MTH 4300/4299: Programming and Computer Science II

Lecture 01: Syllabus; Dev environment setup; Hello, World!

Jaime Abbariao

◼ Hi

I'm Jaime. This is my third semester teaching at Baruch.

I've taught MTH 3300 and 4300. This is my second time teaching MTH 4300.

I don't have a PhD background like your other professors. I went to Baruch (BA in Math) and then to NYU (MS in Computer Science).

I'm currently a software engineer at Figma, a design software company.

Where are we meeting?

This class meets on Mondays and Wednesdays from 5:40pm - 7:20pm in 6-125

▨ Contact

If you need to contact me, you can reach me at jaime.abbariao@baruch.cuny.edu (mailto:jaime.abbariao@baruch.cuny.edu)

I'll typically get back to you within 24 hours.

Due to poor attendance for them, office hours are by appointment.

You should've passed MTH 3300 (or the CIS-equivalent) or took a placement exam.

But more importantly, you should be comfortable with writing code to solve algorithmic problems.

```python
"""
Given a function that takes an integer `n`,
implement an algorithm to get the sum of its digits.

Input: 345
Output: 12
"""

def sum_digits(n: int) -> int:
    ...
```

If this seems difficult, then you may be in trouble. Please do your best to catch up.

▓ Recommended text

I don't really have a text you should be using, but you can refer to The C++ Programming Language, Fourth Edition, Bjarne Stroustrup

Another resource that students mentioned was helpful last semester was learncpp.com (https://www.learncpp.com/)

Lastly, this class has a strong focus on algorithmic problem solving so I would suggest getting familiar with questions from LeetCode (leetcode.com)

Course Overview

This course serves as an introduction to C++, but with a focus on object-oriented programming, data structures, and algorithms.

Grading

- Final exam: 25%
- Midterm 2: 25%
- Midterm 1: 25%
- Quizzes: 15%
- Problem Sets: 5%
- Attendance: 5%

Exams

There will be 2 midterms and a final exam.

These will be closed-book, paper exams.

If you perform better on the final exam than your lowest midterm, then I'll replace your lowest midterm with your final exam grade.

Exam Policy

- All personal belongings should be set at the front of the class. This includes any electronic devices.
- No bathroom breaks during the exam. If you're having an emergency, you can leave the classroom, but you will not be allowed to continue with the exam.

Unfortunately, I've caught students cheating. If caught, it'll mean a trip to the dean and an F in the course.

Problem sets

Because of AI, problem sets have been rather useless, but we'll have them weekly to reinforce topics. I won't be grading them though other than for submission.

No late problem sets will be accepted.

▦ Quizzes

To reinforce material early, we'll be having quizzes before the start of every class. This will start from lecture 03 onwards.

The quizzes will add up to an entire exam. That being said, your lowest two quiz grades will get dropped.

The quiz questions will also be scoped to the previous lecture's topics, but keep in mind that programming is cumulative.

I'll be depending on you all to bring paper for these quizzes.

Attendance

Attendance will be taken in the form of the quizzes. This means that if you took the quiz for the day it'll count towards your attendance (not the grade itself, but the fact that you took the quiz)

If you miss more than 4 classes throughout the semester, you will receive a WU for the course.

Dev Environment Setup

Choosing your editor

You can use any text editor or IDE you're comfortable with. Here are some popular options:

- Visual Studio Code (Recommended): Free, lightweight, and works on all platforms. Install the "C/C++" extension by Microsoft.

There are other editors like Cursor, Antigravity, or even modal text editors like vim/neovim or emacs.

Installing C++ (macOS)

Open Terminal and run:

```
xcode-select --install
```

This installs the Apple Command Line Tools, which includes g++ (actually Clang).

Installing C++ (Windows)

Follow the instructions from the C/C++ for Visual Studio Code article (https://code.visualstudio.com/docs/languages/cpp)

Testing your installation works

Open your terminal and run:

```
g++ --version
```

You should see version information like:

```
Apple clang version 15.0.0 (clang-1500.0.40.1)
```

or

```
g++ (GCC) 13.2.0
```

If you see an error like "command not found", your installation didn't work or PATH isn't set correctly.

▦ Hello, World

Once you have your dev environment setup, then create a file called hello_world.cpp

Insert the following code snippet into the file:

```cpp
#include <iostream>

int main() {
  std::cout << "Hello, World!" << std::endl;
  return 0;
}
```

To run your code in C++, you have to first compile your code.

```
g++ -o hello_world -std=c++20 hello_world.cpp
```

Then the following command will the program:

```
./hello_world
```