Computer Science Practice and Experience: Development Basics

Pedram Pasandide

McMaster University

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1 Contact Information

Instructor

Pedram Pasandide pasandip@mcmaster.ca

My Office Hours

Monday	11:30AM - 12:30PM
Wednesday	11:30AM - 12:30PM

Teaching Assistants

Laeek Ahmed Shaikh shaikl3@mcmaster.ca
Jingze Dai daij24@mcmaster.ca

2 Schedule

The course runs from June 19th to August 4th. Classes will not be held on Monday July 3rd (Canada Day).

2.1 Lectures

Days	Room	Time
Monday	PGCLL B131	9:30AM - 11:30AM
Wednesday	PGCLL B131	9:30AM - 11:30AM

2.2 Labs

For labs, the same topics covered on Mondays, will be taught on Wednesdays. So, you **only** need to participate in Monday's labs **OR** Wednesday's labs. On **Mondays**, the lab will be held in room **BSB 244**, and on **Wednesdays** it will be held in room **BSB 249**.

Days	Room	Time
Monday	BSB 244	12:30PM - 4:30PM
Wednesday	BSB 249	12:30PM - 4:30PM

During labs, you will learn how to install Linux, practice Visual Studio Code installation as IDE, prepare documentation for reports and results, work with GitHub, and solve examples related to assignments and projects.

3 Course Description

The main priority of this course is preserving your mental health! You are going to have lots of sneaky errors, when everything looks perfect. Nothing is worse than seeing the red colour of an error for a programmer compiling the code. But this is the only way you can learn, by debugging! Don't be shy to ask for help.

This course provides an introduction to programming, followed by a brief review of working in the Linux terminal and environment. In the "Fundamentals of C Language" module, students will cover topics such as compiling and executing programs, variable types, and statement structures like loops and if conditions. The "Intermediate Topics in C" module delves into subjects such as debugging, pointers, and dynamic memory allocation. Moving on to the "Advanced Topics in C" module, students will explore concepts including structs and typedefs, reading a file on C, and write or output the result on a file.

ChatGPT covers the majority of topics addressed in this course, and it is likely to handle a significant portion of the tasks performed by programmers in the near future, as well as creating many new jobs! During this semester, I will emphasize **more advanced topics** in the course. **However, these topics will be optional for students to explore**. One of these optional topics is **parallel computing**, which aims to enhance computation speed by utilizing multiple CPUs. Additionally, there will be a brief overview of **Artificial Neural Networks (ANN)** and a demonstration of solving a simple example. It is important to note that this topic is also optional.

3.1 Prerequisites

One of:

- COMPSCI 1MD3
- ENGINEER 1D04

3.2 Resources

I have installed Linux Ubuntu distribution. Students need only read the lecture notes that I'll update every week, and lab notes. If you are interested in more detailed programming in C you may take a look at:

Prof. Barak Shoshany, McMaster University, Lecture Notes for Foundations of Modern Scientific Programming.

4 Grading Policy

The weights for the final grade in this course is shown in the following table.

Activity	weight
Quizzes (up to three) in labs	15%
Assignment 1	15%
Assignment 2	25%
Final Project	45%

For the final project, the instructor will select **three topics**, and students can choose one of them. The final project can be completed either **individually** or in **a group of two students**. One or two of the topics will be about parallel computing or machine learning, for those students who want to learn more about such topics.

Submissions for assignments and projects must be **original** and written by the students themselves from scratch. If students submit code that has been written by someone else, they will receive a **zero grade** for **academic dishonesty**.

While students are allowed to use **ChatGPT** or any generative AI, they must acknowledge that they have used it. Additionally, they are required to **understand the meaning** of each line of code provided by ChatGPT. There may be a request for an in-person presentation from students

to explain the code. It is permissible to include a **short code from other sources**, provided the following **conditions** are met:

1. The copied code is **short** and **not the main component** of the project.

2. The **reference** from which the code was copied is included.

The final project code **must be written in C** and **should not contain any errors**. An error means I cannot compile and run the code, which technically means nothing

4.1 Late Submission Policy

Since it is a short semester, late submissions would not be accepted. MSAF must be submitted online.

5 Academic Integrity

We expect you to demonstrate honesty and ethical behavior throughout your learning journey. Your academic achievements should be built upon the solid foundation of integrity and honesty. It is essential for you to fully comprehend what actions constitute academic dishonesty. Academic dishonesty refers to knowingly engaging in behaviors that lead to unearned academic credit or unfair advantage. Such actions can have severe repercussions, such as receiving a grade of zero on an assignment, losing credit with a notation on your transcript indicating "Grade of F assigned for academic dishonesty," and even facing suspension or expulsion from the university. To familiarize yourself with the various forms of academic dishonesty, please consult the Academic Integrity Policy. Here, we will highlight three examples of academic dishonesty, though this list is not exhaustive:

1. Plagiarism: This occurs when you submit work that is not your own or that has been obtained from another source without proper credit.

2. Improper collaboration in group work: Collaboration is encouraged, but it is essential to respect the boundaries of appropriate teamwork and avoid crossing into dishonest practices.

3. Copying or using unauthorized aids in tests and examinations: Unauthorized aids, such as cheat sheets or devices, should not be utilized during tests or exams.

Remember, fostering a culture of academic integrity is crucial, and we trust that you will make every effort to uphold these principles throughout your academic journey.

5.1 Plagiarism Detection

In certain courses, there might be the utilization of a web-based service called Turnitin.com, which plays a crucial role in identifying the authenticity and ownership of student-submitted work. Additionally, we may employ Moss, a tool that automatically detects similarities in programming code. Students are expected to electronically submit their work either directly to Turnitin.com or through an online learning platform (such as Avenue to Learn) that supports plagiarism detection. This ensures that the submitted work is thoroughly checked for any signs of academic dishonesty.

For more comprehensive information on McMaster University's usage of Turnitin and its policies, please refer to the Turnitin.com website. In conclusion, it is essential to emphasize that plagiarism has no room for escape. We take academic integrity seriously and are committed to upholding its standards.

6 Student Well-being and Code of Conduct

As a strong advocate of student well-being, I deeply resonate with the following quote from my one of my favourite Persian poets:

Human beings are members of a whole, in creation of one essence and soul. If one member is afflicted with pain, other members uneasy will remain. If you have no sympathy for human pain, the name of human you cannot retain. Saadi Shirazi (1210-1292 AD)

Please show respect and understanding for your fellow classmates and TAs. "The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as the problem occurs."