

SYLLABUS

1. Course title:

Fundamentals of Mechatronics Engineering

2. Code:**3. Cycle of study:****4. ECTS credits:****5. Type of course:** Mandatory Elective**6. Prerequisites:****7. Class restrictions:****8. Duration / semester:****9. Weekly contact hours:**

9.1. Lectures:

3

9.2. Seminars:

1

9.3. Laboratory/Practice classes:

1

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Mechatronic / Mechatonic

12. Lecturer:

dr.sc. Almir Osmanović, Assistant Professor

13. Lecturer's e-mail:

almir.osmanovic@untz.ba

14. Web site:

www.mf.untz.ba

15. Course aims:

The main goal of the course is to introduce students with the theoretical foundations of mechatronics engineering, design of mechatronic components and systems, and analysis of these systems. The aim is to familiarize students with the mechatronic approaches in design and analyzing mechatronic components and systems, and using appropriate computer engineering, appropriate software and practical application for design and analysis of the above mentioned components and systems.

16. Learning outcomes:

The student is familiar with the basic principles for development elements of mechatronic systems and the basics of the use of mechatronic engineering in the realization and development of mechatronic components as part of the mechatronic systems.

17. Course content:

Introduction, engineering basics and application in mechatronics. Design methodology. Mechatronics engineering in the process of constructing. Basic principles for development and design elements of mechatronic systems and methods for realization of optimal construction solutions. Shapes, scale and their impact on development and design. Function and structure of mechatronic systems. Methods for choosing the optimal constructional solution. Methods for increasing the accuracy and reliability of mechatronic systems. Material processing method, ecological aspects. Design for environmental protection: strategies, practices, guidelines, methods and tools. Life-cycle design. Design for reliability. The influence of the way of making and the technology on the design of mechatronic elements and systems. Role and goals of mechatronic design in the development of mechatronic systems. Principles for constructing mechatronic systems. Design of multivariate mechatronic systems. Analysis of designed mechatronic systems.

18. Learning methods:

Lectures, auditorial and laboratory exercises. Written and oral knowledge testing, assignments, project paper / graphic works and consultations.

19. Assessment methods:

Defense of assignments, project paper / graphic works - student defends his / her work in front of the professor / assistant - answers questions asked.

Written exam (from the theoretical part and the tasks) - the student solves questions / tasks in the given time period related to the subject of study.

Report on laboratory exercises - submission of reports on the activities related to the realization of certain laboratory exercises, answering questions asked by the assistant.

Final Exam - oral answer to the questions asked by professors.

20. Assessment components:

Evaluation will be based on the following activities:

Assignments, project paper - 20 points

Written examination - 15 points

Theoretical part of exam (2 x 17.5) - 35 points

Final exam (oral) - 30 points

Total: 100 points

21. Required reading list:

Devdas S., Richard A. K., 2010. Mechatronics System Design. Delmar: FWS Publishing.

Richard C. D., Andrew K., 1994. Handbook of Design, Manufacturing and Automation.:Wiley.

Norton R. L., 2005. Machine Design: An Integrated Approach,s.l.:Prentice Hall

22. Web sources:**23. Applicable starting from the academic year:**

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015