

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| Subject name and code | Numerical methods , PG_00025516 | | | | | | | |
|--|---|---------|---|------------|------------------------|--|---------|-----------|
| Field of study | Mathematics | | | | | | | |
| Date of commencement of studies | October 2024 | | Academic year of realisation of subject | | | 2026/2027 | | |
| Education level | first-cycle studies | | Subject group | | | Optional subject group Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | | Mode of delivery | | | blended-learning | | |
| Year of study | 3 | | Language of instruction | | | Polish | | |
| Semester of study | 5 | | ECTS credits | | | 5.0 | | |
| Learning profile | general academic profile | | Assessment form | | | assessment | | |
| Conducting unit | Department Of Differential Equations And Mathematical Applications -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej | | | | | | | ysics And |
| Name and surname | Subject supervisor | | dr inż. Paweł Wojda | | | | | |
| of lecturer (lecturers) | Teachers | | | | | | | |
| Lesson types and methods | Lesson type | Lecture | Tutorial | Laboratory | Projec | t | Seminar | SUM |
| of instruction | Number of study hours | 30.0 | 15.0 | 15.0 | 0.0 | | 0.0 | 60 |
| | E-learning hours inclu | | | | ł | | | |
| | Adresy na platformie eNauczanie: | | | | | | | |
| Learning activity and number of study hours | Learning activity Participation in classes include plan | | i didactic Participation in ed in study consultation hours | | Self-study S | | SUM | |
| | Number of study 60 hours | | | 5.0 | | 60.0 | | 125 |
| Subject objectives | The aim of the course is to acquaint the student with issues related to numerical methods of solving mathematical problems. | | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | | |
| | K6_W08 | | Student: - uses the instructions, functions and procedures of the Mathematica and C environment | | | [SW1] Assessment of factual knowledge | | |
| | K6_U07 | | Student: - uses self-written programs for testing numerical methods; - can choose the appropriate method for the analytical problem under consideration; - uses appropriate numerical methods to solve mathematical problems. | | | [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject | | |
| | K6_W04 | | Student: - uses the basic theorems in algebra and mathematical analysis. | | | [SW1] Assessment of factual knowledge | | |
| | K6_U10 | | Student: - uses self-written programs for testing numerical methods; - can choose the appropriate method for the analytical problem under consideration; - uses appropriate numerical methods to solve mathematical problems. | | | [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment | | |

| 1. Computer arithmetic: absolute and relative error, fixed and floating point representation of numbers. 2. Numerical stability and numerical accuracy of algorithms. 3. Solving nonlinear equations (scalar equations and systems of equations), iteration method, bleection method, individual equations (accuracy of algorithm). 4. Agorithm for alfogginal mucho. 6. Agorithm for alfogginal mucho. 7. Approximation and interpolation of functions; polynomial interpolation error, differential esis and their polynomial interpolation polynomial interpolation error, differential esis and their polynomial interpolation error, differential esis and their application of polynomial interpolation. 8. representation and numerical differential equations and partial differential equations: single and multi-site formulas for tappeze and Simpson and analysis of their errors, change of integration interval. 9. Numerical solution of ordinary differential equations and partial differential equations: single and multi-site primethods; sometruction, convergence analysis. Prerequisites and correquisites Passed exams in Algebra and Mathematical Analysis. Recommended reading Subject passing criteria Passing threshold Percentage of the final grade passing threshold Recommended reading Subject passing criteria Passing the laboratory 50.0% 70.0% Recommended reading Subject passing criteria | Subject contents | | | | | | | |
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| Work placement Not applicable | | N. C. P. L. | | | | | | |

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