

Instructor

Mon/Wed 6:00-9:30 PM PHO 202

July 6 - Aug 10

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Course Description

MET CS201 Introduction to Programming

Introduction to problem-solving methods and algorithm development. Includes procedural and data abstractions, program design, debugging, testing, and documentation. Covers data types, control structures, functions, parameter passing, library functions, and arrays. Laboratory exercises in Python. Laboratory course.

Information technology concepts and foundational mathematics (number systems, set theory, algebra, and functions) are utilized throughout. Develops systematic, analytic and logical thinking and prepares students to take graduate-level courses requiring programming. The course includes an overview of Unix/Linux operating systems, processes for designing, building, and testing computing systems, including systems analysis and project management. The Python programming language and associated tools will be utilized.

Learning Objectives

The course is designed to prepare students without a technical background in information technology to succeed in graduate courses in the The Master of Science (MS) in Computer Science program is intended for computer professionals and for people who intend to move into the computer field from other areas of study.

Master of Science in Computer Science (MS) program. Students often ask how completion of the course relates to acceptance into these graduate programs. The department policy is as follows:

“In making the decision regarding matriculating a student, the Admissions Committee considers the student’s prior academic record and any relevant experience. The Admissions Committee may require some applicants to take CS 201 to better prepare for graduate study in information technology before making a final matriculation decision. For students who complete CS 201 the Committee also considers each student’s performance in each of the areas of CS 201, such as computer systems, systems analysis, mathematics, databases, computer networks, and, in particular, programming. If a student has demonstrated that they are ready for graduate study in *each* of these areas, as demonstrated by a combination of prior coursework, professional experience, and their performance in CS 201, then the Admissions Committee will matriculate them into the program. Simply passing CS 201 does not assure matriculation, though excellent performance in all areas of CS 201 will earn an applicant matriculation into the program.”

For students coming from other programs, this course is a technically-oriented introductory survey of Computer Programming syntax and methods.

Course Objectives

This course will enable you to:

- Understand how algorithms are developed and implemented in higher level languages
- Be able to design, write, and debug programs that use sequence, selection and repetition statements, methods, primitive data types, arrays, and that do I/O Understand object oriented concepts including classes, objects and inheritance
- Be able to solve mathematical problems that involve algebraic expressions and operations

Course Organization

This course has 6 weeks of content divided into modules. Each module includes one major information technology topic. Each module consists of:

- reading in text and online materials. material should be read in advance.
- lab (you are required to bring a wifi enabled computer to class)
- assignments
- quizzes

Assignments and quizzes are due as indicated. Solutions to information technology assignments and quizzes will be provided after they are graded. No Make-ups for missed Quizzes. Late HW will be penalized 20% per day and will not be accepted more than one week late.

Course Outline

Module 1

Readings Discussions Assignments Assessments:

- Text* - *LPtHW* Preface, Exercises 0-8
Appendix: Command Line Crash Course
- Quiz 0 Wed July 6 Blackboard, Dropbox, Slack, ssh
 - Quiz 1 Fri July 8

Module 2

Readings Discussions Assignments Assessments:

CLASS will be held on Friday June 3 (substitute for Mon May 30, Memorial Day)

- Text* - *LPtHW* Exercises 9-16
- *MoP* van Rossum, Gosling, Stroustrup
- Assignment I due Mon July 11
 - Quiz 2 Wed July 13

Module 3

Readings Discussions Assignments Assessments:

- Text* - *LPtHW* Exercises 17-24
- Assignment II due Mon July 18
 - Quiz 3 Wed July 20

Module 4

Readings Discussions Assignments Assessments:

- Text* - *LPtHW* Exercises 25-32
- *DsfS* Chapter 1 Introduction
Chapter 2 A Crash Course in Python
- Assignment III due Mon July 25
 - Quiz 4 Wed July 27

Module 5

Readings Discussions Assignments Assessments:

- Text - *LPtHW* Exercises 33-39
- *DSfS* Chapter 3 Visualizing Data
- Assignment IV due Mon Aug 1
 - Quiz 5 Wed Aug 3

Module 6

Readings Discussions Assignments Assessments:

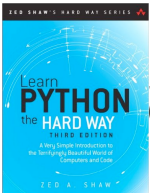
- Text - *LPtHW* Exercises 40-44
- *DSfS* Chapter 9 Getting Data
Chapter 10 Working with Data
- Quiz 6 Mon Aug 8
 - Project due Wed Aug 10

Project Details

- To be distributed separately

Resources

Books



Shaw, Zed (2015). *Learn Python the Hard Way*, (3rd ed.). O'Reilly Media. ISBN 978-0321884916 LPtHW



Grus, Joel (2015). *Data Science from Scratch, First Principles with Python* (1st ed.). O'Reilly Media. ISBN 978-1-491-90142-7



(optional)

Ramalho, Luciano (2015). *Fluent Python* (1st ed.). O'Reilly Media. ISBN 978-1-4919-4600-8

Textbooks can be purchased from [Barnes and Noble at Boston University](#).

(<http://bu.bncollege.com/>)

Required Software

You will be writing Python programs in this course and using the standard distributions. Instructions for downloading and installing this software will be provided.

To facilitate the program development process, we will be using a variety of Python versions (2 & 3) and several environments, Idle, IPython, Jupyter, PyCharm.

Python has implementaion that run under Unix, Linux, Windows, OS X.

General Software

All assignments are to be submitted online.

Boston University Library Information

Boston University has created a set of videos to help orient you to the online resources at your disposal. An introduction to the series is below:

Course Grading Information

Grading Percentages

| | |
|--------------------|------------|
| Quizzes | 30% |
| Assignments | 30% |
| Project | 30% |
| Discussion | 10% |

Letter grades will be assigned based on numeric average ranges according to the following:

| | | | | | |
|-------------|----------------|-----------|--------------|-----------|----------------|
| A | 95–100 | A- | 91–94 | | |
| B+ | 87–90 | B | 83–86 | B- | 80–83 |
| C+ | 76–79 | C | 72–75 | C- | 68–71.7 |
| D | 60–67 | | | | |
| Fail | < 60 | | | | |

Quizzes

Taken in class or online as directed.

Technical Support

Assistance with course-related technical problems is provided by the IS&T Help Center. To ensure the fastest possible response, please fill out the online form using the link below.

IT Help Center Support

Email

ithelp@bu.edu (<mailto:ithelp@bu.edu>) Please use “BB Learn Question” in the subject line

Web

<http://www.bu.edu/tech/web/course-sites/blackboard-learn/> (<http://www.bu.edu/tech/web/course-sites/blackboard-learn/>)

Phone

(888) 243-4596

(subject to change)