

| Course title: ENGINEERING HYDRAULICS  |   |          |                        |                  |
|---|---|----------|------------------------|------------------|
| Course code   | Statud  | Semester | Number of ECTS credits | Course hour fund |
|   | Required  | I        | 5                      | 2+1+1            |
| Study program for which it is organized: Master study program Construction - Infrastructure, duration 4 semesters, 120 ECTS credits   |   |          |                        |                  |
| Conditionality to other subjects: No conditionality   |   |          |                        |                  |
| Course objectives: Through this course students get acquainted with the basic principles and laws of hydraulics, measurement technique and processing of results through laboratory exercises   |   |          |                        |                  |
| Learning outcomes : After passing this exam, the student will know the basic methodologies of making a hydraulic analysis of water flow in engineering facilities and systems.  |   |          |                        |                  |
| Name and surname of teacher: Ivana Čipranić   |   |          |                        |                  |
| Method of teaching and mastering the material: Lectures, exercises, graphic works, fieldwork, colloquia.  |   |          |                        |                  |
| COURSE CONTENT  |   |          |                        |                  |
| I week classes  | Introductory on hydraulics, energy, dominant forces and similarities. Flow in watercourses  |          |                        |                  |
| II week of classes  | Calculation of the water face in case of non-uniform and non-stationary flow in watercourses  |          |                        |                  |
| III week of classes   | Non-stationary flow in a watercourse - flow with sudden changes.  |          |                        |                  |
| IV week of classes  | Sea waves   |          |                        |                  |
| V week of classes   | Stationary flow in water supply networks. Unsteady flow in pressurized systems  |          |                        |                  |
| VI week of classes  | Hydraulic shock   |          |                        |                  |
| VII week of classes   | Oscillations of water masses in systems with water chambers   |          |                        |                  |
| VIII week of classes  | COLLOQUIUM I  |          |                        |                  |
| IX week of classes  | Groundwater   |          |                        |                  |
| X week of classes   | Wells   |          |                        |                  |
| XI week of classes  | Regional models of groundwater flow   |          |                        |                  |
| XII week of classes   | Mechanisms of matter transfer during groundwater  |          |                        |                  |
| XIII week of classes  | Transport of matter carried during surface waters - sediment transport mechanism  |          |                        |                  |
| XIV week of classes   | Air flow  |          |                        |                  |
| Student obligations during classes: Attendance at lectures and exercises, making graphic works, taking the colloquium   |   |          |                        |                  |
| Students workload:  |   |          |                        |                  |
| Weekly<br>5 credits x 40/30 = 6.67 hours<br>Structure:<br>2 hours of lectures<br>2 hours of exercise<br>2.67 hours of independent work, including consultations   | During the semester:<br>Teaching and final exam: (6.67 hours) x 16 = 106.67 hours<br>Necessary preparations before the beginning of the semester<br>2 x (6.67 hours) = 13.33 hours<br>Total load for the subject 5x30 = 150 hours<br>Additional work for exam preparation in the remedial exam period, including taking the correctional exam from 0 to 30 hours (remaining time from the first two items to the total subject load 150 hours)<br>Load structure:<br>106.67 hours (Teaching) +13.33 hours (Preparation) +30 hours (Additional work) |          |                        |                  |
| Literature:<br>1. Kapor R.: Hidraulika, Univerzitet u Beogradu – Građevinski fakultet, Beograd, 2011.<br>2. Jović, V.: Osnove hidromehanike, Element, Zagreb, 2006.<br>3. Chow, V. T.: Open Channel Hydraulics, Mc Graw-Hill Kogakusha, 1986.   |   |          |                        |                  |
| Forms of knowledge assessment and grading:<br>The knowledge test is performed continuously during the semester and at the final exam. The maximum student can earn 100 points during the semester.<br>The following is evaluated:<br>- Attendance continues: 2 to 5 (70% attendance 2 points, 100% attendance 5 points, <70% attendance 0 points)<br>- Graphic works: 5x (2.0 to 5.0) = 10 to 25 (for positively evaluated graphic work min 2.0 points are obtained)<br>- Colloquia: 2 x 19 to 35<br>- Final exam: up to 50<br>The exam is passed if 50 points are collected. |   |          |                        |                  |
| Special indications for the subject: /  |   |          |                        |                  |
| Name and surname of the teacher who prepared the data: prof. dr Goran Sekulić   |   |          |                        |                  |
| Note: Additional information about the subject can be obtained from the subject teacher, associate, head of the study program and vice dean for teaching  |   |          |                        |                  |