

COURSE INFORMATION					
Course Title	Code	Semester	L+P Hour	Credits	ECTS
OBJECT ORIENTED DESIGN	CSE516		3	3	5

Prerequisites	
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Language of Instruction	English
Course Level	Master's Degree
Course Type	Elective
Course Coordinator	
Instructors	Assist.Prof. Dr. Birol Aygün
Assistants	
Goals	Understanding of advanced topics in object-oriented design and their applications
Content	1) Review of basic object-oriented design, 2) Guidelines for class design, 3) Interface types and Polymorphism, 3) Design patterns and applications to GUI design, 4) In-depth look at OOD literature, orientation and Java, 5) Multi-threading, 6) Advanced design patterns, 7) Project development

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Course Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Understands Object-Oriented Design Process, Guidelines for Class Design	1,2	1,2	A,D
2) Understands User-centered design, Abstract classes, Interface Types and Polymorphism, UML	3,4,5	1,2	A,B,D
3) Can apply Patterns and GUI Programming	6,7	1,2	A,B,D
4) Can analyze users and their tasks	7,8	1,2	B,D
5) Gains understanding of Frameworks, Multi-threading	1,2	1,2,4	A,D
6) Can do Individual Project Development	9	4	D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study
Assessment Methods:	A: Testing, B: Experiment, C: Homework, D: Project

COURSE CONTENT		
Week	Topics	Study Materials
1	Crash Course in Java	Textbook , slides, course notes
2	Review of basic object-oriented design principles and practices	Textbook , slides, course notes
3	Advanced guidelines for Class Design	Textbook , slides, course notes
4	Java Interface Types and Polymorphism + Projects given out	Textbook , slides, course notes, project descriptions
5	Multiple inheritance vs Interfaces and Abstract Classes, research on evaluation	Textbook , slides, course notes
6	Current Research areas in OOD + Review Ch 1-5	Textbook , slides, course notes, literature review
7	MidTerm	Textbook , slides, course notes
8	JAVA Run-time Object Model and Frameworks	Textbook , slides, course notes
9	Static Models, Dynamic Models, Composite Models	Textbook , slides, course notes
10	Advanced Design Patterns, their application and evaluation	Textbook , slides, course notes, literature review
11	Multi-threading, multi-processing, distributed/pervasive, next generation computing issues in OOD	Textbook , slides, course notes, literature review
12	Course Review	Textbook , slides, course notes, literature review

13	Course review	Textbook , slides, course notes, literature review
14	Project presentations and in-class evaluations	Project demos and documents

RECOMMENDED SOURCES	
Textbook	Object-Oriented Design and Patterns, Cay Horstmann, John Wiley & Sons ISBN 0-471-45235-1
Additional Resources	<ul style="list-style-type: none"> - Object-Oriented Software Engineering, Lethbridge & Laganierie, McGrawHill 0-09-710908-2 - UML 2 and the Unified Process, Jim Arlow & Ila Neustadt, Object Technology Series, Addison-Wesley - Aspect-Oriented Software Development with Use Cases, Ivar Jacobson, Pan-Wei Ng, Object Technology Series, Addison-Wesley

MATERIAL SHARING
Documents http://birolaygun.com/CSE516 (TBD)
Assignments
Exams

ASSESSMENT		
IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-terms	1	20
Exercises	3	15
Term Project	1	25
Final Exam	1	30
Attendance and participation		10
Total		100
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		35
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		65
Total		100

COURSE CATEGORY	Expertise/Field Courses
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COURSE'S CONTRIBUTION TO PROGRAM						
No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Knowledge in the advanced computer architecture field				X	
2	Knowledge in advanced system design for computer engineering					X
3	Knowledge in the theoretical topics of computer science				X	
4	Ability to comprehend, analyse and critique academic publications and conduct scholarly research at the frontiers of computer engineering					X
5	Ability and knowledge in the fields of Next-Generation and contemporary computer networks				X	

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 15x Total course hours)	15	2	30
Hours for off-the-classroom study (Pre-study, practice)	25	4	100
Midterm examination	1	3	3
Labwork	15	1	15
Project	1	25	25
Final examination	1	3	3
Total Work Load			176
Total Work Load / 25 (h)			5.0
ECTS Credit of the Course			7