SYLLABUS

1. Course title:

Control of Mechatronic Systems

2. Code:

AR302

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[AR201] Linear Automatic Control Systems II, [AR203] Actuators, [AR104] Instrumentation

7. Class restrictions:

Students of the Electrical Engineering and Computing Study Program

8. Duration / semester:

1 8

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. Amila Dubravić, Assistant Professor

13. Lecturer's e-mail:

amila.dubravic@untz.ba, amila.dubravic@fet.l

14. Web site:

15. Course aims:

The objective of the course is introduction of principles of control system design of mechatronic systems .

16. Learning outcomes:

Student training for:
- modeling and analysis of the system, and controller design for the mechatronic system,
- development and simulation of computer control with feedback of the mechatronic system

17. Course content:

Introduction to mechatronics. Multidisciplinary holistic approach to system design, from macro system to its components. Principles, modeling, interfacing and signal conditioning of sensors (linear and angular position, speed, acceleration, force, torque) and actuators (pneumatic, hydraulic, electrical) of mechanical motion. Modeling, analysis and identification of dynamic systems. Design of classical and advanced controllers for mechatronic systems. Hardware in the loop simulation and rapid prototyping of real-time closed loop computer control of mechatronic systems. Design and implementation of computer control systems. Selection of microprocessor, real-time operating system, communication protocol, programing language and development tool chain. Control software development. Case study (control of automotive mechatronic systems).

18. Learning methods:

Lectures - Train students with the skills taught in the course. A Power Point presentation is displayed, for additional explanations blackboard and chalk are used, typical examples are presented and computer simulations are activated.
Auditory Exercises - Solving problems that are the subject of course study.
Laboratory Exercises - Solving problems and performing computer simulations.

19. Assessment methods:

The exam is written and verbal. Written exam is a combination of theoretical questions and computational examples made in lectures and at auditory exercises. The final exam is written and oral exam consisting of discussion of seminar work and theoretical questions.

20. Assessment components:

Test 1 = 25 points,
Test 2 = 25 points,
Seminar work = 20 points.
Final exam = 30 points.

21. Required reading list:

"R. Bishop, Mechatronics – An Introduction, CRC Press, 2006
C. de Silva, Mechatronics – A foundation course, CRC Press, 2010
N. Prljača, M. Glavić, Programiranje u C programskom jeziku, Univerzitet u Tuzli, 1999"

22. Web sources:

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016