





1 Website

<https://www.swamiiyer.net/cs110/> 


2 Course Description

An introduction to computer programming – the concepts involved in using a high-level language and the program development process. The goal of this course is proficiency in the design and implementation of programs of significant size and complexity. This course is quite demanding because of the length of the programming exercises assigned. This is the first course in the computer science major sequence.

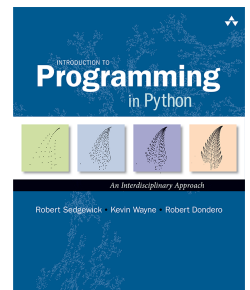
Prerequisites: Math 140  credits or placement; or Math 130  with a B or higher in the previous semester; or permission of the instructor.

This course meets program outcome  1d (be proficient in at least one in-demand programming language). Students who successfully complete this course will be able to tackle computational challenges that they might encounter later in their careers. Students interested in computer science will be well-prepared to delve deeper into the field and students in science and engineering will be able to incorporate computation into their studies.

3 Text

Introduction to Programming in Python: An Interdisciplinary Approach  by Robert Sedgewick, Kevin Wayne, and Robert Dondero

The text offers an excellent introduction to computing principles, motivating each principle by examining its impact on specific applications drawn from fields ranging from materials science to genomics to astrophysics to internet commerce.



4 Topics Covered

- Course Mechanics
- Programming Environment
- Software and Hardware
- Imperative Programming
 - Your First Programs
 - Basic Data Types
 - Control Flow
 - Collection Data Types
 - Input and Output
- Functional Programming
 - Defining Functions
 - Libraries and Applications
 - Recursion
- Object-oriented Programming

- Using Data Types
- Creating Data Types
- Designing Data Types
- Algorithms and Data Structures
 - Analysis of Algorithms
 - Searching and Sorting
 - Stacks, Queues, and Symbol Tables

5 Grading

Students' final grades are determined as follows:

Assessment	% of Final Grade
Projects (best 5 out of 6)	25
Exams (1 and 2) [†]	70
Participation	5

[†] If you score at least 80% on both exams, the higher of the two scores will be considered as your exam average.

The projects:

#	Project
1	Straight-line Programs
2	Programs with Control Flow
3	Mozart Waltz Generator
4	RSA Cryptosystem
5	Atomic Nature of Matter
6	Markov Model

6 Academic Honesty

Cheating on the projects or exams constitutes a violation of the academic honesty code, and will be handled according to the procedures delineated in the Student Code of Conduct, Appendix B [↗](#).

7 Accomodations for Students with Disabilities

Section 504 of the Americans with Disabilities Act of 1990 offers guidelines for curriculum modifications and adaptations for students with documented disabilities. If applicable, students may obtain adaptation recommendations from the Ross Center for Disability Services [↗](#). The student must present these recommendations and discuss them with the instructor within a reasonable period, preferably by the end of Add/Drop period.