

### Faculty of Civil Engineering / / TECHNOLOGY OF STRUCTURES RECONSTRUCTION

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| <b>Course:</b>                       | TECHNOLOGY OF STRUCTURES RECONSTRUCTION                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                     |                                               |
| <b>Course ID</b>                     | <b>Course status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Semester</b> | <b>ECTS credits</b> | <b>Lessons</b> (Lessons+Exercises+Laboratory) |
| 12008                                | Mandatory                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2               | 6                   | 3+1+1                                         |
| <b>Programs</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                     |                                               |
| <b>Prerequisites</b>                 | No conditionality                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                     |                                               |
| <b>Aims</b>                          | Acquiring knowledge in the field of technology of reconstruction, retrofitting and strengthening of facilities. Introducing students to the technology of reconstruction, retrofitting and strengthening of buildings, principles, methods and ways of using materials, equipment and machines for the execution of technological processes during reconstruction, retrofitting and strengthening.                                                    |                 |                     |                                               |
| <b>Learning outcomes</b>             | Acquisition of knowledge in the field of technology of reconstruction of facilities and production processes which are realized, first of all, construction works on reconstruction. Training for the analysis of previously designed reconstruction technologies, consideration of their most important technological characteristics, and evaluation of these variant solutions and selection of the most suitable for the realization of the task. |                 |                     |                                               |
| <b>Lecturer / Teaching assistant</b> | Dr Jelena Pejovic, professor Mr Maja Laušević Odalović, teaching assistant                                                                                                                                                                                                                                                                                                                                                                            |                 |                     |                                               |
| <b>Methodology</b>                   | Lectures, exercises, semester works, fieldwork                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                     |                                               |
| <b>Plan and program of work</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                     |                                               |
| Preparing week                       | Preparation and registration of the semester                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                     |                                               |
| I week lectures                      | Basics of facility reconstruction technologies. Basic concepts and methodology of reconstruction technology analysis. Analysis of technological processes.                                                                                                                                                                                                                                                                                            |                 |                     |                                               |
| I week exercises                     | Basics of facility reconstruction technologies. Basic concepts and methodology of reconstruction technology analysis. Analysis of technological processes.                                                                                                                                                                                                                                                                                            |                 |                     |                                               |
| II week lectures                     | Reconstruction technology of existing buildings. Types of reconstruction: Upgrading, strengthening, reconstruction of a damaged buildings.                                                                                                                                                                                                                                                                                                            |                 |                     |                                               |
| II week exercises                    | Reconstruction technology of existing buildings. Types of reconstruction: Upgrading, strengthening, reconstruction of a damaged buildings.                                                                                                                                                                                                                                                                                                            |                 |                     |                                               |
| III week lectures                    | Technology of reconstruction, retrofitting and strengthening of stone and masonry buildings. Rehabilitation of earthquake-damaged buildings.                                                                                                                                                                                                                                                                                                          |                 |                     |                                               |
| III week exercises                   | Technology of reconstruction, retrofitting and strengthening of stone and masonry buildings. Rehabilitation of earthquake-damaged buildings.                                                                                                                                                                                                                                                                                                          |                 |                     |                                               |
| IV week lectures                     | Technology of reconstruction, retrofitting and strengthening of wooden buildings.                                                                                                                                                                                                                                                                                                                                                                     |                 |                     |                                               |
| IV week exercises                    | Technology of reconstruction, retrofitting and strengthening of wooden buildings.                                                                                                                                                                                                                                                                                                                                                                     |                 |                     |                                               |
| V week lectures                      | Technology of reconstruction, retrofitting and strengthening of high-rise buildings.                                                                                                                                                                                                                                                                                                                                                                  |                 |                     |                                               |
| V week exercises                     | Technology of reconstruction, retrofitting and strengthening of high-rise buildings.                                                                                                                                                                                                                                                                                                                                                                  |                 |                     |                                               |
| VI week lectures                     | Technology of reconstruction, retrofitting and strengthening of industrial facilities. Rehabilitation of buildings damaged due to the aggressive action of the environment. Rehabilitation of buildings damaged due to atmospheric influences.                                                                                                                                                                                                        |                 |                     |                                               |
| VI week exercises                    | Technology of reconstruction, retrofitting and strengthening of industrial facilities. Rehabilitation of buildings damaged due to the aggressive action of the environment. Rehabilitation of buildings damaged due to atmospheric influences.                                                                                                                                                                                                        |                 |                     |                                               |
| VII week lectures                    | Technology of reconstruction, retrofitting and strengthening of bridges.                                                                                                                                                                                                                                                                                                                                                                              |                 |                     |                                               |
| VII week exercises                   | Technology of reconstruction, retrofitting and strengthening of bridges.                                                                                                                                                                                                                                                                                                                                                                              |                 |                     |                                               |
| VIII week lectures                   | Testing of knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                     |                                               |
| VIII week exercises                  | Testing of knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                     |                                               |
| IX week lectures                     | Technology of reconstruction, retrofitting and strengthening of buildings on roads.                                                                                                                                                                                                                                                                                                                                                                   |                 |                     |                                               |
| IX week exercises                    | Technology of reconstruction, retrofitting and strengthening of buildings on roads.                                                                                                                                                                                                                                                                                                                                                                   |                 |                     |                                               |
| X week lectures                      | Technology of reconstruction, retrofitting and strengthening of hydro-power facilities.                                                                                                                                                                                                                                                                                                                                                               |                 |                     |                                               |
| X week exercises                     | Technology of reconstruction, retrofitting and strengthening of hydro-power facilities.                                                                                                                                                                                                                                                                                                                                                               |                 |                     |                                               |

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| XI week lectures                                                                                                                                                                                          | Technology of reconstruction, retrofitting and strengthening of underground structures.                                                                                                              |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XI week exercises                                                                                                                                                                                         | Technology of reconstruction, retrofitting and strengthening of underground structures.                                                                                                              |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XII week lectures                                                                                                                                                                                         | Rehabilitation of the terrain. Rehabilitation of unstable terrain on which the facility was founded. Landslide remediation. Rehabilitation of slopes and cuts.                                       |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XII week exercises                                                                                                                                                                                        | Rehabilitation of the terrain. Rehabilitation of unstable terrain on which the facility was founded. Landslide remediation. Rehabilitation of slopes and cuts.                                       |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XIII week lectures                                                                                                                                                                                        | Modern examples of reconstruction technology in practice. Development of new materials for rehabilitation and strengthening. Trends and perspectives. Special regulations governing reconstructions. |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XIII week exercises                                                                                                                                                                                       | Modern examples of reconstruction technology in practice. Development of new materials for rehabilitation and strengthening. Trends and perspectives. Special regulations governing reconstructions. |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XIV week lectures                                                                                                                                                                                         | Planning the construction of reconstruction, rehabilitation and strengthening of facilities.                                                                                                         |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XIV week exercises                                                                                                                                                                                        | Planning the construction of reconstruction, rehabilitation and strengthening of facilities.                                                                                                         |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XV week lectures                                                                                                                                                                                          | Testing of knowledge.                                                                                                                                                                                |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| XV week exercises                                                                                                                                                                                         | Testing of knowledge.                                                                                                                                                                                |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| <b>Student workload</b>                                                                                                                                                                                   | Weekly 6 credits x 40/30 = 8.0 hours Structure: 3 hours of lectures 2 hours of exercise 3 hours of independent work, including consultations                                                         |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| <b>Per week</b>                                                                                                                                                                                           |                                                                                                                                                                                                      |                                                            | <b>Per semester</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                            |                                                            |                                    |
| <b>6 credits x 40/30=8 hours and 0 minuts</b><br>3 sat(a) theoretical classes<br>1 sat(a) practical classes<br>1 exercises<br><b>3 hour(s) i 0 minuts</b><br>of independent work, including consultations |                                                                                                                                                                                                      |                                                            | Classes and final exam:<br><b>8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts</b><br>Necessary preparation before the beginning of the semester (administration, registration, certification):<br><b>8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts</b><br>Total workload for the subject:<br><b>6 x 30=180 hour(s)</b><br>Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item)<br><b>36 hour(s) i 0 minuts</b><br>Workload structure: <b>128 hour(s) i 0 minuts (courses), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)</b> |                                                            |                                                            |                                    |
| <b>Student obligations</b>                                                                                                                                                                                |                                                                                                                                                                                                      |                                                            | Attendance at lectures and exercises, making semester works.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |                                                            |                                    |
| <b>Consultations</b>                                                                                                                                                                                      |                                                                                                                                                                                                      |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| <b>Literature</b>                                                                                                                                                                                         |                                                                                                                                                                                                      |                                                            | Task Group 9.3 , Externally bonded FRP reinforcement for RC structures fib CEB-FIP Bulletin 14 Swizerland,2001 fib Bulletin No 34: Model Code for Service Life Design, Swizerland,2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                                            |                                    |
| <b>Examination methods</b>                                                                                                                                                                                |                                                                                                                                                                                                      |                                                            | Knowledge and understanding shown during the exercises 0 do 15<br>Semesteral work 0 do 15 Theoretical part of the final exam 0 do 30<br>Analytical part of the final exam 0 do 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                            |                                                            |                                    |
| <b>Special remarks</b>                                                                                                                                                                                    |                                                                                                                                                                                                      |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                            |                                    |
| <b>Comment</b>                                                                                                                                                                                            |                                                                                                                                                                                                      |                                                            | Additional information about the subject can be obtained from the teacher, teaching assistant, head of the study program and vice dean for teaching.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            |                                                            |                                    |
| <b>Grade:</b>                                                                                                                                                                                             | F                                                                                                                                                                                                    | E                                                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | C                                                          | B                                                          | A                                  |
| <b>Number of points</b>                                                                                                                                                                                   | less than 50 points                                                                                                                                                                                  | greater than or equal to 50 points and less than 60 points | greater than or equal to 60 points and less than 70 points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | greater than or equal to 70 points and less than 80 points | greater than or equal to 80 points and less than 90 points | greater than or equal to 90 points |