Add. 3		Course program for the first, second and third degree of studies			
1.	Course title	2D Engineering			
2.	Code	100			
3.	Study group(s)	Production Informatics			
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 semester	7.	Number of ECTS credits	6
8.	Professor	Prof. Dr. Zoran PANDILOV			
9.	Preconditions for enrolling the course	no			
10.	Purpose of the course program (competences): obtaining knowledge about basic elements of the 2D engineering (CAD of 2 and 2.5 D parts and manual generation of NC programs for manufacturing of 2 and 2.5 D parts)				
11.	Contents of the course program: Basic of the CAD of 2 and 2.5 D parts. Application of CAD software for design of 2 and 2.5 D parts. Basic elements of the NC. Principles of manual NC programming. Manual generation of NC programs for 2 and 2.5 D parts milling. Manual generation of NC programs for 2 and 2.5 D parts turning.				
12.	Study methods: interactive lectures, auditory exercises and/or laboratory exercises, individual and/or team work on projects, individual learning				
13.	Total available time period	6 ECTS x 30 hours=180 hours			
14.	Available time assessment	30 + 30 + 40 + 20 + 60 = 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		40 hours
		16.2.	Self running assignments		20 hours
		16.3.	Home studying		60 hours
17.	Evaluation methods				
	17.1.	Tests			60 points
	17.2.	Projects			30 points
	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 activities 17.2 and 17.3			
20.	Language used for performing the teaching	Macedonian language			
21.	Method used for following the teaching quality	Questionnaires, and other forms of continual evaluation			

22.	References					
		Main references				
		No.	Author	Title	Publisher	Year
	22.1.	1.	Zoran Pandilov	Lecture notes in 2D Engineering	Faculty of Mechanical Engineering Skopje	

		No.	Author	Title	Publisher	Year
		2.	Frank Nanfara, Tony Uccello, Derek Murphy	The CNC workshop	Prentice Hall (2nd edition)	2002
		3.	Peter Smid	CNC Programming Handbook (2nd Edition)	Industrial Press Inc.	2003
	22.2.	Additional references				
		No.	Author	Title	Publisher	Year
		1.	P.Radhakrishan, S.Subramanyan, V. Raju	CAD/CAM/CIM	New Age International Publishers	2008
		2.	James V. Valentino, Joseph Goldenberg	Introduction to Computer Numerical Control (4th Edition)	AAA Predator Inc.	2007
		3.	Alan Overby	CNC Machining Handbook	McGraw-Hill	2011