TED UNIVERSITY, COURSE SYLLABUS

Faculty	Engineering	Department	SENG

Course Code & Number	**SENG 315/ 451**	**Course Title**	Software Architectures
Type of Course	☑ Compulsory ☐ Elective	**Semester**	☑ Fall ☐Spring ☐Summer
Course Credit Hours	(2+0+2) 3	**Number of ECTS Credits**	3
Pre-requisite	CMPE 114	**Co-requisite**	None
Mode of Delivery	☑ Face-to-face ☐ Distance learning	**Language of Instruction**	☑ English ☐ Turkish
Course Coordinator	Dr. Özlem ALBAYRAK	**Course Lecturer(s)**	Dr. Özlem ALBAYRAK
Required Reading	Main material: Software Architecture in Practice, Bass, Clements, Kazman Others are provided weekly on the LMS	**Course Assistant(s)**	TBA

Course Catalog Description	Introduction to software architectures, architectural types, modeling of software architectures, architectural evaluation methods, software production lines, model-driven architectures, service-driven architectures, architectural display languages, pattern-based development, interface-based development, contemporary software architectures, microservise architectures, cloud computing services.
Course Objectives	This course aims to enable the students to achieve the below stated learning outcomes.
Course Learning Outcomes	Upon successful completion of this course, a student will be able to LO1. Recognize the concept of software architecture, LO2. Demonstrate software design skills, LO3. Employ online tools to design software architectures LO4. Apply architecture design criteria to different problems, LO5. Recognize quality attributes

Teaching Methods & Learning Activities	☑ Telling/Explaining ☑ Discussions/Debates ☑ Questioning ☑ Reading ☑ Peer Teaching ☐ Scaffolding/Coaching ☑ Demonstrating ☑ Problem Solving ☐ Inquiry ☑ Collaborating ☐ Think-Pair-Share ☐ Predict-Observe-Explain ☐ Microteaching ☐ Case Study/Scenario Analysis	☐ Simulations & Games ☑ Video Presentations ☑ Oral Presentations/Reports ☐ Concept Mapping ☐ Brainstorming ☐ Drama/Role Playing ☐ Seminars ☐ Field Trips ☐ Guest Speakers ☑ Hands-on Activities ☐ Service Learning ☑ Web Searching ☐ Experiments ☐ Other(s): ....

Assessment Methods (Formal & Informal)	☑ Test/Exam
	☑ Quiz/Homework
	☑ Oral Questioning
	☐ Performance Project
	   ☐ Written
	   ☐ Oral
		☐ Observation
		☐ Self-evaluation
		☑ Peer Evaluation
		☐ Portfolio
		☑ Presentation (Oral, Poster)
		☐ Other(s): ....

Student Workload (Total 112 Hrs)	☑ Lectures ....**28** hrs ☑ Course Readings ....**7** hrs ☐ Workshop .... hrs ☑ Online Discussion .... hrs ☐ Debate .... hrs ☐ Work Placement .... hrs ☐ Field Trips/Visits .... hrs ☐ Observation .... hrs ☐ Laboratory Applications .... hrs ☑ Hands-on Work ....**10** hrs ☑ Quizzes ....**12** hrs ☑ Midterm I…….….........................**10** hrs ☐ Midterm II…….….............................. hrs ☑ Final….….......................................**20** hrs	☑ Resource Review ....**7** hrs ☐ Research Review .... hrs ☐ Report on a Topic .... hrs ☐ Case Study Analysis .... hrs ☑ Oral Presentation ....**3** hrs ☐ Poster Presentation .... hrs ☐ Demonstration .... hrs ☐ Web Designs .... hrs ☐ Mock Designs .... hrs ☑ Team Meetings.............................**7** hrs ☑ Other (Project).............................**8** hrs

COURSE POLICIES
I. Attendance
Attendance to the lectures are not mandatory, yet highly suggested.
II. Missed Work
There will be no make-up for quiz exams. Make-ups for midterm and final exams will be provided if the student can provide a legal document (a health committee report taken maximum three days before the exam date) confirming a life-threatening health issue at the time of the examination.
III. Late Assignment Submission Policy
No late assignments are accepted. Thus, late assignments get zero.

IV. Extra Credit

Extra credits will not be offered.

V. Plagiarism

"All of the following are considered plagiarism:
- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not" (www.plagiarism.org)

ChatGPT or other chatbots can be used only for allowed cases and with a must reference. The reference should include data and time, prompt and URL used.

Plagiarism is a very serious offense and will be penalized accordingly by the university disciplinary committee. The best way to avoid accidentally plagiarizing is to work on your own before you ask for the help of other resources.

VI. Cheating

Cheating has a very broad description which can be summarized as "acting dishonestly". Some of the things that can be considered as cheating are the following:
- Copying answers on examinations, homework and laboratory works,
- Using prohibited material on examinations,
- Lying to gain any type of advantage in class
- Providing false, modified or forged data in a report
- Plagiarizing
- Modifying graded material to be re-graded.
- Causing harm to colleagues by distributing false information about an examination, homework or laboratory.

VII. Class Participation

By actively participating in class, you can improve your learning process and immediately confirm what you have learned and what you have not internalized.

VIII. Class Readings

Class readings are highly suggested. The material covered in class by your instructor will only provide a fundamental understanding of the general context. If you are willing to effectively learn something, you must actively work on it yourself. Reading is one of the most successful ways of learning about a topic.

COURSE ASSIGNMENTS

A. Mid-term Exam I [30%]

There will be one midterm examination.

B. Quizzes and check points [30%]

There will be three in class quizzes.

E. Final [40%]

There will be a final examination worth 40% of the overall grade.

GRADING
A. The course will be graded based on a curve.

TENTATIVE COURSE OUTLINE		
No	**Week**	**Topic**
1	23.Sept.2024	Introduction to the Course
2	30.Sept.2024	Architectural Structures, Views, Patterns
3	07.Oct.2024	Context of Software Architecture, Stakeholders, Technical Debt
4	14.Oct.2024	Specifying Quality Attributes (Quality Attributes Scenarios, Tactics) Quiz I (10%)
5	21.Oct.2024	Quality Attributes (Availability, Interoperability)
6	28.Oct.2024	Quality Attributes (Modifiability, Usability)
7	04.Nov.2024	Midterm Exam I (30%)
8	11.Nov.2024	Quality Attributes (Performance, Security)
9	18.Nov.2024	Applied Patterns (Layered, Model View Controller) Quiz II (10%)
10	25.Nov.2024	Applied Patterns (Pipe and Filter, Client Server)
11	02.Dec.2024	Service-Oriented, Publish-Subscribe, Microservices
12	09.Dec.2024	Quiz III (10%)
13	16.Dec.2024	ATAM: Method for Architecture Evaluation
14	23.Dec.2024	Modeling Software Architecture
		FINAL (40%)

COURSE ASSESSMENTS & LEARNING OUTCOMES MATRIX

Assessment Methods	Course Learning Outcomes
Midterm Exam I	LO1, LO2
Quizzes	LO1, LO2, LO3, LO4, LO5
Final	LO1, LO2, LO3, LO4, LO5

SUSTAINABLE DEVELOPMENT Goals*		Related sub-goals**
1. No poverty	☐	
2. Zero hunger (No hunger)	☐	
3. Good health and well-being	☐	
4. Quality education	☒	
5. Gender equality	☒	
6. Clean water and sanitation	☐	
7. Affordable and clean energy	☐	
8. Decent work and economic growth	☐	
9. Industry, Innovation and Infrastructure	☐	
10. Reduced inequality	☐	
11. Sustainable cities and communities	☐	
12. Responsible consumption and production	☐	
13. Climate action	☐	
14. Life below water	☐	
15. Life on land	☐	
16. Peace, justice and strong institutions	☐	
17. Partnership for the goals	☐	
*Please click for goals and you can choose more than one.		
**Please click for related sub-goals and you can choose more than one. Example: 1.1.1 or 1.a.2		

Prepared By & Date	Dr. Özlem ALBAYRAK 17/09/2024	Revision Date	17/09/2024

ChatGPT or any chatbot/ or LLM can be used for allowed check points and assignments.
It is mandatory to refer to these bots and models including the URL, prompt, and time and date, and any add on used. Otherwise it will be considered as cheating.

Please welcome to visit about the centers and units of TEDU.