

UČNI NAČRT PREDMETA

1. Naslov predmeta / enote / modula:

Design of electro-mechanical products

2. Koda predmeta:

3. Študijski program: ELEKTROTEHNIKA

4. Študijska smer: AVTOMATIKA-ROBOTIKA

5. Stopnja študija:
- Dodiplomska (prva)
 - Magistrska (druga)
 - Doktorska (tretja)

6. Letnik: prvi

7. Semester: zimski

8. Steber programa:
- Obvezni – skupni
 - Obvezni – stroka
 - Izbirni – stroka
 - Izbirni – širše

9. Jezik: slovenski

10. Število kontaktnih ur – skupaj:	75
predavanja:	45
avditorne vaje:	
laboratorijske vaje:	30
seminar:	
ostale oblike:	0

11. Število kreditnih točk (ECTS): 6

12. Posebnosti:

13. Cilji in predmetno specifične kompetence:

The course aims at teaching students computer aided design of electrical and mechanical systems. It introduces students with software packages used in computer aided design.

14. Opis vsebine:

Integration of electrical and mechanical components/systems, computer aided design, prototyping; Mechanism design: computer aided design of mechanical components, designing individual parts, assembly of parts - definition of degrees of freedom between elements, restrictions of motion; Simulations of mechanisms: parameterization, statics, kinematics, dynamics and animation; Prototyping of mechanical systems: drawings, milling, grinding, 3D printing; Design of electric circuits: components, functional, thermal, vibration, EMI/EMC requirements, grounding, analog/digital signals, design of schematics and elements, positioning of elements on the circuit, PCB routing; Prototyping of electrical systems: milling and etching techniques, soldering technique, safety, ESD protection; Integration of mechanical and electrical assemblies: installation, electrical connections.

15. Temeljna literatura:

J.D. Bethune: Engineering Design Graphics with Autodesk® Inventor®2011, 2011
W. Younis: Up and Running with Autodesk Inventor Simulation 2011, 2010
C. Waguespack, T. Tremblay: Mastering Autodesk Inventor and Autodesk Inventor LT 2011, Sybex 2010
P. Wilson, The Circuit Designer's Companion, Newnes, 2012.
C. Coombs, Printed Circuits Handbook, McGraw-Hill Professional, 2007.

16. Predvideni študijski dosežki:

16.1 Znanje in razumevanje	Knowledge of computer aided design techniques in electrical and mechanical engineering.
16.2 Uporaba	Finding solutions to practical problems related to design of electrical and mechanical (electro-mechanical) components.
16.3 Refleksija	Practical feeling for design of mechanical and electrical products.
16.4 Prenosljive spretnosti	Skills required for problem solving, design, and implementation of solutions, critical analysis and synthesis, use of software tools.

17. Metode poučevanja in učenja:

Multimedia supported lectures, project based work, lab courses. Combination of individual and team work under the supervision of mentors.

18. Pogoji za vključitev v delo oziroma za opravljanje študijskih obveznosti:

Inscription in the year of study, fundamentals of mathematics, physics, computer science and electrical circuits

19. Metode ocenjevanja in ocenjevalna lestvica:

Completed practical courses; oral public presentation of semester projects; oral exam; grades from 6 to 10 positive, 1 to 5 negative.

20. Metode evalvacije kakovosti:

A short student questionnaire for the assessment of individual parts of the course (course thematics, quality of lectures, quality of lab work), with the aim that students identify weaknesses and suggest improvements.

21. Sestavljalec učnega načrta:

Matjaž Mihelj in Roman Kamnik