

1.	Course Title	Advanced Databases
2.	Code	F18L3S138
3.	Study program	Software engineering and information systems
4.	Study Program Organizer	Faculty of Computer Science and Engineering
5.	Degree (first, second, third cycle)	first cycle
6.	Academic year / semester 4 / summer / mandatory	7. ECTS credits 6
8.	Teacher	full professor Goran Velinov, assistant professor Eftim Zdravevski, assistant professor Vangel Ajanovski
9.	Course enrollment prerequisites	Бази на податоци
10.	<p>Course program goals (competencies): The goal of the course is to introduce the students with the advanced concepts of relational database systems, data modelling, management and maintenance, as well as the development of data centric information systems. Also, the students will acquire strong theoretical and practical knowledge about the novel features and extensions of the relational and non-relational database systems, as well as the contemporary issues in the database systems development.</p>	
11.	<p>Course program content: Advanced data modelling – standards, model types and patterns; Detailed architecture of the database management systems, database security and recovery; Query execution and optimization data indexing, partitioning and clustering; Parallel and distributed database systems, replication; Transactional and analytical database systems, Object-oriented and object-relational databases, object - relational mapping; Web oriented and mobile systems and databases; Practical implementation of advanced data modelling techniques and tools, database administration and database performance management; Tools for replication and recovery; Advanced SQL; Database programming.</p>	
12.	<p>Learning methods: Lectures using presentations, interactive lectures, exercises (using equipment and software packages), teamwork, case studies, invited guest lecturers, independent preparation and defense of a project assignment and seminar work.</p>	
13.	Total available time	6 ECTS x 30 hours = 180 hours
14.	Distribution of the available time	30 + 45 + 15 + 15 + 75 = 180 hours

15.	Teaching activity forms	15.1.	Lectures – theoretical teaching	30 hours
		15.2.	Exercises (laboratory, auditory), seminar papers, teamwork	45 hours
16.	Other activity forms	16.1.	Project Tasks	15 hours
		16.2.	Independent Learning Tasks	15 hours
		16.3.	Home learning	75 hours
17.	Assessment methodology			
	17.1.	Tests		10 points
	17.2.	Seminar paper/project (presentation: written and oral)		10 points
	17.3.	Activity and learning		10 points
	17.4.	Final exam		70 points
18.	Assessment criteria (points/grade)	up to 50 points		5 (five) (F)
		51 to 60 points		6 (six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)
19.	Course completion and final exam requirements	Realized activities 15.1 and 15.2		
20.	Teaching Language	Macedonian and English		
21.	Teaching quality evaluation method	Internal evaluation mechanisms and questionnaires		
22.	Course Material			
	22.1.	Mandatory course material		

No	Author	Title	Publisher	Year
1	Avi Silberschatz, Henry F. Korth, S. Sudarshan	Database System Concepts	McGraw- Hill	2010
2	Joseph M. Hellerstein, Michael Stonebraker, James Hamilton	Architecture of a Database System, Foundations and Trends in Databases,	NOW Publishers	2007
3	Salahaldin Juba, Achim Vannahme, Andrey Volkov	Learning PostgreSQL		2015
22.2.	Additional course material			
No.	Author	Title	Publisher	Year