb 19	**Reading Week!**
Feb 26	Catch-up / Review
Mar 5	Basic Processors
Mar 12	The Compiler Toolchain
Mar 19	Instruction Sets and Assembly
Mar 26	Interrupts and System Calls
Apr 2	The Memory Hierarchy
Apr ???	Final Exam

Readings

The weekly readings will be posted on the course website. To keep costs down, all materials for this course will be available online, either through the web or through the university library. If you are not accessing the library website from on campus, you will need to log in with your utorid to access library resources.

In addition to the readings, I will post recommended exercises. You may wish to complete more, similar exercises to prepare for the weekly quizzes or final exam, but I strongly recommend that you at least complete the recommended exercises and reading. Otherwise, you will not be able to participate during class or to perform well on the weekly quizzes.

Marking Scheme

Reading Quizzes (30%) Each week, I will assign reading and associated exercises that should be completed before the class meeting. In the "lecture" section, we will build on the readings through activities, practice exercises, and discussion. Then, at the beginning of the lab (practical), we will complete a brief quiz on that material. The quizzes have two goals: to provide feedback on your progress through the course and to encourage active participation in the class meetings.

Each quiz is worth 3%. There will be eleven quizzes, allowing you to miss one without penalty. If you complete all the quizzes, I will drop the lowest one.

Labs (20%) The labs (practicals) are an important component of this course. The lectures survey the course content and present short examples, and in the labs, you will apply these concepts and investigate some of them at a deeper level.
During the lab period, the TAs will ask you to demonstrate your progress *during the lab session*. Hence, you must be well-prepared to work on the lab during the session. The lab handouts will be available 4-5 days in advance of the first lab meeting so that you have time to read the handouts and start work.

Final Exam (50%) The course has a three-hour final exam. The exam will feature questions similar to the recommended exercises and quizzes. You must obtain a mark of at least 40% on the final exam to pass the course. If you do not receive a 40%, your final mark will be set to be no higher than a 47%.

Missing a Lab

Since the quizzes are being held in lab and because lab work is being checked in lab, you must attend the practical section that you are enrolled in. (Otherwise, everyone will show up to the last lab of the week, and the TAs will not be able to help and check everyone.) If you are unable to attend your lab, please get in contact with me as soon as possible – and preferably before the lab meeting. In case of illness, have your doctor complete an official U of T medical certificate. For other emergencies, be prepared to provide some kind of documentation.

Academic Offenses

All of the work you submit must be done by you *alone*, and your work must not be submitted by anyone else. Sharing your work or using outside resources without prior permission and appropriate citation is academic fraud and is taken very seriously. The department uses software that compares programs for evidence of similar code. Please read the Rules and Regulations from the U of T Calendar (especially the Code of Behaviour on Academic Matters), an excerpt of which is available here:

`http://www.governingcouncil.utoronto.ca/policies/behaveac.htm`

Please don't cheat. It is unpleasant for everyone involved, including us. Here are a couple of guidelines to help you avoid plagiarism:

- Never discuss marked work or look at another student's solution, whether it is on paper, a board, or on a computer screen, unless that student is your partner and the work is explicitly team work.
- Don't allow your solution to be viewed by or come into the possession of another student. Maintain absolute control of your work – including notes and partial solutions – at all times.
- Do not use material that you find online without discussing the issue with your instructor. (Generally, you will be able to use it as long as it is properly attributed and isn't the key part of the work you are being asked to complete.)