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|  **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 vise 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](http://www.umh.es/contenido/PDI/%3Auni_didac_2220_1_20130910T195437049Z/datos_en.html) 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** |