SABANCI UNIVERSITY
CS 48000 / CS 58005 - Special Topics in CS: Software Design Patterns
Spring 2021-2022

Instructors

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- FENS G013
- E-mail: anil.koyuncu
- Lectures
    - Thursday 11:40-12:30
    - Friday 08:40-10:30
    - https://sabanciuniv.zoom.us/j/99542656193
- Office Hours
    - Friday 10:40-11:30
    - Online by appointment

IMPORTANT NOTE

THIS SYLLABUS IS PREPARED FOR AN **HYBRID EDUCATION SEMESTER**. IN CASE OF A CHANGE OF EDUCATION METHODS (HYBRID, PHYSICAL, OR ANY OTHER MODEL) DURING THE SEMESTER DEPENDING ON NEW PANDEMIC RULES **THIS SYLLABUS WILL BE UPDATED/CHANGED ACCORDINGLY**.

CONTENT

This course introduces the use of software design patterns. Topics include design patterns (creational, structural and behavioral patterns), architectural patterns, anti-patterns, object-oriented design principles and programming idioms will be discussed.

This course will use term-long group projects to give students real-life practical experience with patterns by building software systems.

OBJECTIVE

To introduce the principles of object-oriented (OO) analysis and design, as well as software architecture, through OO principles and design/architectural patterns.

To practice the application of object-oriented software development principles through a team project.

To develop teamwork and communication skills through a team project.

LEARNING OUTCOMES

Differentiate an existing architecture or design patterns.

Generate and justify architecture and/or design given a collection of requirements.

Produce and present concise and unambiguous architecture and design descriptions.

Create and implement an architecture and design, refining it into a complete system.

Course outline

OOP mechanism

Object-oriented design principles

Creational design patterns

Behavioral design patterns

Structural design patterns

Architectural design patterns

TextBook (Optional)

Textbook is just for reference, all the necessary materials will be provided with lecture notes.

1- Gamma, Helm, Johnson, and Vlissides. Design Patterns : Elements of Reusable Object-Oriented Software.Addison-Wesley, 1994
2- Head First Design Patterns, 2nd Edition by Eric Freeman, Elisabeth Robson
(https://www.oreilly.com/library/view/head-first-design/9781492077992/
)

Tentative Grading (subject to change)

Midterm Exam	20%
Final Exam	30%
Course Project*	50%
Quiz & Homework & Participation**	5%

*Receiving a project score less than 50/100 automatically results in a failing grade.

**Bonus extra grade

Course project

A systematic discovery of patterns from open source project artifacts

Constraints:
- 3 / 4 person teams
- SCRUM-like methodology
- Issue & Project Tracking
- Version Control
- Feature branches
- Pull requests

Course Grading Catalog

A	100-95
A-	94-90
B+	89-85
B	84-80
B-	79-75
C+	74-70
C	69-65
C-	64-60
D+	59-55
D	54-50
F	<50

Exam Policies

Unless otherwise noted**,** exams are in the classroom, closed books and closed notes; no computing or communication devices are allowed during the exams.

In case of online exams :
- During the exam, the TAs will be proctoring online over Zoom. You'll be assigned to the Zoom session of one of the TAs.
- Each student will also be assigned a personal GoogleMeet link. When the exam begins, the students are supposed to click the provided link and press 'Record Screen'. The TA will join this meeting arbitrarily in order to check whether the recording has started appropriately and the entire screen is shared.
- Note that during the exam, each student must be connected to both Zoom and GoogleMeet links. Once connected, Zoom will be used to share your computer's camera and microphone and GoogleMeet for screen recording.
- Make sure to check that your setup (i.e., webcam, microphone, etc.) function properly before the exam.

In the case of non-compliance with this and other declared exam procedures, your exam will be void.

Exam Review Policy

Students are allowed to review their midterm and final examinations. You can only review your grades based on an appointment with the primary instructor of the course <u>within 7 days</u> after the respective grade is announced.

<u>Grade bargaining will absolutely not be tolerated.</u>

Expectations from Students

- Students are expected to attend all classes. You must attend the Zoom lectures, recitations, and real-time online exams with your SU email account.

- Students are responsible for the material covered in class even if it is not part of the lecture notes published on the website (Sometimes we explain some stuff on the board). That is why attendance is important.

- Students are responsible to check their emails (Sabanci University accounts), SUCourse and course website daily for any announcements related to this course.

- **PLAGIARISM WILL NOT BE TOLERATED.**

  - Any act of plagiarism may result in a direct fail (F) of the course.

Make-up Policy

No make-up is allowed for the **quizzes, homeworks, and/or project milestones.** Students automatically get 0 (zero) from the respective grade item if any of them is missed.

Make-up is only allowed for the midterm and final examination to those with an official report from the University Health Center and to those with an official permission notice from the university for participating in a university event on the date of the exam in question. Students must submit their reports/notices to one of the instructors **before** the exam in question. The ones having other excuses should contact the instructors within the day of the exam to be missed and then the instructors will decide whether these students are allowed to take the make-up exam. Any excuses to be brought to the attention of the instructors after the exam will **not** be considered. **No exceptions to these rules**!