

## SYLLABUS

**1. Course title:**

FUNDAMENTALS OF MANUFACTURING TECHNOLOGIES

**2. Code:**

**3. Cycle of study:**

1

**4. ECTS credits:**

4

**5. Type of course:**

Mandatory

**6. Prerequisites:**

**7. Class restrictions:**

**8. Duration / semester(s):**

1

5

**9. Weekly contact hours and student workload:**

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)
9.1. Lectures	1	<input style="width: 40px; height: 20px;" type="text"/>		Classes: <input style="width: 40px; text-align: center;" type="text" value="33.7"/>
9.2. Seminars	2	<input style="width: 40px; height: 20px;" type="text"/>		Individual work: <input style="width: 40px; text-align: center;" type="text" value="80.3"/>
9.3. Laboratory/Practice classes	0	<input style="width: 40px; height: 20px;" type="text"/>		In total: <input style="width: 40px; text-align: center;" type="text" value="114"/>
	1	<input style="width: 40px; height: 20px;" type="text"/>		

**10. Faculty:**

Faculty of Mechanical Engineering Tuzla

**11. Department/study program:**

Energetics and thermo-fluid engineering

**12. Lecturer:**

Dr.sc. Samir Butković, professor

**13. Course aims:**

Acquiring basic knowledge in manufacturing technologies, fundamental principles, as well as better understanding of interaction between material and manufacturing technology.

#### 14. Learning outcomes:

After completing this course students are able to participate in solving practical problems in following fields: welding, casting, machining, forming, powder metallurgy. Also, students are able to select optimal manufacturing technology for required product properties.

#### 15. Course content:

1. Introduction and classification of manufacturing technologies,
2. Joining technologies,
3. Fundamentals of metallurgy and heat transfer in welding,
4. Welding processes,
5. Welding processes,
6. Machining technologies, Machining processes for rotation shapes,
7. Test I, Machining processes for complex shapes, Abrasive processing and Finishing operations,
8. High speed machining of hardened materials,
9. Non-Traditional Machining Processes
10. Casting technologies,
11. Forming processes, Rolling, Forging,
12. Extruding, Drowning,
13. Sheet forming processes,
14. Powder metallurgy technologies,
15. Test II

#### 16. Learning methods:

Lectures with active participation of students,  
Laboratory work,  
Consultations,  
Preparation and presentation of seminar papers.

#### 17. Assessment methods:

Activity during lectures,  
2 tests (solving of tasks),  
2 test (understanding of theory)  
Seminar/homework papers,  
Final exam,

Knowledge tests results are recognized as cumulative result if achieved results are positive after each individual exam and gives at least 50% of the planned and/or the necessary knowledge and skills. In order to pass the subject the student must achieve a minimum of 54 cumulative points.

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:

Attendance and activity during lectures, 6 points  
2 tests (solving of tasks), 2 tests x 10 points=20 points  
2 test (understanding of theory), 2 tests x 12 points=24 points  
Seminar/homework papers, 10 points  
Final exam, 40 points

#### 19. Mandatory reading list:

1. Ekinović S. : Obrada rezanjem , Mašinski fakultet u Zenici, 2001. godina.
2. Omer Pašić: Zavarivanje, Sarajevo, 1998.godine.
3. Risto Kovač: Tehnologija izrade odlivka, Udžbenik, Fakultet tehničkih nauka, Novi Sad,2002.
4. Šarić E, Butković S., Izvod iz teorije plastičnosti metala. Tuzla: In Scan d.o.o Tuzla; 2021.
5. George E. Totten: Steel heat treatment, metallurgy and technologies, Taylor and Francis Group, 2007.

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**20. Additional reading list:**

1. K. G. Swift; J. D. Booker: „Process Selection From design to manufacture“, Second edition, 2003. godina.

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**21. Web sources:**

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**22. Applicable from the academic year:**

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**23. Adopted in the Faculty/Academy session:**