SYLLABUS

1. Course title:

Product development

2. Code:

3. Cycle of study:

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4. ECTS credits:

5

5. Type of course:

Mandatory

6. Prerequisites:

No prerequisites

7. Class restrictions:

None

8. Duration / semester(s):

1 | VII

9. Weekly contact hours and student workload:

Semester (1)	1	Semester (2)		(for two-semester courses)	Workload: (hours)
9.1. Lectures	2			Classes:	33,75
9.2. Seminars	0			Individual work:	116,2
9.3. Laboratory / Practice classes	1			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:

Introduce students to the basic concepts, significance and stages of the product development process. Highlight different approaches and modalities of the product development process as well as present the tools, methods and procedures used in various phases of the product development process. Master the fundamentals of organizing and managing the product

development process and the development team. Emphasize the importance of the end user/customer in the product development process. Explain the ways and modalities of coordination in the integration of suppliers into the product development process.

14. Learning outcomes:

Upon successful completion of the course, the student will be able to:
Identify opportunities and approaches for implementing the product development process; Define the stages of the product development process for a specific case; Apply appropriate methods and approaches for each phase of the product development process; Analyze, quantify and evaluate end-user requirements in relation to the possibilities during product development; Establish ways and modalities for coordinating activities with suppliers in the product development process; Define and establish the organizational structure for the implementation of a specific product development process: Menage the product development process.

15. Course content:

1. **Concept of a product;**
2. **Product life cycle;**
3. **Concept of product development;**
4. **The phases of product development;**
5. **Creating ideas about product;**
6. **Product planning;**
7. **Design of products;**
8. **Prototyping; Test 1;**
9. **Testing of products;**
10. **Defining the final product design;**
11. **Role of users/customers in the product development process;**
12. **Measuring user/customer satisfaction with the product;**
13. **Supplier integration in the product development process;**
14. **Quantifying achievements in the product development process;**
15. **Organizational aspects and management of the product development process; Test 2.**

16. Learning methods:

LECTURES (PR) – Theoretical lectures using multimedia tools, along with active two-way communication between student and professor;
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 one from the labratory exercises (LV). Theoretical tests (PR) are scheduled as follows:
- **After the first third of the semester – First midterm,**
- **At the end of the semester – Second midterm.**

Laboratory exercise tests (LV) are scheduled as follows:
- **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. Laboratory exercise tests (LV) consist of problems solving, and students can earn a maximum of 8 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 paper is worth up to 9 points.
In addition, students must prepare, submit to assistent and defend a Laboratory Exercise Report (LV). Successfully completed and defended Laboratory Exercise Report (LV) is worth up to 8 points.
For continuous participation during lectures and exercises throughout the semester, students may earn:
- **Up to 18 points from lectures (PR),**
- **Up to 9 points from laboratory exercises (LV).**

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): 18 points**
- **Theory tests (PR): 2 tests × 9 points = 18 points**
- **Seminar paper (PR): 9 points**
- **Attendence to Laboratory exercises (LV): 9 points**
- **Test with tasks (LV): 8 points**
- **Report form Laboratory exercise (LV): 8 points**

Prerequisites total: 70 points
Final exam: 30 points
TOTAL: 100 points

19. Mandatory reading list:

A. Topčić A, Dž. Tufekčić, E. Cerjaković (2012) "Razvoj proizvoda", Mašinski fakultet Tuzla, Tuzla

20. Additional reading list:

D. Cvetković (2011) "Dizajn i razvoj proizvoda", Beograd
C.H. Loch i sar. (2008) "Handbook of New Product Development Management", Elsevier Ltd
Ulrich, K.T., Eppinger, S.D. (2004) " Pproduct design and development ", McGraw Hill
Otto, K.N., Wood, K.L. (2001) "Product design - techniques in Reverse Engineering and new product development ", Prentice Hall
Andreasen, M.M., Hein, L. (2000) "Integrated product development ", IPU

21. Web sources:

https://www.goodreads.com/shelf/show/product-development
https://resources.saylor.org/wwwresources/archived/site/textbooks/Developing%20New%20Products%20and%20Services.pdf
https://industri.fatek.unpatti.ac.id/wp-content/uploads/2019/03/202-Product-Design-and-Development-Karl-T.-Ulrich-Steven-D.-Eppinger-Edisi-6-2015.pdf

22. Applicable from the academic year:

2025/2026.

23. Adopted in the Faculty/Academy session:

25.04.2025.