SYLLABUS

1. Course title:

Flexible automation

2. Code:

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

7. Class restrictions:

8. Duration / semester:

1 8

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	0
9.3. Laboratory/Practice classes:	2

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 aim of the course is to familiarize students with basic concepts and methods used in flexible automation, with individual elements of automation from which automation systems and industrial plants are built.

16. Learning outcomes:

The learning outcome, allows students to use the contents of this course to automate appropriate systems in a mechatronics. Performs analysis and synthesis for designs appropriate systems. They learned basic concepts in the field of control and application of flexible automation in large production systems, control and regulation systems, flexible production systems.

17. Course content:

The basics of automatic control theory. Characteristics of automation development. Tasks, application and aspects of flexible automation. Analysis of regulatory systems. The role of flexible automation in production processes and application in mechatronics. Classification control problems from the aspect of the information, control design, executive aim and energy part of the system. Process automation systems for digital production. Control system technology. Control objects. Accuracy and stability of regulation. Basic characteristics of measuring devices, measuring size. Measuring - transducer elements - sensors. Compensators and regulators. The technique of realizing logical functions in realistic conditions. Programmable logic controllers PLC. Control architecture of the mechatronic system. Automation of the process. The place and role of flexible automation in technological systems, automation of material flows. Automatic production lines, assembly. Controlling and running processes using a computer. Adaptive systems.

18. Learning methods:

Lectures, laboratory exercises. Written and oral knowledge exam, 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 (from the theoretical part) - student solves questions / tasks in a 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.
Corrective Exam (Written examination) - solving questions / tasks in a given time period related to the subject of study.
Corrective Exam (oral examination) - answer the questions asked by professors.

20. Assessment components:

Evaluation will be based on the following activities:
Assignments, project paper / graphic works (1 x 20) - 20 points
Written examination - 15 points
Theoretical part of exam (2 x 20) - 40 points
Final (oral) exam - 25 points
Total: 100 points

21. Required reading list:

Avdić S., 2003. Fleksibilna automatika. Tuzla: Univerzitet u Tuzli.
Gene F. F., Powell J.D., 2014. Feedback Control of Dynamic Systems. New Jersey: Prentice Hall.

22. Web sources:

23. Applicable starting from the academic year:

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015