CSE 20311 – Fundamentals of Computing – Fall 2017

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Overview: This course is the first semester in the Fundamentals of Computing and Data structures sequence for computer science and computer engineering majors. In this course, students will learn how to formulate algorithms, apply basic problem solving strategies, and apply techniques to different problem domains.

The programming assignments are the main component of the course, where students will spend a significant amount of time learning the craft of programming and problem solving. The assignments are also designed to give students a “tour” of computer science, touching on algorithms, data processing, simulation, languages, graphics, and more. This course will be a lot of work and also a lot of fun!

Course Outcomes: To successfully complete the course, students must be able to:

- Demonstrate basic proficiency in the C++ programming language.
- Formulate algorithms to solve basic computational problems.
- Develop a strong understanding or Object-Oriented Programming.
- Construct larger programs by identifying and solving sub-problems.
- Apply basic concepts of software engineering.
- Apply pointers, arrays, and structures correctly.
- Apply dynamic memory allocation correctly.
- Apply basic I/O operations to read and write data files.
- Understand the basic concepts of algorithmic complexity.
- Apply basic architectural concepts to program design.


Assignments will have several parts. The first parts will consist of simpler exercises to demonstrate that you can reproduce what you have learned from the book and the lecture. The latter parts will be open-ended exercises that ask you to write a program that solves a non-trivial problem, making use of the same techniques. Use your creativity and write programs that reflect your interest and skills!

Getting Help: Many of the assignments will be challenging; you should not hesitate to get help if you are stuck on a technical problem. The instructor and the TAs have office hours throughout the week, and no appointment is needed to stop by. You may also post questions or problems to the CSE 20311 Piazza group, and the instructor or TAs will respond when they are able, typically on weekday afternoons or evenings. For grading or personal issues, please contact the instructor or the head TA by email.

Where to Find Linux Machines

Cushing 303 is available anytime a class is not scheduled, usually after 5PM.
Fitzpatrick 149 (Engineering Library) is open 24 hours, swipe card late at night.
At all hours, you may access any of the following machines remotely using the secure shell protocol
(use ssh on Linux/Mac or Putty on Windows): student[00-03].cse.nd.edu

You may use your own computer to work on assignments for this class. However, be warned that operating systems and compilers can vary in subtle ways, so a program that works on your machine may need some minor changes before it runs on the ND machines, or vice versa. Your work will be graded on the ND Linux machines, so it is your responsibility to verify that it compiles and runs correctly before turning it in.
**Attendance and Time Management:** To succeed in the class, you should attend all lectures and lab sessions. Programming is a time-intensive activity. It is best done in a state of ‘flow’ when you are concentrating on the problem at hand for an extended period of time without distractions. Expect to use the lab sessions as an opportunity to get started on your assignment, typically completing the first one or two sections in lab. Especially as the assignments become more difficult, expect to spend several hours in the lab on your own time during the week. If you get stuck, you may find it helpful to put the work down, think about it, talk to the instructor or a TA, and return to it later. Both Prof. Bualuan and the TAs are available throughout the week to assist you.

Most assignments will be due on Friday at 10 pm, but you are strongly encouraged to complete them earlier in the week when more help is available. “Last call” for help with the assignment is the end of office hours on Friday evening.

**Grading:** The final grade will consist of the following components:

- 40 % - Assignments
- 30 % - In-class exams
- 10 % - Participation
- 20 % - Final exam

Any request to re-grade an item should be submitted to Prof. Bualuan by email within one week of receiving the grade. Factual or clerical errors will be cheerfully corrected. Matters of judgment are unlikely to be modified. After one week, grades are final.

Late assignments are not accepted; turn them in well before the deadline. There are no makeup exams; be in the right place at the right time.

In grave circumstances, exceptions will be made according to the rules outlined in the Notre Dame duLac student handbook.

**On Collaboration and Academic Honesty:** As a Notre Dame undergraduate, you have already agreed to abide by the ND Honor Code: [http://honorcode.nd.edu/](http://honorcode.nd.edu/)

In this class, you are encouraged to seek out help from other students, from other books, and from sources on the Internet. However, the end goal of any such collaboration is for you to understand the principles so that you can do the work yourself. Any programming or written work must flow from your brain through your fingers to your computer. Submitting someone else’s work or using someone else’s code as if it were your own will result in a referral to the honor committee, where penalties include failure of the course and dismissal from the University.

To clarify, some examples are:

- Discussing concepts and algorithms with others is permitted.
- Helping each other to understand an error message or debug a problem is permitted.
- Looking up the documentation for a function on the Internet is permitted.
- Copying code or solutions from others (regardless of their permission) is not allowed.
- Writing code or completing homework for someone else is not allowed.
- Copying a program (or part of a program) from the Internet is not allowed.
- If you aren’t sure whether a certain form of collaboration is allowed, you should assume that it is not, until you consult with the instructor.

We look forward to a wonderful semester with all of you!