

Add. 3		Course program for the first, second and third degree of studies			
1.	Course title	Engineering Design			
2.	Code	175			
3.	Study group(s)	All			
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	2/IV	7.	Number of ECTS credits	6
8.	Instructor	Prof. Dr. Tatjana Kandikjan			
9.	Prerequisites	1. Engineering Graphics 2. Technical Mechanics 1			
10.	<p>Course objectives (competences): Study of the phases of the design process starting from the recognition of need and clarifying of customer requirements, through functional decomposition and creation of concepts, to product development, prototyping and application of design for X guidelines. Understanding of geometric dimensioning and tolerancing principles. Building of practical skills through development of "proof of concept prototype" for the assigned team project, project presentation and dissemination of the results.</p>				
11.	<p>Course content: Engineering design task. Product quality. Designers and design teams. Planning of the design process. Understanding of the problem. Axiomatic method and functional decomposition. Generation and evaluation of concepts. Product development. Modularity. Robust design. Design for manufacture, assembly, safety, disassembly and recycling. Technical documentation. Functional dimensioning. Tolerance stack-up. Geometric dimensioning and tolerancing. Datums and datum systems. Maximum material condition. Specifics of the tolerances of orientation, position and profile. Statistical tolerancing.</p>				
12.	Study methods: interactive lectures, auditory practice and/or laboratory practice, self running and/or team work projects, self learning				
13.	Total hours	180 hours			
14.	Hours allocation per activity:	28+28+60+14+50=180			
15.	Lectures/Lab	15.1.	Teaching lectures	28 hours	
		15.2.	Practice, seminars, team work	28 hours	
16.	Project Work/Assignments	16.1.	Project assignments	60 hours	
		16.2.	Selfrunning assignments	14 hours	
		16.3.	Home studying	50 hours	
17.	Points/Marks:				
	17.1.	Tests			70 points
	17.2.	Projects			30 points
	17.3.	Attendance			0 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	All project assignments completed and at least 12 points from projects earned.			
20.	Language of Instruction	Macedonian			
21.	Course evaluation	Student questionnaire			

22.	Textbooks				
	Instruction materials				
	No.	Author	Title	Publisher	Year
22.1.	1.	T. Kandikjan	Engineering Design	Lecture notes	2006
	2.				
	3.				
	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
22.2.	1.	D.Ullman	The Mechanical Design Process	McGraw-Hill Science/Engineering/Math	2010
	2.	G. Dieter, L. Schmidt	Engineering Design	McGraw-Hill Science/Engineering/Math	2008
	3.				