### COURSE DESCRIPTION

1. **Course title:** DUSTS AND MINE GASES

2. **Course code:** S II-EZiZO/27

3. **Validity of course description:** 2014/2015

4. **Level of studies:** MSc programme

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

6. **Field of study:** MINING AND GEOLOGY

7. **Profile of studies:** general

8. **Programme:** Mining Technologies and Waste Disposal

9. **Semester:** III

10. **Faculty teaching the course:** Institute of Mining

11. **Course instructor:** Krzysztof Słota, PhD, Eng.

12. **Course classification:** detailed subject

13. **Course status:** compulsory

14. **Language of instruction:** English

15. **Pre-requisite qualifications:** Lack of subjects introducing.

16. **Course objectives:**

   The aim of the course are: to introduce students to the problem of dust and gases in the mine; understanding of the basic concepts, categories of classification and prevention; opinions, analysis, understanding of the effects of coal dust explosion, methane, methane and rocks remorse; the ability to forecasting methane hazard and risk to the roadways and longwalls; the ability to select the appropriate method of degassing; systematization of knowledge.

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 an extended knowledge of the hazards of methane and dust.</td>
<td>Test, engineering task</td>
<td>Lecture</td>
<td>K_W20++</td>
</tr>
<tr>
<td>2</td>
<td>The student has an extended knowledge of the mine workings ventilation analysis, accident and degassing.</td>
<td>Test, engineering task</td>
<td>Lecture</td>
<td>K_W19++</td>
</tr>
<tr>
<td>3</td>
<td>The student is able to formulate and solve typical and atypical tasks associated with the danger of dust and gas.</td>
<td>Test, engineering task</td>
<td>Lecture</td>
<td>K_U16+</td>
</tr>
<tr>
<td>4</td>
<td>The student is able to assess the suitability of methods and tools to solve the tasks of the dust and gas hazards and mine ventilation.</td>
<td>Test, engineering task, discussion</td>
<td>Lecture</td>
<td>K_U22++</td>
</tr>
<tr>
<td>5</td>
<td>The student is able to perform measurements and engineering calculations necessary for the proper design of underground mines.</td>
<td>Test, engineering task, discussion</td>
<td>Lecture</td>
<td>K_U20+</td>
</tr>
<tr>
<td>6</td>
<td>The student is able to properly prioritize the tasks set out by himself and others.</td>
<td>Opinion of test and task</td>
<td>Lecture</td>
<td>K_K04+</td>
</tr>
</tbody>
</table>

18. **Teaching modes and hours**

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

   Lecture 15 h

19. **Syllabus description:**

   **Lecture:**

   Mine gases - the permissible content, explosive limits, the impact on the human body. Methane - mine gas: methane saturation decks as a criterion for inclusion in the appropriate categories of methane hazard, the classification criteria excavations and degrees of methane explosion hazard triangle explosive mixture of air and methane. Forecast methane hazard in the projected mine gallery. Opinions on methane hazard. Methane hazard forecast for the longwalls. Principles of conducting longwalls in terms of methane hazard. The principles of prevention of methane. Technology overview degassing. Analysis of the risk of fire and explosion of
methane in the longwalls. Coal dust explosion mechanism and the criteria for the classification of deposits and workings of the danger the dust. Discussion of a defense strategy against coal dust explosion. The principle of prevention in the field of coal dust explosion hazard. Ejection mechanism of methane and rocks, as well as discussion of the factors causing this threat.

### 20. Examination

No

### 21. Primary sources:

- Kołowski B.: Zagrożenie wyrzutami gazów i skał w górnictwie węglowym. PWN Warszawa – Kraków.

### 22. Secondary sources:


### 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>15/15</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory</td>
<td>/</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>15/15</td>
</tr>
</tbody>
</table>

### 24. Total hours: 30

### 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

### 26. Comments:

Lectures will be held in the multimedia classroom. Part of the course will be devoted to solving engineering tasks. Will check the student's knowledge through a written test consisting of engineering tasks.

Approved:

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