

Óbuda University Bánki Donát Mechanical and Safety Engineering Faculty			Institute of Material Science and Technology Department of Manufacturing Technology	
Course title and code: Mechatronics of Manufacturing Systems (Gyártórendszerek mechatronikája)				Credits: 5
BAWGME6BNE				
Full-time, 20120/2021 academic year. 2. Semester				
Faculties in which the subject is taught: Bánki Donát Mechatronics Engineering Faculty, NMH III Eng				
Lecturer instructor	Balázs Mikó, PhD		Instructors	György Czifra, PhD (1-4) Balázs Mikó PhD (5-7) Ferenc Oláh (8-13) Abdul Whab Mgherony
Prerequisites conditions (code)		-		
Hours per week:	Lecture: 2	Practise: 0	Laboratory: 2	Consultation: -
Semester closing way: (required)		é – practice mark		
Curriculum				
The objective of the course: The aim of the subject is to present modern machining methods and CNC technology. The first part (w1-4) of the subject focuses on the build up of the CNC machine tools and investigates them as a typical mechatronic system. The second part (w5-8) presents the manual CNC coding and shows typical examples in the field of milling and turning. The third part (w9-13) shows the application of CAD/CAM solutions integrated in the system CATIA.				
Schedule				
Educational weeks	Topics			
1.	Fundamentals of CNC technology and machines, Industrial robotics in machining, Industry 4.0			
2.	Classification of modern CNC machines, types, and their variations Building blocks of CNC machines,			
3.	Drives used in CNC machines, PLC Controllers of CNC machines, Measuring systems			
4.	Control systems, Coordinates in CNC machining and their transformations			
5.	CNC programming – Milling example 1 (HW1)			
6.	CNC programming – Milling example 2			
7.	CNC programming – Milling example 3			
8.	CNC programming – Milling example 4			
9.	Education break / Holiday			
10.	CATIA lab (CAD) – Part modelling			
11.	CATIA lab (CAM) – 2.5D milling			
12.	CATIA lab (CAM) – 3D milling			
13.	CATIA lab (CAM) - Machining			
14.	Test			
Requirements				
1 test in 14th week (max 60 points), 1 homework (max 15 points) 0-39 % – 1 (fail) 40-54 % – 2 (pass) 55-69 % – 3 (satisfactory) 70-84 % – 4 (good) 85-100 % – 5 (excellent)				
Bibliography:				
Course books: 1. Alen Overby: CNC machining handbook; McGraw-Hill New York, 2011 2. Peter Smid: CNC programming handbook (2nd ed.); Industrial Press New York; 2003 3. NCT programming guides; www.nct.hu 4. Moodle				

Budapest, 12 January 2021

Balázs Mikó, PhD
Lecturer instructor