

Add. 3		Course program for the first, second and third degree of studies			
1.	Course title	Production systems			
2.	Code	278			
3.	Study group(s)	PI, TML, TI, HIMV, MSKI, IEM, MV, EE, MHT, AUS			
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 degree)	First			
6.	Academic year / semester	Winter	7.	Number of ECTS credits	6
8.	Professor	Prof. Robert Minovski			
9.	Preconditions for enrolling the course	None			
10.	Purpose of the course program (competences):				
	<ul style="list-style-type: none"> - Understanding the structure of production systems - Detailed understanding of the subsystems in the production systems - Designing complete production systems (factories) - Designing subsystems (part of factories) - Rationalization, modernization, expanding the production systems. 				
11.	Contents of the course program:				
	<ul style="list-style-type: none"> - Elements of the production systems: definition, environment, characteristics - Production systems structure: basic functions and subsystems - Technological subsystem - Subsystem for warehouse management - Subsystem for transportation - Subsystem for quality management - Design of production systems: tasks, principles, methodologies - Methods in designing the subsystems: patterns for designing, designing material flow - Calculations for the required elements in the production systems: production equipment, personal, space, energy and fluids, capital. - Layout, planning and selecting location, factory buildings - New generation of production systems: factories in the near future, factories in the distant future 				
12.	Study methods:				
	Interactive teaching, Laboratory and/or in-class exercises, individual and/or team work on projects, self-study.				
13.	Total available time period	6 ECTS x 30 hours = 180 hours			
14.	Available time assessment	30 + 30 + 20 + 20 + 80 = 180 hours			
15.	Educational activity module	15.1.	Teaching lectures	30 hours	
		15.2.	Practice, seminars, team work	30 hours	
16.	Other activity module	16.1.	Project assignments	20 hours	
		16.2.	Selfrunning assignments	20 hours	
		16.3.	Home studying	80 hours	
17.	Evaluation methods				
	17.1.	Tests			90 points
	17.2.	Projects			
	17.3.	Activity and participation			10 points
18.	Evaluation criteria (points and marks)	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.	Signature and final exam requirements	Realized activity 16.2	
20.	Language used for performing the teaching	Macedonian language	
21.	Method used for following the teaching quality	Surveys and other forms of continuous evaluation	

22.	References				
	Main references				
	No.	Author	Title	Publisher	Year
22.1.	1.	Delco Jovanoski	Production systems (structure, analysis, design)	Faculty of Mechanical Engineering – Skopje	2010
	2.	Robert Minovski, Bojan Jovanoski	Manual with exercises for production systems (design of production systems), 2 nd edition	Faculty of Mechanical Engineering – Skopje	2010
	3.				
	Additional references				
22.2.	No.	Author	Title	Publisher	Year
	1.	Zelenovik	Design of production systems		