CSCI 120: Computer Science I
Fall 2014

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Office Hours: MWF Noon -- 2:00pm
T Noon -- 1:00pm
or by appointment

1. Course Description

The goal of this course is to introduce students to the techniques computer scientists use to answer questions and solve real-world problems. The course emphasizes the design and creation of computer programs to solve problems and the analysis of program capabilities. In general, what is the best way to solve a given problem? Computer programming will be used as a vehicle for learning computer science concepts. In particular, this course includes data types, control structures, functional abstraction, parameter passing, and structured data, including simple objects.

During the in-class portion of the course, students will learn programming skills and discuss applications of these ideas. Weekly laboratories give students the opportunity for hands-on exploration of the material and the chance to solve real-world problems.

2. Course Objectives

Upon completion of this course, a successful student will be able to:

-- Describe how the concepts of computer science are applied to solve real-world problems.
-- Write programs in Python using assignments, conditions, loops, functions, and objects.
-- Measure the performance of computer programs using appropriate mathematical notation.
-- Break down problems using top-down / bottom-up design and functional decomposition.

3. Textbook

In addition to the following text, supplementary readings will be given periodically during the semester.

-- *Python Programing: An Introduction to Computer Science* (2nd ed), by John Zelle

You should expect to spend about an hour before each class session working through the readings. This means reading the text for detail, studying the syntax for new language features, and working to learn vocabulary -- not just skimming through the material before class.

4. Grading

There are five components of your grade:

-- *Mid-term Exams*: There will be two exams during the semester. Weight: 20%
-- *Final Exam*: A final exam will be given during the College-scheduled exam time. Weight: 15%
-- *Lab assignments*: These will be performed during the lab periods. The lab assignments will involve short programming problems and research questions. Most labs will be performed individually, but some may allow you to work in teams of size 2. Weight: 30%
-- *Projects*: These will be distributed throughout the semester and are to be performed individually. They will involve longer and more challenging programming assignments. Weight: 25%
-- *Participation*: This involves attending and actively participating in classroom activities. Weight: 10%

5. Course Policy

5.1 Late Work

I will accept work beyond its due date within reason and with *prior notification* and *discussion*. Late work may be penalized depending on the justification for its tardiness.

5.2 Attendance

Attendence is not mandatory, but it may affect the participation component of your grade. Also, it will be extremely detrimental to your learning to miss class, and you will not benefit from the support of the instructor or TAs if you miss the scheduled lab.

If you are going to miss an exam due to a conflict, you must let me know in advance and arrange for an alternative exam time. If you miss an exam due to illness or some other circumstance, you must let me know as soon as possible and provide appropriate documentation.

5.3 Academic Honesty

Please read the College's Academic Honesty Policy (which you can find in the Student Handbook).

Since collaboration with your colleagues will be an important part of your careers, collaboration is permitted on all graded assignments (*with the exception of exams*). However, you have to turn in your own copy of each assignment *in your own words*. Note that "in your own words" is not meant superficially--collaboration is not copying (digital or otherwise). This applies to programming assignments as well.

For example, if a homework assignment asks you to provide an argument that a given statement is correct, *collaboration* means discussing the high level ideas of an argument with a colleague. *Copying* is transcribing a colleague's argument (and perhaps changing variable names/words).

5.4 Academic Accommodations

Please let me know immediately if you have any disability that requires accommodation. Students who which to request accommodations in this class for a disability should contact Ms. Elaine Mara, Assistant Director of Academic & Disability Support, located on the lower level of Monocacy Hall (extension 1401). Accommodations cannot be provided until authorization is received from the office of Academic & Disability Support.

6. Schedule

Week	Topic	Reading
1	Computer Hardware and Software. Compiling. A First Program.	Ch. 1 Ch. 2
2	Input / Output. Assignment Statements. Definite Loops. Using Libraries. Numeric Representation and Types.	Ch. 2 Ch. 3
3	Using Objects. Graphics. Strings.	Ch. 4 Ch. 5
4	Decision Statements. Lists. List Processing.	Ch. 7 Ch. 5
5	Test #1. Looping Statements. Loop Designs. Loop Patterns.	--- Ch. 8
6	Loop Designs. Loop Patterns. Functions.	Ch. 8 Ch. 6
7	Parameters and Return Values. Top-Down Design. Bottom-Up Design.	Ch. 6 Ch. 9
8	Fall Break. Unit Testing.	--- TBD
9	More Unit Testing. Test #2.	--- ---
10	Big-Oh Notation. Algorithm Analysis..	Malik
11	Selection Sort. Insertion Sort. Bubble Sort.	---
12	Sorting Analysis. Defining Classes. Encapsulation.	--- Ch. 10
13	Object-Oriented Design. File Processing.	Ch. 12 Ch. 5
14	Test #3. Thanksgiving Break.	--- ---
15	Prisoner's Dilemma. Review.	TBD
16	Final Exam	---

The details of this syllabus and schedule are subject to change based on our progress through the material.