SYLLABUS

1. Course title:

Fundamentals of Mechatronics

2. Code:

ESKE104

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[ESKE001] Fundamentals of Electrical Engineering I, [RI001] Introduction to Computer Science

7. Class restrictions:

8. Duration / semester:

1 4

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 1

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

Ph.D. Mario Pejdanović, assistant prof.

13. Lecturer's e-mail:

mario.pejdanovic@untz.ba

14. Web site:

15. Course aims:

The course objective is for students to acquire basic knowledge in the field of mechatronics.

16. Learning outcomes:

Students will be able to understand the mechatronics as a multidisciplinary science after completing the course and passing the exam. They will master the basic knowledge of all fields that form mechatronic systems and gain basic knowledge about design, modeling and management of mechatronic systems.

17. Course content:

Introduction to Mechatronics - Mechatronics Philosophy, Mechatronics Application, Intelligent Machines and Expert Systems. Basic technologies in electrical engineering - fluxes and difference potential, electrical power and electrical energy, network theorems, electrostatic systems, power systems, alternating sizes, three-phase circuits, transformers. Analog electronics-semiconductor transistor, thyristor, amplifier, power supply. Sensors and measuring instruments-analog and digital inverters, static and dynamic characteristics, measurements. Electric Actuators-Physical Principles, DC electrical machines, reciprocating machines. Electropneumatic and electrohydraulic systems - pneumatic wagons, hydraulic wagons, electrohydraulic servo systems. Digital Electronics - Bulo Algebra, Combination Logic Systems, Sequential Logic Systems. Microprocessor Technology-Computer Architecture, Digital Data Transmission Standards. Programming of high and low level operating systems, control programming languages.

18. Learning methods:

Theoretical knowledge is gained by students through lectures and auditorial exercises. Practical knowledge includes independent work by students through homework and laboratory exercises.

19. Assessment methods:

The exam is written in writing and / or verbally. Written exam is a combination of theoretical questions and computational examples. It is organized in two parts. The final exam contains only theoretical questions.

20. Assessment components:

Students earn points through attendance at lectures, audit and laboratory exercises, and through two partial examinations, of which the first part-exam is mid-semester, and the second is completed at the end of the semester and through the final exam.

21. Required reading list:

C. Fraser, J. Milne: ''Integrated electrical and electronic engineering for mechanical engineers'', McGraw-Hill Book Company, England, 2000
O. Kaynak, S. Tosunoglu: "Recent advances in Mechatronics", Springer-Verlag, 1999

22. Web sources:

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016