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| FACULTY: | **Faculty of Mechanical Engineering** |
| FIELD OF STUDY: | **Mechatronics** |
| ERASMUS COORDINATOR OF THE FACULTY: | Igor Maciejewski |
| E-MAIL ADDRESS OF THE COORDINATOR: | igor.maciejewski@tu.koszalin.pl |
| COURSE TITLE: | **Electrical engineering and electrical machines in mechatronics** |
| LECTURER’S NAME: | dr inż. Piotr Zaporski |
| E-MAIL ADDRESS OF THE LECTURER: | piotr.zaporski@tu.koszalin.pl |
| ECTS POINTS FOR THE COURSE: | 3 |
| ACADEMIC YEAR: | 2021/2022 |
| SEMESTER:  (W – winter, S – summer) | Summer |
| HOURS IN SEMESTER: | 30+15=45 |
| LEVEL OF THE COURSE:  (1st cycle, 2nd cycle, 3rd cycle) | 1st cycle |
| TEACHING METHOD:  (lecture, laboratory, group tutorials, seminar, other-what type?) | Lessons (30 h) + classes (15 h) |
| LANGUAGE OF INSTRUCTION: | Polish/English |
| ASSESSMENT METOD:  (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?) | Written exam |
| COURSE CONTENT: | The course includes:  the course includes  Simplification of the SLS electrical circuit description - voltage model  Characteristics of the sources. Energy transformations and relations between signal variables of dissipative and conservative elements of the SLS electrical circuit.  Normal branch form, equivalent branch changes. Thevenin and Norton theorems. Basic laws of electrical engineering and methods of calculating DC circuits.  Matrix description of the SLS electrical network, Matrix form of the laws of electrical engineering and matrix methods for calculating DC circuits.  Indicator plots for symbolic values ​​of voltages, currents, impedance and admittance  Differential-integral description of first and second order inertial circuits.  Transient states in RL, RC, RLC circuits  Magnetic circuits. Calculation of magnetic circuits. Properties of the transformer as a cross.  DC machines and their applications. Mathematical models of the dynamics of electric machines.  Characteristics and use of synchronous and asynchronous machines, induction machines.  Calculation of simple DC circuits by various methods.  Calculation of branched DC circuits by matrix methods.  Calculation of branched harmonic current circuits by matrix methods  Calculation of simple three-phase circuits.  The use of MATLAB for network methods of calculating electrical circuits.  Application of SIMULINK program for simulation of transient determination. |
| ADDITIONAL INFORMATION: |  |