## STUDY MODULE DESCRIPTION FORM

| Name of the module/subject **Mathematics** | | Code **1010311411010340025** |
|---|---|---|
| Field of study **Power Engineering** | Profile of study (general academic, practical) **general academic** | 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) **full-time** | |

No. of hours

Lecture: **30**   Classes: **30**   Laboratory: **-**   Project/seminars: **-**

No. of credits **4**

| Status of the course in the study program (Basic, major, other) **basic** | (university-wide, from another field) **university-wide** |
|---|---|
| Education areas and fields of science and art | ECTS distribution (number and %**)** |

### Responsible for subject / lecturer:

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### 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 calculus of functions of single variable.

### Study outcomes and reference to the educational results for a field of study

**Knowledge:**

1. To know basic calculus of complex numbers    - [K_W01+++]

2. To know the concept of matrix and methods of operations on it and methods of solving systems of linear equations - [K_W01+++]

3. To understand the concept of limit of the sequence, derivative methods of it calculus and it applications - [K_W01+++]

**Skills:**

1. Use basic calculus of complex numbers   - [K_U06++ K_U07+++]

2. To calculate determinants, add, multiply and inverse matrix, solve systems of linear equations.  - [K_U06++ K_U07+++]

3. To calculate the derivative. Find monotonicity, maxima, minima of functions of single variable  - [K_U06++ K_U07+++]

**Social competencies:**

### Assessment methods of study outcomes

Classes: tests during the semester and colloquium

### Course description

Algebra of complex numbers. Trigonometric and algebraic form. Polynomials. Determinants. Definition and classification matrix. Inverse matrix. Row of the matrix. The Gauss-Jordan algorythm . Systems of linear equations. Methods for solving systems of linear equations. Limits. Derivative. Differentiation. Finding monotonicity, maxima, minima, concavity, convex and the points of inflection of functions.

Update 2017.

Applied methods of education:

I Lectures

1. Interactive lecture with questions to the group of students

2. Discussions

II Classes

1. Solving illustrative tasks on board

2. Teacher?s detailed assessment of students? solutions followed by discussion and  comments

**Basic bibliography:**

1. I. Foltyńska, Z.Ratajczak, Z. Szafrański, Matematyka dla studentów uczelni technicznych część 1, Wydawnictwo PP Poznań 2004.

2. I. Foltyńska, Z.Ratajczak, Z. Szafrański, Matematyka dla studentów uczelni technicznych część 2, Wydawnictwo PP Poznań 2004.

3. T. Jurlewicz, Z. Skoczylas, Algebra liniowa 1, Oficyna wydawnicza GiS, Wrocław 2002 (i późniejsze),

**Additional bibliography:**

1. Stankiewicz W. Zadania z matematyki dla wyższych uczelni technicznych PWN Warszawa 2012

## Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| | |

### Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 100 | 4 |
| Contact hours | 75 | 3 |
| Practical activities | 25 | 1 |