

COURSE INFORMATION					
Course Title	Code	Semester	L+P Hour	Credits	ECTS
ADVANCED TOPICS IN SOFTWARE ENGINEERING	CSE544		3	3	10

Prerequisites	
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Language of Instruction	English
Course Level	Master's Degree
Course Type	Elective
Course Coordinator	
Instructors	Prof.Dr Semih Bilgen
Assistants	
Goals	Students will gain knowledge and experience in developing professional level quality software applying agile software development processes, whose importance have enormously increased recently.
Content	1) Review of basic software engineering topics and formal foundations, 2) Agile software development processes and software quality assurance, 3) Software project planning and monitoring, 4) Functional size estimation, project effort estimation and monitoring, 5) Process quality assurance via continual reviews.

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Course Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Review of basic software engineering topics and formal foundations	1,2	1,2,3	A,C,D
2) Software development processes	3,4,5	1,2,3,4	A,C,D
3) Pervasive applications	6,7	1,2,3,4	A,B,D
4) Design, implementation and testing technologies	7,8	1,2,3,4	B,D
5) Complexity models, software functional size, effort and defect prediction	1,2	1,2,4	A,D
6) Project assignments	9	3,4	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	Review of basic software engineering topics, software project management principles and techniques	Textbook ,slides, course notes
2	Review of agile processes, software size and effort estimation and quality assurance, finalization of project team compositions and project assignments	Textbook , slides, course notes
3-13	Software development team project practice, applying agile (Extrem Programming) process principles, in-class reviews of all process artifacts	Textbook , slides, course notes
9	Midterm Exam	
14	Review and evaluation of the whole process	

RECOMMENDED SOURCES	
Textbook	Software Engineering: A Practitioner's Approach, 7/e, 2010 Roger Pressman, ISBN 0073375977
Additional Resources	Class Notes, reading list (Updated on the course web site)

MATERIAL SHARING
Documents:
Assignments
Exams

ASSESSMENT			
	IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-term		1	25
Term Project		1	40

Final Exam	1	35
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	Ability to reach wide and deep knowledge through scientific research in the field of Computer Science and Engineering, evaluate, interpret and apply.				X	
2	Ability to use scientific methods to cover and apply limited or missing knowledge, and to integrate the knowledge of different disciplines.					X
3	Ability to construct Computer Science and Engineering problems, develop methods to solve the problems and use innovative methods in the solution.					X
4	Ability to develop new and/or original ideas and algorithm; develop innovative solutions in the design of system, component or process.					X
5	Ability to have extensive knowledge about current techniques and methods applied in Computer Engineering and their constraints.					X
6	Ability to design and implement analytical modeling and experimental research, solve and interpret complex situations encountered in the process.					X
7	Ability to use a foreign language (English) at least at the level of European Language Portfolio B2 in verbal and written communication.				X	
8	Ability to lead in multidisciplinary teams, develop solutions to complex situations and take responsibility.					X
9	Ability to pass process and the results in Computer Science and Engineering field, in national and international area in or outside of the field, systematically and clearly in written or oral form.					X
10	Awareness of the social, legal, ethical and moral values, and the ability to conduct research and implementation work within the framework of these values.					X
11	Awareness of the new and emerging applications in Computer Science and Engineering field, and the ability to examine them and learn if necessary.				X	
12	Ability to describe the social and environmental dimensions of Computer Science and Engineering applications.				X	

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 12x Total course hours)	12	3	36
Hours for off-the-classroom study (Pre-study, practice)	12	4	48
Midterm examination	1	3	3
Project (5 iterations, 2 weeks each)	10	15	150
Final examination	1	3	3
Total Work Load			240
Total Work Load / 25 (h)			9.6
ECTS Credit of the Course			10