Computer Science Seminar Syllabus

Lectures: Monday - Friday, 9:30-11:30am
Location: CAS 327
Instructor: Tim Jackman
Email: tjackman@bu.edu
Course Website: https://cs-people.bu.edu/tjackman/busc2025

Course Description

This seminar provides an overview of computer science concepts and teaches basic programming skills. Learn about algorithms, variables and expressions, input and output, if-else statements, for and while loops, functions and parameters, and simple data structures. The history of computer science, artificial intelligence, software engineering, computer networking, and computer-human interaction are covered. You will work in groups to code in two programming languages, Scratch and Java, and will choose one language to use for a final project.

Course Information

Assignments

Short homeworks will be given on most days, with the intention of reinforcing that day's lesson or to prepare you for the next lecture. These assignments are **optional**, however completing them will be important to master the material.

Projects

Students will work in groups of 4-5 on a final project. The group will choose to either program in Scratch, MakeCode, or Java. A list of project ideas will be posted on the course website by the end of the first week, but students are encouraged to pursue their own interests. There will be dedicated class time during the second week for working on the project.

Grading

There are no grades during Boston University Summer Challenge. At the end of the program, students will receive a certificate of completion and a letter of evaluation written by me. The letter will consist of a description of this course, your performance (both individually and as a member of our classroom community), and any other feedback I have for you.

Absences

Attendance is mandatory and all absences will be reported to the Summer Term office. If you are too ill to attend, you **must** reach out to the Summer Term office. Do not email me about your absence without first getting approval.

Tentative Course Schedule

Each two hour class will be broken into two blocks (typically 55 minutes each) with a 10 minute break inbetween. During week 2, the second block of each class will be dedicated to working on your group projects. The final day of class will be for presenting projects. It will be held in a different location which can be found in the schedule below.

Date	Topics
Monday July 7	**Course Overview** Introductions **Programming Basics in Scratch** Variables, Conditionals, and Loops
Tuesday July 8	**Intro to Java** Types, Methods, Running a Java Program **More Practice with Java** IO, Errors, Debugging
Wednesday July 9	**Even More Java!** Lists, Arrays, Recursion **Activity:** Drawing with Java
Thursday July 10	**Networking** TCP, The Internet **Activity:** Building a Weather Program with APIs
Friday July 11	**Software Development** Object-Oriented Design, ModelViewController **Activity:** Collaboration and Version Control with Git
Saturday July 12	**No Class**
Sunday July 13	**No Class**
Monday July 14	**Algorithms** Sorting, Binary Search, Big O **Project Block**
Tuesday July 15	**Theory of Computation** P vs NP, Reductions **Project Block**
Wednesday July 16	**Cryptography** Encryption, Blockchains **Project Block**
Thursday July 17	**Machine Learning** Prediction, Large Language Models **Project Block**
Friday July 18	**Presentations** Location: CAS B12