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| FACULTY: | Faculty of Mechanical and Energy Engineering |
| FIELD OF STUDY: | Management and Production Engineering |
| ERASMUS COORDINATOR OF THE FACULTY: | dr hab. inż. Łukasz Bohdal, prof. PK |
| E-MAIL ADDRESS OF THE COORDINATOR: | lukasz.bohdal@tu.koszalin.pl |
| COURSE TITLE: | Mathematics III |
| LECTURER’S NAME: | dr hab. inż. Volodymyr Sushch, prof. PK |
| E-MAIL ADDRESS OF THE LECTURER: | volodymyr.sushch@tu.koszalin.pl |
| ECTS POINTS FOR THE COURSE: | 2 ECTS |
| COURSE CODE (USOS): | 1 |
| ACADEMIC YEAR: | 2025/2026 |
| 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 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: | Integral calculusThe indefinite integral of real-valued functions of a single real variableFormal definitionProperies of integralsFinding the value of an integral (integration)Higher derivativesTechniques for computing integralsIntagration by subtitutionIntagration by partsIntagration by trigonometric subtitutionIntagration by reduction formulaeIntagration by partial fractionsIntagration using Euler’s formulaThe definity integral (the Riemann integral)Definition and propertiesFundamental theorem of calculus (the Newton-Leibniz theorem) **Applications of definity integrals** Improper integralsConvergence of the integralSingularities  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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