**COURSE DESCRIPTION**

1. **Course title:** Mathematics  
2. **Course code:** RB-S1-17-I08  
3. **Validity of course description:** 2017  
4. **Level of studies:** BSc programme  
5. **Mode of studies:** intramural studies  
6. **Field of study:** Civil Engineering  
7. **Profile of studies:** general  
8. **Programme:** 1) SE  
9. **Semester:** 1  
10. **Faculty teaching the course:** Faculty Of Applied Mathematics (RMS)  
11. **Course instructor:** dr hab. inż. Wojciech Kempa  
12. **Course classification:** other subjects  
13. **Course status:** obligatory subject  
14. **Language of instruction:** English  
15. **Pre-requisite qualifications:**  
Mathematics at secondary level, English for communication  
16. **Course objectives:**  
The purpose of this course is to acquaint students with the basics of analysis in terms of functions of one variable and algebra in terms of complex numbers, matrices and analytical geometry  
17. **Description of learning outcomes:**

<table>
<thead>
<tr>
<th>No</th>
<th>Learning outcomes description</th>
<th>Method of assessment</th>
<th>Teaching methods</th>
<th>Learning outcomes reference code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A student has a systematic knowledge of the foundations of logic, linear algebra and analytic geometry.</td>
<td>exam, class-test</td>
<td>lecture, classes</td>
<td>K1A_W01+++</td>
</tr>
<tr>
<td>2</td>
<td>A student has a systematic knowledge of the foundations of calculus and its applications.</td>
<td>exam, class-test</td>
<td>lecture, classes</td>
<td>K1A_W01+++</td>
</tr>
<tr>
<td>3</td>
<td>A student knows how to apply logic to formulate statements correctly and to determine the truth of composed sentences.</td>
<td>exam, class-test</td>
<td>lecture, classes</td>
<td>K1A_W01+ K1A_U06+++</td>
</tr>
<tr>
<td>4</td>
<td>A student can operate on vectors in 3 dimensions and apply basics of matrix calculus.</td>
<td>class-test</td>
<td>lecture, classes</td>
<td>K1A_W01++ K1A_U06++</td>
</tr>
<tr>
<td>5</td>
<td>A student understands the notion of continuous and differentiable function.</td>
<td>class-test</td>
<td>lecture, classes</td>
<td>K1A_W01+++ K1A_U06+++</td>
</tr>
<tr>
<td>6</td>
<td>A student can evaluate derivatives of functions.</td>
<td>class-test</td>
<td>lecture, classes</td>
<td>K1A_W01+++ K1A_U06+++</td>
</tr>
<tr>
<td>7</td>
<td>A student has consciousness of the necessity of raising personal and professional competences.</td>
<td>class-test</td>
<td>lecture, classes</td>
<td>K1A_K06+</td>
</tr>
</tbody>
</table>

18. **Teaching modes and hours:**  
lecture: 30, classes: 30,  
19. **Syllabus description:**  
Classes: During classes are solved exercises describing and using the content presented in the lecture.  
20. **Examination:** yes  
21. **Primary sources:**  
22. Secondary sources:

23. Total workload required to achieve learning outcomes:

<table>
<thead>
<tr>
<th>No</th>
<th>Teaching mode</th>
<th>Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>contact</td>
<td>student workload</td>
</tr>
<tr>
<td>1</td>
<td>Participation in lectures</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Participation in exercises</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Participation in additional consultations</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Own work of student on preparatory to exam, colloquium, etc.</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>5</td>
<td>Own work of student on preparatory to exercises</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>Defense of the laboratory report, project etc.</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Participation of the student in knowledge checking (exam, test, etc.)</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Summary:</td>
<td>81</td>
<td>121</td>
</tr>
</tbody>
</table>

24. Total hours: 162  (1 ECTS = 27 h, PO 19/14/15)

25. Number of ECTS credits: 6

26. number of ECTS credits allocated for contact hours: 3

27. number of ECTS credits allocated for in-practice hours: 5

28. Comments:
To complete the course it is necessary to acquire a minimum of 41 points (out of 100), including at least 30% of the points dedicated for checking the given learning outcome.

1) shortened form of a speciality for the Civil Engineering: SE - Structural Engineering

---------------------------------------------------------- (date, Instructor’s signature)  
---------------------------------------------------------- (date, the Director of Faculty Unit signature)