



Object-Oriented Analysis and Design (SE 321) Course Details

Course Name	Course Code	Term	Lecture Hours	Application Hours	Lab Hours	Credit	ECTS
Object-Oriented Analysis and Design	SE 321	Autumn	3	0	0	3	7

Pre-requisite Course(s)	COMPE 225
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Course Language	English
Course Type	Compulsory Departmental Courses
Course Level	Bachelor
Mode of Delivery	Face to Face
Learning and Teaching Strategies	Lecture
Course Coordinator	

Course Lecturer(s)	
Course Assistants	
Course Objectives	The objective of this course is to provide students to gain knowledge and skills to perform object-oriented software analysis and design.
Course Learning Outcomes	<p>The students who succeeded in this course;</p> <ul style="list-style-type: none"> • Understand the approach and obligations of the professional systems analyst and the analogies between software and other branches of engineering • Discuss the aims and objectives of an software system in the context of a human activity system • Use object-oriented analysis and design techniques to document existing information systems, to propose alternative new systems, and to specify required information systems • Be aware of the need for quality assurance and know, how it is applied in the software industry with engineering standards • Understand analysis, and design techniques to meet the special needs of the systems
Course Content	<p>Fundamentals of object-orientation. Object-oriented (OO) modeling using UML. Experimentation in OO analysis: identification of use cases and objects. Experimentation in OO design: class hierarchies. Implementation in OO programming. Design Pattern (overview). Case study to reinforce the underlying concepts. Note: No particular software development process is prescribed in the course. However, the key process activities followed will be the Unified Software Development Process (USDP).</p>

Weekly Subjects and Related Preparation Studies

Week	Subjects	Preparation
1	Information Systems-What are they?	Chapter 1
2	Challenges in IS Development Meeting the Challenges	Chapter 2 Chapter 3
3	Fundamentals of Object-orientation	Chapter 4
4	Modeling Concepts	Chapter 5. Chapter A1.
5	Requirement Elicitation	Chapter 6 Chapter A2
6	Requirement Modeling	Chapter 7 Chapter A3
7	Refining Requirement Modeling	Chapter 8
8	Object Interaction	Chapter 9
9	Specifying Operations, Specifying Control	Chapter 10, 11, Chapter A4
10	System Architecture	Chapter 12
11	System Design	Chapter 13, Chapter A5
12	Detailed Design	Chapter 14
13	Design Pattern	Chapter 15
14	Final Examination Period	Review of topics
15	Final Examination Period	Review of topics

Sources

Course Book:	1. Object Oriented Systems Analysis and Design using UML, Simon Bennett, Steve McRobb, Ray Farmer, 3/e, MacGraw Hill, 2005
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Other Sources:	1. Object Oriented Systems Analysis and Design With UML, Robert V. Stumpf, Lavette C. Teague, 1/e, Prentice Hall, 2005
	2. Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development, Craig Larman, 3rdEdition, Prentice Hall, 2005
	3. UML and C++: A Practical Guide to Object-Oriented Development, Richard C. Lee, William M. Tepfenhart. 2nd Edition, Prentice Hall, 2001. UML Distilled: A Brief Guide to the Standard Object Modeling Language, Martin Fowler. 3rd Edition, Addison Wesley,
	4. UML Distilled: A Brief Guide to the Standard Object Modeling Language, Martin Fowler. 3rd Edition, Addison Wesley, 2004.

Evaluation System

Requirements	Number	Percentage of Grade
Attendance/Participation	1	5
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship	-	-
Quizzes/Studio Critics	-	-
Homework Assignments	-	-
Presentation	-	-
Project	1	30
Seminar	-	-
Midterms Exams/Midterms Jury	1	25
Final Exam/Final Jury	1	40

Total	4	100
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Percentage of Semester Work	60
Percentage of Final Work	40
Total	100

Course Category

Core Courses	X
Major Area Courses	
Supportive Courses	
Media and Management Skills Courses	
Transferable Skill Courses	

The Relation Between Course Learning Competencies and Program Qualifications

#	Program Qualifications / Competencies	Level of Contribution				
		1	2	3	4	5
1	Adequate knowledge in mathematics, science and subjects specific to the software engineering discipline; the ability to apply theoretical and practical knowledge of these areas to complex engineering problems.			X		
2	The ability to identify, define, formulate and solve complex engineering problems; selecting and applying proper analysis and modeling techniques for this purpose.					X
3	The ability to design a complex system, process, device or product under realistic constraints and conditions to meet specific requirements; the ability to apply modern design methods for this purpose.					X
4	The ability to develop, select and utilize modern techniques and tools essential for the analysis and determination of complex problems in software engineering applications; the ability to utilize information technologies effectively.			X		
5	The ability to gather data, analyze and interpret results for the investigation of complex engineering problems or research topics specific to the software engineering discipline.			X		
6	The ability to work effectively in inter/inner disciplinary teams; ability to work individually.					X
7	Effective oral and written communication skills in Turkish; the knowledge of at least one foreign language; the ability to write effective reports and comprehend written reports, to prepare design and production reports, to make effective presentations, to give and receive clear and understandable instructions.			X		

8	Recognition of the need for lifelong learning; the ability to access information and follow recent developments in science and technology with continuous self-development	X			
9	The ability to behave according to ethical principles, awareness of professional and ethical responsibility; knowledge of the standards utilized in software engineering applications.	X			
10	Knowledge on business practices such as project management, risk management and change management; awareness about entrepreneurship, innovation; knowledge on sustainable development.	X			
11	Knowledge on the effects of software engineering applications on the universal and social dimensions of health, environment and safety; awareness of the legal consequences of engineering solutions.	X			
12	An ability to apply algorithmic principles, mathematical foundations, and computer science theory in the modeling and design of computer-based systems with the trade-offs involved in design choices.				X
13	The ability to apply engineering approach to the development of software systems by analyzing, designing, implementing, verifying, validating and maintaining software systems.				X

ECTS/Workload Table

Activities	Number	Duration (Hours)	Total Workload
Course Hours (Including Exam Week: 16 x Total Hours)	16	3	48
Laboratory			

Application			
Special Course Internship			
Field Work			
Study Hours Out of Class	16	3	48
Presentation/Seminar Preparation			
Project	1	25	25
Homework Assignments			
Quizzes/Studio Critics			
Preparation of Midterm Exams/Midterm Jury	1	20	20
Preparation of Final Exams/Final Jury	1	30	30
Total Workload			171