# THE PROGRAM OF THE UNDERGRADUATE STUDY OF CIVIL ENGINEERING

The undergraduate study of Civil Engineering at the Faculty of Civil Engineering, Architecture and Geodesy lasts three academic years and is organised in six semesters.

The syllabus (curriculum) consists of compulsory and elective courses. It is aligned with European Credit Transfer and Accumulation System (ECTS) of the European Higher Education Area (EHEA) and students accumulate minimum of 60 ECTS each academic year. In order to obtain qualification (bachelor degree, first cycle) students have to accumulate minimum of 180 ECTS.

Upon completion students are awarded the academic title and corresponding qualification sveučilišni prvostupnik/prvostupnica (baccalaureus/baccalaurea) inženjer/inženjerka građevinarstva (University Bachelor in Civil Engineering). Students may continue their studies at graduate study in civil engineering or similar engineering fields, or enter the labour market.

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## Syllabus

The tables below show information for the actual (spring) and the former (autumn) semester. Detail plans for specific semesters and academic years are published on the following Faculty's web site: this link.

| Teacher | Course | Related learning outcomes | Teaching and learning | Assessment | Code | Hours | ECTS |
|---|---|---|---|---|---|---|---|
| | **I. semester** | | | | | | |
| J. Sedlar | Mathematics I | a,c | 1,2 | 1 | GAB001 | 60+60 | 10,0 |
| N. Leder | Physics | a,c | 1,2 | 1 | GAB002 | 30+30 | 5,0 |
| M. Andrić | Descriptive Geometry | a,e,h,l | 1,2,3 | 1,2,3 | GAC001 | 30+30 | 5,0 |
| T. Vlahović | Basics of Geology and Petrography | i,j,l | 1,2 | 1 | GAG001 | 30+15 | 3,5 |
| J. Sedlar, M. Vulević | Basics of Engineering Informatics | a,b,c | 1,3 | 1 | GAB003 | 15+45 | 3,5 |
| V. Kukoč | Introduction to Architecture | o,p,r | 1 | 1 | GAU001 | 30+00 | 2,0 |
| | **II. semester** | | | | | | |
| S. Banić | Mathematics II | a,c | 1,2 | 1,2 | GAB004 | 60+60 | 10,0 |
| S. Ivelić Bradanović | Probability and Statistics | b | 1,2,3 | 1,2 | GAB005 | 30+30 | 5,0 |
| N. Lovričević | Applied Geometry | e,h,l | 1,2,3 | 1,2,3 | GAC002 | 30+30 | 5,0 |
| Ž. Nikolić | Mechanics I | a,c,d,e | 1,2 | 1,3 | GAO001 | 30+45 | 6,0 |
| T. Duplančić-Leder | Geodesy | a,b,l,m,o | 1,2,3,4 | 1,2 | GAF001 | 30+30 | 5,0 |
| | **III. semester** | | | | | | |
| B. Gotovac | Mechanics II | a,c,f | 1,2,3 | 1,2,3 | GAD101 | 45+30 | 6,0 |
| P. Marović, M. Galić | Strength of Materials I | c,d,f,g,o | 1,2 | 1,2 | GAR101 | 45+30 | 6,0 |
| A. Mihanović, B. Trogrlić | Building Statics I | c,d,e,f,g,o | 1,2,3 | 1,2,3 | GAO101 | 30+30 | 5,0 |
| S. Juradin | Building Materials I | b,i,o,r | 1,2,3,5 | 1,2,3 | GAN101 | 60+30 | 7,0 |
| V. Denić-Jukić | Hydrology | b,k,r | 1,2,3,4 | 1,2,3 | GAI101 | 30+30 | 5,0 |
| S. Ivelić Bradanović, S. Pavasović | Introduction to Programming | a,b,c,o,r | 1,3 | 1 | GAB101 | 15+30 | 3,0 |
| | **IV. semester** | | | | | | |
| P. Marović, M. Galić | Strength of Materials II | c,d,f,g,o | 1,2 | 1,2 | GAR102 | 30+30 | 5,0 |
| A. Mihanović, B. Trogrlić | Building Statics II | c,d,e,f,g,o | 1,2, | 1,2,3 | GAO102 | 45+30 | 6,0 |
| D. Bojanić | Hydromechanics | a,c,k,o,p | 1,2,3 | 1,2,3 | GAH101 | 45+45 | 7,0 |
| P. Miščević, N. Štambuk Cvitanović | Soil Mechanics and Foundations | a,b,j,m,o,p,r | 1,2,3,5 | 1,2 | GAG101 | 45+30 | 6,0 |
| V. Perković-Jović | Elements of Building Construction | m,o,p,r | 1,2,3 | 1,2 | GAM001 | 30+30 | 5,0 |

| Teacher | Course | Related learning outcomes | Teaching and learning | Assessment | Code | Hours | ECTS |
|---|---|---|---|---|---|---|---|
| | **V. semester** | | | | | | |
| A. Harapin | Basics of Concrete Structures | a,c,d,e,g,o,p | 1,2,3,4 | 1,2,3 | GAE201 | 60+30 | 7,0 |
| I. Boko, N. Torić | Introduction to Timber Structures | a,c,d,e,h,o,p | 1,2,3,4 | 1,3 | GAP201 | 30+30 | 5,0 |
| S. Knezić | Construction operations and equipment | b,i,n,o,p,r | 1,2,3 | 1,2,3 | GAL001 | 30+15 | 4,0 |
| J. Margeta | Water Supply and Sewerage System | b,c,k,o,p,r | 1,2,3 | 1,2,3 | GAJ201 | 30+30 | 5,0 |
| N. Ostojić-Škomrlj | Construction Management | n,o,p,r | 1,2,3 | 1,3 | GAL101 | 45+15 | 5,0 |
| D. Cvitanić, D. Breški | Roads | b,c,l,o,p,r | 1,2,3 | 1,2,3 | GAF101 | 30+30 | 5,0 |
| | **VI. semester** | | | | | | |
| I. Boko | Introduction to Metal Structures | a,b,c,d,e,f,h,o,p,r | 1,2,3,4 | 1,3 | GAP202 | 45+30 | 6,0 |
| | Elective courses (min. 18 ECTS) | | | | | | |
| | Final work | o,p,r | 7 | 3 | GAX201 | | 5,0 |
| | **Elective courses** | | | | | | |
| V. Srzić, H. Gotovac | Hydraulic Structures | As listed in the | 1,2 | 1,2 | GAK201 | 30+30 | 5,0 |
| J. Radnić, D. Matešan | Bridges | detail plans | 1,2,3,4 | 1,2,3 | GAE202 | 30+30 | 5,0 |
| V. Srzić | Ports and Marine Structures | at the Faculty's | 1,2 | 1,2 | GAK202 | 30+30 | 5,0 |
| B. Viđak | Railways | web site. | 1,2,3 | 1,3 | GAF102 | 30+15 | 4,0 |
| S. Ivelić Bradanović | Applied Mathematics | | 1,2 | 1,2 | GAB701 | 30+30 | 5,0 |
| S. Juradin | Building Materials II | | 1,2,5 | 2,3 | GAN701 | 30+30 | 5,0 |
| N. Jajac | Basics of Business Economy | | 1 | 1,2,3 | GAL002 | 30+00 | 3,0 |
| A. Mršić Zdilar | English Language | | 1,2 | 1,2 | GAA001 | 15+15 | 1,5 |

## Learning outcomes – Undergraduate University Study of Civil Engineering

| Label | Units of learning outcomes |
|---|---|
| a | To apply mathematical analysis and linear algebra methods to solve engineering problems. |
| b | To implement basic tools for analysis of random fields in civil engineering |
| c | To apply methods of static, kinematic and dynamic analysis in solving engineering problems. |
| d | To determine dimensions of the elements of linear and statically determinate and indeterminate structures taking into account strength, stiffness and stability analysis in response to all types of load. |
| e | To recognise and apply an adequate geometric simplification to linear structures. |
| f | To estimate the significance of deformation parameters on the behaviour of static models. |
| g | To analyse structural principles of simple reinforced concrete and masonry buildings and elements. |
| h | To develop and design connections used in timber and steel structures. |
| i | To recognise, classify and compare characteristics of construction materials. |
| j | To classify and determine physical and mechanical properties of soil, to determine dimensions of foundations and retaining structures, as well as to calculate slope stability. |
| k | To solve basic problems in hydrology, open channel flow and pressurised systems, as well as water supply and sewage systems. |
| l | To create a conceptual design of a rural road. |
| m | To plan and manage the construction work. |
| n | To plan and an organise production in construction plants. |
| o | To cooperate in project design development, construction processes and project management. |
| p | To appraise various solutions and to recommend an adequate solution to associates and stakeholders in the construction process. |
| r | To stand for and present attitude with respect to civil and related engineering problems in order to adapt to and participate in the teamwork, respecting ethical principles of the profession. |

## Teaching and learning:

1. Lectures: a teacher teaches ex-cathedra or uses some forms of interactive lectures.
2. Theoretical exercises: teacher demonstrates to students how to solve standard mathematical or engineering tasks.
3. Practical exercises: students solve and prepare practical assignments under supervision of the teacher in standard or IT equipped classrooms.
4. Field exercises: students and teachers visit, or students perform small-scale practical work at construction sites, factories, production plants, etc.
5. Lab exercises: the teacher demonstrates experiments/tasks to students, or students perform their own experiments/tasks in the laboratory under the supervision of teachers and/or technicians.
6. Internship: students perform practical work at construction sites during semester or summer vacations.
7. Independent work: theoretical or practical assignment under the supervision of a teacher.

## Assessment:

1. Written exams: students solve tasks as the paperwork or by a computer in IT equipped classrooms. They may be performed throughout the semester or during the examination period.
2. Oral exams: a teacher poses questions to students in a spoken form.
3. Presentation or defence of a practical or written assignment.