

| STUDY MODULE DESCRIPTION FORM | | |
|--|---|--|
| Name of the module/subject Mathematical analysis and linear algebra | | Code 1010334511010344953 |
| Field of study Information Engineering | Profile of study (general academic, practical) (brak) | Year /Semester 1 / 1 |
| Elective path/specialty - | Subject offered in: Polish | Course (compulsory, elective) obligatory |
| Cycle of study: First-cycle studies | Form of study (full-time, part-time) part-time | |
| No. of hours Lecture: 20 Classes: 16 Laboratory: - Project/seminars: - | | No. of credits 5 |
| Status of the course in the study program (Basic, major, other) (brak) | | (university-wide, from another field) (brak) |
| Education areas and fields of science and art | | ECTS distribution (number and %) |
| Responsible for subject / lecturer: dr inż. Zenon Zbąszyniak email: zenon.zbaszyniak@put.poznan.pl tel. 616652330 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań | | |
| Prerequisites in terms of knowledge, skills and social competencies: | | |
| 1 | Knowledge | Basic knowledge with range of secondary school. |
| 2 | Skills | Student is able to meet the challenges arising from the high school |
| 3 | Social competencies | Student understands the need and knows the possibility of studying (postgraduate courses, second-degree studies), improving language skills, professional, personal and social skills. |
| Assumptions and objectives of the course: The recognizing methods and applications of differential and integral calculus of functions of single variable. The recognizing methods of investigation of infinite series and power series. The getting to know of matrix analysis and applying it to solving systems of linear equations. | | |
| Study outcomes and reference to the educational results for a field of study | | |
| Knowledge: | | |
| 1. To understand the concept of limit of the sequence, divergence of the series, derivative and its applications - [K_W01++] | | |
| 2. To know methods of calculation indefinite integrals - [K_W01++] | | |
| 3. To understand the concept of matrix, to know methods of operations on it and methods of solving systems of linear equations - [K_W01++] | | |
| Skills: | | |
| 1. To calculate the derivative. Find monotonicity, maxima, minima of functions of single variable. - [K_U01+] | | |
| 2. To calculate indefinite and definite integrals - [K_U01+] | | |
| 3. To calculate determinants, add, multiply and inverse matrix, solve systems of linear equations. - [K_U01+] | | |
| 4. To represent functions by the power series - [K_U01+] | | |
| Social competencies: | | |
| | | |
| Assessment methods of study outcomes | | |
| Lectures: written exam checking theoretic knowledge and ability it application in practical exercises. | | |
| Classes: tests during the semester | | |

| Course description | | |
|---|----------------------|------|
| Revision 2017 | | |
| Applied methods of education: lectures and practical lessons. | | |
| Lecture with multimedia presentation (including: drawings, photos) supplemented by examples given on the board. Interactive lectures with problems and questions for students. The activity of students is taken into account in valuation of them. Discussion during lectures is expected. | | |
| Connections with others mathematical subjects are indicated. | | |
| Practical lessons. Solving of exemplary exercises on a blackboard. Discussion of solutions with relative comments. | | |
| Sequences, infinite series and power series. Differential and integral calculus of functions of single variable. Applications of integrals. Determinants, matrix. systems of linear equations. Methods for solving systems of linear equations. Complex numbers. | | |
| Basic bibliography: | | |
| 1. F. Leja, Rachunek różniczkowy i całkowy, PWN, Warszawa, 1978. | | |
| 2. I. Folyńska, Z. Ratajczak, Z. Szafranski, Matematyka, cz. I, II, III, Wyd. Politechniki Poznańskiej, Poznań, 2001. | | |
| 3. T. Jurlewicz, Z. Skoczylas, Algebra liniowa 1, Oficyna wydawnicza GiS, Wrocław 2002 . | | |
| 4. M. Gewert, Z. Skoczylas, Analiza matematyczna 1, Oficyna Wyd. GiS, Wrocław, 2006. | | |
| Additional bibliography: | | |
| 1. Krysicki W., Włodarski L.: Analiza matematyczna w zadaniach. Część I, II, PWN, Warszawa, 2006. | | |
| 2. Stankiewicz W.: Zadania z matematyki dla wyższych uczelni technicznych. Część I, II, PWN, Warszawa, 2006. | | |
| Result of average student's workload | | |
| Activity | Time (working hours) | |
| 1. Lectures | 20 | |
| 2. Classes | 16 | |
| 3. Consultations and exam | 7 | |
| 4. Preparation for classes | 34 | |
| 5. Preparation for exam | 43 | |
| Student's workload | | |
| Source of workload | hours | ECTS |
| Total workload | 120 | 5 |
| Contact hours | 36 | 2 |
| Practical activities | 16 | 0 |