SYLLABUS

1. Course title:

METAL POWDER PRESSING TECHNOLOGIES

2. Code:

3. Cycle of study:

1

4. ECTS credits:

5

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	3		Classes:	45
9.2. Seminars	1		Individual work:	92,17
9.3. Laboratory/Practice classes	0		In total:	137,17

10. Faculty:

Faculty of Mechanical Engineering Tuzla

11. Department/study program:

Production Mechanical Engineering

12. Lecturer:

Dr.sc. Samir Butković,professor

13. Course aims:

Acquiring fundamental theoretical and practical knowledge in the field of processing of metal powders, from production, characterization to pressing and shaping. Also, students learn about advantages and specificities of powder metallurgy technologies in manufacturing complex parts, processing of material which are difficult to process using other

technologies and application of P/M technology in developing new materials.

14. Learning outcomes:

After completing this course students are able to: design technological procedure for powder production with required properties and material, select method of production and perform characterization of produced powder, find suitable shaping (pressing, compaction) technology, solve tooling problems and design technological procedure of pressing, participate in selection of appropriate consolidation technique and parameters.

15. Course content:

1. Introduction in powder pressing technologies and comparison with other technologies,
2. Powder production methods,
3. Powder production methods
4. Characterization of metal powders,
5. Characterization of metal powders,
6. Preparing of metal powders for pressing (shaping,compaction),
7. Test I, Powder presing (shaping,compaction) methods,
8. Conventional pressing and CIP,
9. Warm compaction,
10 Hot isostatic pressing,
11. Metal injection molding,
12. Metal injection molding,
13. Rolling and Forging of metal powders
14. Green part testing and Introduction in sintering,
15. Test II

16. Learning methods:

Lectures with active participation of students,
Exercises,
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. B.Samir, E.Šarić.M.Mehmedović, Tehnologije presanja i sinterovanja metalnih prahova, Tuzla 2021.
2. Powder metal technologies and aplication, ASM Handbook Committe, 1998

20. Additional reading list:

1. M. Mitkov, D. Božić, Z. Vujović: Metalurgija praha, Beograd, (1998).

21. Web sources:

22. Applicable from the academic year:

23. Adopted in the Faculty/Academy session: