

| <b>STUDY MODULE DESCRIPTION FORM</b>   |  |  |
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| Name of the module/subject<br><b>Mathematics</b>   |  | Code<br><b>1011101321010340063</b>                     |
| Field of study<br><b>Engineering Management - Full-time studies -</b>  | Profile of study<br>(general academic, practical)<br><b>(brak)</b> | Year /Semester<br><b>1 / 2</b>                         |
| Elective path/specialty<br><b>-</b>  | Subject offered in:<br><b>Polish</b>                               | Course (compulsory, elective)<br><b>obligatory</b>     |
| Cycle of study:<br><b>First-cycle studies</b>  | Form of study (full-time, part-time)<br><b>full-time</b>           |  |
| No. of hours<br>Lecture: <b>15</b> Classes: <b>30</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>  |  | No. of credits<br><b>5</b>                             |
| Status of the course in the study program (Basic, major, other)<br><b>(brak)</b>   |  | (university-wide, from another field)<br><b>(brak)</b> |
| Education areas and fields of science and art<br><b>technical sciences</b>   |  | ECTS distribution (number and %)<br><b>5 100%</b>      |
| <b>Responsible for subject / lecturer:</b><br><br>Institute of Mathematics<br>email: e-mail: office_@math.put.poznan.pl.<br>tel. (0-prefiks-61) 6652 320, fax: (061) 665 2348;<br>Faculty of Electrical Engineering<br>ul. Piotrowo 3A, 60-965 Poznań; |  |  |
| <b>Prerequisites in terms of knowledge, skills and social competencies:</b>  |  |  |
| 1  | <b>Knowledge</b>   | Student has basic knowledge on mathematical analysis   |
| 2  | <b>Skills</b>  | Student is able to use a calculator efficiently        |
| 3  | <b>Social competencies</b>   | Student understands the need of lifelong learning      |
| <b>Assumptions and objectives of the course:</b><br>Acquiring and consolidating of basic mathematical concepts using examples and skills in mathematical tools.  |  |  |
| <b>Study outcomes and reference to the educational results for a field of study</b>  |  |  |
| <b>Knowledge:</b>  |  |  |
| 1. has the basic knowledge on the character of managerial science and it's place in relations with contextual and ergological sciences - [K1A_W01]   |  |  |
| 2. knows methods and instruments for collecting data, processing and selecting it and for distributing information - [K1A_W11]   |  |  |
| 3. knows methods and instruments of descriptive statistics, as well as their application in models of processes and phenomena occurring in organizations - [K1A_W12]   |  |  |
| <b>Skills:</b>   |  |  |
| 1. is able to use own knowledge of mathematics in order to make simulations and then, make a logical concluding and interpret results - [K01_InżA_U1]  |  |  |
| 2. is able to use analytical and simulation methods in forming and solving engineer tasks - [K01_InżA_U2]  |  |  |
| 3. is able to solve engineer project tasks with use of mathematical rules - [K01_InżA_U6, K01_InżA_U7]   |  |  |
| <b>Social competencies:</b>  |  |  |
| 1. understands the necessity of expanding own mathematical knowledge - [K1A_K01]   |  |  |
| 2. is able to prepare and realize different engineer ventures individually and in a team - [K1A_K02, K1A_K07]  |  |  |
| <b>Assessment methods of study outcomes</b>  |  |  |

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|---|-----------------------------|-------------|
| Forming assessment:<br>a) exercises: on basis of the current progress of the realization of topics evaluated during written<br>b) lectures: on basis of responses to questions referring to topics from previous lectures,<br>final assessment:<br>a) exercises: on basis of the average from partial grades obtained for the forming assessment<br>b) lectures: written exam. It is possible to enter the examination after passing exercises. |                             |             |
| <b>Course description</b>   |                             |             |
| Elements of the integral calculus of functions of single variable.<br>Series of numbers.<br>Ordinary Differential Equations.<br>Functions of several variables.   |                             |             |
| <b>Basic bibliography:</b>  |                             |             |
| 1. Folyńska, Z. Ratajczak, Z. Szafranski, Matematyka dla studentów uczelni technicznych, WPP, Poznań 2000   |                             |             |
| <b>Additional bibliography:</b>   |                             |             |
| 1. Krysicki W., Włodarski L., Analiza matematyczna w zadaniach, PWN, Warszawa 1999  |                             |             |
| <b>Result of average student's workload</b>   |                             |             |
| <b>Activity</b>   | <b>Time (working hours)</b> |             |
| 1. lecture  | 15                          |             |
| 2. classes  | 30                          |             |
| 3. consultations  | 30                          |             |
| 4. student  | 20                          |             |
| 5. exam   | 5                           |             |
| <b>Student's workload</b>   |                             |             |
| <b>Source of workload</b>   | <b>hours</b>                | <b>ECTS</b> |
| Total workload  | 110                         | 5           |
| Contact hours   | 75                          | 3           |
| Practical activities  | 80                          | 3           |