



蘇州大學
Soochow University

CS 320 Software Design

Winter 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email:TBA

COURSE OBJECTIVES

In this course, students will learn to design software using both structured programming and object-oriented programming concepts. The aim of this course is to learn the process of software design, describe the different stages in this design process, how object-oriented and functional design strategies are complementary, design quality attributes, agile methodologies.

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

1. Develop knowledge and understanding of the historical developments that have led to current practices in software design and development, and of emerging trends and technologies in this field;
2. Develop skills in management appropriate to the design and development of software solutions;
3. Develop competence in the techniques of systematic problem analysis, program construction and documentation;
4. Describe and use design patterns in the design and development of your software.

PREREQUISITES

CS 220 Introduction to Computing System, CS 240 Object-oriented Programming

GRADING

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

ITEM

POINTS



4 Labs and Assignments	20 Points
2 Quizzes	20 Points
Group Project	20 Points
Midterm Exam	15 Points
Final Exam	25 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:

Gamma, Helm, Johnson, and Vlissides, *Design Patterns: Elements of Reusable Object-Oriented Software*, Addison-Wesley, 1995.

Recommended (Optional) Texts or Other Materials:

Bernd Bruegge and Allen H. Dutoit, *Object-Oriented Software Engineering: Using UML, Patterns and Java*, 2nd Edition, Prentice Hall, 2003.

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Program Analysis and Design within the System Development Life Cycle Topic 2: Evolution and Development of Program Design Topic 3: Software Process Models Topic 4: Software Process Activities Assessments: Lab #1 Assignment #1



Module 2	<p>Topics: Topic 5: Design Process for Structured Program Design Topic 6: Notational Languages Topic 7: Sequence, Selection, and Loop Structures within a Structured Design Solution for an Operation Topic 8: While, Until, For Loops, and Nested Loops within a Structured Design</p> <p>Assessments: Lab #2 Assignment #2 Quiz #1</p>
Module 3	<p>Topics: Topic 9: Single Dimensional and Parallel Arrays Topic 10: Modular Code Topic 11: Agile Software Development Topic 12: System Modeling</p> <p>Assessments: Midterm Exam</p>
Module 4	<p>Topics: Topic 13: Architectural Design Topic 14: Object-Oriented Design using UML Topic 15: Design Patterns Topic 16: Open-Source Development</p> <p>Assessments: Lab #3 Assignment #3</p>
Module 5	<p>Topics: Topic 17: Attributes and Methods for Candidate Classes Given a Problem Description Topic 18: Operations with a Full UML Signature Topic 19: Validation and Verification Testing Topic 20: Software Testing Process</p> <p>Assessments: Lab #4 Assignment #4 Quiz #2</p>



Module 6	<p>Topics: Topic 21: Software Evolution Topic 22: Software Maintenance Topic 23: Software Project Management Topic 24: Quality Management and Configuration Management</p> <p>Assessments: Group Project Final Exam</p>
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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.



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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).

ACADEMIC 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.