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| FACULTY: | Department of Mechanical Engineering |
| FIELD OF STUDY: | Mechanics and Machine Building |
| ERASMUS COORDINATOR OF THE FACULTY: | Dr hab. inż. Agnieszka Kułakowska, Prof. PK |
| E-MAIL ADDRESS OF THE COORDINATOR: | 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 |
| COURSE CODE (USOS): | 6 |
| ECTS POINTS FOR THE COURSE: | 5 ECTS |
| ACADEMIC YEAR: | 2026/2027 |
| SEMESTER: (W – winter, S – summer) | W |
| HOURS IN SEMESTER: | 15 + 15 |
| LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle) | 1 st cycle |
| TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?) | Lecture + practice |
| LANGUAGE OF INSTRUCTION: | <ul style="list-style-type: none"> English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; English 50% individually with the teacher + Polish 50% with Polish students or individual project work-scheme for classes with less than 5 international Erasmus+ students enrolled/ accepted; |
| ASSESSMENT METOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?) | Written exam |
| COURSE CONTENT: | <p>1. Integral calculus The indefinite integral of real-valued functions of a single real variable</p> <ul style="list-style-type: none"> Formal definition Properties of integrals Finding the value of an integral (integration) Higher derivatives <p>Techniques for computing integrals</p> <ul style="list-style-type: none"> Integration by substitution Integration by parts Integration by trigonometric substitution Integration by reduction formulae Integration by partial fractions Integration using Euler's formula <p>The definity integral (the Riemann integral)</p> <ul style="list-style-type: none"> Definition and properties Fundamental theorem of calculus (the Newton-Leibniz theorem) <p>Applications of definity integrals Improper integrals</p> <ul style="list-style-type: none"> Convergence of the integral Singularities <p>2. 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,</p> |

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| | coefficients, The method of undetermined coefficients, Variation of parameters, Linear ODE with variable coefficients. |
| ADDITIONAL INFORMATION: | |

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