# SYLLABUS

**1. Course title:**

MECHANIZATION IN AGRICULTURE

**2. Code:**

**3. Cycle of study:**

1

**4. ECTS credits:**

3

**5. Type of course:**

○ Mandatory ◉ Elective

**6. Prerequisites:**

No prerequisites

**7. Class restrictions:**

No class restrictions

**8. Duration / semester:**

1 5

**9. Weekly contact hours:**

| | |
|---|---|
| 9.1. Lectures: | 2 |
| 9.2. Seminars: | 0 |
| 9.3. Laboratory/Practice classes: | 1 |

**10. Faculty:**

Faculty of Technology

**11. Department/study program:**

Agronomy

**12. Lecturer:**

Almir Osmanović, Ph.D. assistant professor

**13. Lecturer's e-mail:**

almir.osmanovic@untz.ba

**14. Web site:**

www.tf.untz.ba

**15. Course aims:**

The aim of the course is to enable students to understand the legality, principles and working methods of various modern automated agricultural machines, equipment, devices and plants in the field of agricultural production, processing, processing and storage of agricultural food products. Students acquire the necessary theoretical and practical knowledge of the application of automated systems and artificial intelligence systems used and applied in agricultural technology.

**16. Learning outcomes:**

At the end of the semester/course, successful students, who have been continuously carrying out their duties during the entire teaching period, will be trained: to familiarize themselves with the basics of automation concepts, to describe the various possibilities of applying automation from agricultural practice, to apply acquired knowledge in solving simpler problems or tasks in Field of agricultural technology (mechanization).

**17. Course content:**

Basic concepts and principles of automatic system management. Analysis of the control system. Mathematical approach to dynamic systems. Mathematical modeling of mechanical, electrical, electromechanical, hydraulic, pneumatic and thermal systems. Analysis in the time domain, in the field of complex variables and in the frequency domain. Regulatory objects and devices in agricultural technology. Regulatory devices in agricultural technology. Synthesis and control stability of the control loop. Selection of regulators and adjustment methods. Basics of measurement and metrology. Measurement of temperature, pressure, flow, humidity, force, speed. Sensors. Sensor basics and application of sensors in automated systems in agricultural mechanization. Basics of mechanization in agriculture. Drive machines and traction units. Machines for landscaping and drainage. Substrate preparation machines. Machines for forming production area. Sowing machines. Transport, storage and packaging machines.

**18. Learning methods:**

Lectures and laboratory exercises, written and oral examination, seminar / graphic works and consultations.

**19. Assessment methods:**

Presentation of seminar / graphic works, written exam (from the theoretical part), final exam (oral), corrective exam (oral and written).

Presentation of  / graphic works - student present his / her work in front of the professor / assistant - answers the questions asked.
Written exam (from the theoretical part) - student solves questions / tasks in a given time period related to the subject of study.
Final Exam - oral answers to the questions asked by professor.
Corrective Exam (written) - solving questions / tasks in the given time period related to the subject of study.
Corrective Exam (oral) - oral answers to the questions asked.

**20. Assessment components:**

| | |
|---|---|
| Activity / Points | |
| Seminar paper (2 x 12) | 24 |
| Test theory (2 tests x 22) | 44 |
| Presence at classes | 2 |
| Final exam (oral) | 30 |
| TOTAL: | 100 points |

**21. Required reading list:**

1. Šurina T., 1974. Analiza i sinteza servomehanizama i procesne regulacije. Zagreb: Školska knjiga.
2. Golnaraghi F., Kuo B.C., 2009. Automatic Control Systems. New Jersey: Wiley.
3. Bajkin A., Ponjičan O., 2005. Mašine u hortikulturi, Novi Sad

**22. Web sources:**

**23. Applicable starting from the academic year:**

2016/2017

**24. Adopted in the Faculty/Academy session:**