



UNIVERSITY OF NIŠ

Course Unit Descriptor

Faculty

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study program

Mechanical Engineering

Study Module (if applicable)

Course title

Electric machines

Level of study

Bachelor Master's Doctoral

Type of course

Obligatory Elective

Semester

Autumn Spring

Year of study

III

Number of ECTS allocated

6

Name of lecturer/lecturers

Jelena Ž. Manojlović

Teaching mode

Lectures Group tutorials Individual tutorials
 Laboratory work Project work Seminar
 Distance learning Blended learning Other

PURPOSE AND OVERVIEW (max. 5 sentences)

This course is designed to understand the principles of electromechanical systems with electric machinery as examples. The idea is to introduce the fundamentals of converting electrical energy to mechanical energy and vice versa and the basic electrical, magnetic and mechanical phenomena for the certain types of electrical machines. The different classes of electric machines, their operating principle and the important characteristics have been described, such as the advantages and disadvantages of different machines and their applications. Students will also learn how to calculate or to estimate the essential parameters of electric machines by many practical examples.

SYLLABUS (brief outline and summary of topics, max. 10 sentences)

1) The term electromagnetic energy conversion, 2) Electromagnets in electric and electromechanical devices, 3) Magnetic circuit, Lorentz force and Faraday's law of induction, 4) Basic electrical machines, 5) Balances of electric power and losses in machines, 6) Electric machines, working principle and basic degree of efficiency, 7) Transformer principles, forces in a magnetic field, Working principle of a transformer, Different types of transformers, 8) Introduction of electric machine types, basic electric motor and generator – operational theory, 9) Comparison of generator and motor, Motor construction and motor types, DC current machines and alternating current motors.

LANGUAGE OF INSTRUCTION

- Serbian (complete course) English (complete course) Other _____ (complete course)
- Serbian with English mentoring Serbian with other mentoring _____

ASSESSMENT METHODS AND CRITERIA

Pre exam duties	Points	Final exam	points
Activity during lectures	10	Written examination	
Practical teaching		Oral examination	50
Teaching colloquia	40	OVERALL SUM	100

***Final examination mark is formed in accordance with the Institutional documents**