

<b>Óbuda University</b> Bánki Donát Faculty of Mechanical and Safety Engineering			<b>Institute:</b> <i>Institute of Mechanical Engineering and Technology</i>		
Name of the subject: <b>Manufacturing Engineering 1 BGXGTE3BNF</b> Full time course                      Term: <b>2024/2025 I.</b> <b>Credit: 5</b>					
Programme: Mechatronic Eng BSc II English			Timetable:            Lec.: Mo. 13:30-15:10 Room 134. Sem: Mo. 15:20-16:10 Room 134.		
Teacher responsible for the subject:		Mikó Balázs (PhD.habil; ass. prof.)		Teachers:            Mikó Balázs (PhD.habil; ass. prof.)	
Prerequisites:		-			
Hours per week:		Lecture: <b>2</b>		Practice.: <b>0</b>	
				Labs: <b>1</b>	
				Consultation:	
Way of closing the semester:		<b>Exam</b>			
<b>Curriculum</b>					
<i>The aim of the course is to familiarise students with the manufacturing technologies of mechanical components, the basic types of manufacturing tools and manufacturing processes.</i> <i>The course will cover the types of machining processes, tools, and the design of conventional and CNC machine tools. The technologies of fine surface machining (grinding, sanding, ...), laser, plasma and water jet machining, spark cutting technologies will be discussed. Special attention is paid to the production technologies of plastic and composite parts and to additive manufacturing processes. Basic measurement skills are also taught.</i>					
<b>Schedule</b>					
Week no.		Topics			
1.		Introduction Manufacturing process planning, requirements and process elements, Documenting		Project work discussion	
2.		Cutting technology, Tool wear, forces, cooling		Blank materials, selection and calculation, tolerances and manufacturing errors	
3.		Basic cutting methods and machine tools: turning		Edge geometry and tool materials	
4.		Basic cutting methods and machine tools: drilling, milling		Manufacturing process planning (calculation example)	
5.		Basic cutting methods and machine tools: planning, shaping, broaching, grinding		Positioning and fixtures, typical fixtures in machining	
6.		CNC machine tool		NC programming	
7.		Plastic part production technologies		Design for manufacturing: plastic parts	
8.		Composite technologies		Injection mould	
9.		Additive manufacturing		Presentation workshop	
10.		Metrology		Measuring lab	
11.		Education break			
12.		Safety and ergonomics in machining workshop		Consultation	
13.		Presentation			
14.		Test			
<b>Requirements</b>					
1 project work (max 20 points) 4 small test (4x3 points) 1 test in 14th week (max 40 points), 1 optional experimental work (3+2 points)					
0-60 %                      – 1 (fail);            60-70 %                      – 2 (pass);            70-80 %                      – 3 (satisfactory) 80-90 %                      – 4 (good);            90-100 %                      – 5 (excellent)					

**Literature:**

- [1] S. Kalpakjian; S.R. Schmid: Manufacturing engineering and technology; Pearson Singapore 8<sup>th</sup> ed. 2020.
- [2] Handouts in the Moodle system

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Dr. MIKÓ Balázs

<b>Óbuda University</b> Bánki Donát Faculty of Mechanical and Safety Engineering			<b>Institute:</b> <i>Institute of Mechanical Engineering and Technology</i>		
Name of the subject: <b>Manufacturing Engineering 2 BGXGTE3BNE / BAGGT23NED/C</b> <span style="float:right"><b>Credit: 4</b></span>					
Full time course                      Term: <b>2023/2024 I.</b>					
Programme: Mechatronic Eng BSc II English			Timetable:      Lec.: Mo. 13:30-15:10 Room 134. Sem: Mo. 15:20-17:00 Room 134.		
Teacher responsible for the subject:	Mikó Balázs (PhD.habil; ass. prof.)		Teachers:      Mikó Balázs (PhD.habil; ass. prof.)		
Prerequisites:		-			
Hours per week:	Lecture: <b>2</b>	Practice.: <b>0</b>	Labs: <b>2</b>	Consultation:	
Way of closing the semester:	<b>Exam</b>				
<b>Curriculum</b>					
<i>The aim of the course is to familiarise students with the manufacturing technologies of mechanical components, the basic types of manufacturing tools and manufacturing processes.</i>					
<i>The course will cover the types of machining processes, tools, and the design of conventional and CNC machine tools. The technologies of fine surface machining (grinding, sanding, ...), laser, plasma and water jet machining, spark cutting technologies will be discussed. Special attention is paid to the production technologies of plastic and composite parts and to additive manufacturing processes. Basic measurement skills are also taught.</i>					
<b>Schedule</b>					
Week no.	Topics				
1	Cancelled				
2	Introduction Manufacturing process planning, requirements and process elements, Documenting		Project work discussion		
3	Cutting technology, Tool wear, forces, cooling		Blank materials, selection and calculation, tolerances and manufacturing errors		
4	Basic cutting methods and machine tools: turning		Edge geometry and tool materials		
5	Basic cutting methods and machine tools: drilling, milling		Manufacturing process planning (calculation example)		
6	Basic cutting methods and machine tools: planning, shaping, broaching, grinding		Positioning and fixtures, typical fixtures in machining		
7	Education break				
8	CNC machine tool		NC programming		
9	Plastic part production technologies		Design for manufacturing: plastic parts		
10	Composite technologies		Injection mould		
11	Education break				
12	Additive manufacturing		Safety and ergonomics in machining workshop		
13	Metrology		Measuring lab		
14	Test		Presentation		
<b>Requirements</b>					
1 project work (max 20 points) 4 small test (4x3 points) 1 test in 14th week (max 40 points), 1 optional experimental work (3+2 points)					
0-60 %                      – 1 (fail);      60-70 %                      – 2 (pass);                      70-80 %                      – 3 (satisfactory) 80-90 %                      – 4 (good);      90-100 %                      – 5 (excellent)					

**Literature:**

- [3] S. Kalpakjian; S.R. Schmid: Manufacturing engineering and technology; Pearson Singapore 8<sup>th</sup> ed. 2020.
- [4] Handouts in the Moodle system