

SYLLABUS

1. Course title:

Technological processes and operations planning

2. Code:

3. Cycle of study:

I

4. ECTS credits:

5

5. Type of course:

Mandatory

6. Prerequisites:

No prerequisites

7. Class restrictions:

None

8. Duration / semester(s):

I

VIII

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)
	1	<input style="width: 40px; height: 20px;" type="text"/>		
9.1. Lectures	3	<input style="width: 40px; height: 20px;" type="text"/>		Classes: 56,25
9.2. Seminars	1	<input style="width: 40px; height: 20px;" type="text"/>		Individual work: 93,63
9.3. Laboratory / Practice classes	1	<input style="width: 40px; height: 20px;" type="text"/>		In total: 149,9

10. Faculty:

Faculty of Mechanical Engineering Tuzla

11. Department/study program:

Production Engineering / Production Engineering

12. Lecturer:

Alan Topčić PhD, Full Professor

13. Course aims:

Familiarization with the concept, significance, classifications, methods and approaches to the design of technological processes and operation planning. Understanding the interdependence and impact of technical-technological and economic parameters on the realization of technological processes and operations planning. Application of modern

approaches to design of technological process and operations planning with the aim of increasing the competitiveness of the production system. Get to know of the fundamentals of technological process and operations planning modeling.

14. Learning outcomes:

Upon successful completion of the course, the student will be able to:

To defines and classifies technological processes; To recognizes and utilizes appropriate technological fundamentals for designing of technological process and operations planning; Successfully applies methods for solving technological measurement sequences; Selects technological bases and calculates positioning errors; Determines all necessary parameters for the realization of a specific technological processes and operations planning; Identifies mechanisms and controls the emergence of errors in the production process; To implements acquired theoretical and practical knowledge and skills necessary for successful design of technological processes (conventional, group, and computer-aided – CAPP); To be familiar with the fundamentals of technological processes and operations planning modeling.

15. Course content:

1. Fundamentals, importance, definition and classification of technological processes and operations planning; Classification of manufacturing technologies;
2. Product Analysis System: Design/construction analysis and Technological (Cost Effective Design) product analysis;
3. Concept of technological processes and operations planning design; Fundamentals for designing of technological processes and operations planning;
4. Systems/approaches to designing of technological processes and operations planning; Segments and structure of technological processes and operations planning;
5. Technological Measurement Sequences;
6. Positioning and selection of technological bases; Positioning Errors;
7. Machining allowances; Selection of raw material/semi-products;
8. Deviations in the Machining Process; Machining Errors; Test 1;
9. Selection of technological processes and operations variants; Sequence of operations, setups, passes and positions;
10. Machining parameters and processing time; Tool and machine selection;
11. Design of conventional technological processes and operations planning;
12. Concentration of technological operations;
13. Design of group technological processes;
14. Computer-Aided Process Planning – CAPP;
15. Fundamentals of modeling of technological process and operations planning; Test 2.

16. Learning methods:

LECTURES (PR) – Theoretical lectures using multimedia tools, along with active two-way communication between student and professor;

AUDITORIUM EXERCISES (AV) – Solving practical problems and tasks related to the subject matter, with active two-way communication between student and teaching assistant;

LABORATORY EXERCISES (LV) – Work in the laboratory and in the field aimed at acquiring practical skills related to the subject matter; Preparation and presentation of seminar and graphical assignments;

CONSULTATIONS – Additional sessions that allow students to clarify specific segments of the lectures/exercises with the professor or assistant after their completion.

17. Assessment methods:

PRE-EXAM OBLIGATIONS: Students are required to take two written tests from the theoretical part (PR) and two from the auditorium exercises (AV). Theoretical tests (PR) are scheduled as follows:

- After the first third of the semester – First midterm,
- At the end of the semester – Second midterm.

Auditorium exercise tests (AV) are scheduled as follows:

- After the middle of the semester – First midterm,
- At the end of the semester – Second midterm.

The tests cover the material presented up to that point in lectures and exercises. Theoretical tests (PR) consist of multiple-choice questions, short answer questions, and essay-type questions. Students can earn a maximum of 9 points per midterm — totaling 18 points for all two theoretical tests. Auditorium exercise tests (AV) consist of problems solving, and students can earn a maximum of 5 points per test — totaling 10 points. All students take the tests at the same time, ensuring uniform knowledge evaluation and consistent testing conditions.

As part of the pre-exam obligations, students are required to prepare an individual Seminar paper (PR) on a topic related to the course content. It must be submitted in written form to the course professor for review and evaluation, and then defended orally. Successfully completed and defended Seminar assignment is worth up to 8 points. Students need to prepare an individual Graphical assignment on a topic related to the course content too. It must be submitted in written form to the course assistant for review and evaluation, and then defended orally. Each successfully completed and defended Graphical assignment is worth up to 5 points.

In addition, students must prepare, submit, and defend a Laboratory Exercise Report (LV), for which they may earn a maximum of 4 points.

For continuous participation during lectures and exercises throughout the semester, students may earn:

- Up to 15 points from lectures (PR),
- Up to 10 points from exercises (5 points from Auditorium (AV) + 5 points from Laboratory (LV) exercises).

The final exam is oral. Only students who have successfully fulfilled more than 50% of the pre-exam obligations and attended more than 70% of lectures and exercises are eligible to take the final exam. In the final exam, students must answer five questions from the course material covered in lectures and exercises. The maximum score for the final exam is 30 points.

All forms of knowledge assessment are recognized as part of the cumulative grading system. To pass the course, a student must earn a minimum of 54 cumulative points.

If a student misses lectures/exercises, they are required to provide valid justification.

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:

The exam grade is based on the total number of points that the student earned by fulfilling pre-exam obligations and taking the exam, and contains a maximum of 100 points. It is determined according to the following scale:

- Attendance at Lectures (PR): 15 points
- Theory tests (PR): 2 tests × 9 points = 18 points
- Seminar paper (PR): 8 points
- Attendance at Auditorium exercises (AV): 5 points
- Attendance to Laboratory exercises (LV): 5 points
- Tests with tasks (AV): 2 tests × 5 points = 10 points
- Graphic work (AV): 5 points
- Report form Laboratory exercise (LV): 4 points

Prerequisites total: 70 points

Final exam: 30 points

TOTAL: 100 points

19. Mandatory reading list:

Jurković M., Tufekčić Dž.(2015) „Tehnološki procesi – projektovanje i modeliranje“, Tuzla

20. Additional reading list:

Todorić V. (2004.) „Projektovanje tehnoloških procesa“, Novi Sad

Babić B. P. (2004.) „Projektovanje tehnoloških procesa“, Beograd

Đ.S. Panić (1990) „Tehnološki procesi i studija rada“,

V. Gačnik, F. Vodenik (1990) "Projektiranje tehnoloških procesa", Tehnička knjiga Zagreb

V. Mečanin, M. Jurković, V. Višekruna (1988) „Tehnološki procesi automatske proizvodnje“, Sarajevo

21. Web sources:

22. Applicable from the academic year:

2025/2026.

23. Adopted in the Faculty/Academy session:

25.04.2025.