CS 276 Introduction to Computational Programming

Summer 2024

Course Credits: 4
Contact Hours: 56 hours
Instructor: TBA
Email:TBA

COURSE OBJECTIVES

This course introduces fundamental concepts in computational programming, Emphasis is placed on problem-solving through programming, data structures, algorithmic thinking, and the utilization of computational tools in various scientific disciplines. Students will not only acquire essential programming skills but will also learn how to apply these skills to solve real-world scientific problems.

Upon Completion of this Course, students will be able to:

1. Understand fundamental data structures and algorithms relevant to computational sciences.
2. Develop proficiency in a programming language suitable for scientific computing.
3. Acquire skills in data processing, cleaning, and analysis using programming tools.
4. Cultivate algorithmic thinking skills to devise efficient solutions for computational challenges.
2. Apply programming knowledge and skills to solve scientific problems and analyze data.

PREREQUISITES

MAT 190 Calculus and Analytic Geometry II

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
2 Quizzes	20 Points
Midterm	25 Points
2 Programming Projects	20 Points
Final Exam	35 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

A ≥ 90 > B ≥ 80 > C ≥ 70 > D ≥ 60 > F.

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Computation and Programming Using Python: With Application to Understanding Data. John V. Guttag, MIT Press, 2021.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Introduction to Python Topic 2: Some Simple Numerical Programs Topic 3: Recursion and Globe Variables Topic 4: Palindrome testing **Assessments:** Quiz#1

Module 2	**Topics:** Topic 5: Modules and Files Topic 6: Common Functions for Accession Files Topic 7: Testing and Debugging Topic 8: Testing boundary Conditions **Assessments:** Quiz#2 Programming Project 1
Module 3	**Topics:** Topic 9: Program with Bugs Topic 10: Exception and Assertions Topic 11: Using Exceptions for Control Flow Topic 12: Control Flow without a Try-except **Assessments:** Midterm
Module 4	**Topics:** Topic 13: A Simple Introduction to Algorithmic Complexity Topic 14: Implementation of Subset Test Topic 15: Implementation of List Intersection Topic 16: Generating the Power Set **Assessments:** Programming Project 2
Module 5	**Topics:** Topic 17: Data Structures Topic 18: Implementing List Topic 19: Linear Search of a Sorted List; Sorting a List of Names Topic 20: Implementing Dictionaries using Hashing **Assessments:** Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

1) Late assignments are not acceptable and are subjected to grade deductions.
2) Assignments submitted in the wrong format will be counted as not submitted.
3) Failure to submit or fulfill any required course component results in failure of the class.
4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACEDEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.