1. **Course title:** DRILLING

2. **Course code:** SI – GG/25

3. **Validity of course description:** 2016/2017

4. **Level of studies:** 1st cycle of higher education

5. **Mode of studies:** intramural studies

6. **Field of study:** MINING AND GEOLOGY (RG)

7. **Profile of studies:** academic profile

8. **Programme:** Mining Geodesy

9. **Semester:** IV

10. **Faculty teaching the course:** Faculty of Mining and Geology, Institute of Mining Mechanization

11. **Course instructor:** Eryk Remiorz, Ph.D.

12. **Course classification:** other

13. **Course status:** compulsory

14. **Language of instruction:** English

15. **Pre-requisite qualifications:** Theoretical mechanics, Mechanics of materials, Engineering drawing

16. **Course objectives:** The objective of this course is to provide knowledge about the application of technical solutions and drilling technologies in mining.

17. **Description of learning outcomes:**

<table>
<thead>
<tr>
<th>Nr</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>The student has knowledge about actual state and trends of progress of drilling technologies, tools and equipment</td>
<td>written test</td>
<td>lecture</td>
<td>K_W10++</td>
</tr>
<tr>
<td>2.</td>
<td>The student has fundamental knowledge of the operation of machinery and drilling equipment</td>
<td>test or assessment of a given task</td>
<td>laboratory</td>
<td>K_W11+</td>
</tr>
<tr>
<td>3.</td>
<td>The student has basic knowledge of the structure and operation of the selected drilling machinery, equipment and tools</td>
<td>test or assessment of a given task</td>
<td>laboratory</td>
<td>K_W28+++</td>
</tr>
<tr>
<td>4.</td>
<td>The student knows the names of the main domestic and foreign manufacturers of drilling machines, tools and equipment and can acquire information from literature, databases, producers catalogue cards etc.</td>
<td>test or assessment of a given task</td>
<td>laboratory</td>
<td>K_U01++</td>
</tr>
<tr>
<td>5.</td>
<td>The student has knowledge of safety issues related to the operation of drilling machines and threats accompanying their action</td>
<td>written test</td>
<td>lecture</td>
<td>K_U16+</td>
</tr>
<tr>
<td>6.</td>
<td>The student knows the safety rules in the use of machines applied in drilling works</td>
<td>test or assessment of a given task</td>
<td>laboratory</td>
<td>K_U27+++</td>
</tr>
<tr>
<td>7.</td>
<td>The student is able to work independently and in a team, and is aware of the continuous deepening their knowledge</td>
<td>written test</td>
<td>lecture</td>
<td>K_K01++</td>
</tr>
</tbody>
</table>

18. **Teaching modes and hours**

Lecture 15 h, Laboratory 15 h

19. **Syllabus description:**

**Lectures:**
Purpose and methods of use of drilling. Application of drilling in underground mining and other industries. Elementary definitions, main elements and dimensions of the borehole, dimensions determining the position of the borehole axis in the ground, spatial mapping scheme of the straight borehole. Division of drilling machinery and equipment, drillings and boreholes. Rotary drilling rig. Methods to remove cuttings from the bottom and near-bottom zone of the borehole. Drilling fluid. The tasks of drilling mud in the process of drilling. Types of drilling fluids. Measurements in boreholes. Environmental protection at the borehole drilling site.

**Laboratory:**
Drilling machines with electric, pneumatic and hydraulic drives. The selected constructions of drilling rigs used in coal mines. Rotary and
percussive drilling rigs. Working tools of drilling machines and their selection for different rock Working tools of drilling rigs.

20. Examination: No

21. Primary sources:
3. PN–92/G–01201 – Wiertnictwo. Terminologia

22. Secondary sources:
4. Informatory techniczne, katalogi, poradniki i prospekty – dotyczące narzędzi i maszyn wiertniczych – polskich producentów: KRÓLMET – FASING, FM GLINKI S.A. Gorlice, OMAG Oświęcim, ZMUW Sosnowiec i innych

23. Total workload required to achieve learning outcomes

<table>
<thead>
<tr>
<th>Lp.</th>
<th>Teaching mode</th>
<th>Contact hours / Student workload hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>15 / 5</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory</td>
<td>15 / 9</td>
</tr>
<tr>
<td>4</td>
<td>Project</td>
<td>/</td>
</tr>
<tr>
<td>5</td>
<td>BA/ MA Seminar</td>
<td>/</td>
</tr>
<tr>
<td>6</td>
<td>Other</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>Total number of hours</td>
<td>30 / 14</td>
</tr>
</tbody>
</table>

24. Total hours: 44

25. Number of ECTS credits: 1

26. Number of ECTS credits allocated for contact hours: 1

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

28. Comments: 

Approved:

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