

Add. 3		Course program for the first, second and third level (cycle) of studies			
1.	Course title	Boiler plants			
2.	Code	180			
3.	Study group(s)	TE			
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	
8.	Instructor	Risto Filkoski			
9.	Prerequisites	Thermodynamics			
10.	Course objectives (competences): Purpose of the course program (competences): Introducing the types of boiler plants, fuels and combustion process. Setting material and energy balance. Analysis of the work of certain systems and components in the boiler plants. Design calculations for boiler plants and separate systems. Assessment of the energy efficiency of the boiler plants and auxiliary systems				
11.	Course content: Basics of boiler plants. Fuels and combustion systems. Treatment of fuels for combustion. Water treatment for boiler plants. Material and energy balance. Heat transfer. Heating surfaces. Fundamentals of thermal, aerodynamics and strength calculation. Energy efficiency. Incineration plants and environmental impact				
12.	Study methods: : lectures, exercises, preparation of seminar and project work, practical classes				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30 + 30 + 30 + 30 + 60 = 180 hours			
15.	Lectures/Lab	15.1.	Lectures	30	
		15.2.	Lab (student work)	30	
16.	Project Work/Assignments	16.1.	Project assignments	30	
		16.2.	Individual assignments	30	
		16.3.	Self-study	60	
17.	Points/Marks:				
	17.1.	Tests	2 x 40 = 80 points		
	17.2.	Projects	14 points		
	17.3.	Attendance	6 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	Delivered, presented and positively evaluated seminar work			
20.	Language of Instruction	Macedonian language			
21.	Course evaluation	Survey			

22.	Textbooks				
	22.1.	Instruction materials			
No.		Author	Title	Publisher	Year

		1.	I.J. Petrovski	Steam boilers	Univ. "Sts Cyril and Methodius", Skopje	2009
		2.	S.C. Stultz, J.B. Kitto (editors)	Steam, its generation and use, 40 th edition	Babcock & Wilcox – a McDermott company	1992
		3.	R.V. Filkoski	Boiler plants, script	Faculty of Mech. Eng., Skopje	2011
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	R.V. Filkoski	Thermal calculations in boiler technique, Script	Faculty of Mech. Eng., Skopje	2011
			Group of authors	The Steam and Condensate Loop	Spirax Sarco Co., ISBN 978-0-9550691-3-0	2007