Add. 3	**Course program for the first, second and third level (cycle) of studies**

1.	Course title	Energy management and resources				
2.	Code	148				
3.	Study group(s)	Energy and environment				
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	Risto Filkoski				
9.	Prerequisites	Thermodynamics				
10.	Course objectives (competences): Introduction of modern technologies and methods for efficient transformation and use of energy. Enabling energy efficiency evaluation of systems and installations in industry and other sectors. Enabling the selection of appropriate technologies, methods and measures to improve energy-environmental performance of energy facilities, installations. EMS					
11.	Course content: Importance of energy. Energy and economic and social development. Energy and environment issues. Effective energy management. Efficiency of energy transformations. Techniques for energy analysis. Energy audits. Energy efficiency in different systems: boilers and incineration plants, steam-condensing systems, cogeneration, waste heat utilization, compressed air systems, electric motor drives. Energy efficiency in industry and other sectors. Monitoring the efficiency of energy use. Energy management system					
12.	Study methods: : lectures, exercises, preparation of seminar and project work, practical classes					
13.	Total hours	6 ECTS x 30 hours = 180 hours				
14.	Hours allocation per activity:	30 + 30 + 30 + 30 + 60 = 180 classes				
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.	R.V. Filkoski	Power engineering and resources, Script	Faculty of Mech. Eng., Skopje	2011

		2.	Steve Doty, Wayne C. Turner	Energy Management Handbook, 7th Ed.	The Fairmont Press Inc., CRC Press	2009
		3.	Clive Beggs	Energy: Management, Supply and Conservation	Elsevier	2009
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	W. Shepherd, D. W. Shepherd	Energy Studies, Second edition	Imperial College Press, London	2005
		2.	Group of authors	Integrated Pollution Prevention and Control (IPPC), Best Available Techniques for Large Combustion Plants	EC - Directorate-General JRC Joint Research Centre, Institute for Prospective Technological Studies, Seville, Spain	2006