COURSE DESCRIPTION FORM	
Course Code and Name	CENG483 DESIGN PATTERNS (TECH. ELECT.)
Course Semester	7
Catalogue Data of the Course (*Course Content*)	Principles and usage of software design patterns
Course Textbooks	1. Design Patterns: Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, 1994. 2. Head First Design Patterns, 2nd Edition by Eric Freeman, Elisabeth Robson, 2020.
Supplementary Textbooks	1. Software Architecture: Foundations, Theory, and Practice, Richard N. Taylor, Nenad Medvidović, Eric M. Dashofy, 2009. 2. Object-Oriented Software Engineering Using UML, Patterns, and Java 3rd Edition by Bernd Bruegge, Allen Dutoit
Credit (*ECTS*)	6
Prerequisites for the Course (*Attendance Requirements*)	Attendance mandatory
Course Type	Technical Elective
Language of Instruction	English
Course Objectives	The aim is to explain the requirements, problem-solving approaches, and usage of software design patterns in software development.
Course Learning Outcomes	1. Explains and utilizes design patterns 2. Performs object-oriented program analysis 3. Provides solutions to software problems using design patterns
Instruction Method *(Face-to-face, Distance education etc.)*	Face-to-face
Weekly Schedule of the Course	1. Object-oriented programming principles 2. Object-oriented analysis and design 3. UML diagram modeling 4. Requirements and classification of using design patterns 5. Creational design patterns and implementation examples 6. Creational design patterns and implementation examples 7. Structural design patterns and implementation examples 8. Structural design patterns and implementation examples 9. Structural design patterns and implementation examples 10. Behavioral design patterns and implementation examples 11. Behavioral design patterns and implementation examples 12. Behavioral design patterns and implementation examples 13. Behavioral design patterns and implementation examples 14. Concurrency and anti-design patterns
Teaching Activities *(The time spent for the activities listed here will determine the amount of credit required)*	Weekly theoretical course hours: 3 Reading activities Internet search and library work Making a report Preparing and making presentations Midterm and revision for midterm Final exam and revision for final exam
Assessment Criteria	

	Number(s)	**Weight (%)**
Midterm exam	1	30
Assignment	3	30
Application		

	Project		
	Practice		
	Quiz		
	Final exam	1	40
	Total	5	100

Workload of the Course

Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload
Weekly theoretical course hours	14	3	42
Weekly practical course hours			
Reading activities	12	3	36
Internet search and library work	10	3	30
Designing and implementing materials			
Making a report	2	4	8
Preparing and making presentations	1	8	8
Midterm and revision for midterm	1	10	10
Final exam and revision for final exam	1	16	16
Total workload			150
Total workload/ 25			6
Course Credit (ECTS)			6

Contribution Level between Course Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.					X
2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.			X		
3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.			X		
4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.					X
5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.			X		
6	Knowledge of the effects of engineering practices and the standards used in these practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the consequences of engineering solutions in the fields of information security and law.					

	7	Acting in accordance with engineering professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.		X			
	8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).		X			
	9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).			X		
	10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.					
	11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.			X		
Lecturer(s) and Contact Information	Assist. Prof. Dr. Çağrı Şahin cagrisahin@gazi.edu.tr						