

(faculty stamp)

**COURSE DESCRIPTION**

<b>1. Course title:</b> <b>MATHEMATICS</b>	<b>2. Course code</b>			
<b>3. Validity of course description:</b> 2012/2013				
<b>4. Level of studies:</b> BA programme				
<b>5. Mode of studies:</b> intramural studies				
<b>6. Field of study:</b> POWER ENGEENERING	(RIE)			
<b>7. Profile of studies:</b> general				
<b>8. Programme:</b> all				
<b>9. Semester:</b> 1 <sup>st</sup>				
<b>10. Faculty teaching the course:</b> RMS				
<b>11. Course instructor:</b> dr Iwona Nowak				
<b>12. Course classification:</b> fundamental				
<b>13. Course status:</b> compulsory				
<b>14. Language of instruction:</b> English				
<b>15. Pre-requisite qualifications:</b> the knowledge and skills (on average level) in mathematics on the secondary school level are required				
<b>16. Course objectives:</b> The aim of the course is to familiarize students with the mathematical apparatus in the field of mathematics. In addition, training course aims at abstract thinking skills and creating a description of the phenomena and processes.				
<b>17. Description of learning outcomes:</b>				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	The student has ordered knowledge of elementary logic, basic linear algebra, analytic geometry and calculus of functions of one variable.	exam	lecture	K_W01
2.	Students can apply logic to properly formulate and assess the veracity of complex sentences.	practical test	classes	K_U07
3.	Student can operate on matrices.	practical test	classes	K_U07
4.	Student understands the concepts and relations in analytic geometry.	practical test	classes	K_U07

5.	Student understand the concept of continuous and differentiable functions.	practical test	classes	K_U07
6.	Student can use the methods of differential calculus.	practical test	classes	K_U07

#### 18. Teaching modes and hours

Lecture 30 / BA /MA Seminar / Class 60 / Project / Laboratory

#### 19. Syllabus description:

**Lectures:** Elements of Logic. Complex numbers. Matrices and determinants. Systems of linear equations. Calculus of vectors. Analytic geometry in space  $R^3$ . Differential calculus of functions of one variable.

**Classes:** Elementary logic tasks. Operations in set of complex numbers. Operations on matrices. Determination of determinants. Solving systems of linear equations. Operations on vectors. Line and plane in  $R^3$ . Calculation of limits of sequences of numbers. Continuous function. Calculating the derivative. Applications of differential calculus.

#### 20. Examination: yes

#### 21. Primary sources:

1. Łobos E., Sikora B. First course in calculus, Wydawnictwo Pol. Śl. Gliwice 2006
2. Łobos E., Sikora B. Calculus and differential equations in exercises, Wydawnictwo Pol. Śl. Gliwice 2006
3. Grzymkowski R., Matematyka dla studentów wyższych uczelni technicznych, WPKJS, Gliwice 2005.
4. Grzymkowski R., Matematyka. Zadania i odpowiedzi, WPKJS, Gliwice 2005.
5. Matematyka, cz. I, II, III, seria Podręczniki akademickie, WNT, Warszawa 2005.
6. Żakowski W., Trajdos T., *Matematyka*, część I i II, WNT, Warszawa 1970.

#### 22. Secondary sources:

1. Krysicki W., Włodarski L., Analiza matematyczna w zadaniach, cz. I i II, PWN, 2004.
2. Kącki E., Siewierski L., Wybrane działy matematyki wyższej z ćwiczeniami, WSI, Łódź, 2002.

#### 23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	30/30
2	Classes	60/60
3	Laboratory	/
4	Project	/
5	BA/ MA Seminar	/
6	Other	5/25
	Total number of hours	95/115

#### 24. Total hours: 210

#### 25. Number of ECTS credits: 7

#### 26. Number of ECTS credits allocated for contact hours: 3

#### 27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 0

#### 28. Comments: -

Approved:

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(date, Instructor's signature)

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(date, the Director of the Faculty Unit signature)