Identification	Subject	CMS 610 Software Engineering, 6 ECTS
	Department	Computer Science
	Program	Master
	Term	Spring, 2024
	Instructor	Shahnaz N.Shhabazova
	E-mail:	shahbazova@gmail.com
	Classroom/hours	41 Mehseti str. (Neftchilar campus), Thursday 18:40-21:00
Prerequisites	Fundamentals of Programming, Database System, Networking, Algorithm Fundamentals and Data Science	
Language	English	
Compulsory/Elective	Required	
Required textbooks and course materials	*Core textbooks:* Architecture and design of software systems: Monograph / S.V. Nazarov; Software development technology / L.G. Gagarina, E.V. Kokoreva, B.D. Visnadul; Ed. prof. L.G. Gagarina Practical software engineering based on a case study / L. A. Matsyashek, B. L. Liong *References:* 1 Design of software for economic information systems / A. M. Vendrov 2 Design of information systems / N.N. Zabotina **Web References:** 1. http://znanium.com/bookread.php?book=353187 2. http://znanium.com/bookread.php?book=389963 3. http://e.lanbook.com/view/book/8766/	
Course outline	The purpose of the discipline is the practical introduction of students to the technologies of designing applied software systems using the unified UML language for visual design of application software systems and Microsoft Solutions Framework (MSF) technology for developing enterprise-scale applications. Preparing students to work on creating software in project groups. Training in teamwork methods.	
Course objectives	As a result of mastering the discipline, the student must: be able to: - Able to work in a team and be responsible for maintaining partnerships and trusting relationships; - Able to understand the essence and problems of development of the modern information society; - Able to participate in the creation and management of IP at all stages of the life cycle; - The ability to acquire new scientific and professional knowledge using modern educational and information technologies; - The ability to carry out a targeted search for information about the latest scientific and technological achievements on the Internet and from other sources; - Able to use technological and functional standards, modern models and methods for assessing quality and reliability in the design, construction and debugging of software; - The ability to form judgments about the meaning and consequences of one's professional activities, taking into account social, professional and	

	ethical positions;
Learning outcomes	Upon completion of this course, the students must know: ● Software development technology and master the methods used in software production, methods for identifying requirements for a software product, the main stages and content of work at each stage of development of application software systems. must be able to: ● Assess the complexity of developing a specific software system, be able to assess the quality of software, apply software development models when creating software products, and draw up technical specifications for the development of a software product. must own: ● Theoretical knowledge about the basic concepts and models of the software development process: software development life cycle model; preliminary design of the system; user, logical and physical models of the system, etc. ● Skills in conducting strategic planning, analyzing the subject area and requirements for the system being created, developing a custom system architecture, logical and physical design. must demonstrate the ability and willingness to: ● Use modern technologies for programming, testing and documenting software systems. Ability to take responsibility for the results of software development work.

Teaching methods	Lecture	x
	Group discussion	x
	Experiential exercise	x
	Lab	x
	Case analysis	
	Course paper	
	Others	

Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Activity		10
	Project		20
	Final Exam		40
	Total		100

Policy	● **Preparation for class** The structure of this course makes your individual study and preparation outside the class extremely important. The lecture material will focus on the major points introduced in the text. Reading the assigned chapters and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes and work relevant problems and cases from the end of the chapter and sample exam questions. Throughout the semester we will also have many review sessions. These review sessions will take place during the regularly scheduled class periods. ● **Withdrawal (pass/fail)** This course strictly follows grading policy of the School of Engineering

and Applied Science. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year.

- **Cheating/plagiarism**
  Cheating or other plagiarism during the Quizzes, Mid-term and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0), without any considerations.

- **Professional behavior guidelines**
  The students shall behave in the way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited.

- **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.

- **Exams**
  All exams will be closed book.

- **Project**
  This course is not about programming. For this reason, the result of the project is the most important part of it, and the projects that are not executed on the computer are not given a grade. The number of people in each group in the project can be maximum 3 people. A maximum of one third of the project score is related to its presentation in less than ten minutes and answers to the questions. All team members are responsible for answering any questions about the project.

WK	Date/Day (tentative)	Topics	Textbook/Assignments
1.	15/02/2024 Lecture	**Software Engineering Subject**	Chapter 01
	15/02/2024 Lab	**Exercises**	Chapter 01
2.	22/02/2024 Lecture	**Life cycle and stages of software development**	Chapter 02-03
3	29/02/2024 Lecture	**Requirements analysis and specification determination. Design. Software development**	Chapter 04-05
	29/02/2024 Lab	**Exercises**	Chapter 04-05
4	07/03/2024 Lecture	**Review of software product design methodologies**	Chapter 06-07
5	14/03/2024 Lecture	**Visual modeling in analysis and design. Unified Modeling Language (UML) Basics**	Chapter 08-09
	14/03/2024 Lab	**Exercises**	Chapter 08-09
6	28/03/2024 Lecture	**MFS application design methodology. Main components and models of MFS**	Chapter 10-11
7	04/04/2024 Lecture	**Command Model**	Chapter 12-13
	04/04/2024 Lab	**Exercises**	Chapter 12-13
8	11/04/2024 Lecture	**Risk management model**	Chapter 14-15
9	18/04/2024 Lecture	**Process model. General diagram of the development process. Phases of the development process: concept development, planning**	Chapter 16-17
	18/04/2024 Lab	**Midterm Exam Exercises**	Chapter 16-17
10	25/04/2024 Lecture	**Process model. Development and stabilization phases**	Chapter 18-19
11	02/05/2024 Lecture	**Implementation of the solution. Implementation phase**	Chapter 20-21
	02/05/2024 Lab	**Exercises**	Chapter 20-21
12	09/05/2023 Lecture	**Enterprise application model**	Chapter 22-23

13	16/05/2024 Lecture	**Visual design of application software systems using the unified language UML**	Chapter 24-25
	16/05/2024 Lab	**Exercises**	Chapter 24-25
14	23/05/2024 Lecture	**Projects/Presentations**	
15	30/05/2024 Lecture	**Preparation for the final exam Exercises**	
	30/05/2024 Lab	**Exercises**	Chapter 29-30

This syllabus is a guide for the course and any modifications to it will be announced in advance.