

Add. 3		Course program for the first, second and third level (cycle) of studies			
1.	Course title	Energetic and Ecology			
2.	Code	145			
3.	Study group(s)	EE (Energy and Ecology)			
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	4 / VIII summer	7.	Number of ECTS credits	6
8.	Instructor	assoc. prof. PhD Done Tashevski			
9.	Prerequisites	No			
10.	Course objectives (competences): Introducing of the processes for energy transformation, energy world situation Also with all types of pollutant sources, emission and concentration calculation, methods of emission reduction. Candidates will be able to prepare energetic and ecology report.				
11.	Course content: ENERGETICS–FUNDAMENTALS. Energy production – world indicators. Energy transformation. Energy consumption. Useful energy. Energy from renewable energy sources. ECOLOGY. Ecology characteristics and types of pollutions. Natural pollutions. Measurement concentration units. Photochemical air pollution. AIR POLLUTION FROM COMBUSTION PROCESSES. Pollution sources. Combustion – stoichiometrical equation. Pollution forming in exhaust gasses. Pollution impact. Pollutant emission and imission (concentration). Maximal allowed pollutant concentration (world, European, Macedonian standards). EMISSION AND CONCENTRATION POLUTANT CALCULATION. Air pollutant diffusion. Emission calculation. Concentration calculation forms a deferent source of pollution. Chimney solution. METHODS FOR EMISSION REDUCTION. For Solid particles – filters. For sulphur oxides. For nitrogen oxides. THERMAL POLLUTION. RADIOACTIVE POLLUTION.				
12.	Study methods: Teaching lectures, auditory/laboratory practice, self/team work, home studding				
13.	Total hours	6 ECTS x 30 hours = 180 hours			
14.	Hours allocation per activity:	30 + 30 +10 +10 +100 = 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	10 hours	
		16.2.	Individual assignments	10 hours	
		16.3.	Self-study	100 hours	
17.	Points/Marks:				
	17.1.	Tests			80 points
	17.2.	Projects			10 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				
20.	Language of Instruction				
		Macedonian			

21.	Course evaluation	Student questionnaire				
22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	D.Tashevski	Energetic and ecology – printed lectures	FME	2012
		2.	N. Zalogin	Energetic and ecology	Energy	1979
	3.					
	22.2	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	L. Rihter	Thermal power plant and ecology	Energy	1975
		2.	F. Skalkin	Energetic and ecology	Energoizdat	1981
		3.				