

Add. 3		Course program for the first, second and third level (cycle) of studies				
1.	Course title	Water Monitoring				
2.	Code	218				
3.	Study group(s)	HEWM, EE				
4.	The organizer of the study program (unit, institute, department)	Faculty of Mechanical Engineering - Skopje, Ss. Cyril and Methodius University in Skopje				
5.	Level (first, second, third)	First				
6.	Academic year / semester	winter	7.	ECTS credits	6	
8.	Instructor	prof. d-r Atanasko Tuneski				
9.	Prerequisites	Systems and control - passed				
10.	Course objectives (competences): Training students to determine water quality in surface waters (rivers, lakes and accumulation) and waste water by physical, chemical and biological parameters of water. Introduction to methods and instruments for measuring through practical examples and applications.					
11.	Course content: Introduction to surface waters and the natural hydrological cycle. Water characteristics (physical, chemical). Water classification into categories and their characteristics. Macedonian and European Union standards. Sampling and analysis. Analytical procedures and standard techniques. Water analysis according to the water quality index. Use of the water quality index. Measurement systems and instrumentation for remote water monitoring. Water pollution and its regulation. Waste water and its characteristics.					
12.	Study methods: Interactive lectures, laboratory exercises, exercises, independent and/or team work on project tasks, independent learning					
13.	Total hours	6ECTSx30 classes = 180 hours				
14.	Hours allocation per activity:	30 + 30 + 30 + 30 + 60 = 180 hours				
15.	Lectures/Lab	15.1.	Lectures	30 hours		
		15.2.	Lab (student work)	30 hours		
16.	Project Work/Assignments	16.1.	Project assignments	30 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Tests			70 points	
	17.2.	Projects			20 points	
	17.3.	Attendance			10 points	
18.	Grading scale	Under 50		5 (five) (F)		
		51 - 60 points		6 (six) (E)		
		61 - 70 points		7 (seven) (D)		
		71 - 80 points		8 (eight) (C)		
		81 - 90 points		9 (nine) (B)		
		91 - 100 points		10 (ten) (A)		
19.	Prerequisites for taking the final exam	Accomplished 16.1				
20.	Language of Instruction	Macedonian				
21.	Course evaluation	Student questionnaire				
22.	Textbooks					
	22.1.	Instruction materials				
		No.	Author	Title	Publisher	Year
1.		NANCIE	Monitoring of water quality	Elsevier Science Ltd	1998	
	2.	T, H. Y, Tebbutt	Principles of water quality control	Butterworth-Heinemann	1998	

		3.	American Water Works Association	Water quality and treatment	McGraw Hill	1999
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	American Water Works Association	Water Treatment Plant Design	McGraw-Hill	1990
		2.	M.L. Davis	Water and Wastewater Engineering	McGraw-Hill	2010