1. Course title: GEODESY
2. Course code: S I-GG/20

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: MINE SURVEYING
9. Semester: 5

10. Faculty teaching the course: INSTITUTE OF MINING
12. Course classification: Programme course
13. Course status: compulsory
14. Language of instruction: English

15. Pre-requisite qualifications: Primary entry courses are: Mathematics, Physics, Geometry and engineering graphics. Student should have fundamental knowledge in the field of linear algebra and analytic geometry as well as technical drawing.

16. Course objectives: Course objective is gaining skills and references in the scope of: measurement techniques in geodesy and working out their results, geodesy computations, estimating accuracy of geodesy measurements, partitioning and demarcating of real properties as well as making maps and documents for law purpose.

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>The student has fundamental knowledge in the field of setting up and keeping register of real properties (land registry).</td>
<td>Tasks for individual realization</td>
<td>Laboratory</td>
<td>K_U09+</td>
</tr>
<tr>
<td>2.</td>
<td>The student has fundamental knowledge in the field of theory of measurement errors, ability of compensation of the geodesy measurements, estimation of the geodesy observations accuracy in the scope allowing them to apply in different branches of geodesy and cartography.</td>
<td>Written examination, realization of measurements and computations individually</td>
<td>Lecture Laboratory</td>
<td>K_W17++</td>
</tr>
<tr>
<td>3.</td>
<td>The student has fundamental knowledge in the scope of land surveying, realizing observations on diversified terrains with regard to land management and utilization</td>
<td>Written examination, realization of measurements and computations individually</td>
<td>Lecture Laboratory</td>
<td>K_W18+</td>
</tr>
<tr>
<td>4.</td>
<td>The student has ability to use rules of adjustment calculus for estimation of the accuracy of measurements</td>
<td>Realization of measurements and computations individually</td>
<td>Laboratory</td>
<td>K_U20+</td>
</tr>
<tr>
<td>5.</td>
<td>The student has ability to use geodetic software and draft with usage of CAD tools. Student is able to use coordinate systems applied in geodesy</td>
<td>Tasks for individual realization</td>
<td>Laboratory</td>
<td>K_U22++</td>
</tr>
</tbody>
</table>
18. Teaching modes and hours
Lecture / BA /MA Seminar / Class / Project / Laboratory
30 h L, 15 Lab, 15 Proj.

19. Syllabus description:

**Lecture**

**Laboratory**

**Projekt:**
Working out results of surface leveling done by dispersed points method and net leveling. Working out results of tacheometric surveying, mapping. Estimating single indentations. Working out project of 3rd class horizontal geodetic network. Working out project of 3rd and 4th class vertical geodetic network. Adjusting tasks with usage of computer programs. Preliminary analyze of accuracy with usage of computer programs.

20. Examination: YES

21. Primary sources:

22. Secondary sources:
3. Instrukcje obsługi programów GEONET, C-Geo i WinKalk.
### 23. Total workload required to achieve learning outcomes – Sem. V

<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 / 57 – including: acquaint with indicated literature (25), preparing for short tests that checks the knowledge (15), preparing for exam (15), exam (2).</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory</td>
<td>15 / 30 – including: preparing for laboratories (10), finalizing calculations (15), participation in consultations (1), participation in examination (4).</td>
</tr>
<tr>
<td>4</td>
<td>Project</td>
<td>15 / 29 – including: preparing for project (5), finalizing calculations and graphical parts of project (20), plotting and defence of the project (2), participation in consultations (2).</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><strong>Total number of hours</strong></td>
<td><strong>60/ 116</strong></td>
</tr>
</tbody>
</table>

24. **Total hours:** 167

25. **Number of ECTS credits:** 6

26. **Number of ECTS credits allocated for contact hours:** 2

27. **Number of ECTS credits allocated for in-practice hours (laboratory classes, projects):** 4

26. **Comments:**

Approved:

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