

Add. 3		Course program for the first, second and third level (cycle) of studies			
1.	Course title	Heat generators			
2.	Code	119			
3.	Study group(s)	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	summer	7.	ECTS credits	6
8.	Instructor	Vasko Sharevski			
9.	Prerequisites	no			
10.	Course objectives (competences): Thermal calculations, heat balances in the processes of heat production, schemes of devices, plants and systems for heat energy generation, energy and environmental characteristics				
11.	Course content: Devices and plants for generation of fossil fuels thermal energy; thermo transformation systems; thermo compression; heat pumps, heat recuperation, energy and environmental characteristics, natural working mediums; heating energy consumption; steam-condense systems in industry and district heating, material and energy balances; characteristics of industrial boiler plants; specific design of heat generators; environmental impacts of the combustion products; systems and equipment for purification of combustion products; reduction of sulfur and nitrogen oxides.				
12.	Study methods: Interactive teaching, exercises, single-handed lessons				
13.	Total hours	6 ECTS x 30 = 180 classes			
14.	Hours allocation per activity:	30 + 30 + 30 + 30 + 60 = 180 classes			
15.	Lectures/Lab	15.1.	Lectures	30	
		15.2.	Lab (student work)	60	
16.	Project Work/Assignments	16.1.	Project assignments	30	
		16.2.	Individual assignments	30	
		16.3.	Self-study	30	
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	no			
20.	Language of Instruction	Macedonian language			
21.	Course evaluation	Surveys and other forms of continuous evaluation			

22.	Textbooks				
	22.1.	Instruction materials			
		No.	Author	Title	Publisher
	1.	Vasko Sharevski	Heat generators, printed lectures	MFS	2011

		2.	Vasko Sharevski	Heat generators, solved examples	MFS	2010
		3.	Vasko Sharevski	Heating and climatization	MFS	2010
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	I.Petrovski	Steam Boilers	UKIM	2011
		2.	ASHRAE Handbook	Systems and Equipment	ASHRAE Atalanta	2004
		3	A.J. Антонов	Тепловое оборудование и тепловие сети	Москва	1988