Course Syllabus

Instructor: Sarah Morrison-Smith

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- Office hours: Wednesdays 2-4pm, Thursdays 10am-12pm. Others only by appointment
- She/her/hers

Lab Instructor: Darren Strash

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- Office: Science 3005
- He/him/his

Teaching Assistant Office Hours in Science 2017

- Sun/Mon 4-6pm
- Sun/Mon/Tues/Wed/Thurs 7-10pm

Course Logistics

- Gradescope: <u>https://www.gradescope.com/courses/813142</u>
- Blackboard: <u>https://blackboard.hamilton.edu</u>
- EdStem: <u>https://edstem.org/us/courses/64568</u>
- Perusall: https://app.perusall.com/join/morrison-smith-khw31
- Lectures: MWF 10am-11am, Science 3021
- Labs: T 12pm-2pm or T 2pm-4pm, Science 2017

Prerequisites

CPSCI-101.

Course Description

A second course in programming, concentrating on principled software design techniques. Topics include class design, effective functional decomposition, recursion, and structured data. Students will continue to develop programming proficiency by writing programs in the C++ programming language. Course discussion will emphasize efficient implementations in terms of memory space and running time, computational complexity of algorithms, and an introduction to data structures.

Student Learning Objectives

After taking this course, students should be able to:

- Demonstrate their mastery of appropriate programming constructs in written code.
- Write effective and stylistically acceptable code in C++.
- Apply object-oriented design to new problems.
- Design efficient algorithms and analyze the memory space and running time of those algorithms.
- Select appropriate data structures and implement them in C++.

Course Materials

Practical C++ Programming, S Qualline.

Grading

Your grade will be comprised of the following components:

- Projects (40%). Coding projects are given on a weekly basis (most weeks) and will be equally weighted.
- Midterms (10% each). There will be two midterm exams. Midterm exams will be from 7-9pm on Thursday, September 26th and Thursday, November 14. If you have a conflict with one or both of these exams, please let me know ASAP. All exams are open note, where you are allowed to use any notes you have on paper.

CPCSI 102

Design Principles

- Labs (10%). The purpose of labs is to practice concepts you learn in class and to introduce new ideas. Lab work is not graded, but lab attendance is required. Your lab grade is based on your prompt and engaged attendance. Arriving late and/or engaging in non-lab activities, such as browsing the web or using a cell phone will lower your lab grade. If you have an excused absence for lab, you will need to make it up within a week to receive credit for the lab
- Codelets (10%). Codelets will be assigned after (almost) every class. Each codelet will be a very short programming task that you should be able to complete in approximately 15 minutes. Codelets will give you chances to practice programming frequently, an important practice for learning a new programming language. Codelets are graded right or wrong with no partial credit.
- Attendance and Participation (5%). Class attendance is very important. You should attend every class unless you have a very good reason not to. Please inform me if you know in advance that you will miss a class. If you are sick or have an important appointment at the health or counseling center, please email me before the class and take care of yourself. Your attendance grade will be negatively affected by unexcused absences. Arriving late for class will count as half of an unexcused absence. Additionally, if you expect to miss class for religious, athletic, or academic conflicts, please contact me at the earliest possible time to be excused and arrange for missed work. Your grade here will primarily be based on exit questions that you complete at the end of every class. These exit questions will show me that you are engaging with the material and be a record of your attendance.
- Final Exam (15%). The final exam will be at the assigned time on TBD. All exams are open note, where you are allowed to use any notes you have on paper.

At semester's end, I'll calculate your average based on the stated weights. Grades round to the nearest whole number (92.4 to 92, 92.5 to 93). No grade bumping or extra credit is allowed. grade reflects mastery of course content and meeting or exceeding assignment/exam criteria. Effort isn't a grading factor. We'll use Gradescope for assignment submission and grade posting.

Re-Grade Requests

If you believe I have made a genuine error when grading your assignment, submit a grade review request on Gradescope, referencing the rubric, within one week of posting. After this period, no grade changes can occur. Note that the whole assignment will be reassessed, and **your grade may decrease if I discover additional errors**. Similarly, any concerns about absent grades must be raised within a week of grade publication.

Course Policies

Communication

The preferred means of communication depend on the purpose of the discussion:

- Personal requests: should be sent via email or discussed one-on-one during office hours.
- Questions and discussion of assignments and quizzes: should happen during class, and via the EdStem workspace. EdStem is the best place to post questions or discuss homework assignments. For individual matters, please email me.
- **Course announcements and assignments**: will be regularly posted through EdStem. It is your responsibility to check EdStem regularly for announcements. Missing an announcement, for example, due to absence or not checking EdStem, is not an acceptable excuse for incomplete or incorrect work or missing a deadline.

Late Assignments and Makeups

Late work is not accepted without prior approval. If you contact me at least one business day before the due date with appropriate requests for an extension, you will automatically be given an additional amount of time to make up late assignments equal to the time lost due to the unforeseen circumstance.

Incompletes

Incompletes will be granted for only the most extreme circumstances. To be considered for an incomplete you must 1) let me know at in advance that you are seeking an incomplete, and 2) provide documentation to support the request. This decision is also made in consultation with the Dean of Students.

Code Headers

All code, regardless of the must have a commented header at the top with the description, file name, your name, and collaborators. Code without this header will have points taken off. Here is an example:

```
/*
 * Author: Sarah Morrison-Smith
 * Collaborators: Darren Strash
 *
 * Description: This file defines the implementation of the ExampleClass,
 * which demonstrates basic class functionality in C++. The class includes
 * simple methods to illustrate standard C++ coding practices.
 *
 * File Name: ExampleClass.cpp
 */
```

Academic Integrity & Collaboration

Hamilton's policy on plagiarism can be found in the Honor Code: <u>https://www.hamilton.edu/student-handbook/studentconduct/honor-code</u>. Cases of plagiarism will be taken seriously and referred to the Honor Court. Anything you turn in should be your own work, and each instance of collaboration with or borrowing from others should be properly acknowledged and cited. If you reference anything besides notes from class, the textbook, or the professor, you should cite it in your submission. This course features a significant amount of programming, which falls under this policy.

Important note: you may not have an AI agent (such as ChatGPT or GitHub Copilot) write any of the code you submit in this class. You should not even query such an agent about programming problems. Doing so would be equivalent to having a person write code that you submit, a clear violation of the Honor Code. If you have GitHub Copilot or a similar AI-driven code completion installed, you should disable it for this semester.

That said, I expect, and hope students will collaborate throughout this course, by discussing ideas and algorithms, but not by sharing code (or even looking at each other's code). If you discuss ideas related to an assignment, please cite that collaboration in your submission; this is fine and expected. On the other hand, submitting code or solutions that you did not create yourself is plagiarism. Your citations must be tied to a particular part of the assignment and must (1) identify the source, and (2) describe the nature of the help received. Below are two examples of proper citation in C^{++} , which would appear beside the relevant code:

```
// CITE: Lucy Williams
// DESC: Discussed how to use anonymous functions with filter.
// CITE: http://www.math.rutgers.edu/~greenfie/gs2004/euclid.html
// DESC: Source of Euclid's method for determining GCD.
```

Good rules of thumb:

- Never have anyone else type into your text editor
- Never copy code from another student or the internet
- Cite any collaboration or outside reference you use
- Ask if you are unsure

Public Code Policy

You may not post code you write in this class publicly (e.g. GitHub, your blog, etc.), even after the semester ends. This is to ensure that current and future students aren't able to find answers. You may provide your code privately to potential employers.

Consequences for Academic Dishonesty

Academic integrity is important, and I will not tolerate violations. Egregious violation of these rules (i.e., cheating on a quiz or exam, plagiarism that is beyond overlooking a citation for a line or two of code, etc.) will result in a final grade of 'F' for the class.

Seeking Help

Accommodations

If you believe you may need accommodation for a disability, contact me privately within the first two weeks of the semester to discuss your specific needs. If you have not already done so, please contact Allen Harrison, Assistant Dean of Students for International Students and Accessibility at 315-859-4021, or via email at aharriso@hamilton.edu. He is responsible for determining reasonable and appropriate accommodations for students with disabilities on a case-by-case basis.

Mental Health and Wellness

If you are feeling isolated, depressed, sad, anxious, angry, or overwhelmed, you aren't alone: we all struggle sometimes. Don't stay silent! Talk to a trusted confidant: a friend, a family member, a professor you trust. The counseling center offers completely confidential and highly professional services, and can be contacted at 315-859-4340. If this seems like a difficult step, contact me. We can talk and call or walk to the counseling center together.

Course Outline

Course topics are subject to change. Students will be notified of any changes via EdStem.

Week	Monday	Approx. Topics	Notes
0	08/26	Intro to C++	
1	09/02	Intro to C++	
2	09/09	Arrays and Scope	Thurs: Project 1 Due
3	09/16	Pointers and Memory Management	Thurs: Project 2 Due
4	09/23	Classes and OOP	Thurs: Midterm Exam 1
5	09/30	Array-based Stacks	Thurs: Project 3 Due
6	10/07	Pointer-based Stacks	Thurs: Project 4 Due
7	10/14	Recursion	Friday: No class, Fall break
8	10/21	More Recursion, Classes, and OOP	Thurs: Project 5 Due
9	10/28	More Classes and OOP	Thurs: Project 6 Due
10	11/04	Linked Lists	Thurs: Project 7 Due
11	11/11	Templates	Thurs: Midterm Exam 2
12	11/18	Trees	Thurs: Project 8 Due
13	11/25	Thanksgiving Recess	All week: No class, Thanksgiving
14	12/02	Hash Tables	
15	12/09	Standard Template Library	Thurs: Project 9 Due
16	12/16	Final Exam	Mon: Final Exam, 7:00-10:00pm

Final Exam Date

The final for this class is on Monday, December 16th from 7:00-10:00 PM in our regular classroom of Science 3021.