

Introductory course in computer programming for computer science majors and minors using a high-level programming language. The emphasis is on problem solving, designing, writing, and executing structured programs.

This course covers the general principles of programming and assumes students have no prior programming experience. Although it is an introductory course, it does move at a rapid pace. So, students are encouraged to keep up with the lectures and labs.

Credits: 3

Time and Location: online

Instructor: Chris Merritt

Office Location: MH315

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Office Hours: 12:30pm – 2:30pm, or by appointment

Textbook

None. Handouts and other resources will be provided for each topic covered.

Learning Objectives of the Computer Science Major

1. Demonstrate real-world problem-solving skills through the use of programming languages, database design, and computer system architecture.
2. Participate successfully in post-baccalaureate professional activities such as graduate studies, computer science practice or other fields such as science, law, medicine, politics, business, or clergy.
3. Demonstrate an understanding of how computing components (software design, system design, and system administration) fit into systems as a whole, including human-computer interaction and ethical considerations.
4. Create at least one major project that involves group development and implementation.

Course Objectives

By the end of this course you should be able to:

- Describe what a programming language is and the history of Python. (3)
- Understand the fundamental structures and components of a computer program. (3)
- Design and develop Python computer code to solve problems. (1, 3)
- Debug and evaluate Python code to assess and/or improve its quality. (1, 3)
- Understand and maintain existing Python code. (1, 3)
- Document a computer program – primarily with code comments. (3)

Topics (not necessarily in the order we will cover them)

| Number | Topics |
|--------|---------------------------------------|
| 1 | Programming and programming languages |
| 2 | String data types |
| 3 | Numeric data types |
| 4 | Variables |
| 5 | Conditional expressions |
| 6 | Boolean values and data types |
| 7 | Operators |
| 8 | Casting |
| 9 | Loops |
| 10 | Floating point numbers |
| 11 | Manipulating strings |
| 12 | Mathematical operations |
| 13 | Lists, tuples, sets, and dictionaries |
| 14 | File handling |
| 15 | Modules |
| 16 | Functions |

Assignments

There are a total of ten labs. Most of these will be assigned on Fridays. These are designed to be short enough for students to complete during a single class period. So students should expect to be able to complete them in about an hour. Labs are usually due the Wednesday following the date they are assigned. Labs are to be submitted via the course's "Coursework" page on MyBLC unless the instructions say otherwise.

Quizzes

There will be twelve quizzes throughout the semester. These are scheduled and highlighted on the "course schedule" handout. They will occur most Fridays. Quizzes will be completed online (on MyBLC) and will have a time limit. Each quiz may include topics from anything covered up to the date of the quiz. Only ten of the twelve quizzes will count toward your final grade. Your two lowest quiz grades will be dropped at the end of the semester.

Mid-Term Exam: The mid-term exam will include questions from all topics covered up until the exam (weeks 1 through 6). If you do okay on the quizzes, then you should do okay on the exam. There will be no topics on the exam that were not already covered on a quiz. The mid-term exam is worth 50 points.

Final Exam: Like the mid-term, the final exam will include questions from all topics covered since the beginning of the semester and will be based on the quiz questions. If you do okay on the quizzes, then you should do okay on the final exam. The final exam is worth 100 points.

Projects

The best way to demonstrate what you have learned from the course is to put its concepts together into a nontrivial computer program. We will complete two mini-projects during the course of the semester. During weeks 8 and 15 you will be given step-by-step directions on how to build a simple program that actually does something and includes all the topics we will have covered prior to those weeks. The instructions will be in plain English and pseudocode (computer code written as plain English). Your job will be to follow the written instructions and build the program. Each mini project is worth 50 points.

Grading

A total of 400 points is possible divided between the following areas.

| | |
|-------------------|-----------------------------------|
| Labs (10) | 10 points each (100 points total) |
| Quizzes (10) | 5 points each (50 points total) |
| Mini-projects (2) | 50 points each (100 points total) |
| Mid-Term | 50 points |
| Final Exam | 100 points |

Grading Scale

| | |
|----|------------------|
| A | 370-400 points |
| A- | 358-369 points |
| B+ | 346-357 points |
| B | 330-345 points |
| B- | 318-329 points |
| C+ | 306-317 points |
| C | 290-305 points |
| C- | 278-289 points |
| D+ | 266-277 points |
| D | 250-265 points |
| D- | 238-249 points |
| F | below 249 points |

Expectations

There are a lot of assignments (labs and quizzes) in this course, but all of them are designed to be completed during a single class period (about an hour). It is important that you keep up with the assignments. None of them are very big, but if you fall behind it may be difficult to catch up. Late assignments will not be accepted except in extraordinary circumstances. If you know you will be unable to complete an assignment on time you must let the instructor know before the assignment is due. However, that does not guarantee late work will be accepted.

Since this is an online course it is expected that you have access to a computer. A Windows PC is recommended because the screen shots and demonstrations I show in class will use a Microsoft Windows operating system, but you may use either a Windows or Mac computer.

Academic Honesty

As stated in Bethany's academic catalog, "Every student is expected to be honest." Much of the work done in this course will be completed in class, so opportunities to plagiarize are limited. Nonetheless, students are expected to observe academic honesty on assignments, labs, and projects. Work submitted by a student must be the original work of that student.

Computer science courses especially have what seems to be a "gray area" when it comes to academic plagiarism. There are many software developer blogs and other websites that offer help in the form of computer code that is intended by the authors to be copied and used by others. Software IDEs such as Visual Studio often provide "canned" code that must be used to develop applications using that IDE. Agile software development methods like Scrum recognize collaboration as an important part of software development.

I do recommend using these resources because they can greatly add to your understanding of the solution to a problem. However, wholesale copying of code or text from one of these sources is not acceptable. Not to mention, some online source code may not work. If you reference online or other sources, you should read and understand those sources, but write your own code. You must document any material you obtain or adapt from an outside source either in code comments or on a "Sources Cited" page for written work.

The following “Recording and Privacy” statement is addressed to students who attend this course in-person and/or synchronously online. Since COMS 103 Z is an asynchronous online course, you will be viewing recorded sessions of the live in-person classes. Therefore, the same privacy policy applies to you. You may view the sessions for your own use in this course, but you may not download, share, replicate, or publish the recordings, in whole or in part, or use the recordings for any other purpose.

Recording and Privacy

In this class, software will be used to record live class sessions. As a student in this class, your participation may be recorded. These recordings will be made available only to students enrolled in the class. The intent of the recordings is to assist those who cannot attend the live session or to serve as a resource for those who would like to review content presented during the current semester in which the recording is made. You may not download, share, replicate, or publish the recording, in whole or in part, or use the recording for any other purpose without the written approval of the instructor. Recordings are for personal academic use only, where personal academic use is restricted to the personal study use of the individual. Any violations to this policy must be reported to the Vice President of Academic Affairs and may result in disciplinary action, including expulsion from the college. All recordings will become unavailable to students in the class shortly after the course ends.

If you have any concerns about being recorded during class, please discuss your options with your instructor or express your concerns to the Dean of Faculty.

STUDENTS WITH DISABILITIES

The Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) require that “no qualified person shall, solely by reason of disability, be denied access to, be excluded from participation in, or the benefits of services, programs or activities or subjected to discrimination under any program or activity receiving federal assistance.”

If you have a disability, or feel you are in need of accommodations, please contact Kristi Ringen in the Academic Resource Center (kringen@blc.edu, 507-344-7730).