# SYLLABUS

**1. Course title:**

Electromagnetic Compatibility

**2. Code:**

ESKE201

**3. Cycle of study:**

1

**4. ECTS credits:**

6

**5. Type of course:**

(•) Mandatory ( ) Elective

**6. Prerequisites:**

Fundamentals of Electrical Engineering II, Theory of Electromagnetic Fields, Theory of Electrical Circuits

**7. Class restrictions:**

**8. Duration / semester:**

1 5

**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. Vlado Madžarević, full professor

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

vlado.madzarevic@untz.ba

**14. Web site:**

**15. Course aims:**

Enabling students to understand electromagnetic interference electrical, electronic and telecommunication equipment, development of skills for calculation and measurement of electromagnetic interference and skills to achieve electromagnetic compatibility, and the development of engineering ways of thinking

**16. Learning outcomes:**

Understanding of electromagnetic compatibility (EMC), protection against electromagnetic interference. Construction and installation of equipment for protection against electromagnetic interference. Representation of EMC solutions. Define and describe the parameters of voltage quality, their causes and consequences and methods for improvement. Define and implement international and European standards for power quality. Describe the sources (causes) for interference caused by radiation of electromagnetic fields. Establish procedures to reduce the interference caused by the radiation field. Understand the methodology of measurement and calculation LF electromagnetic fields.

**17. Course content:**

Definitions and Standards. EMC and EMI definitions. CE and EMC labeling.
Sources of interference. Mode of transmission interference Electromagnetic waves TEM. Wave impedance. Polarization. The flow of energy. Traveling waves. Propagation of plane waves.
The waves in the dielectric. Standing waves. The waves in the conductive material. Distribution of materials on insulators and conductors. The surface effect. Guided propagation of plane waves. Transmission line, waveguides. Resonators, radiation of electromagnetic waves.
EMC electrical equipment. EMC electronic equipment. EMC radio communication devices. Techniques to achieve. EMC Testing. EMC in chambers. EMC testing in the open. Methods of assessing potential impact of electromagnetic fields on human health. Methodology of calculation LF electric and magnetic fields. The methodology of measuring LF electric and magnetic fields. The reduction of LF electric and magnetic fields of power facilities

**18. Learning methods:**

Lectures using multimedia means, exercises, laboratories, field measurements

**19. Assessment methods:**

The completed project task
Two tests and final oral examination
Correctional exam (written test + oral)

**20. Assessment components:**

Rating exam is based on the total number of points a student earned by completing pre-exam and a final exam. The student can achieve a maximum of 100 points according to the following scale:
Test I 25
Test II 25
Project task 20
Final exam 30

**21. Required reading list:**

P. A. Chatterton, M. A. Houlden, "EMC Electromagnetic Theory to Practical Design", England, 1995
J. D. Kraus, D. A. Fleisch, "Electromagnetic with Applications", New York, 2000
K. Malarić, "Protection of wireless systems", Zagreb, 2005

**22. Web sources:**

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

2016/2017

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

04.04.2016.