SYLLABUS

1. Course title:

Fundamentals of Electrical Engineering II

2. Code:

ESKE002

3. Cycle of study:

1

4. ECTS credits:

7

5. Type of course:

(●) Mandatory ( ) Elective

6. Prerequisites:

7. Class restrictions:

8. Duration / semester:

1 2

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 2

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. Izudin Kapetanovic, full professor

13. Lecturer's e-mail:

izudin.kapetanovic@untz.ba

14. Web site:

www.oe.fe.untz.ba, www.fet.ba

15. Course aims:

The course gives understanding of electrical engineering concepts, laws and principles regarding electromagnetics, AC electrical circuits and polyphases systems-. After finishing this course students will be able to analyze AC electrical circuits and understand underlying physical phenomena. The aim of the course is to overcome the integrated process of theoretical and practical basics through research and laboratory work and mathematical methods for analisys of complex problems.

16. Learning outcomes:

1. define and understand the fundamental concepts related to magnetic fields
2. understand and apply magnetic field laws
3. apply superposition method for magnetic filed calculation
4. describe a basic elements of AC electrical circuits
5.understand and apply Kirchhoff's Laws to AC circuit analysis.
4. Current and voltage waveforms. Complex calculus in analysis of AC circuits. RLC circuits.
5. Topographic and locus diagrams.
6. Frequency characteristics. Instantaneous, real, reactive and apparent power. AC circuits with multiple sources.
7. Polyphase system. Harmonic analysis, applications in circuit analysis. Transients
8. Measurements of electrical circuit's currents and voltages

17. Course content:

Electromagnetocs
The themes are: Lorentz force, magnetic flux density. Sources: current. Charge in uniform motion: Ohm s law, resistance. Biot-Savart s law, Ampere s circuital law, magnetic materials, energy in magnetic field, inductances, magnetic circuits. Time-dependent fields, Faraday s law, sinusoidal fields.Characterstics of magnetic materials. Magnetic circuits. Inductance and mutial inductance. Magnetic field energy.
AC currents
Current and voltage waveforms. Amplitude and effective value of current or voltage. AC Generator. Complex calculus in analysis of AC circuits. RLC circuits. Topographic and locus diagrams. Frequency characteristics. Instantaneous, real, reactive and apparent power. AC circuits with multiple sources. Polyphase system. Harmonic analysis, applications in circuit analysis. Transients. Transformers.

18. Learning methods:

Lectures- Involvement in lectures
Exams- Computer aided, written, and oral exams
Laboratory Work- Laboratory work
Consultations- Lecturers consultations
Other -Individual work and learning
E-learning -Homework

19. Assessment methods:

Three midterm written exams (calculations) in IV, VIII and XV week
Final exam: written and oral (theoretical issues and solve practical problems)

20. Assessment components:

Continuous Assessment
Homeworks 5 %,
Electromagnetics (I midterm exam) 12 %
AC Electric circuits (II midterme exam) 20 %
Polyphase systems 8%
Class participation 5 %
Exam
Test 1(theory)-Electromagnetics 10 %
Test 2 (theory)- AC Electric circuits and polyphase systems 10 %
Final Exam (oral or written) 30 %
Maximam: 100 %

21. Required reading list:

E. Hot, "Osnovi elektrotehnike", knjiga druga, Svjetlost Sarajevo, 1996.
E.Hot, I.Kapetanovic, ''Osnovi elektrotehnike'' treći dio, Sarajevo 1998
B. Milatović, "Osnovi elektrotehnike II", Svjetlost Sarajevo, 1983.
B. Popović, "Osnove elektrotehnike II", Građevinska knjiga Beograd, 1990.
H. Božilović, Ž. Spasojević, G. Božilović, "Zbirka zadataka iz osnova elektrotehnike-Elektromagnetizam, naizmjenične struje", Naučna knjiga Beograd, 1989.
I. Kapetanović, N. Sarajlić, T. Konjić, "Osnovi elektrotehnike-zbirka zadataka, knjiga 3,4", Fakultet elektrotehnike Univerziteta u Tuzli, Tuzla 2000.
I. Kapetanović, V. Madžarević, N. Sarajlić, T. Zuber, "Osnovi elektrotehnike-prvi dio: Elektrostatika i linearna električna kola jednosmjerne struje sa teorijom, laboratorijskim vježbama i zadacima, drugo dopunjeno izdanje", Fakultet elektrotehnike i mašinstva Univerziteta u Tuzli, Tuzla 1995.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016