



East China Normal University International Summer Session

CPP 11 Introduction to Computer Programming

Term: July 5th –August 8th, 2018

Instructor: Bernard Brooks

Home Institution: Rochester Institute of Technology

Office hours: 12:40-1:50 Monday and Wednesday

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Teaching Assistant: TBD

Course Description

This introductory course begins with core programming basics such as: data types, control structures, algorithm development, and program design with functions. The course uses the Python programming language. We will discuss the concept of Object-Oriented Programming, and data and information processing techniques. Students will learn to solve real-world problems such as numerical integration and random number generation from a target distribution. This class is primarily focused on having the students learn to write practical and useful code.

Course Overview

This course is designed to learn a skill: programming in python. No previous programming ability is assumed. We will all be expected to help each other learn. The quizzes and assignments are individual efforts but the learning in preparation for those assessments is cooperative.

Course Goals:

A student who satisfactorily completes this course should:

- 1) Create python programs to implement numerical methods in mathematics
- 2) Gain an understanding of object oriented programming
- 3) Gain an understanding of programming structures, loops and strings.
- 4) Learn to think 'computationally' so that they can begin to numerically solve problems.

Required Text

Practical Programming (2nd edition), An Introduction to Computer Science Using Python 3
by Paul Gries, Jennifer Campbell, Jason Montojo

<https://pragprog.com/book/gwpy2/practical-programming>



Required program and equipment

Students are required to have their laptops with them during class so we can all work on the concepts as they are presented. Use the link

<https://www.python.org/downloads/>

to install python on your laptop. Also students will need the editor:

<https://wingware.com/downloads/wing-101>

Academic Honesty

Students are expected to maintain high standards of academic honesty. Specifically, unless otherwise directed by the professor, students may not consult other students, books, notes, electronic devices or any other source, on examinations. Failure to abide by this may result in a zero on the examination, or even failure in the course.

You cannot submit code you find online as your own code; even if you just use a portion of it. If you can find it online so can I and so can your classmates. Using code you find on the web is plagiarism in this course.

Course Hours

The course has 25 class sessions in total. Each class session is 110 minutes in length, for a total of 2750 minutes of in-class time. The course meets from Monday to Friday from July 5 to August 8. ECNU awards 4 credits for this course. Different universities may count course credits differently. Consult officials at your own home institution.

Attendance

Summer school is very intense and to be successful, students need to attend every class. Occasionally, due to illness or other unavoidable circumstance, a student may need to miss a class. ECNU policy requires a medical certificate to be excused. Any absence may impact on the student's grade. Moreover, **ECNU policy is that a student who has more than 3 absences will fail the course. Arriving late or leaving early will count as a partial absence.**

Grading Policy

ECNU awards grades of A, A-, B+, B, B-, C+, C, D, and F. Most colleges and universities do not award transfer credit for grades of D or F.

In this course, grading will be based on the following:

- 20% In class quizzes
- 40% Assignments
- 30% Final project
- 10% Classroom engagement (attendance, attention, participation in discussions)

General expectations:



Students are expected to:

- *Attend all classes and be responsible for all material covered in class and otherwise assigned. Any unexcused absence may impact a student's grade. Moreover, ECNU policy is that a student who has more than 3 absences will fail the course. Arriving late or leaving early will count as a partial absence.*
- *Complete the day's required reading and assignments before class*
- *Review the previous day's notes before class; make notes about questions you have about the previous class or the day's reading*
- *Participate in class discussions and complete required written work on time.*
- *Refrain from texting, phoning or engaging in computer activities unrelated to class during class. Students who do not do this will be asked to leave the class*
- *While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.*

Course Schedules

The planned schedule sketched out below may be modified to suit the interests or abilities of the enrolled students or to take advantage of special opportunities or events that may arise during the term.

WEEK ONE: July 5-11

Thurs: Introductions, install, first program

Fri: Expressions, Types, variables and assignment statement

Mon: Functions, **Quiz 1 on Thurs-Fri material**

Tues: Strings and printing

Wed: Modules **Quiz 2 on Mon-Tues. material**

WEEK TWO: July 12-18

Thurs: Modules cont.

Fri: Lists and indices

Mon: slicing, aliasing, nesting **Quiz 3 on Wed.-Fri material**

Tues: files as lists

Wed: Boolean logic **Quiz 4 on Mon-Tues. material**

WEEK THREE: July 19-25

Thurs: If statements and conditionals

Fri: Loops

Mon: Loops cont. **Quiz 5 on Wed.-Fri material**

Tues: File processing

Wed: multiple fields **Quiz 6 on Mon-Tues. material**



WEEK FOUR: July 26-Aug. 1

Thurs: Writing to files

Fri: Searching algorithms

Mon: Timing **Quiz 7 on Wed.-Fri material**

Tues: Linear, binary search

Wed: Sorting **Quiz 8 on Mon-Tues. material**

LAST DAY TO DROP CLASSES

WEEK FIVE: Aug. 2-8

Thurs: Testing and debugging

Fri: Object oriented programming

Mon: GUI's **Quiz 9 on Wed.-Fri material**

Tues: More GUI's

Wed: **Final Project due (30%)**