SYLLABUS

1. Course title:

Manufacturing technologies I

2. Code:

3. Cycle of study:

I

4. ECTS credits:

5

5. Type of course:

Mandatory

6. Prerequisites:

7. Class restrictions:

8. Duration / semester(s):

| 1 | V |

9. Weekly contact hours and student workload:

	Semester (1)	V	Semester (2)		(for two-semester courses)	Workload: (hours)	
9.1. Lectures		3				Classes:	45,00
9.2. Seminars		1				Individual work:	104,4
9.3. Laboratory / Practice classes		0				In total:	149,4

10. Faculty:

Faculty of Mechanical Engineering Tuzla

11. Department/study program:

Mechatronics

12. Lecturer:

Ph.D Muhamed Mehmedović, associate prof.

13. Course aims:

to introduce students with production technology definition and its importance as well as production technologies classifications,
to explain fundamentals of metal removal process: chip formation, mechanic, thermodynamic and tribology,

to introduce students with fundamentals of some mostly used of conventional metal removal technologies,
to introduce students with structure elements and principles of CN tool machines control as well as machining programming on CNC tool machines ,
to introduce students with principles and techniques of metal removal processes modeling, control and regulation,
to explain fundamentals of plastic deformation: dislocations, yield conditions, stress and strain relation,

14. Learning outcomes:

At the end of this course, the students should be able to:
Understand basis of material removal process.
Understand basis of material removal technologies such as turning, drilling, milling, grinding.
Understand of CNC machines elements as well as logic of CNC machines programming.
Understand the basics of machining process analysis with the goal of their modeling and regulation.
Explain yield mechanism of metals.
Explain strain-stress relation and effects of strain rate and temperature on the flow curve

15. Course content:

1. Introduce, Technology definition, Criteria of technologies classifications,
2. Fundamentals of material removal process, cutting tool geometry, Machining regimes,
3. Mechanic and Thermodynamic of metal removal process,
4. Tribology of metal removal process, Turning technology,
5. Drilling technology,
6. Milling technology,
7. Test 1, Computer numerical control (CNC) tool machines,
8. Methodology of CNC machining programming, CNC lathe machining programming,
9. Experimental methods of investigation of machining processes , Methods of machining processes modeling,
10.Machining processes regulation and control,
11.Dislocations, slip systems, Stress and strain tensors,
12.Principal stresses and strains, Flow criteria, Strain hardening,
13.Work hardening, Work of plastic deformation,
14.Friction, Metal formability,
15.Test 2.

16. Learning methods:

The following methods are planned for successful learning:

- Lectures with the use of multimedia equipment and learning technique with active participation and student
 discussions,
- Auditory exercises,
- Graphic papers preparation and working

17. Assessment methods:

• Lectures – theoretical lectures, active two-way communication between student and professor, compulsory attendance of students;
• Theory tests - solving tests;
• Tests with tasks - solving tests;
• Graphic work – independent work of the student to solve the problem;
• Oral final exam - interactive conversation with the student in order to validate the acquired knowledge;
• Consultations – clarification of any ambiguities related to the topic of the studied subject.

The condition for signing is the student's attendance at a minimum of 70% of lectures and exercises.
Grading Scale:

Grade	Descriptive	Letter	Points
5 (five)	Does not meet minimum criteria	F, FX	<54
6 (six)	Meets minimum criteria	E	54÷64
7 (seven)	Generally good, but with significant shortcomings	D	65÷74
8 (eight)	Average, with noticeable errors	C	75÷84
9 (nine)	Above average, with occasional errors	B	85÷94
10 (ten)	Exceptional success with no errors or with minor errors	A	95÷100.

18. Assessment components:

1. Attendance at lectures (45×0.111=5)
2. Theory test (2 tests - 2×10=20)
3. Tests with tasks (2 tests - 2×10=20)
4. Graphic work (1×10=10)

5. Final exam (45)
Through the continuous activities of checking the student's knowledge during the semester (sequential number: 1, 2, 3 i 4), the student can win 55% of the total number of points, and by passing the oral (final) exam another 45% of the total number of points

19. Mandatory reading list:

1. Ekinović S. : „Material removal processes", Faculty of Mechanical Engineering in Zenica, 2003.
2. Ekinović, S.: " Numerical and computer control tool machines", Mechanical faculty of Zenica, Zenica 2010

20. Additional reading list:

1. Stanić J. : "Basics of mathematical theory of experiment", Faculty of Mechanical Engineering in Belgrad, Belgrade.
2. H.Đukić, P.Popović: " Metal forming and Sheet metalworking processes", Faculty of Mechanical Engineering, Mostar

21. Web sources:

22. Applicable from the academic year:

2025/2026

23. Adopted in the Faculty/Academy session:

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