ECE 551 Programming, Data Structures, and Algorithms in C++
Fall 2014
Dr. Andrew (Drew) Hilton

Course webpage: http://people.ee.duke.edu/~adh39/courses/fall_2014/ece551/
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Class Format

This course will use the “flipped classroom” model for most of the semester. In this model, your homework will be to watch videos of lectures. Class time will be primarily spent working problems and practicing programming. If you do not complete in-class exercises during class time, you will be expected to complete them out of class within 1 week.

Around the start of November, we will return to a “traditional classroom” format, where lectures will be delivered in class. At this time, we expect you to devote your out of class time more fully to completion of your course project (described below).

This course also has a recitation section (Fridays), which will focus on practice problems, as well as some related skills.

Textbook


Note that assigned readings will not start immediately. I will post reading assignment information on the course webpage when appropriate.

The readings are optional: we’ll cover all of the relevant material in the lecture videos, however, you may find it useful to have a different perspective/format.

Assignments and Grading

Your grade for this course will be comprised of four components:

- In Class Exercises: 20%
- Project: 20%
- Midterm Exam: 25%
- Final Exam: 35%

Final letter grades are assigned based on the following scale (with slight modification as described below):

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<tr>
<th>Grade Range</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>&gt;97</td>
<td>A+</td>
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<tr>
<td>91–97</td>
<td>A</td>
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<tr>
<td>90–91</td>
<td>A-</td>
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<tr>
<td>87–90</td>
<td>B+</td>
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<td>81–87</td>
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<td>80–81</td>
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<td>C</td>
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<td>70–71</td>
<td>C-</td>
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<td>&lt;70</td>
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Before assigning letter grades, I may alter the scale by lowering the threshold for a certain grade (e.g., making a B- span 79.5–81 instead of 80–81). Such a change is solely at my discretion, and occurs when the change results in a letter grade more accurately reflecting the quality of the students work and effort.

In Class Exercises

During the “flipped classroom” portion of the course, class time will be dedicated to in-class programming exercises. The expectation is that you will attend class regularly and complete these exercises in the classroom. During these exercises, I will answer questions that may arise, or help you get unstuck as needed. I will generally move around and answer individual questions, but may interrupt everyone to answer a commonly occurring question or clear up a common misconception.

While I expect you to generally finish these activities in class, I recognize that sometimes you must be absent for legitimate reasons, and that sometimes programming tasks take longer than expected. Each of these assignments will be due 1 week from the start of the class period in which it should have been completed. If that date is a holiday, then it will be due at the same time on the next day which class at Duke are in session.

Note that these classworks will typically be broken down into 4 problems. The grading will typically be P1: 40 points, P2: 25 points, P3: 20 points, P4: 15 points (if it is something else, I will tell you).

Project

You will perform one large project on a topic of your own choosing in this class. The only constraint is that it must be implemented in C++. This project is expected to represent a significant programming effort with a tangible/useful result—that is, you should produce a piece of software that performs some interesting/meaningful function.

You are required to submit a project proposal is due 3:00 PM on Friday, October 10th (immediately before fall break). This proposal should specify the functional requirements of your program (i.e., what it will do), a rough plan of how you will design your software, and any specific expertise you are lacking to accomplish your goals (e.g., graphics, sound, networking, etc...)

Your functional requirement should be separated into two categories:

Requirements These requirements should form a substantive project appropriate to the 2 or 3 graduate students that comprise your group. Successful completion of (only) these requirements should yield a project grade in the range of 85–93.

Stretch Goals These should specify additional features to add to the project after completion of the main requirements. Completion of these requirements will add 1–7 points to the project grade.

Your project is due at 10:29 PM on Tuesday, November 25. Extensions will be given through Wed, Dec 3 for any reason. Extensions to this deadline to the deadline past Wed Dec 3 require exceptional circumstances.

Your proposal will be submitted in \LaTeX and pdf format.
Exams

You will have one mid-term exam (during recitation on Friday October 17th), and one final exam (during the scheduled final exam time slot). These exams will be individual effort, however, they will be open book and open notes—you may bring any printed material you want, but may not use any electronic, interactive, or human resources.

Academic Integrity

Academic integrity is very important, and misconduct will not be tolerated in this course. All students should already be aware of a few basic principles which govern academic integrity at Duke in general:

- I will not lie, cheat, or steal in my academic endeavors, nor will I accept the actions of those who do.
- I will conduct myself responsibly and honorably in all my activities as a Duke student.

If I suspect academic misconduct in my class, I will report you to the appropriate Associate Dean, who will carry out the required due process to determine if you committed academic misconduct. If you are found responsible for academic misconduct, I will give you a 0 on the corresponding assignment. The Associate Dean overseeing your case is likely to impose additional sanctions against you.

Some concrete expectations for how you will perform your work in my class:

Classwork

Classwork is for you to learn. You can work with people any way you want, as long as you are learning from it. You need to know this stuff not only for the tests, but also for future classes, job interviews, and programming jobs—if you do not make the best use of this learning opportunity, it is your loss.

Project

Your project will be done in groups of 2 or 3—you are supposed to collaborate freely within your group. However, the work that you turn in is expected to represent solely the efforts of these group members. You should not download or outsource code, or seek help from other groups in implementing your project. You may ask the professor and TAs for assistance in difficulties you cannot solve, or for guidance.

You may use outside resources for general information (C++ syntax, library function reference, etc), but should cite anything you use in your homework. The one exception to the citation requirement is that you may use the Unix man pages without citation. Note that this does not mean that you can download code and use it.

Note that some projects may wish to use non-code related external resources, such as artwork or music. This is not an art/music class, so you are not expected to be able to create high quality artwork or music. If your project requires artistic skills (e.g., you write a game and need to draw things for it), you will not be penalized for the quality of the art. If you choose, however, to
use external non-code resources to improve the aesthetics of your project, you must do so in an academically appropriate manner. Specifically:

1. You must have permission for the resources you use, or the use must fall under the “Fair Use” doctrine. This permission can either take the form of a specific request you have made to the owner of the content, or may take the form of a general license for open or academic use.

2. You must acknowledge (cite) the original source of the work.

Exams

Exams are expected to be entirely individual effort. You may use printed resources (“open book, open notes”), but may not use any electronic, interactive, or human resources. You must keep your eyes on your own paper.

Other

If you are unsure if something is OK, please ask me. If you do not want to ask me because you think I will probably say “no,” that is a good indicator that it is not acceptable.

If you do something wrong and regret it, please come forward. I recognize the value and learning benefit of admitting your mistakes. You should not take this to mean that coming forward of your own volition will absolve you of all consequences, just that it can be taken into account in reducing the sanctions.

If you are aware of someone else’s misconduct, please report it to me or another appropriate authority. Note that this carries even more weight if the misconduct occurs within your own project group: if you are aware that a member of your group committed academic misconduct in the completion of an assignment with your name on it, and you do not report it, you are complicit in the misconduct.