Identification	**Subject**	**CMS 610 Advanced Software Engineering,** 4 KU /8 ECTS credits	
	Department	Computer Science	
	Program	Graduate	
	Term	Fall 2023	
	Instructor	**PhD, Associate Professor Leyla Muradkhanli**	
	E-mail:	leyla@khazar.org	
	Phone:	(+994 12) 421 1093	
	Classroom/ hours	41 Mehseti str. (Neftchilar campus), Saturday, 11:50-15:10	
Prerequisites	Data Structures and Algorithms, Programming Languages		
Language	English		
Compulsory/Elective	Major		
Textbooks and course materials	**Core Textbooks :** 1. Software Engineering by Ian Sommerville, 9th edition, Pearson, 2011. 2. Software Engineering: A Practitioner's Approach by Roger S. Pressman, Bruce R. Maxim 8th edition, Mc Graw Hill, 2015.		
Course outline	Software Process Structure, Agile software development, Architectural design, Component-based software engineering, Distributed software engineering, Security engineering, Service-oriented architecture, Aspect-oriented software engineering, Project management, Estimation for software projects, Project planning, Quality management, Configuration management, Process improvement		
Course objectives	This is an advanced course in software engineering. This course goes into more detail about software engineering techniques and principles and introduces advanced aspects of software engineering: • Software process and its various models and standards. • Software architecture, i.e. the structure of data and program components that are required to build a software system. Examples include distributed and component-based architectures. • Emerging technologies, such as security engineering, service-oriented software engineering, and aspect-oriented software development. • Project management concepts. • Cost estimation and project scheduling for large software systems. • Software configuration management (software evolution, change management, version and release management).		
Learning outcomes	By the end of the course the students should be able: • Understand the methods of modern software engineering • Apply software engineering principles and practices to the planning and development of an actual software product. • Work as a member of a software project team. • Produce professional-quality software engineering documents. • Manage simple Projects with Microsoft Project.		
Teaching methods	**Lecture**		**x**
	Group discussion		**x**
	Assignments		**x**
	Course paper		**x**
Evaluation Criteria	**Methods**	**Date/deadlines**	**Percentage (%)**
	Midterm Exam		**30**
	Project		**15**

	Assignments		**15**
	Final Exam		**40**
	Total		**100%**

Policy

- **Assignments**

Three assignments will be during the semester. Assignments will cover architectural design, project management and quality management topics.

- **Project**

Students will develop software applications using software development steps. Students should submit 15-20 pages research paper, program codes and will give 15 minute presentation to the class, in the last week of the semester.

- **Preparation for class**

  The structure of this course emphasizes the importance of independent study and preparation outside of class. The lecture material will concentrate on the key points raised in the text. Reading the assigned chapters and becoming acquainted with them prior to class will aid your understanding of the lecture. Following the lecture, you should review your notes and work on relevant problems and cases from the chapter's end, as well as sample exam questions.

  We will also have many review sessions throughout the semester. These review sessions will take place during the regular class times.

- **Withdrawal (pass/fail)**

  This course strictly adheres to the grading policy of the School of Science and Engineering. As a result, a student is normally expected to pass with a grade of at least 65%. In the event of failure, he or she will be required to repeat the course the following term or year.

- **Cheating/plagiarism**

  Cheating or other plagiarism during the Quizzes, Midterm and Final Examinations will lead to paper cancellation. In this case, the student will receive a zero (0) without further consideration.

- **Professional behavior guidelines**

  During class, students must act in a way that fosters a positive academic and professional environment. Unauthorized conversations and unethical behavior are forbidden.

- **Ethics**

  Students should not arrive in late to class.

  All cell phones must be turned off and stowed away before entering class. Use of any electronic devices is not allowed in the classroom and violators will be punished accordingly.

Tentative Schedule

Week	Date	Topics	Textbook/Assignments
1	16.09.23	Introduction to Software Engineering Software Process Structure	Chapter 1, 2
2	23.09.23	Software processes	Chapter 3
3	30.09.23	Architectural design	Chapter 6
4	07.10.23	Component-based software engineering	Chapter 17

5	14.10.23	Distributed software engineering	Chapter 18
6	21.10.23	Security engineering	Chapter 14
7	28.10.23	Service-oriented architecture	Chapter 19
8	04.11.23	**Midterm exam**	
9	11.11.23	Aspect-oriented software engineering	Chapter 21
10	18.11.23	Project management	Chapter 22
11	25.11.23	Estimation for software projects	Chapter 22
12	02.12.23	Project planning	Chapter 23
13	09.12.23	Quality management	Chapter 24
14	16.12.23	Configuration management	Chapter 25
15	23.12.23	Process improvement	Chapter 26
		Final exam	