

| NAME OF THE COURSE  |   | APPLIED SOIL AND ROCK MECHANICS          |                 |   |                    |   |  |
|---|---|--|-----------------|---|--------------------|---|--|
| Code  |   | Year of study                            | 1., I. semester |   |                    |   |  |
| Course teacher  | Predrag Mišćević, PhD,<br>Full Professor  | Credits (ECTS)                           | 5.0             |   |                    |   |  |
| Associate teachers  |   | Type of instruction<br>(number of hours) | L               | S   | E                  | F |  |
|   |   |  | 30              |   | 15                 |   |  |
| Status of the course  | compulsory  | Percentage of application of e-learning  | /               |   |                    |   |  |
| COURSE DESCRIPTION  |   |  |                 |   |                    |   |  |
| Course objectives   | Cognise how to from the geotechnical investigation results define data about soil and rock, required to solve engineering task in a hydraulics construction. Use geosynthetics material in a hydraulics tasks. Analyse stability of a natural slopes and an embankments slopes.   |  |                 |   |                    |   |  |
| Course enrolment requirements and entry competences required for the course       | Undergraduate qualification (6th level of EQF or CROQF).  |  |                 |   |                    |   |  |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | The learner is expected to acquire knowledge about geotechnical aspect in design of engineering structures in which water has significant influence (use of geotechnical investigation data, define hydraulics conductivity of soil, define seepage data of soil, analyse consolidation process, define drained and undrained strength of soil, calculate slope stability, design drainage systems) .   |  |                 |   |                    |   |  |
| Course content broken down in detail by weekly class schedule (syllabus)          | <ol style="list-style-type: none"> <li>1. Basic characteristics of soil and rock mass</li> <li>2. Geotechnical field investigation</li> <li>3. Geotechnical design profile; Soil models</li> <li>4. Hydraulic conductivity of soil and rock mass</li> <li>5. Seepage, seepage through earth dams</li> <li>6. Stresses in soil and rock mass</li> <li>7. Consolidation theory in soil mass</li> <li>8. Drained and undrained shear strength of soil</li> <li>9. Stability of soil and rock slopes</li> <li>10. Geosynthetics in geotechnical and hydraulic engineering</li> <li>11. Drainage and surface erosion protection of slopes</li> </ol> |  |                 |   |                    |   |  |
| Format of instruction   | <input checked="" type="checkbox"/> <b>lectures</b><br><input type="checkbox"/> seminars and workshops<br><input checked="" type="checkbox"/> <b>exercises</b><br><input type="checkbox"/> <i>on line</i> in entirety<br><input type="checkbox"/> partial e-learning<br><input type="checkbox"/> field work   |  |                 | <input checked="" type="checkbox"/> <b>independent assignments</b><br><input type="checkbox"/> multimedia<br><input type="checkbox"/> laboratory<br><input type="checkbox"/> work with mentor |                    |   |  |
| Student responsibilities  | Class attendance. Independent assignments.  |  |                 |   |                    |   |  |
| Screening student work (name the  | Class attendance  | 1.0                                      | Research        |   | Practical training |   |  |

|  |   |     |               |  |                                     |  |
|--|---|-----|---------------|--|-------------------------------------|--|
| <i>proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i> | Experimental work   |     | Report        | 0.5                                    |                                     |  |
|  | Essay   |     | Seminar essay |  |                                     |  |
|  | Tests   | 2.5 | Oral exam     |  |                                     |  |
|  | Written exam  | 1.0 | Project       |  |                                     |  |
| Grading and evaluating student work in class and at the final exam   | Oral examination, written examination.  |     |               |  |                                     |  |
| Required literature (available in the library and via other media)   | <b>Title</b>  |     |               | <b>Number of copies in the library</b> | <b>Availability via other media</b> |  |
|  | Smolczyk U.: Geotechnical engineering handbook, Vol 2., Ernst & Sohn, Berlin, 2003.   |     |               |  |                                     |  |
|  | Braja M. Das: Fundamentals of geotechnical engineering, Thomson, 2005.  |     |               |  |                                     |  |
|  | Craig R.F.: Craig's soil mechanics  |     |               |  |                                     |  |
| Optional literature (at the time of submission of study programme proposal)  | (1) Software package: Rocscience, Ontario, Canada.;<br>(2) Recommendations for design and analysis of earth structures using geosynthetic reinforcements, DGGT, Ernst & Sohn, Berlin 2011.;<br>(3) EUROCODE 7; (4) Fang H.: Foundation engineering handbook, Chapman &Hall, 1991. |     |               |  |                                     |  |
| Quality assurance methods that ensure the acquisition of exit competences  | Quality assurance will be performed at three levels:<br>(1) University level, through questionnaires; (2) Faculty level by Quality Control Committee; (3) Lecturer's level.   |     |               |  |                                     |  |
| Other (as the proposer wishes to add)  |   |     |               |  |                                     |  |