



Subject card

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|---|--|--|---|-------------------------------------|-------------------------------|------------|-----|
| Subject name and code | , PG_00052287 | | | | | | |
| Field of study | Mathematics | | | | | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | | | 2024/2025 | | |
| Education level | second-cycle studies | Subject group | | | | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 1 | Language of instruction | | | Polish | | |
| Semester of study | 2 | ECTS credits | | | 4.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Divison of Dynamical Systems -> Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr hab. Sergey Kryzhevich | | | | |
| | Teachers | | dr hab. Sergey Kryzhevich | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 0.0 | 0.0 | 30.0 | 60 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | | Participation in consultation hours | | Self-study | SUM |
| | Number of study hours | 60 | | 5.0 | | 35.0 | 100 |
| Subject objectives | clear 119 / 5 000 Wprowadzenie do podstawowych narzędzi i metod związanych z teorią układów nieliniowych równań różniczkowych zwyczajnych. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| Subject contents | Linear systems of differential equations. The matrix method. Basic methods of solving nonlinear systems. First integrals, Lyapunov functions, stability. Classification of fixed points. | | | | | | |
| Prerequisites and co-requisites | Assessment in the following subjects: algebra, analysis, differential equations | | | | | | |
| Assessment methods and criteria | Subject passing criteria | | Passing threshold | | Percentage of the final grade | | |
| | Exam | | 51.0% | | 50.0% | | |
| | Project | | 51.0% | | 50.0% | | |
| Recommended reading | Basic literature | | 1. Arrowsmith, D.K. and Place, C.M. (1982) Ordinary Differential Equation. Chapman and Hall, New York. | | | | |
| | | | 2. Coddington, Earl A.; Levinson, Norman (1955). Theory of Ordinary Differential Equations. New York: McGraw-Hill. | | | | |
| | Supplementary literature | | 1. W. Hurewicz, Lectures on Ordinary Differential Equations, Dover Publications, ISBN 0-486-49510-8 | | | | |
| | | | 2. Hartman, Philip (2002) [1964], Ordinary differential equations, Classics in Applied Mathematics, vol. 38, Philadelphia | | | | |
| | eResources addresses | | Adresy na platformie eNauczanie: | | | | |

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| <p>Example issues/ example questions/ tasks being completed</p> | <p>During the first classes, the student receives a topic to independently develop and present the project within the set deadline. The theoretical knowledge acquired during lectures and seminars is tested in the exam.</p> <p>State and prove the properties of the matrix exponent.</p> <p>State and prove the theorem of stability by first approximation.</p> <p>Determine the type of fixed points for a nonlinear autonomous system of second order.</p> |
| <p>Work placement</p> | <p>Not applicable</p> |

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