



Subject card

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|---|--|--|---|-------------------------------------|--|--|-----|--|--|
| Subject name and code | Mathematics II, PG_00039389 | | | | | | | | |
| Field of study | Medical and Mechanical Engineering, Mechanical and Medical Engineering | | | | | | | | |
| Date of commencement of studies | October 2020 | | Academic year of realisation of subject | | 2020/2021 | | | | |
| Education level | first-cycle studies | | Subject group | | Obligatory subject group in the field of study | | | | |
| 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 | | 6.0 | | | | |
| Learning profile | general academic profile | | Assessment form | | exam | | | | |
| Conducting unit | Mathematics Center -> Vice-Rector for Education | | | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Magdalena Łapińska | | | | | | |
| | Teachers | | mgr Katarzyna Kiepiela dr inż. Magdalena Łapińska | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM | | |
| | Number of study hours | 30.0 | 30.0 | 0.0 | 0.0 | 0.0 | 60 | | |
| | E-learning hours included: 0.0 | | | | | | | | |
| Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11548 Adresy na platformie eNauczanie: WM - IMM grupa 1 - Matematyka 2 2020/2021 (K.Kiepiela, M.Łapińska) - Moodle ID: 11549 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11549 WM - IMM grupa 1 - Matematyka 2 2020/2021 (K.Kiepiela, M.Łapińska) - Moodle ID: 11549 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11549 WM - IMM grupa 1 - Matematyka 2 2020/2021 (K.Kiepiela, M.Łapińska) - Moodle ID: 11549 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11549 | | | | | | | | | |
| 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 | | 10.0 | | 80.0 | 150 | | |
| Subject objectives | The aim of this subject is to obtain the student's competence in the range of using the basic methods of mathematical analysis. Furthermore, the student is able to use this knowledge to solve simple theoretical and practical problems that can be found in the field of engineering. | | | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | | Method of verification | | | |
| | K6_U01 | | The student appreciates the importance of expanding knowledge and takes up the challenges associated with working on group problem solving. The student combines knowledge in the field of mathematics with knowledge from other fields. | | | [SU3] Assessment of ability to use knowledge gained from the subject | | | |
| | K6_W01 | | The student uses basic derivative properties. The student analyzes the properties of the function based on the study of its first and second derivative. The student applies basic formulas and integration techniques to calculate indefinite integrals. The student performs basic operations on complex numbers. | | | [SW1] Assessment of factual knowledge | | | |
| | K6_U05 | | The student is able to apply the mathematical methods for analysis to solve problems in the field of mechanical and medical engineering. | | | [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information | | | |

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| Subject contents | 1. Definite integrals and its applications. 2. Complex numbers. 3. Numeric series. 4. Elements of linear algebra, systems of linear equations. 5. Basic definitions and properties of vectors. Scalar, vector, mixed product - applications. 6. Equation of a straight line and a plane in space. 7. Functions of many variables. Limit, function continuity, partial derivatives of functions of many variables, extremes of functions of many variables. 8. Double integral over rectangle and normal area. Polar coordinates. Applications. 9. Triple integral over a cuboid and normal area. Cylindrical and spherical coordinates. Applications. | | | | |
| Prerequisites and co-requisites | No recommendations | | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade | | |
| | Written and oral exam | 55.0% | 100.0% | | |
| Recommended reading | <p>Basic literature</p> <p>G.M. Fichtenholz, Rachunek różniczkowy i całkowy, Tom 1, Wydawnictwo Naukowe PWN, Warszawa 2002 , B.Wikiet, Matematyka, Podstawy z elementami matematyki wyższej, Wydawnictwo Politechniki Gdańskiej Gdańsk 2009, K.Jankowska, J.Jankowski, Zbiór zadań z matematyki, Wydawnictwo Politechniki Gdańskiej Gdańsk 2003, W. Krysicki, L. Włodarski Analiza matematyczna w zadaniach część I, PWN, Warszawa 1986.</p> <p>Supplementary literature</p> <ul style="list-style-type: none"> • Gewert M., Skoczyłas Z., "Analiza matematyczna 2. Definicje, twierdzenia, wzory", Oficyna Wydawnicza GiS • Jurlewicz T., Skoczyłas Z., "Algebra i geometria analityczna. Definicje, twierdzenia, wzory", Oficyna Wydawnicza GiS • Kajetanowicz P., Wierzejewski J., „Algebra z geometrią analityczną", Wydawnictwo Naukowe PWN • W.Żakowski, W.Kolodziej , Matematyka część 2 Analiza Matematyczna, Wydawnictwa Naukowo- Techniczne, Warszawa 12003 • W. Krysicki, L. Włodarski Analiza matematyczna w zadaniach PWN, Warszawa 1986 W. Stankiewicz Zadania z matematyki dla wyższych uczelni technicznych, PWN, Warszawa 1980 • K. Jankowska, T.Jankowski, Funkcje wielu zmiennych, Całki wielokrotne, Geometria analityczna <p>eResources addresses</p> <p>WM - IMM grupa 1 - Matematyka 2 2020/2021 (K.Kiepiela, M.Łapińska) - Moodle ID: 11549 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11549</p> <p>WM - IMM grupa 1 - Matematyka 2 2020/2021 (K.Kiepiela, M.Łapińska) - Moodle ID: 11549 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11549</p> <p>WM - IMM grupa 1 - Matematyka 2 2020/2021 (K.Kiepiela, M.Łapińska) - Moodle ID: 11549 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11549</p> | | | | |
| Example issues/ example questions/ tasks being completed | 1. Calculation of double integrals 2. Calculation of triple integrals 3. Solving matrix equations. 4. Searching for the determinant value. | | | | |
| Work placement | Not applicable | | | | |