

Computer Science 121  
 Introduction to Computer Programming  
 Spring 2019

Instructor: Dr. Chris Healy

My office is located in Room 200-I in Riley Hall. My office hours are MWF 10:30-1:20, TR 1:00-2:15, and also by appointment. Please see me if you ever have any questions during the course. Office phone number 294-2233 and e-mail address [chris.healy@furman.edu](mailto:chris.healy@furman.edu)

Class Meetings

- Section 1: MWF 1:30-2:20 in 31 Plyler Hall.  
 Labs are held Tuesdays 2:30-4:30 in 108 Riley Hall.
- Section 2: MWF 9:30-10:20 in 101 Riley Hall.  
 Labs are held Wednesdays 2:30-4:30 in 201 Riley Hall.

Purpose

This course introduces you to some of the fundamental concepts in computer science. We will become acquainted with the computer as a problem-solving machine. This course provides hands-on practice using the Python programming language. By the end of the term, students should be capable of the following:

- read a given Python program to predict what should happen when it runs
- transcribe an English pseudocode solution into a working Python program
- for a given routine problem, design and implement a solution in Python
- document, test and debug programs effectively

Web site

Course announcements, notes and handouts can be found here:  
<http://cs.furman.edu/~chealy/cs121>

Textbook

None. Reading material will be given to you during class or on the class Web site.

Grade calculation

- 10% Labs
- 25% Homework
- 20% Test #1    Friday, February 15, 2019
- 20% Test #2    Friday, March 29, 2019
- 25% Final      Section 1: Thursday, May 2, 2019, 12:00-2:30
- Section 2: Tuesday, May 7, 2019, 8:30-11:00

Please note the dates/times of these exams. Any appropriate documentation supporting special arrangements necessary for any test must be given to me during the first week of class.

### Attendance

Furman's attendance policy states that you cannot pass a course if you miss more than one-quarter of the class meetings. If you miss a test, you will earn a score of zero, unless your absence is excused. If you know in advance that you cannot take a test, please let me know as soon as possible so that you can take it early. Otherwise, if you are absent from a test due to an excused absence, then your final exam grade will substitute for that test's score. Travel plans are not an acceptable excuse for absences.

### Preparation

Study includes reviewing notes, becoming acquainted with the material to be discussed in the next class, completing homework assignments and preparing for exams. Studying on a consistent schedule each day will work far better for you than cramming before a test. Don't forget the most important thing – I am here for you. Please come to my office anytime for help or advice in this course.

### Homework and Labs

This class features a lot of hands-on experience on the computer. Keeping up with the lab work is essential because most lab activities build on previous ones. Please keep your work organized so that you can quickly refer to work you have done previously.

Please note the following homework policy, because it may differ from other classes you have had. Each student is required to turn in an individual homework submission. Getting help from someone else or collaborating with another student when working on homework is allowed. If you do get help, include a statement at the end of your homework paper that says who you worked with, exactly what portion of the assignment you needed help with, and to what extent you still do not understand how to do the problem(s). Your homework grade will not be affected by this statement. Examples of such a statement might be: "Donald Duck and I worked on the second problem together, and now I fully understand how to do it." Or, "I did not know how to format the output correctly. Mickey Mouse showed me how to do it, but I still would not be able to do it myself."

If you don't include a statement of assistance at the end of your homework, I will assume that you were able to complete all of the problems by yourself. The reason why I am tracking whether you needed help on certain problems is so that I can contact you about what you don't understand. My mission is to help you master all of the material of the course.

Plagiarism means receiving assistance without the proper attribution, and this will not be allowed. Also, if you are using my collaboration policy merely as a way for other people to do your homework for you, this will also not be allowed. Cheating penalties will be substantial, up to and including an automatic failing grade in the course. The minimum penalty for cheating related to homework will be a failing grade on the assignment.

### Deadlines and late policy

Type of activity	Deadline	Is late work accepted?
Labs	Six calendar days after the lab period	No
Homework (programming assignment)	This will be stated on the handout	Yes, but the submission will be penalized 10 percentage points. No work will be accepted more than 2 weeks late.

### Guiding principles for students in Computer Science classes

1. We are here to learn and explore.
  - a. Seek discussions with the instructor and classmates about the material to reinforce your understanding and practice communicating ideas.
  - b. Have fun. Live in the moment (i.e. don't dwell too much on the difficulties of yesterday or tomorrow). Enjoy the journey and intellectual feast. Be enthusiastic about what you are doing.
2. I want you to be successful in this class. Every day is an opportunity for an epiphany. Don't let mistakes or setbacks hold you back. After some effort, things can suddenly click in your mind.
3. Learn by doing, not just passively reading, listening or watching.  
Each study period needs to have a clear goal.  
Pay attention to the big picture and the facts that you are collecting.
4. Be organized: Take notes on what you read. Review earlier material as needed. Create a cumulative study outline every few weeks. Maintain a portfolio of your work.
5. Be patient when solving a homework or lab problem.
  - a. There is no need to rush.  
Don't worry if your first attempt at a solution is wrong.  
Read all instructions and be methodical.  
Take time to gather your thoughts.  
Deliberately write out your thought process and plan of attack.
  - b. A computer program or other homework assignment may take up to several hours to complete. In programs you need to comment your code as you go, because you will quickly forget what looks obvious right now! Realize that you don't need to finish everything in one sitting.
  - c. Break up large problems into small, more manageable pieces.
  - d. Don't get bogged down with too many mechanical details. Computing is all about removing tedium from routine tasks.

6. Be curious, and always ask questions.
  - a. Find a topic or application that you are enthusiastic about.
  - b. Consider alternative solutions to a problem.
  - c. When finishing a problem, ask yourself if this problem or its solution lends itself to other problems.
7. Computer science is about logic, structured thinking, information, communication and problem solving. Thus, it has connections to many other fields in the sciences, humanities and social sciences. You will find the analytical techniques useful in your career.

#### Outline of course topics

1. Problem-solving procedure
2. Anatomy of a computer program
3. Coding conventions (identifiers, comments, indenting, blank lines)
4. Variables, types and expressions
  - a. Operator precedence and associativity
  - b. Assignment statements
  - c. Strings
  - d. Lists
  - e. Dictionaries
5. Control structures such as if-statements and loops
6. Input/output
  - a. Error checking of input
  - b. File I/O
  - c. Tokenizing input
  - d. Formatted output
  - e. Image I/O
7. Functions
8. Simple recursion
9. Built-in library functions in Python (e.g. random numbers, looking up the time, examining files in a folder)
10. Types of errors that occur in computer programs
11. Handling exceptions to avoid run-time errors