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| FACULTY: | Department of Mechanical Engineering |
| FIELD OF STUDY: | Transport |
| ERASMUS COORDINATOR OF THE  FACULTY: | Dr hab. inż. Agnieszka Kułakowska, Prof. PK |
| E-MAIL ADDRESS OF THE  COORDINATOR: | [agnieszka.kulakowska@tu.koszalin.pl](mailto:agnieszka.kulakowska@tu.koszalin.pl) |
| COURSE TITLE: | Mathematics III |
| LECTURER’S NAME: | Prof. Volodymyr Sushch |
| E-MAIL ADDRESS OF THE LECTURER: | [volodymyr.sushch@tu.koszalin.pl](mailto:volodymyr.sushch@tu.koszalin.pl) |
| COURSE CODE (USOS): | 6 |
| ECTS POINTS FOR THE COURSE: | 2 ECTS |
| ACADEMIC YEAR: | 2023/2024 |
| SEMESTER:  (W – winter, S – summer) | W |
| HOURS IN SEMESTER: | 15 + 15 |
| LEVEL OF THE COURSE:  (1st cycle, 2nd cycle, 3rd cycle) | 1st cycle |
| TEACHING METHOD:  (lecture, laboratory, group tutorials, seminar, other-what type?) | Lecture + practice |
| LANGUAGE OF INSTRUCTION: | English |
| ASSESSMENT METOD:  (written exam, oral exam, class test, written  reports, project work, presentation, continuous assessment, other – what type?) | Written exam |
| COURSE CONTENT: | 1. **Integral calculus**   **The indefinite integral of real-valued functions of a single real variable**   * + Formal definition   + Properies of integrals   + Finding the value of an integral (integration)   + Higher derivatives   **Techniques for computing integrals**   * + Intagration by subtitution   + Intagration by parts   + Intagration by trigonometric subtitution   + Intagration by reduction formulae   + Intagration by partial fractions   + Intagration using Euler’s formula   **The definity integral (the Riemann integral)**   * + Definition and properties   + Fundamental theorem of calculus (the Newton-Leibniz theorem)   **Applications of definity integrals Improper integrals**   * + Convergence of the integral   + Singularities  1. **Ordinary differential equations (ODE)**   Basic concepts and classifying of differential equations. Solutions of differential equations (a particular solution and the general solution of a differential equation). Initial-value and boundary-value problems.  First order ODE: Separable equations, Homogeneous equations, Exact equations, Linear equations (homogeneous and non-homogeneous), Bernoulli equations, Solved problems.  Second order linear ODE: Linear differential equations (linearly independent solutions, the Wronskian), Linear homogeneous ODE with constant coefficients, (the characteristic equation), Linear non-homogeneous ODE with constant, coefficients, The method of undetermined coefficients, Variation of parameters,  Linear ODE with variable coefficients. |
| ADDITIONAL INFORMATION: |  |

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