**COURSE DESCRIPTION**

1. **Course title**: UTILIZATION OF WASTE MATERIALS  
2. **Course code**: S II - GGiP/22

3. **Validity of course description**: 2017/2018

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

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

6. **Field of study**: Mining and Geology  
   (RG)

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

8. **Programme**: Mining and exploring geology

9. **Semester**: 3

10. **Faculty teaching the course**: Department of Applied Geology

11. **Course instructor**: Katarzyna Nowińska, PhD

12. **Course classification**: speciality course

13. **Course status**: compulsory

14. **Language of instruction**: English

15. **Pre-requisite qualifications**: Mineralogy and petrology, Environmental geochemistry, Methods of minerals and rocks investigations, Technical mineralogy

16. **Course objectives**:  
The aim of the course is to study utilization methods of wastes from the industry and municipal structures and their possible influence on the environment with regard to law conditions

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>Student has ordered, theoretically based knowledge in the field of methods of mineral raw materials processing and waste material utilization, including their influence on the environment</td>
<td>written test, laboratory report</td>
<td>Lecture, laboratory</td>
<td>K_W13+++</td>
</tr>
<tr>
<td>2.</td>
<td>Student knows the Polish environmental law and administrative procedures connected with the use of the environment during geological works and mining activity</td>
<td>written test, laboratory report</td>
<td>Lecture, laboratory</td>
<td>K_W14+</td>
</tr>
<tr>
<td>3.</td>
<td>Student manages, when formulating and solving engineering tasks in the field of mining and geology, to integrate knowledge and to apply system approach, taking into account non-technical aspects</td>
<td>written test</td>
<td>Lecture</td>
<td>K_U09++</td>
</tr>
<tr>
<td>4.</td>
<td>Student manages to formulate and solve engineering tasks and simple investigative problems and to test corresponding hypotheses using analytical methods and computer simulator methods</td>
<td>laboratory report</td>
<td>Laboratory</td>
<td>K_U10++</td>
</tr>
<tr>
<td>5.</td>
<td>Student manages to prognosis the formation of technical minerals and optimize processing conditions to reduce the environmental impact</td>
<td>written test</td>
<td>Lecture, laboratory</td>
<td>K_U18+++</td>
</tr>
<tr>
<td>6.</td>
<td>Student is conscious of and understands non-technical aspects and effects of engineering activity, environmental impact including, and understands responsibility for undertaken decisions connected with it</td>
<td>written test</td>
<td>Lecture</td>
<td>K_K02+++</td>
</tr>
</tbody>
</table>

18. **Teaching modes and hours**  
Lecture / BA/MA Seminar / Class / Project / Laboratory  
30 / 15
19. Syllabus description:

Lecture

Laboratory
Determination of the environmental influence of waste materials from the mining industry, metallurgy and power plants by elution test.

20. Examination: No

21. Primary sources:

1. Rosik-Dulewska C. - Podstawy gospodarki odpadami. PWN Warszawa 2010
4. Piecuch T. - Termiczna utylizacja odpadów i ochrona powietrza przed szkodliwymi składnikami spalin. Wydawnictwo Uczelniane Politechniki Koszalińskiej

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>30/5</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>-/-</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory</td>
<td>15/10</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>45/15</td>
</tr>
</tbody>
</table>

24. Total hours: 60

25. Number of ECTS credits: 2

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

27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 1

26. Comments:

Approved:

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