



蘇州大學  
Soochow University

# CS 426 Advanced Topics in Comparative

## Programming Languages

Winter 2024

**Course Credits:** 4

**Contact Hours:** 56 hours

**Instructor:** TBA

**Email:**TBA

### COURSE OBJECTIVES

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This course is designed to introduce students to different programming languages and their features, strengths, and weaknesses. Students will learn how programming languages are designed, how they differ in syntax, semantics, and features, and how to choose the right language for specific tasks.

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

1. Understand the principles and characteristics of different programming paradigms
2. Evaluate the suitability of different programming languages for specific tasks
3. Design and implement data structures and algorithms using various programming languages
4. Compare and contrast different programming languages based on their features, strengths, and weaknesses
5. Apply programming language concepts in problem-solving and algorithm development

### PREREQUISITES

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CS 231 Systems Programming

### GRADING

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Grades will be determined by accumulating points, with 100 points being the



maximum, as follows:

ITEM	POINTS
Quizzes	20 Points
Midterm 1	15 Points
Midterm 2	15 Points
Project	20 Points
Final Exam	30 Points
Total	100 Points

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

$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$ .

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

## COURSE MATERIALS

### **Required Texts:**

Scott, Michael L., *Programming Language Pragmatics*, 4th Edition, Morgan Kaufmann.

### **Recommended (Optional) Texts or Other Materials:**

None

## COURSE TOPICS

MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: The Art of Language Design Topic 2: Programming Language Syntax Topic 3: Names, Scopes, and Bindings Topic 4: Semantic Analysis <b>Assessments:</b> Quiz#1



Module 2	<b>Topics:</b> Topic 5: Target Machine Architecture Topic 6: Core Issues in Language Design Topic 7: Control Flow Topic 8: Type Systems <b>Assessments:</b> Quiz#2 Project
Module 3	<b>Topics:</b> Topic 9: Composite Types Topic 10: Subroutines and Control Abstraction Topic 11: Exception Handling Topic 12: Data Abstraction and Object Orientation <b>Assessments:</b> Midterm#1 Project
Module 4	<b>Topics:</b> Topic 13: Functional Languages Topic 14: Logic Languages Topic 15: Concurrency Topic 16: Scripting Languages <b>Assessments:</b> Midterm#2 Project due
Module 5	<b>Topics:</b> Topic 17: A Closer Look at Implementation Topic 18: Building a Runnable Program Topic 19: Run-Time Program Management Topic 20: Code Improvement <b>Assessments:</b> Final Exam

## ATTENDANCE

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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**

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- 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**

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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).

### **ACADEMIC INTEGRITY POLICY**

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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.



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## **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.