

UNIVERSITY OF RIJEKA
FACULTY OF CIVIL ENGINEERING

CURRICULUM OF THE UNIVERSITY
UNDERGRADUATE STUDY PROGRAMME

CIVIL ENGINEERING

Rijeka, July 2026

CURRICULUM

University Undergraduate Study of CIVIL ENGINEERING

General information	
Name of study programme	**University Undergraduate Study of Civil Engineering**
Programme holder	Faculty of Civil Engineering, University of Rijeka
Programme provider	Faculty of Civil Engineering, University of Rijeka
Type of study programme	University
Level of study programme	Undergraduate
Area and field of study	2. TECHNICAL SCIENCES, 2.05 Civil Engineering
Academic/professional title awarded upon completion of the study	University Bachelor of Civil Engineering (abbreviation: univ. bacc. ing. aedif.)

Information on the programme holder:

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1. INTRODUCTION

During the implementation of the Bologna Process, the Faculty of Civil Engineering, University of Rijeka, envisages reforming its existing study programmes (university, professional and postgraduate studies) in accordance with the principles of the Bologna Process, that is, the European Credit Transfer and Accumulation System (ECTS), with the aim of enabling student mobility within the common European area of knowledge.
The Faculty of Civil Engineering, University of Rijeka, has organised and delivered civil engineering studies since 1976 and, over nearly five decades of activity, has educated more than 2,700 civil engineers through university and professional study programmes. As the only higher education institution educating civil engineering professionals in Primorje-Gorski Kotar, Istria and Lika-Senj Counties, the Faculty plays an important regional and national role in developing professional and scientific competences in the field of civil engineering.

In developing the new study programmes, the Faculty drew on its previous experience in educating civil engineering professionals. Labour market needs and estimates of the requirements that, due to Croatia's integration into the European area of knowledge and work, will be placed on future students, the Faculty and its staff, as well as civil engineering professionals, were taken into account. Consideration was given to the fact that the Faculty of Civil Engineering in Rijeka is the only higher education institution educating civil engineering professionals in the wider region (Primorje-Gorski Kotar County, Istria County and Lika-Senj County). Owing to the current intensive activity in the planning, design and construction of infrastructure (roads, residential developments, water-supply systems and similar facilities), there is a substantial need for highly educated civil engineering professionals. Data show that, as a rule, there are no unemployed graduate civil engineers or civil engineers registered with employment offices. It can be confidently stated that the trend of intensive infrastructure construction will continue in the coming years. In the long term, the need to plan and design new civil engineering structures will be transformed into a need to manage, maintain and reconstruct municipal infrastructure and systems. Part of the curriculum has therefore also been adapted to this requirement.

During the development of the curricula, the Faculty actively cooperated with related faculties of civil engineering in Croatia. At the undergraduate level, the core part of the curriculum was harmonised with equivalent programmes at other faculties of civil engineering in Croatia in order to enable student mobility at the graduate level, initially within Croatia. In preparing the programmes (undergraduate and graduate), the curricula of reputable foreign institutions educating professionals of the same profile were considered (Czech Technical University in Prague, Technical University of Munich: Technische Universität München-Studienplan für studierende des Baiungenieurrwesens, Eidgenossiche Technische Hochschule Zürich-ETH-Abfeilung für Bauingenienieurrwesen). The recommendations of the European Civil Engineering Education and Training association (EUCEET) were taken into account through coordination within the TEMPUS project "Restructuring and Updating of Civil Engineering Curriculum" (which also involved all four faculties of civil engineering in Croatia, as well as international experts and scientists).

All Faculty teaching staff were actively involved in developing the curricula, and students were also consulted.
The structure of the curricula was adopted by the Faculty Council of the Faculty of Civil Engineering on 21 December 2004.
The adopted structure of the study cycles is "3+2+3", namely:

- three-year university undergraduate study of civil engineering
- two-year university graduate study of civil engineering
- three-year doctoral study of civil engineering

The proposed university undergraduate study programme continues the core component of the former university undergraduate study. The curriculum has been adapted to the principles of the Bologna Process and modernised in terms of both content and methodology. The university undergraduate study of civil engineering is an essential first step in educating highly qualified professionals in civil engineering and other technical fields.

2. GENERAL SECTION

2.1. NAME OF THE STUDY

At the Faculty of Civil Engineering, University of Rijeka, the organisation of a university study of civil engineering is planned, and the first cycle of that study is the UNIVERSITY UNDERGRADUATE STUDY OF CIVIL ENGINEERING.

2.2. PROGRAMME HOLDER AND PROVIDER

The programme holder and provider is the Faculty of Civil Engineering, University of Rijeka, through its core teaching organisational units: Chair of Geotechnical Engineering, Chair of Hydrotechnical Engineering, Department of Computational Modelling of Materials and Structures, Chair of Structures, Chair of Construction Organisation and Technology, Chair of Architecture and Urban Planning, Chair of Transportation Engineering, Chair of Technical Mechanics, Chair of Mathematics, Chair of Physics and Other Courses.

2.3. DURATION OF STUDY

The planned duration of the university undergraduate study of civil engineering is three (3) academic years, and upon completion of the study, the student acquires a minimum of 180 ECTS credits.

2.4. ADMISSION REQUIREMENTS

Applicants who have completed secondary education or an equivalent qualification lasting at least four years, or who meet the conditions laid down in a separate Faculty regulation, are entitled to apply for admission to the university undergraduate study programme. Citizens of the Republic of Croatia and citizens of EU Member States are entitled to apply for admission; foreign nationals and stateless persons may apply under the same conditions. Candidates are selected for enrolment in the university undergraduate study based on their secondary-school achievement (average grades across all four years and the compulsory part of the State Matura examination) and the results of the compulsory (Mathematics) and elective (Physics, Chemistry or Informatics) parts of the State Matura examination.

2.5. COMPETENCES ACQUIRED UPON COMPLETION OF THE STUDY PROGRAMME

Upon completing the university undergraduate study, the student acquires basic competences for participating in the design and dimensioning of structures, as well as fundamental knowledge enabling enrolment in graduate and subsequently postgraduate studies in civil engineering and related fields, and in various lifelong learning programmes.

During the study, the student develops the ability to inform and communicate with interested professionals and the public about problems and solutions related to the civil engineering profession. On the basis of analysis, the student is able to assess specific civil engineering issues from both a professional perspective and the perspective of broader social benefit, such as environmental protection. The student is qualified to perform static calculations for concrete, timber and metal structures and to participate in the planning and design of hydraulic engineering and transportation systems and structures. The student is qualified to assist in managing the design and dimensioning of simpler structures or parts of complex structures, organising construction works, and supervising the construction of simpler civil engineering and building structures.

The knowledge and competences acquired upon completion of the university undergraduate study are sufficient for the student to follow university and professional graduate programmes at the Faculty of Civil Engineering, University of Rijeka, and the same or similar programmes at other faculties of civil engineering in the Republic of Croatia. The fundamental knowledge acquired also enables the student to follow graduate programmes in other technical fields.

2.6. PROGRAMME LEARNING OUTCOMES

The learning outcomes of the study programme are listed in the table below.

No.	PROGRAMME LEARNING OUTCOME
IU1	Solve and analyze standard engineering problems using theoretical knowledge in the fields of mathematics, physics, and basic engineering sciences
IU2	Explain and draw the basic construction details of structures and systems
IU3	Identify the difference in structure and analyze the properties of building materials
IU4	Participate in the creation of technical documentation of more complex structures and systems
IU5	Participate in the implementation of laboratory and field tests and analyze and interpret the measured data
IU6	Apply methodology and regulation relevant to civil engineering and other related fields
IU7	Plan and design the basic organizational and technological processes of constructing standard structures and systems, taking into account the principles of sustainable development and the environmental impact of structures and systems
IU8	Design standard structures and systems using theoretical knowledge and complying with applicable domestic and foreign regulations and guidelines, taking into account the environmental impact
IU9	Use professional literature efficiently and apply acquired knowledge and skills to new circumstances
IU10	Interpret and discuss expert information using technical terms in Croatian and foreign languages
IU11	Organize and plan work stages in order to successfully complete the project
IU12	Work efficiently and collaboratively in a group/team taking into account professional and ethical principles

2.7. ACADEMIC TITLE OR DEGREE AWARDED UPON COMPLETION OF THE STUDY

Under the study programme, the academic title and degree awarded upon completion of the university undergraduate study is University Bachelor of Civil Engineering (univ. bacc. ing. aedif.)

3. DESCRIPTION OF THE PROGRAMME

3.1. LIST OF COMPULSORY AND ELECTIVE COURSES

No.	Code	Compulsory courses	*Contact hours*			ECTS
			L	E	S	
1.	OT104	Construction Economics	20	20	0	3
2.	AU103	Building Elements 1	30	30	0	6
3.	FD100	Physics	15	30	0	4
4.	P100	Geodesy	30	15	0	4
5.	G110	Geology	20	10	0	3
6.	OT100	Civil Engineering Regulations	30	0	0	3
7.	H100	Hydrology	30	15	0	4
8.	H101	Hydromechanics	30	30	0	5
9.	M100	Engineering Informatics	5	45	0	5
10.	MK101	Engineering Materials	25	20	0	4
11.	M101	Constructive Geometry	25	35	0	5
12.	M102	Mathematics 1	45	45	0	9
13.	M103	Mathematics 2	45	45	0	8
14.	TM101	Solid Body Mechanics 1	30	30	0	6
15.	TM103	Solid Body Mechanics 2	30	30	0	5
16.	G111	Soil and Rock Mechanics	45	30	0	5
17.	OT102	Construction Organisation	30	30	0	4
18.	NK101	Fundamentals of Concrete Structures	45	30	0	6
19.	NK102	Fundamentals of Steel Structures	30	30	0	5
20.	TM102	Fundamentals of Dynamics	30	30	0	5
21.	G114	Fundamentals of Geotechnical Engineering	30	30	0	5
22.	H102	Fundamentals of Hydraulic Engineering	30	30	0	5
23.	P101	Fundamentals of Road Design 1	30	30	0	5
24.	P102	Fundamentals of Road Design 2	20	25	0	4
25.	TM100	Fundamentals of Statics	30	30	0	6
26.	TM104	Statics of Linear Structures 1	30	45	0	6
27.	TM105	Statics of Linear Structures 2	30	30	0	5
28.	OT101	Construction Machinery	20	10	0	3
29.	OT103	Professional Practice 1	0	0	90	3
30.	OT105	Professional Practice 2	0	0	90	3
31.	MK102	Concrete and Asphalt Technology	15	15	0	3
32.	MK100	Introduction to Civil Engineering	20	0	10	3
33.	NK100	Introduction to the Design of Civil Engineering Structures	20	10	0	3
34.	M104	Probability and Statistics	15	30	0	4
35.	ZR-SVP	Undergraduate Thesis	0	0	150	5

No.	Code	Elective courses	*Contact hours*			ECTS
			L	E	S	
36.	G117	Experimental Soil Mechanics	15	15	30	5
37.	AU104	Building Elements 2	30	30	0	5
38.	FD101	English Language	10	15	5	3
39.	P104	Urban Roads and Intersections	30	30	0	5
40.	H103	Hydrotechnical Measures for Adaptation to Climate Change	30	0	15	4
41.	FD103	Communication Skills	15	15	0	3
42.	FD104	Building and Constructing English	15	10	5	3
43.	MK104	Laboratory Testing of Materials	5	30	10	5
44.	OT106	Construction Management	30	0	15	4
45.	NK103	Bridges	30	15	0	4
46.	FD102	German Language	10	15	5	3
47.	OT107	Maintenance of Structures	30	15	0	5
48.	NK104	Fundamentals of Timber Structures	30	30	0	5
49.	MK103	Fundamentals of Building Physics	15	0	15	3
50.	G115	Fundamentals of Engineering Geology	15	20	10	4
51.	G112	Fundamentals of Unsaturated Soil Mechanics	20	0	10	3
52.	H104	Fundamentals of Coastal Engineering	30	30	0	5
53.	AU101	Fundamentals of Spatial Planning	20	0	10	3
54.	AU102	Building Design	20	25	0	4
55.	M105	Computer Programs	0	30	0	3
56.	G116	Field Testing in Geotechnics	15	15	15	4
57.	M106	Introduction to Programming	10	20	0	3
58.	G113	Environmental Protection and Sustainable Construction	10	0	20	3
59.	P103	Railway Engineering	25	20	0	4

3.2. DESCRIPTION OF EACH COURSE

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	
Course	**Construction Economics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+20+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The goal is to acquire the knowledge necessary for cost analysis and calculations of construction works.

1.2. Course enrolment requirements

Construction Machinery – passed
Construction Organisation – *enrolled*

1.3. Expected course learning outcomes

1. Interpret the basic concepts of construction economics.
2. Interpret specific concepts from the economics of construction.
3. Elaborate in writing and orally a problem in the field of construction economics using appropriate terminology.
4. To make a complete offer for the construction of a moderately complex civil engineering structure or building.

1.4. Course content

1. Norms in construction.
2. Norms of construction works – preparatory, earthwork, carpentry, reinforcement, concrete, masonry, transport operations, finishing works.
3. Standardization of machine work.
4. Cost structure in construction - material costs, labor costs, machine labor costs, machine depreciation, direct and indirect costs, structure of indirect costs on the construction site, company management costs, additional calculation, calculation factor, price analysis, construction work price calculations.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

70% attendance at exercises. 70% of attendance at lectures. Colloquiums. Program. Exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio		Assignment	X				

1.8. Student assessment during classes and at the final examination

Preparation and submission of coursework, attendance and participation in classes – 70%; examination – 30%. In accordance with the current Regulations on Studies of the University of Rijeka and the Regulations on the Evaluation and Assessment of
Students' Work at the Faculty of Civil Engineering, University of Rijeka

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Lectures and exercises on the Merlin LMS	online	50
Katavić, M., Basics of Economics for Builders, Croatian University Press, Croatian Association for Construction Organization. Zagreb, 2009.	7	
Bučar, G., Norms and Prices in Construction, ICG d.o.o., Omišalj, Faculty of Civil Engineering in Rijeka, Rijeka, 2003.	4	
Norms and Standards of Work in Construction, Construction Book, Belgrade, Belgrade 2001.	1	
Standard Calculation of Works in Building Construction, Bulletin, Institut IGH, d.d., Zagreb	1 + online	

1.10. Supplementary reading

Linarić, Z. Construction Machinery; Machine labor costs
https/www.grad.unizg.hr/_download/repository/troskovistrojnograda.pdf

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Iva Mrak, Ph.D.	
Course	**Building Elements 1**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**6.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION
1.1. Course objectives
The course aims to introduce students to the principles of designing construction details of buildings, enable them to independently prepare parts of project documentation, and prepare them for work involved in the execution of building projects.
1.2. Course enrolment requirements
-
1.3. Expected course learning outcomes
1. Distinguish between basic building elements and materials used in building construction 2. Define the basic details of building structures and ways of connecting them into a whole 3. Identify different types of projects, read blueprints of various types and scales 4. Explain the basic principles of building physics 5. Create a part of the technical documentation of a building according to the rules of technical drawing 6. Distinguish the levels of spatial plans and identify the elements of spatial plans necessary for design
1.4. Course content
1. Structural systems, materials in construction, physical influences on buildings. 2. Foundations, waterproofing, thermal insulation. 3. Massive masonry structures and massive monolithic structures. 4. Floors and vaults. 5. Arches and lintels. 6. Staircases. 7. Flat roofs. 8. Drafts 9. Construction and spatial planning; spatial plans

1.5. Types of teaching (tick as appropriate)	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☒ multimedia and internet ☐ laboratory ☒ mentoring ☐ other _____

1.6. Student obligations

Class attendance, periodic knowledge assessments, preparation of seminar assignments and coursework, in-class tasks, group work and individual work.
Student attendance is governed by the current Regulations on the Evaluation and Assessment of Students' Work of the Faculty of Civil Engineering, University of Rijeka, and must amount to at least 70% of scheduled teaching hours.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination		Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment: 100% during classes:
- In-class and homework assignments, practical work, research.
- Coursework, practical work, research.
- Test.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Technical Encyclopedia, Miroslav Krleža Institute of Lexicography, Zagreb, 1963-1997	1	30
Štulhofer, A. and Veršić, Z.: Drawing Architectural Designs: Accessories and Basics, Zagreb, 1998.	1	
Francis D. K. Ching, Building Construction Illustrated, Wiley, New Jersey, USA, 2014.	6	
Legislation, Official Gazette of the Republic of Croatia	*online*	

1.10. Supplementary reading

1. Andrea Deplazes (eds), Constructing Architecture: Materials, Processes, Structures: a Handbook, Darch Eth, 2008.
2. Sorić, Z.: Masonry Structures I, Croatian Association of Civil Engineers, Zagreb, 1999.
3. Crnković, B., Šarić, Lj., Construction with Natural Stone, IGH, 2003.
4. Peulić, Đ.: Constructive Elements of Buildings I, II, Technical Book, Zagreb, 1986.
5. Vrkljan, Z.: Equipment of Building Designs, Zagreb, 1965.
6. Rex, S. Industrial Way of Construction I and II, IGH Faculty of Civil Engineering, Zagreb, 1983.
7. Technology of Wooden Buildings, Mozaik knjiga, 2001.
8. Buđevac, D., Metal Structures in Buildings, Construction Book, 2000.
9. Production programs of construction products.

Additional literature according to the topics of lectures recommended during classes.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Iva Mrak, Ph.D.	
Course	**Building Elements 2**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The course aims to introduce students to the principles of designing construction details of buildings, enable them to independently prepare parts of project documentation, and prepare them for work involved in the execution of building projects.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Distinguish between basic building elements and materials used in building construction
2. Define the basic details of building structures and ways of connecting them into a whole
3. Create a part of the technical documentation of a simple building according to the rules of technical drawing

1.4. Course content

1. Lightweight building structures and building-envelope systems
2. Waterproofing of more demanding parts of buildings
3. Floors, ceilings and internal partitions.
4. Acoustic performance systems
5. Doors and windows.
6. Staircases 2.
7. Pitched roofs, roof coverings, green roofs, drainage, chimneys and ventilation.
8. Plasters and coatings.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☒ multimedia and internet ☐ laboratory ☒ mentoring ☐ other _____

1.6. Student obligations

Class attendance, periodic knowledge assessments, preparation of seminar assignments and coursework, in-class tasks, group work and individual work.
Student attendance is governed by the current Regulations on the Evaluation and Assessment of Students' Work of the Faculty of Civil Engineering, University of Rijeka, and must amount to at least 70% of scheduled teaching hours.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination		Oral examination		Essay		Research	
Project	X	Continuous assessment	x	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment: 100% during classes:
- In-class and homework assignments, practical work, research.
- Coursework, practical work, research.
- Test.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Technical Encyclopedia, Miroslav Krleža Institute of Lexicography, Zagreb, 1963-1997	1	130
Štulhofer, A. and Veršić, Z.: Drawing Architectural Designs: Accessories and Basics, Zagreb, 1998.	1	
Francis D. K. Ching, Building Construction Illustrated, Wiley, New Jersey, USA, 2014.	6	
Legislation, Official Gazette of the Republic of Croatia	*online*	

1.10. Supplementary reading

1. Andrea Deplazes (eds), Constructing Architecture: Materials, Processes, Structures: a Handbook, Darch Eth, 2008.
2. Sorić, Z.: Masonry Structures I, Croatian Association of Civil Engineers, Zagreb, 1999.
3. Crnković, B., Šarić, Lj., Construction with Natural Stone, IGH, 2003.
4. Peulić, Đ.: Constructive Elements of Buildings I, II, Technical Book, Zagreb, 1986.
5. Vrkljan, Z.: Equipment of Building Designs, Zagreb, 1965.
6. Rex, S. Industrial Way of Construction I and II, IGH Faculty of Civil Engineering, Zagreb, 1983.
7. Technology of Wooden Buildings, Mozaik knjiga, 2001.
8. Buđevac, D., Metal Structures in Buildings, Construction Book, 2000.
9. Production programs of construction products.

Additional literature according to the topics of lectures recommended during classes.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Boris Podobnik, Ph.D.	
Course	**Physics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**15+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Developing general and specific knowledge in the field of physics.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Define and explain basic physical quantities and units of measurement.
2. Explain and apply the laws of mechanics, kinematics and dynamics.
3. Define the laws of fluid motion.
4. Define basic thermodynamic quantities and processes.
5. Know the basics of the theory of oscillation and waves.
6. Know the basics of the theory of electricity and magnetism.
7. Define the basic assumptions of the structure of matter and the interaction of substances.
8. Apply the acquired knowledge to solve problems.

1.4. Course content

1. Introduction. Physical quantities and units. International System of Units. Scalar and vector physical quantities
2. Kinematics and dynamics in mechanics.
3. Fluids. Fluid statics.
4. Fluids. Fluid motion. Bernoulli's equation.
5. Mechanical oscillation.
6. Mechanical waves. Electromagnetic waves.
7. Heat and heat transfer.
8. Fundamentals of thermodynamics.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%
Satisfaction of activities that evaluate the acquisition of learning outcomes:
1. Regular attendance, at least 70%;
2. Active teaching and solving tasks;
3. Knowledge assessment;
4. Final examination (written).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written examination	1	Oral examination		Essay		Research	
Project		Continuous assessment	1.5	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Kilić, S.: Physics I, Faculty of Civil Engineering in Split	5	100
Cindro, N.: Physics I, Školska knjiga, Zagreb 1981.	3	
Cindro, N.: Physics II, Školska knjiga, Zagreb 1981.	3	

1.10. Supplementary reading

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Andrej Marinović, Senior Lecturer	
Course	**Geodesy**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**30+15+0**

1. COURSE DESCRIPTION		
1.1. Course objectives		
Adoption and understanding of basic concepts and terminology in the field of geodesy.		
1.2. Course enrolment requirements		
-		
1.3. Expected course learning outcomes		
1. Analyze geodetic bases: maps and plans of different scales. 2. Identify the role of geodetic works in construction in individual phases of design. 3. Calculate the basic elements of staking (vertical and horizontal). 4. Assess the importance of geodetic works in various project tasks and the need to engage geodetic experts. 5. Explain the elements of GIS and apply the basic functions of search in GIS.		
1.4. Course content		
1. Division and basic concepts of geodesy. 2. Geodetic measurements and instruments 3. Geodetic networks and surveys 4. Application of geodesy in construction 5. Geodetic works in various areas of civil engineering and phases of design and construction of buildings 6. Fundamentals of geographic information systems		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____
1.6. Student obligations		
Attendance at exercises and lectures. Colloquiums. Creating a program within the framework of exercises.		

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Macarol, S.: Practical Geodesy, Technical Book, Zagreb,	1	100
Pribičević B., Medak D.: Geodesy in Civil Engineering, V.B.Z. d.o.o. Zagreb 2003.	15	

1.10. Supplementary reading

1. Janković, M.: Engineering Geodesy I and II
2. Kapetanović N., Selesković F.: Geodesy, University Book, Sarajevo
3. Schofield W.: Engineering surveying, Butterworth Heinemann 2001.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Petra Jagodnik, Ph.D.	
Course	**Geology**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+10+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The course introduces students to the basic types of rocks of the lithosphere, as the environments in which and from which they are built. Students will know the ways of rock weather, i.e. the formation of soil, and will be able to classify soil with regard to genesis. The course introduces students to the hydrogeological properties of rocks and soils. It enables the student to recognize phenomena in the field that occur as a result of geomorphological processes. Students will be trained for elementary recognition of the geological structure of the terrain by inspecting geological maps. Students will know the basic methods of geological research for construction purposes. The course prepares students for the next courses in the field of geotechnics, hydraulic engineering and environmental protection.
The course prepares students for subsequent courses in geotechnics, hydraulic engineering and environmental protection.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Identify and describe the basic types of rocks and soils. Interpret geological structures.
2. Distinguish the ways of wasting rocks and classify soils according to the genetic principle.
3. Understand the hydrogeological properties of rocks and soils.
4. Recognize and classify phenomena due to the action of geomorphological processes.
5. Recognize the geological structure of the terrain based on the interpretation of the geological map.
6. Knowledge of basic methods of field research of locations for construction purposes.

1.4. Course content

Structure of the Earth and internal dynamics.
Minerals: physical and chemical properties; classification of rock-forming minerals.
Rocks: genetic classification; basic types of rocks.
Geological structures.
Rock weathering and soil formation.
Groundwater: hydrogeological properties of rocks and soils; groundwater zones.
Geomorphological processes: flowing water, karst morphology, landslides and erosion.
Earthquakes.
Representation of geological structure: geological mapping; geology of the Republic of Croatia.
Fieldwork for construction purposes.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attending lectures and exercises. Preparation for exercises and independent solving of tasks in exercises, with consultations and support from teachers.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
The total proportion of points available is 70% during classes and 30% in the final examination.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Pavelić, D.: General Geology. University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, 2014	3	100
Vlahović, T.: Geology for Civil Engineers. University of Split, Faculty of Civil Engineering and Architecture, 2010	5	

1.10. Supplementary reading

1. Tišljar, J.: Petrology with the Basics of Mineralogy. Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb, 1999
2. Šestanović, S.: Fundamentals of Geology and Petrography. IV edition. Faculty of Civil Engineering, University of Split, 2001
3. Šestanović, S.: Fundamentals of Engineering Geology - Application in Construction. Geoing, Split 1993.
4. Pollak, Z.: Hydrogeology for Civil Engineers. Poslovna knjiga, Zagreb, 1995.
5. Benac, Č.: Dictionary of Terms in Applied Geology and Geological Engineering. University of Rijeka, 2013.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Ivan Marović, Ph.D.	
Course	**Civil Engineering Regulations**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**30+0+0**

1. COURSE DESCRIPTION		
1.1. Course objectives		
It is necessary for students of future civil engineers to master the basic concepts, categories, institutes and legal relations in construction in a broad sense.		
1.2. Course enrolment requirements		
-		
1.3. Expected course learning outcomes		
1.Interpret the basic legal concepts. 2.Interpret specific concepts of building regulations. 3.Apply the adopted concepts in the interpretation of legal problems in construction. 4.Make appropriate use of the available applicable technical regulations.		
1.4. Course content		
Introduction to law: concepts, categories, legal institutions, branches and legal relationships Review and development of national construction regulations Basic construction legislation (public construction law) Relationships between construction participants (private construction law) International practice and autonomous construction regulations (FIDIC)		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____
1.6. Student obligations		
Attendance at lectures (at least 70%) and satisfaction of activities that evaluate the acquisition of learning outcomes (colloquium and final exam).		

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The total proportion of points that can be earned is 70% during classes and 30% in the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Construction Act (Official Gazette website)	online	80
Physical Planning Act (Official Gazette website)	online	
Act on Physical Planning and Construction Affairs and Activities (Official Gazette website)	online	
Occupational Safety and Health Act (Official Gazette website)	online	
Civil Obligations Act (Official Gazette website)	online	
Special Customs on Construction (Official Gazette website)	online	

1.10. Supplementary reading

1. FIDIC: Conditions of Contract for Construction, FIDIC, Geneva, 1999.
2. FIDIC: Conditions of Contract for Plant and Design-Build, FIDIC, Geneva, 1999.
3. FIDIC: Conditions of Contract for EPC/Turnkey Projects, FIDIC, Geneva, 1999.
4. Rajčić, D., Nikšić, S.: Introduction to Construction Law, Croatian University Publishing and Zagora-Zagorje, Zagreb, 2008.
5. Vukmir, B.: Contracts on Construction and Services of Consulting Engineers, RRIF-Plus, Zagreb, 2009.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Nevenka Ožanić, Ph.D.	
Course	**Hydrology**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**30+15+0**

1. COURSE DESCRIPTION

1.1. Course objectives

To ensure that within the course students master the basic knowledge and notions of hydrological processes and laws. To provide students with a basic insight into the application of statistical methods, as well as the application of probability theory in hydrology. To train students for the independent implementation of elementary hydrological calculations in hydraulic engineering.

1.2. Course enrolment requirements

Constructive Geometry – passed
Probability and Statistics – *enrolled*

1.3. Expected course learning outcomes

1. Analyze the components of runoff and water balance in the catchment area
2. Analyze the spatial and temporal distribution of precipitation in the basin
3. Analyze data on precipitation and runoff processes in the catchment using methods for determining direct runoff
4. Apply mathematical-statistical methods to solve problems
5. Identify the impact of climate change on water resources and water balance

1.4. Course content

1. History and definition of hydrology
2. Distribution and circular movement of water
3. Hydrometry (measurements of hydrological parameters, measuring instruments and devices, evaluation of measurement errors)
4. Meteorological and hydrological parameters (precipitation, temperature, evaporation, humidity, water levels, flows, suspended and drawn sediment, water temperature, etc.)
5. Definition of flow curves, duration curve and frequency of observed parameters
6. Basics of application of mathematical-statistical methods and probability theory in hydrology (numerical characteristics of random variables, empirical and theoretical functions of probability distribution, testing of statistical hypotheses, correlation and regression in hydrology)
7. River basin and river hydrography, connection of precipitation and runoff, hydrological balance
8. Small and medium-sized waters – principles and methods of calculation
9. Runoff hydrogram analysis
10. Basics of parametric calculations of large waters (empirical methods, rational method, HTP and ITP curves)
11. Unit and synthetic hydrograms
12. Identify the impacts of climate change on water resources and the water balance across the entire course content

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☐ multimedia and internet ☒ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%
Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes: attendance, program, periodic testing of knowledge and final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
The total proportion of points available is 70% during classes and 30% in the final examination.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Žugaj, R.: Hydrology, RGN faculty, Zagreb, 2002.	18	80
Bonacci, O.: Meteorological and Hydrological Substrates, Manual for Hydrotechnical Reclamation, Society for Drainage and Irrigation of Croatia, Zagreb, 1984.	4	
Pauše, Ž.: Introduction to Mathematical Statistics, Školska knjiga Zagreb, 1993.	4	

1.10. Supplementary reading

1. Bonacci, O.: Precipitation – the main input quantity in the hydrological cycle, Geing, Split, 1994.
2. Chow, Ven Te, etc.(1988): Applied Hydrology, McGraw-Hill Publishing Co.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Nevenka Ožanić; Asst. Prof. Elvis Žic, Ph.D.	
Course	**Hydromechanics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Ensure that students master the basic elements of engineering analysis, reasoning and solving fundamental hydromechanical problems (hydrostatics, hydro kinematics, hydrodynamics of liquid flow in pressurised systems and open channels).
Enable students to independently solve elementary hydromechanics problems.

1.2. Course enrolment requirements

Fundamentals of Dynamics – *enrolled*

1.3. Expected course learning outcomes

1. Calculate tasks in hydrostatics
2. Calculate tasks in hydro kinematics and hydrodynamics
3. Calculate tasks from pressurized piping systems
4. Calculate Open Channel Hydraulics Tasks
5. Calculate tasks in the field of groundwater hydraulics

1.4. Course content

Basic concepts of fluids. Fields of physical quantities. Physical properties of fluids. Rheological diagram. Forces acting on fluids.
Fluid statics. Equilibrium equation for fluids. Relative equilibrium. Buoyancy and stability of floating bodies.
Fluid kinematics. Motion of a fluid particle. Steady flow. Conservation laws for fields and mass.
Fluid dynamics. Momentum conservation equation. General flow law for real fluids. Kinetic energy conservation equation. Bernoulli's equation for ideal and real fluids. Laminar and turbulent flow. Boundary layer. Flow resistance and calculation of local and distributed losses.
Potential flow. Equations of potential flow. Boundary conditions. Sources and sinks.
Open-channel hydraulics. Prismatic channels. Uniform and non-uniform channel flow. Flow over practical-profile weirs of curved and polygonal outlines. Flow under gates. Hydraulic jump. Design of stilling basins.
Groundwater flow. Application of Darcy's law of seepage. Unconfined wells. Confined wells. Groups of wells near an impervious boundary and a watercourse. Superposition principle. Partially penetrating confined and unconfined wells.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☒ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%
Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes: attendance, program, periodic testing of knowledge and final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
The total proportion of points available is 70% during classes and 30% in the final examination.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Jović, V.: Basics of Hydromechanics, Element d.o.o., 2006.	7	80
Fancev, M.: Fluid Mechanics, Technical Encyclopedia, Volume 8, Zagreb, 1982.	1	
Agroskin, I.: Hydraulics, Tehnička knjiga, Zagreb, 1973.	3	
Chow, V. T.: Open Channel Hydraulics, McGraw-Hill Kogakusha, 1959.	3	

1.10. Supplementary reading

1. Gjetvaj, G.: Experimental Hydraulics (internal script), 2003.
2. Kobus, H: Hydraulic Modelling, German Association for Water Resources and Land Improvement, Verlag PaulParcy, Hamburg, 1980 23

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Anamarija Perušić-Pribanić; Asst. Prof. Franjo Šarčević, Ph.D.	
Course	**Engineering Informatics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**5+45+0**

1. COURSE DESCRIPTION
1.1. Course objectives
Provide a systematic overview of selected fundamental areas of information technology and computing; students acquire the ability to use computers and computer networks independently to solve engineering problems. Introduce students to the purpose and capabilities of various software applications used in engineering so that they can select appropriate tools for problem-solving, analysis and presentation of results. Provide students with a basic introduction to CAD tools for preparing technical drawings and their application in engineering practice.
1.2. Course enrolment requirements
-
1.3. Expected course learning outcomes
1. Work in a Windows operating system environment (work with files, folders, and applications) 2. To devise the concept of solving a practical task in computer tools for engineering computing 3. Solve a practical task using an appropriate computer program applying the principle of computational automation (solution to a general problem) 4. Select, produce and interpret graphical representations of data according to the type of data and purpose of the presentation, and recognise inappropriate uses of graphical representations. 5. Know the basic principles and possibilities of exchanging files and data between different computer programs (data import and export) 6. Apply cloud work and online collaboration through teamwork 7. Apply CAD tools to independently prepare and edit drawings.
1.4. Course content
Engineering software packages (fundamentals of mathematical computations) Computer applications in civil engineering: current state and trends Practical computer work. Work in CAD software for technical drawing and design: interface, drawing commands, editing, drawing organisation and dimensioning.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70%
Satisfaction of activities that evaluate the acquisition of learning outcomes: class activity, colloquium, program,

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper	~~X~~	Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	~~X~~	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The proportion of points that can be earned is 60% during classes and 40% in the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Microsoft Excel 2019	*online*	100

1.10. Supplementary reading

1. Bill Jelen & Tracy Syrstad: Microsoft Excel 2019 VBA and Macros, Microsoft, 2019.
2. Cole N. Knaflic; let's practice Storytelling with Dana, Wiley, 2020.
3. John V. Guttag: Introduction to Computation and Programming Using Python, MIT Press, 2013.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Silvija Mrakovčić, Ph.D.	
Course	**Engineering Materials**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**25+20+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to the properties, production methods, testing methods, regulations for quality control and technology of basic materials used in construction.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

- Relate internal structure to the properties of the main classes of construction materials: ceramics, polymers, metals and composites.
- Describe the manufacturing technology of various construction materials.
- Calculate the physical and mechanical properties of construction materials.
- Test material properties, interpret the results and compare test outcomes.
- Assess the advantages and disadvantages of using different construction materials under specific conditions and select the most appropriate material for a particular application based on its properties.

1.4. Course content

Structure and properties of materials.
Physical properties of materials.
Inorganic binders.
Mortars and grouting mixtures
Stone, aggregates and testing of aggregate properties.
Concrete.
Asphalt mixtures.
Metals.
Timber.
Clay-based construction products.
Glass.
Applications of materials in construction.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☐ multimedia and internet ☒ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%

Satisfaction of activities that evaluate the acquisition of learning outcomes: activities in class, colloquium and final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance		Class participation	X	Seminar paper		Experimental work	X
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	X
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Ukrainczyk V: Knowledge of Material, Institute of Civil Engineering of Croatia, Alcor, Zagreb, 2001.	8	130
Ukrainczyk V: Concrete – Structure, Properties, Technology, Alcor, Zagreb, 1994.	10	
Young, J. F.; Mindess, S.; Gray, R. J.; Bentur, A.: The Science and Technology of Civil Engineering Materials, Prentice Hall, 1998	2	
Bjegović D., Balabanić G., Mikulić D.: Building Materials – A Collection of Solved Problems, Zagreb, 2007.	22	

1.10. Supplementary reading

1. Mehta P., Povindar K. Mehta, Paulo J. M. Monteiro: Microstructure, Properties, and Materials, McGraw-Hill Education, 2006
2. Ashby M F, Jones D R: Engineering Materials 1, An Introduction to properties, application and Design. Butterworth Heinemann 2012.
3. William D. Callister and David G. Rethwisch 2018, Materials Science and Engineering: An Introduction, 10th, John Wiley & Sons, New York USA

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Maura Jurić, Senior Lecturer	
Course	**Constructive Geometry**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**25+35+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Develop the ability of spatial perception and constructively solve tasks with objects in space. Be able to display objects in projections. Encourage a creative approach and critical thinking. Be able to interpret, "read" objects from projections. Develop graphic communication and teamwork.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

After passing the course exam, students will be able to:

1. Apply the rules of technical drawing: types and thicknesses of lines, designations of elements, drawing scales, dimensioning. Solve metric and positional problems on the relations of point, line and plane in space.
2. Represent objects in projection planes and visualise three-dimensional objects from their projections.
3. Represent polyhedral and rotational solids in projections and model them in 3D space; develop spatial visualisation skills.
4. Apply conic-section constructions when intersecting geometric solids with planes, both manually and in CAD. Distinguish different types of intersections and construct them manually and as 3D models. Solve simple intersections of coaxial geometric solids and model them using CAD.
5. Define the relations of point, line and plane in a dimensioned projection. Apply drawing scales. Explain the situation of earthworks of a simple object, construct an embankment and a notch in a dimensioned projection and show the transverse profile of the terrain and the object, graphically and in the CAD model.

1.4. Course content

Rules of technical drawing. Types of projection. Monge's projection. Auxiliary projections. Perpendicularity in space.
Intersection of planes and piercing point. Affinity and ellipse. Rotation.
Projection of planar figures and circles. Projection of polyhedral and solids of revolution.
Axonometric methods.
Collineation and conics. Plane sections of polyhedral and rotational solids.
Points of intersection between lines and geometric solids. Tangent plane.
Intersections of coaxial polyhedral and rotational solids – CAD models.
Dimensioned projection. Topographic surfaces.
Application of dimensioned projection (roads).

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%
Passing the point threshold in each of the two programs and in the final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment and grading are conducted during classes and at the final examination. A total of 70% of the points can be earned during classes and 30% at the final examination. Details of the methods used to monitor and assess student work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Babić; Gorjanc; Sliepčević; Szirovicza: Constructive Geometry, IGH, Zagreb, 2000.	5	100
Niče, dr. Vilko: Descriptive Geometry I, Školska knjiga, Zagreb, 1992.	3	
Niče, dr. Vilko: Descriptive Geometry II, Školska knjiga, Zagreb, 1992.	5	

1.10. Supplementary reading

1. Jurić; Pletenac: Problem Collection for Fundamentals of Orthogonal Projection, course notes, 2024.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Anamarija Perušić Pribanić, Ph.D.	
Course	**Mathematics 1**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**9.0**
	Number of hours (L+E+S)	**45+45+0**

1. COURSE DESCRIPTION

1.1. Course objectives

By becoming familiar with computational methods and their theoretical foundations, students will be able to:
- vector and matrix calculus, including solving systems of linear equations,
- differential calculus for functions of one variable.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

After passing the course exam, students will be able to:
1. perform computational operations with vectors such as scalar, vector and mixed multiplication,
2. analyze the mutual relations of points, lines and planes in space,
3. perform basic computational operations with matrices and determine the rank, determinant and inverse of the matrix,
4. solve the system of linear equations,
5. determine the eigenvalues and eigenvectors of the matrix,
6. analyze the basic properties of polynomials, rational, exponential, logarithmic, trigonometric, arcus, hyperbolic and area functions,
7. apply the procedures of calculating limits and derivatives,
8. apply limits and derivatives when analyzing the flow of a function or a parametrically given curve, as well as when solving geometric and physical problems.

1.4. Course content

Vectors. Analytical geometry in three-dimensional space. Matrices, systems of linear equations, eigenvalues. Real functions of one real variable: introduction. Continuity, limits, derivatives and applications.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70% of classes. Passing the point threshold on each of the three examinations: the first colloquium, the second colloquium and the final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. During classes, it is possible to earn a maximum of 70 points. A maximum of 30 points can be earned on the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Elezović, N.: Linear Algebra, 3rd edition, Element, Zagreb, 2003.	21	100
Javor, P.: Mathematical Analysis 1, 2nd edition, Element, Zagreb, 2003.	5	

1.10. Supplementary reading

1. Elezović, N.; Aglić, A.: Linear Algebra - zbir zadataka, 3. izdanje, Element, Zagreb, 2003.
2. Došlić, T.; Sandrić, N.: Mathematics 1, script, Faculty of Civil Engineering, University of Zagreb, 2007.
3. Štambuk, Lj.: Mathematics 1, Faculty of Engineering, University of Rijeka, Rijeka, 2002.
4. Anton, H.: Calculus - A New Horizon, 6th edition, John Wiley and Sons, Inc., New York, 1999.
5. Demidovič, B.P. et al.: Tasks and solved examples from mathematical analysis for technical faculties, Golden marketing - Tehnička knjiga, Zagreb, 2003.
6. Bronštejn, I.N. et al.: Matematički priruč, Golden marketing - Tehnička knjiga, Zagreb, 2004.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Rozarija Mikić, Ph.D.	
Course	**Mathematics 2**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**8.0**
	Number of hours (L+E+S)	**45+45+0**

1. COURSE DESCRIPTION

1.1. Course objectives

By becoming familiar with computational methods and their theoretical foundations, students will be able to:
- integral calculus for functions of one variable,
- finding and applying Taylor polynomials,
- solving ordinary differential equations,
- differential and integral calculus for functions of several variables,
- evaluating line and surface integrals.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

After passing the course exam, students will be able to:
1. apply the procedures for calculating single integrals,
2. Approximate functions with Taylor polynomials and Taylor series.
3. solve some (more important) types of first- and second-order differential equations with initial conditions, especially the first-order linear differential equation and the second-order linear differential equation with constant coefficients,
4. Analyze the function of two or three variables using partial derivatives.
5. apply single, double and triple integrals to geometric and physical problems,
6. Define and explain the basic concepts of vector analysis.
7. apply curved and planar integrals to physical problems.

1.4. Course content

Integral calculus; indefinite and definite integrals; applications of integrals. Taylor series. Ordinary differential equations. Functions of several variables: introduction. Partial derivatives. Extrema of multivariable functions. Double and triple integrals.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70% of classes. Passing the point threshold on each of the three examinations: the first colloquium, the second colloquium and the final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. During classes, it is possible to earn a maximum of 70 points. A maximum of 30 points can be earned on the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Javor, P.: Mathematical Analysis 1, 2nd edition, Element, Zagreb, 2003.	5	100
Javor, P.: Mathematical Analysis 2, 2nd edition, Element, Zagreb, 2002.	2	

1.10. Supplementary reading

1. Elezović, N.: Differential Equations, 4th edition, Element, Zagreb, 2014.
2. Brnetić, I.; Županović, V.: Multiple Integrals, 1st edition, Element, Zagreb, 2019.
3. Burić, T.; Korkut, L.; Krnić, M.; Milišić, J. P.; Pašić, M.; Velčić, I.: Vector Analysis, 4th edition, Element, Zagreb, 2014.
4. Demidovič, B.P. et al.: Tasks and solved examples from mathematical analysis for technical faculties, Golden marketing - Tehnička knjiga, Zagreb, 2003.
5. Bronštejn, I.N. et al.: Matematički priruč, Golden marketing - Tehnička knjiga, Zagreb, 2004.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Leo Škec, Ph.D.	
Course	**Solid Body Mechanics 1**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**6.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Understand the physical significance of stresses and deformations and their role in simple equilibrium states of a deformable body. To be able to solve problems of material mechanics and deformable structures in which uniaxial or simple stress states occur. Acquire the necessary prior knowledge for the courses Introduction to the Design of Civil Engineering Structures, Mechanics of Solid Bodies 2, Fundamentals of Steel Structures.

1.2. Course enrolment requirements

Mathematics 1 – passed
Mathematics 2 – passed
Fundamentals of Statics – passed

1.3. Expected course learning outcomes

1. Determine displacements, deformations and stresses in linear-elastic behavior of materials
2. Analyze structural elements exposed to simple stress and strain conditions.
3. Size a given girder for basic load cases using the criteria of strength, stiffness, and stability.
4. Identify static uncertainty and solve simple statically indeterminate systems.
5. Identify the problem of loss of stability (buckling) of flat rods.
6. Calculate simpler statically determined and statically indefinite structures according to the theory of plasticity.

1.4. Course content

Uniaxial stress, strain and their relationship. Linear elasticity.
Equations for deformable bodies: equilibrium, kinematic and constitutive equations. Bar problems.
Bernoulli beam theory for plane deformation. Normal stresses in pure bending and bending with transverse shear forces.
Geometric properties of cross-sections.
Unsymmetrical bending.
Bending combined with axial force. Kern of a cross-section.
Analytical determination of displacements in beam structures.
Pure shear. Design of welds, bolts and rivets.
Pure torsion. Statically indeterminate torsion problems.
Stability of equilibrium states. Buckling. Design according to stability criteria.
Introduction to material nonlinearity. Fundamentals of plasticity theory. Elastoplastic bending.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☒ multimedia and internet ☒ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70% and completed activities that evaluate the acquisition of learning outcomes (colloquiums).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Šimić, V. Resistance of Materials 1, Školska knjiga, Zagreb, 1992.	13	80
Šimić, V. Resistance of Materials 2, Školska knjiga, Zagreb, 2002.	7	
Brnić, J., Turkalj, G. Strength Science 1, Faculty of Engineering, University of Rijeka, 2004.	15	
Brnić, J., Turkalj, G. Strength Science 2, Faculty of Engineering, University of Rijeka, 2006.	14	

1.10. Supplementary reading

1. Alfirević, I. The Science of Strength I, Technical Book, Zagreb, 1995
2. Bazjanac, D. The Science of Strength, Technical Book, Zagreb, 1973
3. Rašković, D. Resistance of materials, Construction Book, Belgrade, 1985
4. Tymoshenko, S. Resistance of materials 1 and 2, Construction Book, Belgrade, 1972, 1966
5. Brčić, V. Resistance of Materials, Construction Book, Belgrade, 1982

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Sara Grbčić Erdelj, Ph.D.	
Course	**Solid Body Mechanics 2**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Understand the tensor nature of stress and strain and the behaviour of linear-elastic materials under multiaxial stress and strain states.
Develop the ability to solve problems of mechanics of materials and deformable structures subjected to multiaxial stress and strain states.
Acquire the necessary prior knowledge for the Fundamentals of Concrete Structures course.

1.2. Course enrolment requirements

Solid Body Mechanics 1 – *enrolled*

1.3. Expected course learning outcomes

1. Perform differential equilibrium and kinematic equations in stress and strain analysis and corresponding transformation equations.
2. Determine the stress and strain tensor components of linear-elastic material behavior.
3. Calculate complex stress and strain states in structures.
4. To size a given beam for complex stress conditions using the criterion of strength and stiffness.
5. Explain the key energy principles of the mechanics of deformable bodies.

1.4. Course content

1. Introduction to the multiaxial stress state. Stress vector.
2. Strain tensor. Equilibrium equations.
3. The main stresses. Mohr's circle of stress.
4. Tensor deformation. kinematic equations.
5. Constitutional Equations. A linearly elastic material.
6. Tangential stresses in the cross-sections of beams. Coupled brackets.
7. Complex stress condition in beams due to general longitudinal and transverse loads.
8. Tymoshenko's theory of planar deformation of beams.
9. St. Venant's torsion. Torsion of non-round full sections.
10. Torsion of thin-walled sections. The center of torsion.
11. Potential energy of deformation. Reciprocity of work and displacement.
12. Castigliano's theorems. Unit load method.
13. Critical multiaxial stress condition. Theories of maximum uniaxial stresses and deformations.
14. Flow criteria. The theory of maximum tangential stresses. Energy theories of strength.
15. Design according to strength theories.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70% and satisfaction of activities that evaluate the acquisition of learning outcomes (colloquium).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Šimić, V. Resistance of Materials 1, Školska knjiga, Zagreb, 1992.	13	80
Šimić, V. Resistance of Materials 2, Školska knjiga, Zagreb, 2002.	7	
Brnić, J., Turkalj, G. Strength Science 1, Faculty of Engineering, University of Rijeka, 2004.	15	
Brnić, J., Turkalj, G. Strength Science 2, Faculty of Engineering, University of Rijeka, 2006.	14	

1.10. Supplementary reading

1. Alfirević, I. The Science of Strength I, Technical Book, Zagreb, 1995
2. Bazjanac, D. The Science of Strength, Technical Book, Zagreb, 1973
3. Rašković, D. Resistance of materials, Construction Book, Belgrade, 1985
4. Tymoshenko, S. Resistance of materials 1 and 2, Construction Book, Belgrade, 1972, 1966
5. Brčić, V. Resistance of Materials, Construction Book, Belgrade, 1982
6. Srpčič, S. Mechanics of solid bodies, University of Ljubljana, Faculty of Civil Engineering and Geodesy, Ljubljana, 2003
7. Beer, F.P.; Johnston, E.R.: Mechanics of materials, McGraw-Hill, London, 1992
8. Benham, P. P.; Crawford, R. J.: Mechanics of Engineering Materials, Longman, Harlow, 1988.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Josip Peranić, Ph.D.	
Course	**Soil and Rock Mechanics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**45+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Preparing students for a basic understanding of soil and rock behavior. It enables students to identify and classify soils and rocks and provides insight into strength and deformability features as well as other features of soil and rock mass behavior. It prepares students for the course Fundamentals of Geotechnical Engineering and other applied subjects.

1.2. Course enrolment requirements

Geology – passed
Solid Body Mechanics 1 – *enrolled*

1.3. Expected course learning outcomes

1. Classify and recognize soil and rock types in the field
2. List and describe the basic types of research and testing of soil and rock mass in the field and in the laboratory using appropriate standards
3. Describe, select and interpret the laws of strength and deformability of soil and rock mass
4. Recognize and apply the principles of stress transfer in soil and rock mass
5. Describe the processes of water flow and consolidation in the soil.
6. Analyze and calculate soil stresses and associated deformations in soil and rock mass due to the action of geotechnical structures
7. Solve tasks in the field of determination of physico-mechanical characteristics of soil, water flow in the soil and consolidation, stress on the soil and rock mass, and horizontal stresses in the soil

1.4. Course content

1. Physical and mechanical properties of soil and rocks
2. Classifications and Identifications of Soils and Rocks
3. Laboratory and field tests of soil and rocks
4. Water in the soil and rock mass
5. Soil strength, rock and rock mass
6. Stresses in the soil and rock mass
7. Breakdown in soil and rock mass
8. Deformability of soil, rock and rock mass
9. Soil consolidation
10. Earth pressure and soil resistance

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☒ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attending lectures and exercises. Preparation of seminars.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination	X	Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Attending lectures and exercises. Preparation for exercises and independent solving of tasks in exercises, with consultations and support from teachers.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Nonveiller, E.: Soil Mechanics and Building Foundations, Školska knjiga, Zagreb, p.780, 1979.	6	80

1.10. Supplementary reading

1. Verruijt, A.: Soil Mechanics, Delft University of Technology, 2001.
2. Powrie, W.: Soil Mechanics: Concepts and Applications, Spon Press, 2002.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Martina Šopić, Ph.D.	
Course	**Construction Organisation**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION
1.1. Course objectives
Acquiring organizational knowledge and skills necessary for organizing the preparation and planning of construction, as well as the management and management of construction.
1.2. Course enrolment requirements
Construction Machinery – passed
1.3. Expected course learning outcomes
1. Interpret the basic concepts of construction organization. 2. Elaborate in writing and orally the organizational problem of construction using appropriate terminology. 3. Solve a task from the organization of construction in the preparation of construction (e.g. planning the time required for construction 4. Solve a task from the organization of construction in the construction process (e.g. updating the construction time plan). 5. Acquire IT knowledge necessary to solve organizational problems (e.g. creating dynamic plans). 6. Develop a construction organization project for a medium-complex building (civil engineering or building construction).
1.4. Course content
1. Introduction to the organization of construction 2. System and project, basics of construction project management 3. Development of a construction organization project (POG) 4. Organization of construction processes 5. Organization of the construction site 6. Construction planning 7. Organization of participants in the construction process 8. Occupational health and safety

1.5. Types of teaching (tick as appropriate)		
	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at lectures and exercises according to the applicable Regulations.
Preparation of coursework.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The total proportion of points that can be earned is 70% during classes and 30% in the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Radujković, M. et al., Organization of Construction, Textbooks of the University of Zagreb, Zagreb, 2015.	10	75
Radujković, M. et al., Project Planning and Control, University of Zagreb, Zagreb, 2012.	12	
Bučar, G., Normatives of Construction Works-Handbook for Construction Entrepreneurship, ICG, Omišalj, Rijeka, 1999.	13	

1.10. Supplementary reading

1. Bučar G., Carpentry, Reinforcement and Concrete Works on the Construction Site, Faculty of Civil Engineering J.J. Strossmayer, Osijek, 1997.
2. Trbojević, B., Construction Machinery, Belgrade, 1985.
3. Trbojević, B., Organization of Construction Works, Scientific Book, Belgrade, 1992.
4. Linarić, Z., Lexicon of Machines and Equipment for the Production of Building Materials, Business Media Croatia, Zagreb, 2007.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Davor Grandić, Ph.D.	
Course	**Fundamentals of Concrete Structures**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**6.0**
	Number of hours (L+E+S)	**45+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Students will acquire basic knowledge about the properties of materials, the rules of execution and structural design, as well as the calculation and dimensioning of concrete structures, and thus be able to independently design simpler concrete structures, be associates in the design of more complex structures and participate in the execution of concrete structures of buildings. The acquired knowledge is also the basis for future professional and scientific training in the field of concrete structures and load-bearing structures in general.

1.2. Course enrolment requirements

Introduction to the Design of Civil Engineering Structures – passed
Solid Body Mechanics 1 – passed
Solid Body Mechanics 2 – passed
Statics of Linear Structures 2 – *enrolled*

1.3. Expected course learning outcomes

1. Define the properties of concrete and steel for reinforcement and explain the conditions of joint action of concrete and reinforcement.
2. To size reinforced concrete rectangular and T-section for bending and rectangular reinforced concrete sections for centric and eccentric pressure and train.
3. Size reinforced concrete elements to transverse forces and torsion.
4. Calculate the reinforced concrete slab to the puncture.
5. Determine the second-order effects in slender compressive elements by the nominal curvature method.
6. Define the calculation and construction principles of basic reinforced concrete elements and explain the basic structural principles of buildings.
7. Define the basic concepts of prestressed concrete.

1.4. Course content

General about concrete structures. Properties of concrete and steel for reinforcement. Conditions of joint action of concrete and reinforcement. Adhesion, anchoring and rebar continuation. Reinforcement design. Budget properties of the material. The smallest and largest cross-sectional area of the tensile reinforcement. Dimensioning of rectangular and T-section on bending. Short elements stressed by centric and eccentric pressure. Stress by centric and eccentric tensile force. Local compressive stresses. Elements stressed by transverse forces. Torsion-stressed elements. Calculation of the plates on the breakthrough. Second-order effects in slender compressive elements according to the nominal curvature method. Usability limit states: limitation of cracking without direct calculation and cases where deflection calculation can be omitted. Calculation and construction principles of basic structural elements: beams, slabs, columns, walls, short brackets and wall mounts. Ceiling structures. Frame structures. Basic principles of reinforced concrete structures of buildings. Basic concepts of prestressed concrete.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes (development and defense of a program task, passing colloquia and final exam).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination	X	Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio		Assignment	X				

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes (60%) and at the final exam (40%). Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Sorić, Z.; Kišiček T.: Concrete Structures 1, Faculty of Civil Engineering, Zagreb, Zagreb, 2014.	10	75
Sorić, Z.; Kišiček T.: Concrete Structures 2, Faculty of Civil Engineering, Zagreb, Zagreb, 2018.	10	
Tomičić, I.: Concrete Structures, DHGK, Zagreb, 1996.	13	

1.10. Supplementary reading

1. Tomičić, I.: Manual for the Calculation of Reinforced Concrete Structures, DHGK, Zagreb, 1993.
2. Zilch, K.; Zehetmaier, G.: Design in constructive concrete construction according to DIN 1045-1 (version 2008) and EN 1992-1-1 (Eurocode 2), Springer-Verlag, Berlin Heidelberg, 2006, 2010.
3. Mosley, B.; Bungey, J.; Hulse, R.: Reinforced Concrete Design to Eurocode 2, Palgrave Macmillan, Hampshire – New York, 2007.
4. Martin, L.A.; Purkiss, J.A.: Concrete Design to EN 1992, Butterworth-Heinemann, Oxford - London, 2006.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Paulina Krolo, Ph.D.	
Course	**Fundamentals of Steel Structures**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Ensure that students acquire the theoretical and practical knowledge enabling them to:
- design simple steel structures (simple buildings and hall structures)
- design basic standard bolted and welded connections

Acquire prerequisite knowledge for steel and composite structures.

1.2. Course enrolment requirements

Introduction to the Design of Civil Engineering Structures – passed
Solid Body Mechanics 1 – passed
Solid Body Mechanics 2 – passed
Statics of Linear Structures 2 – *enrolled*

1.3. Expected course learning outcomes

1. To connect knowledge about the behavior of steel and its influence on the resistance of structural elements
2. To make a draft of a layout solution of a simple construction (e.g. an industrial hall without a crane track)
3. Recognize the structural systems of halls, describe parts of the hall, explain and apply the hall stabilization system
4. Calculate the effects of action at the level of structural elements of statically determined systems
5. Calculate the resistance of simple structural elements for the ultimate limit state and the serviceability limit state
6. Calculate typical bolted and welded joints
7. Prepare a drawing of a standard connection

1.4. Course content

- Basic concepts and manufacture of steel. Mechanical properties of steel. Types and grades of structural steel.
- Fundamentals of structural reliability.
- Actions on structures. Representative values of actions. Partial safety factors. Combinations of actions.
- Cross-section rotation capacity. Cross-section classes. Effective cross-section reduction.
- Cross-sectional resistance (axial force, bending, shear). Interaction between axial force, bending and shear.
- Member resistance (resistance of members under tension and compression, resistance of members subjected to bending).
- Frame systems. Frame components. Classification of frames (braced and unbraced systems). Sway and non-sway frames.
- Structural detailing
- Connections and joints: types of fasteners and connection design. Welding technologies. Quality control of welded joints.
- Design and construction of industrial halls: hall components; hall types and grids; bracing and cladding.

- Corrosion protection and fire protection

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes: preparation and submission of a program assignment, passing one colloquium, passing the final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio		Course assignment	X				

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Androić B.; Dujmović D.: Steel Structures - Part 1., Fair, Zagreb, 2021	21	75
Androić B.; Dujmović D.: Steel Structures - Part 1., Fair, Zagreb, 2021	18	

1.10. Supplementary reading

1. Dujmović, D.; Androić, B.; Džeba, I.: Modeling of Metal Structures according to EUROCODE 3, IA Projektiranje, Zagreb, 2004.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Nina Čeh, Ph.D.	
Course	**Fundamentals of Dynamics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Understand Newton's laws of dynamics through examples of the motion of particles and rigid bodies.
Develop the ability to apply these principles to simple problems of dynamics.
Acquire the prerequisite knowledge for Hydromechanics.
Understand the oscillatory behaviour of simple systems.

1.2. Course enrolment requirements

Mathematics 1 – passed
Mathematics 2 – passed
Fundamentals of Statics – passed

1.3. Expected course learning outcomes

1. Analyze problems involving friction.
2. Explain and mathematically and graphically describe simple and complex motions of a material point.
3. Explain and mathematically and graphically describe simple and complex motions of a rigid body.
4. Determine kinematic and dynamic quantities for complex motion of body systems.
5. Determine kinematic and dynamic quantities using one of the calculation methods for body dynamics.
6. Determine the dynamic quantities and characteristics of simple oscillatory systems.

1.4. Course content

Newton's laws of mechanics. Equations of motion.
Contact forces and friction.
Particle kinematics and the vector nature of position, velocity and acceleration.
Kinematics and dynamics of curvilinear particle motion.
Impulse and linear momentum. Angular momentum.
Work and energy.
Application of the laws of dynamics to rigid bodies. Euler's equations and moments of inertia.
Planar rigid-body motion. Angular momentum about the centre of mass.
Three-dimensional motion of a rigid body.
Oscillations of simple systems.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70% and satisfaction of activities that evaluate the acquisition of learning outcomes (colloquia).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	X
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
M. Krpan, A. Franulović, M. Butković, R. Žigulić, S. Braut, Dynamics – Theory and Application, University of Rijeka, Faculty of Engineering, Rijeka, 2001.	11	80
Čaušević, M.: Technical Mechanics -- Kinematics, Školska knjiga, Zagreb	5	

1.10. Supplementary reading

1. Beer, F.P.; Johnston, E.R., Jr.: Vector Mechanics for Engineers - Dynamics, McGraw-Hill, Singapore, 1990
2. Meriam, J.L; Engineering Mechanics - Vol. 2. Dynamics, Wiley, New York, 1978
3. Pytel, A.; Kiusalaas, J.: Engineering Mechanics ? Dynamics, Harper Collins, New York, 1996
4. Kiričenko, A.: Technical Mechanics -- Part II: Kinematics, Universities of Osijek and Zagreb.
5. Kiričenko, A.: Technical Mechanics -- Part III: Dynamics, University of Zagreb
6. Jecić, S.: Mechanics II -- Kinematics and Dynamics, Tehnička knjiga, Zagreb
7. Andrejev, V; Mechanics – Part 2: Kinematics and Part 3: Dynamics, University of Zagreb

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Martina Vivoda Prodan, Ph.D.	
Course	**Fundamentals of Geotechnical Engineering**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Introducing students to the basics of geotechnical engineering. It provides students with the basics of geotechnical analyses as well as the acquisition of knowledge and skills in the design of basic and other geotechnical structures made on the ground, in the ground and from the ground and represents the basis for successful mastering of other subjects.

1.2. Course enrolment requirements

Soil and Rock Mechanics – passed

1.3. Expected course learning outcomes

1. Describe the behavior, select, analyze and draw basic geotechnical structures: shallow and deep foundation structures, retaining structures, slopes and embankments
2. Describe and analyze the behavior of rock mass in the environment of underground openings during construction and use.
3. Calculate the loads on the foundation structures and the limit values of the bearing capacity of the soil and rock mass
4. Calculate the stability of retaining structures, slopes and embankments
5. Apply appropriate regulations for the design and execution of geotechnical works
6. Describe and select appropriate equipment and design, describe and plan the process of building foundation and other geotechnical structures and underground openings.

1.4. Course content

Shallow foundations.
Deep foundations.
Retaining structures.
Sheet-pile and cofferdam structures.
Slope stability: causes of landslides and calculation methods.
Slope stability: landslide remediation methods.
Earth structures.
Modes of instability of underground openings.
Principles and techniques for stabilising rock masses around underground openings.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☒ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attending lectures and exercises. Creating a program task.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination	X	Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
The total proportion of points available is 70% during classes and 30% in the final examination. Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Nonveiller, E.: Soil Mechanics and Building Foundations, Školska knjiga, Zagreb, p.780, 1979.	6	75

1.10. Supplementary reading

1. Nonveiller, E.: Sliding and stabilization of slopes, Školska knjiga, Zagreb, p.204, 1987.
2. Hoek, E., Bray, J.W.: Rock Slope Engineering, 2nd. Edn., The Institute of Mining and Metallurgy, London, p. 527., 1977.
3. Hoek, E., Brown, E. T.: Underground Excavations in Rock, Institution of Mining and Metallurgy, London, 1980.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Barbara Karleuša, Ph.D.	
Course	**Fundamentals of Hydraulic Engineering**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Ensure that students acquire the fundamentals of engineering analysis, reasoning and solving hydraulic engineering problems concerning river regulation, water supply and drainage systems.
Enable students to independently perform basic tasks relating to river regulation, water supply and wastewater and stormwater drainage.

1.2. Course enrolment requirements

Hydromechanics – passed

1.3. Expected course learning outcomes

1. Identify the principles of the functioning of ecosystems and its components, their vulnerability and the possibility of protection with a focus on water resources.
2. Calculate the basic elements of watercourse regulation and display them graphically.
3. Calculate the relevant input parameters for the dimensioning of water supply and drainage systems, carry out the dimensioning and graphically display the solution.
4. Explain the basic methods of drinking water conditioning and wastewater treatment.
5. Explain the types, elements and functioning of reservoirs, dams and hydromelioration systems.
6. Identify the basic impact of climate change on hydraulic structures and systems.

1.4. Course content

1. Ecosystem, water resources and systems (basic concepts, distribution of waters in the hydrosphere, water quality, water management systems and environment, structural and non-structural measures in water management)
2. Watercourse regulation (morphology of the riverbed, floods, sedimentation, longitudinal and transverse structures in the riverbed, basics of design, construction and maintenance of facilities)
3. Water supply systems (water needs, water conditioning, elements of water supply systems, basics of design, construction and maintenance of water supply systems)
4. Wastewater and rainwater drainage systems (relevant quantities, elements of the drainage system, wastewater treatment, recipient characteristics and protection of water from pollution, basics of design, construction and maintenance of drainage systems)
5. Dams and reservoirs (types, functions, parts)
6. Hydro-amelioration systems (irrigation and drainage of agricultural land)
7. Overview of the impacts of climate change on hydraulic engineering structures and systems

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes: attendance, program, periodic testing of knowledge and final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
The total proportion of points available is 70% during classes and 30% in the final examination.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Gulić,I. (2000): Water Supply, HSGI, Zagreb.	20	75
Margeta, J. (2009): Sewerage of settlements: drainage and disposal of wastewater and rainwater, Faculty of Civil Engineering and Architecture in Split, Split.	10	
Vuković, Ž. (1994): Basics of Hydraulic Engineering, Aquamarine, Zagreb.	14	

1.10. Supplementary reading

1. Tedeschi, S. (1996): Water Protection, Croatian Society of Civil Engineers
2. Svetličić, E. (1987): Open Watercourses – Regulations, GF Zagreb.
3. Chin A.D.: 2000, Water – Resources Enginnering, Prentice Hall, New Jersey.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Aleksandra Deluka-Tibljaš; Assoc. Prof. Sanja Šurdonja, Ph.D.	
Course	**Fundamentals of Road Design 1**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is for students to master the basics of calculating horizontal and vertical elements of roads and to know how to apply the basic elements of intersections at level.

1.2. Course enrolment requirements

Geodesy – passed

1.3. Expected course learning outcomes

1. Define, recognize and sketch the basic elements of the road, Describe the development of road construction throughout history and list the most important historical roads in the wider region.
2. Calculate the horizontal geometric elements of roads.
3. Calculate the vertical geometric elements of roads.
4. Describe the basic elements of different categories of urban roads.
5. Select appropriate geometric elements of the intersection in level (in simple traffic and spatial conditions).
6. To make a preliminary design of an open section of the road outside the settlement.- to set the horizontal and vertical course of the road route outside the settlement and to form three-way intersections at the level of the connections.

1.4. Course content

History of road construction and road classification in Croatia and the EU
Basic concepts of road traffic and roads, traffic loading, cross-sectional elements.
Fundamental theories and characteristics of vehicle motion.
Horizontal road alignment and its plan elements.
Vertical road alignment.
Fundamentals of urban road design – categories and geometric elements.
Fundamentals of at-grade intersection design – types and geometric elements.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Periodic examination of knowledge, creation of a program assignment, attendance and active participation in classes.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Dragčević, V., Korlaet, Ž.: Road Design and Construction, University of Zagreb Faculty of Civil Engineering, Zagreb, 2018.	3	80
Legac, Ivan: Intersections of Public Roads, University of Zagreb, Faculty of Transport and Traffic Engineering, Zagreb, 2008.	3	
Legac, Ivan: City Roads, University of Zagreb, Faculty of Transport and Traffic Engineering, Zagreb, 2011.	20	
Ordinance on the basic conditions that public roads outside settlements and their elements must meet from the point of view of traffic safety, Official Gazette No. 110/01.	online	

1.10. Supplementary reading

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Marijana Cuculić, Ph.D.	
Course	**Fundamentals of Road Design 2**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**20+25+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to train students for the development of road projects in the form of optimization of earthworks and works on the lower structure of the road.

1.2. Course enrolment requirements

Fundamentals of Road Design 1 – passed

1.3. Expected course learning outcomes

1. Distinguish the method of road construction with regard to the base on which it is built
2. Elaborate the cross-sections of the out-of-town road with drainage elements
3. Calculate earthmoving volumes
4. Explain the basic influences and distinguish the application of different types of pavement materials
5. Dimensioning a flexible pavement structure using the empirical method

1.4. Course content

1. Lower structure of roads
2. Material classification and material quality rating
3. Methods for the manufacture of elements of the lower structure of the road
4. Basics of Dimensioning of Flexible Pavement Structures by Empirical Methods
5. Pavement Construction Materials
6. Fundamentals of drainage design for rural roads

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Periodic examinations of knowledge, development of the program task of the road project outside the settlement, attendance and active participation in classes.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Dragčević, V., Korlaet, Ž.: Road Design and Construction, University of Zagreb Faculty of Civil Engineering, Zagreb, 2018.	3	75
Ordinance on the basic conditions that public roads outside settlements and their elements must meet from the point of view of traffic safety, Official Gazette	online	
General technical conditions for road works	23	
Babić, B.: Design of pavement structures, Zagreb 1997.	7	

1.10. Supplementary reading

1. Lukić, D.Č.; Anagnosti, P.V.: Geotechnics of Roads, Belgrade 2010.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Edita Papa Dukić, Ph.D.	
Course	**Fundamentals of Statics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**6.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Understand the laws of statics for rigid bodies subjected to concurrent and general force systems in two and three dimensions.
Apply these laws to determine reactions and internal forces in simple linear structures. Acquire the necessary background for Fundamentals of Dynamics and Solid Body Mechanics 1.

1.2. Course enrolment requirements

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1.3. Expected course learning outcomes

1. Explain the basic theorems and axioms in statics and the concept of force and momentum.
2. Determine the reactions and intersectional forces of simple structural systems and draw diagrams of internal forces.
3. Analyze geometric invariability and static definiteness or uncertainty of line structures.

1.4. Course content

Fundamental concepts of mechanics. Vectors and vector spaces.
Concurrent force systems in the plane and in space.
Equilibrium of concurrent force systems; equilibrium of a particle.
General force systems in the plane and in space. Moment of a force.
Parallel forces. Force couples. Reduction to a force and a moment.
Equilibrium of general force systems; equilibrium of a rigid body.
Basic types of structures. Supports and reactions.
Trusses and member forces.
Beams. Uniformly distributed loads.
Internal forces and their diagrams. Static determinacy and indeterminacy.
Beams and frames with hinges. Internal force diagrams for hinged beams and frames.
Relationships between internal forces and maximum bending moment.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70% and satisfaction of activities that evaluate the acquisition of learning outcomes (colloquia).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	X
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Andrejev, V.: Mechanics - Part 1: Statics, Tehnička knjiga, Zagreb, 1968.	2	100
Damić, V.: Statics, Croatian University Press, Zagreb, 1999 (953-169-045 6)	22	

1.10. Supplementary reading

1. Beer, F.P, Johnston, E.R., Jr. Vector Mechanics for Engineers – Statics, McGraw-Hill, Singapore, 1990 (0-07-100454-8)
2. Pytel, A., Kiusalaas, J. Engineering Mechanics – Statics, Harper Collins, New York, 1996 (0-673-99870-3)
3. McLean, W.G, Nelson, E.W. Engineering Mechanics (Schaum's Outline Series), McGraw-Hill, New York, 1962 (07-044812-4)
4. Stanek, M, Turk, G. Statics I, University of Ljubljana, Faculty of Civil Engineering and Geodesy, Ljubljana, 1996 (961-6167-07-3)
5. Matejiček, F. Semenski, D, Vnučec, Z. Introduction to Statics with a Collection of Tasks, Golden Marketing – Tehnička knjiga, Zagreb, 2005 (953-6168-88-X)

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Silvija Mrakovčić, Assoc. Prof. Neira Torić Malić, Assoc. Prof. Natalija Bede Odorčić, Asst. Prof. Ivana Ban, Ph.D.	
Course	**Laboratory Testing of Materials**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**5+30+10**

1. COURSE DESCRIPTION

1.1. Course objectives

The course aims to enable students to acquire theoretical and practical knowledge through independent supervised project work related to the characterisation of construction materials, including the planning and implementation of experimental investigations.

1.2. Course enrolment requirements

Concrete and Asphalt Technology – passed

1.3. Expected course learning outcomes

1. Plan an experimental programme for testing construction material properties in accordance with current regulations.
2. Apply laboratory methods and equipment to test mechanical, physical or durability properties of materials.
3. Analyse test results using basic statistical methods.
4. Interpret results in the context of material behaviour and civil engineering applications through a report and a presentation of results and conclusions using appropriate professional terminology.

1.4. Course content

Introduction to laboratory work
Fundamentals of experimental design
Standards for testing construction materials
Preparation and manufacture of specimens for laboratory testing of construction materials
Conducting laboratory tests
Data processing and analysis
Structure of a laboratory test report

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☒ laboratory
	☐ distance learning	☒ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Attendance of at least 70%. Completion of activities used to assess learning outcomes: participation in classes, completion of a laboratory project assignment, and preparation and presentation of a seminar paper.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper	X	Experimental work	X
Written examination		Oral examination		Essay		Research	X
Project		Continuous assessment	X	Report		Practical work	X
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are conducted during classes. All available points (100%) are awarded during classes. Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Bjegović, D., Štirmer, N.: Theory and Technology of Concrete, Zagreb, 2015.	20	10
Bjegović, D., Štirmer, N.: Theory and Technology of Concrete: Measurement Methods, Zagreb, 2022.	5	
Roberts, F. L., Kandhal, P. S., Brown, E. R., Lee, D.-Y. and Kennedy, T. W.: Hot Mix Asphalt Materials, Mixture Design and Construction (Croatian translation), HSGI and IGH, Zagreb, 2003.	6	
Technical Regulations for Asphalt Pavements	*ONLINE*	

1.10. Supplementary reading

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Teo Mudrić, Ph.D.	
Course	**Statics of Linear Structures 1**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**6.0**
	Number of hours (L+E+S)	**30+45+0**

1. COURSE DESCRIPTION

1.1. Course objectives

After completing the course, the student is expected to master the basic theoretical knowledge and practical methods of calculation of statically determined line structures of buildings loaded with static, stable and moving loads.

1.2. Course enrolment requirements

Fundamentals of Statics – passed

1.3. Expected course learning outcomes

1. Students will be able to distinguish between statically determined and statically indeterminate models according to the criterion of static determination on concrete practical examples.
2. Students will be able to prove the balance of forces in plane and space using analytical expressions and the principle of virtual work on all types of statically determined models composed of flat or curved rods.
3. Students will be able to determine the cross-sectional forces of rod systems based on equilibrium conditions on planar and spatial line models of structures.
4. Students will be able to describe the theoretical foundations of the relationships between cross-sectional forces and deformation quantities using equilibrium and constitutive equations and compatibility equations due to the action of longitudinal forces, bending moments, torsional moments and shear forces on line beams.
5. Students will be able to apply the methods and technique of deformation calculation, and analyze the significance of individual deformation quantities, assuming small deformations on statically determined models.
6. Students will be able to determine the influence line for an arbitrary static quantity by analytical and graphical means on a statically determined carrier.
7. Students will be able to describe the concepts of flexion and rigidity on an arbitrarily statically determined model.

1.4. Course content

Types and structures of linear structural models.
Kinematic and static stability of models.
Equilibrium equations for stable models.
Principle of virtual work as an expression of equilibrium.
Principles of superposition of loads and effects, and load symmetry and asymmetry.
Application of methods to the analysis of statically determinate beams, frames, grids, trusses and complex structures.
Analysis of model behaviour using influence lines for moving loads.
Application of displacement calculation methods to linear structural models.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%. Satisfy active exercises. Create an assigned standalone task. Pass written examinations during classes (colloquiums). Pass the final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The total number of points that can be obtained is 50% during classes and 50% in the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Simović. V.: Building Statics I, Civil Engineering Institute, Zagreb, 1988.	4	80

1.10. Supplementary reading

1. Werner, H.: Technical Mechanics, Faculty of Civil Engineering, Zagreb, 1986.
2. Tymoshenko, S.; Young, D.H.: Statics of Engineering Structures, Construction Book, Belgrade, 1956.
3. Đurić, M.: Statics of Structures, Construction Book, Belgrade, 1979.
4. Wagner, W.; Erlhof, G.: Practical Building Statics I, Construction Book, Belgrade, 1979.
5. Prokofiev, I. P.: Theory of Constructions I, Building Book, Belgrade, 1966.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Edita Papa Dukić, Ph.D.	
Course	**Statics of Linear Structures 2**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

After completing the course, the student is expected to master the basic theoretical knowledge and practical methods of calculation of statically indeterminate line structures of buildings loaded with static loads.

1.2. Course enrolment requirements

Statics of Linear Structures 1 - passed

1.3. Expected course learning outcomes

1. Determine the degree of static uncertainty on more complex structures.
2. Apply the displacement method and the force method for the calculation of statically indeterminate structures.
3. Apply procedures for determining displacements and turns to statically indeterminate structures.
4. Apply computational methods and computer programs to the design of structures.

1.4. Course content

1. Determination of the uncertainty of line models of structures.
2. Force Method in Model Static Uncertainty Analysis and Choice of "Basic Model".
3. Continuity equations. Formation of the flexibility matrix of the model.
4. The impact of forced displacements. The influence of temperature.
5. Apply the method to different types of constructive models.
6. Geometrically symmetrical models.
7. A reduction rule for calculating deformations of indeterminate models and applications to "base models" that are still statically indeterminate.
8. The method of deformation in the analysis of both statically determined and indeterminate line models.
9. Rod stiffness matrix and structural model stiffness matrix.
10. Forces and moments of tension for local load.
11. Movable and Stationary Constructive Models.
12. Simplified "engineering" method of displacement.
13. Application of the displacement method using software for modelling linear structures.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☒ independent assignments
	☐ seminars and workshops	☒ multimedia and internet
	☒ practical classes	☐ laboratory
	☒ distance learning	☒ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Students are obliged to attend lectures and exercises in at least 70% of the timetable, participate in solving tasks in active exercises, meet two written exams during classes (colloquiums), create an independent assignment - program (an alternative option instead of assignments from active exercises) and meet the written final/remedial exam. Independent research is an option for creating a program.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Assessment is carried out during classes and at the final examination. Up to 70% of the points may be earned during classes and 30% at the final examination. Details are set out in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Anđelić, M., Statics of Indeterminate Rod Structures, DHGK, Zagreb 1993.	2	75

1.10. Supplementary reading

1. Ghali, A.M. Neville and T.G. Brown, Structural analysis. A Unified Classical and Matrix Approach, Spon Press, London and New York, 2003.
2. S. Tymoshenko, D.H. Young, Theory of Structures, Construction Book, Belgrade, 1968.
3. S.P. Timoshenko, D.H. Young, Ttheory of structures, McGraw-Hill International Editions, 1965.
4. Livesley, R.K.: Matrix Methods of Structural Analysis, 1975.
5. I.P. Prokofiev, Theory of Structures II, Building Book, Belgrade, 1960
6. Wagner, W.; Erlhof, G., Practical Building Statics III, 1981.
7. Đurić, M.: Statics of Structures, 1979.
8. K. Beyer, Statics of Reinforced Concrete Structures, Stavebna knjiga, Belgrade, 1963.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Martina Šopić, Ph.D.	
Course	**Construction Machinery**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+10+0**

1. COURSE DESCRIPTION		
1.1. Course objectives		
Acquisition of technological knowledge and skills required for preparing and carrying out construction work, with emphasis on the application of construction machinery, quantification and sizing of works, organisation and management of mechanised operations, productivity optimisation, reduction of downtime and cost efficiency, and the application of technological solutions in standard construction processes.		
1.2. Course enrolment requirements		
-		
1.3. Expected course learning outcomes		
1. Explain work processes and activities on a construction site, with particular emphasis on the selection and use of construction machinery. 2. Analyse a technological problem in construction execution and present solutions orally and in writing using appropriate technology and work methods, including an assessment of the productivity, economy and profitability of construction machinery. 3. Forecast and size the technological resources required for construction, including planning, managing and optimising mechanised work and reducing downtime. 4. Evaluate the organisation of mechanised work and technological processes with the aim of increasing productivity, rationalising resources and improving the efficiency of the overall process.		
1.4. Course content		
1. Characteristics and use of construction machinery in construction processes 2. Planning, management and optimisation of mechanised operations on construction sites (construction technology design) 3. Machine productivity, economic efficiency and profitability (calculation of output of standard construction machinery) 4. Technological solutions for standard construction processes 5. Sizing technological resources required for construction		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Student attendance is governed by the current Regulations on the Evaluation and Assessment of Students' Work of the Faculty of Civil Engineering, University of Rijeka, and must amount to at least 70% of scheduled teaching hours.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written examination	1	Oral examination		Essay		Research	
Project		Continuous assessment	1	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The total proportion of points that can be earned is 100% during classes. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Mlinarić, V., Construction Technology, Croatian University Fee, Zagreb University Polytechnic, Zagreb, 2017.	15	80
Linarić, Z., Lexicon of Machines and Equipment for the Production of Building Materials, Business Media Croatia, Zagreb, 2007.	5	
Peurifoy R. L., Schexnayder C. J., Shapira A.: Construction Planning, Equipment, and Methods, McGraw-Hill, New York, SAD, 2006.	5	
Nichols H. L., Day D. A.: Moving the Earth, McGraw-Hill, New York, SAD, 2005.		
Nunnally S. W.: Construction Methods and Management, Pearson Prentice Hall, Upper Saddle River, New Jersey, 2007.		

1.10. Supplementary reading

1. Bučar, G., Normatives of Construction Works-Handbook for Construction Entrepreneurship, ICG, Omišalj, Rijeka, 1999.
2. Bučar G., Carpentry, Reinforcement and Concrete Works on the Construction Site, Faculty of Civil Engineering J.J. Strossmayer, Osijek, 1997.
3. Trbojević, B., Construction Machinery, Belgrade, 1985.
4. Trbojević, B., Organization of Construction Works, Scientific Book, Belgrade, 1992.
5. Linarić, Z., Plants for the production of bulk and related mineral materials. Business Media Croatia, Zagreb, 2009.
6. Radujković, M. et al., Organization of Construction, Textbooks of the University of Zagreb, Zagreb, 2015.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	
Course	**Professional Practice 1**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**0+0+90**

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to the practical application of organizational and technological knowledge through solving specific tasks in the business environment (with the investor/designer/supervising engineer/contractor).

1.2. Course enrolment requirements

Construction Machinery – passed
Construction Organisation – *enrolled*

1.3. Expected course learning outcomes

- Use methods from construction organisation, technology and economics to solve tasks and problems involved in preparing a construction project.
- Apply knowledge acquired in other specialist courses to solve specific problems in the business environment of a construction project.
- Solve an organisational and technological task for a specific project.
- Present the selected organisational and technological solution in writing and explain it orally
- Keep a work diary (report).

1.4. Course content

Completion of professional practice in a construction company.

1.5. Types of teaching (tick as appropriate)		
	☐ lectures	☒ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☐ practical classes	☐ laboratory
	☐ distance learning	☒ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Min. 2 weeks (80 h) of professional practice within the construction company (with the investor/designer/ supervising engineer/contractor), preparation of the professional practice study, exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance		Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	X
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation and submission of the professional practice report, examination – 100%.
In accordance with the current Regulations on Studies of the University of Rijeka and the Regulations on the Evaluation and Assessment of Students' Work at the Faculty of Civil Engineering, University of Rijeka.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Materials on LMS Merlin	online	75

1.10. Supplementary reading

1. Bučar G., Carpentry, Reinforcement and Concrete Works on the Construction Site, Faculty of Civil Engineering J.J. Strossmayer, Osijek, 1997.
2. Linarić, Z.: Lexicon of Machinery and Equipment for the Production of Building Materials - Effects of Machinery and Vehicles in Earthworks, Business Media Croatia, Zagreb, 2007.
3. Lončarić, R.: Organization of Construction Projects, HDGI, Zagreb, 1995.
4. Mlinarić, V.; Construction Technology, Croatian University Press, Zagreb University of Applied Sciences, Zagreb, 2017
5. Radujković, M. et al.: Organization of Construction, University of Zagreb, Faculty of Civil Engineering, Zagreb, 2015.
6. Radujković, M. et al.: Project Planning and Control, University of Zagreb, Faculty of Civil Engineering, Zagreb, 2012.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	
Course	**Professional Practice 2**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**0+0+90**

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to the practical application of organizational and technological knowledge through solving specific tasks on the construction site.

1.2. Course enrolment requirements

Construction Machinery – passed
Construction Organisation – *enrolled*
Professional Practice 1 – *enrolled*

1.3. Expected course learning outcomes

- Apply methods from construction organisation, technology and economics to solve problems of construction preparation and execution.
- Apply knowledge from other specialist courses to solve specific problems on a construction site.
- Solve an organisational and technological task for a specific construction site.
- Present the selected organisational and technological solution in writing and explain it orally
- Keep a construction diary (report).

1.4. Course content

Completion of professional practice on a construction site.

1.5. Types of teaching (tick as appropriate)		
	☐ lectures	☒ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☐ practical classes	☐ laboratory
	☐ distance learning	☒ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Min. 2 weeks (80) hours of professional practice on the construction site of a civil engineering or building construction facility, preparation of a professional practice study, exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance		Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	X
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation and submission of the professional practice report, examination – 100%.
In accordance with the current Regulations on Studies of the University of Rijeka and the Regulations on the Evaluation and Assessment of Students' Work at the Faculty of Civil Engineering, University of Rijeka.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Materials on LMS Merlin	online	75

1.10. Supplementary reading

1. Bučar G., Carpentry, Reinforcement and Concrete Works on the Construction Site, Faculty of Civil Engineering J.J. Strossmayer, Osijek, 1997.
2. Linarić, Z.: Lexicon of Machinery and Equipment for the Production of Building Materials - Effects of Machinery and Vehicles in Earthworks, Business Media Croatia, Zagreb, 2007.
3. Lončarić, R.: Organization of Construction Projects, HDGI, Zagreb, 1995.
4. Mlinarić, V.; Construction Technology, Croatian University Press, Zagreb University of Applied Sciences, Zagreb, 2017
5. Radujković, M. et al.: Organization of Construction, University of Zagreb, Faculty of Civil Engineering, Zagreb, 2015.
6. Radujković, M. et al.: Project Planning and Control, University of Zagreb, Faculty of Civil Engineering, Zagreb, 2012.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Natalija Bede Odorčić; Asst. Prof. Marijana Cuculić, Ph.D.	
Course	**Concrete and Asphalt Technology**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**15+15+0**

1. COURSE DESCRIPTION		
1.1. Course objectives		
To introduce students to the technological aspects of asphalt and concrete mixtures.		
1.2. Course enrolment requirements		
Engineering Materials – passed		
1.3. Expected course learning outcomes		
1. Apply the acquired knowledge about the properties of ingredients, technology and properties of asphalt and concrete mixtures to solve given problems. 2. Design a composition of asphalt and concrete mixtures of given workability, strength and durability. 3. Plan the preparation and implementation of tests of asphalt and concrete according to the standard written in English. 4. Examine the basic properties of asphalt and concrete in a fresh and hardened state.		
1.4. Course content		
Physical, mechanical and technological properties of constituents used in asphalt and concrete mixtures. Properties, manufacture, application and testing of asphalt and concrete mixtures.		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☐ multimedia and internet ☒ laboratory ☐ mentoring ☐ other _____
1.6. Student obligations		
Students are required to attend lectures regularly, pass a colloquium, actively participate in field classes, actively participate in laboratory exercises.		

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	X
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation of the plan and implementation of the experiment, attendance at classes, colloquium – 100%.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Bjegović, D., Štirmer, N.: Theory and Technology of Concrete, Zagreb, 2015.	20	80
Bjegović, D., Štirmer, N.: Teorija i tehnologija betona Mjerne metode, Zagreb, 2022.	5	
Bjegović D., Balabanić G., Mikulić D.: Building Materials – A Collection of Solved Problems, Zagreb, 2007.	22	
Roberts, F. L., Kandhal, P. S., Brown, E. R., Lee, D.-Y. and Kennedy, T. W.: Hot Mix Asphalt Materials, Mixture Design and Construction (Croatian translation), HSGI and IGH, Zagreb, 2003.	6	
Relevant regulations – HRN EN 1 80	1	
Technical Regulations for Asphalt Pavements	Available online	

1.10. Supplementary reading

1. Muravlov M.: Fundamentals of Concrete Theory and Technology, Construction Book, Belgrade, 2005.
2. Mehta, P. K., Paulo J. M. Monteiro: Concrete: Microstructure, Properties, and Materials, McGraw-Hill, 2006.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Silvija Mrakovčić, Ph.D.	
Course	**Introduction to Civil Engineering**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	1.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+0+10**

1. COURSE DESCRIPTION
1.1. Course objectives
To introduce students to the basic concepts related to civil engineering, materials, elements and types of buildings and the achievements of world, Croatian and local construction.
1.2. Course enrolment requirements
-
1.3. Expected course learning outcomes
1. Distinguish and compare the basic phases in the historical development of construction. 2. Distinguish between the basic types, materials and elements of buildings. 3. Explain the specifics of certain types of buildings. 4. Explain the importance of applying regulations and standards in construction. 5. Write and present a seminar paper on the topic of features of an existing building in Croatia.
1.4. Course content
History of construction Types of construction materials and load-bearing elements Construction methods Geotechnical structures Hydraulic engineering structures Transport infrastructure Buildings Civil engineering regulations and standards Outstanding achievements in international and Croatian construction; modern materials and structures Field visits

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance 70%
Satisfaction of activities that evaluate the acquisition of learning outcomes: class activity, colloquium, seminar, fieldwork.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The total proportion of points that can be earned is 100% during classes. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Radić, J. Introduction to Construction, Školska knjiga, 2016.	2	100

1.10. Supplementary reading

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Ante Džolan, Ph.D.	
Course	**Introduction to the Design of Civil Engineering Structures**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+10+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Acquiring basic knowledge about the design of building structures, the legislative, technical and standardization framework that regulates it, taking into account the specifics of the material, the type and load-bearing system of the structure and the effects on the structure.

1.2. Course enrolment requirements

Building Elements 1 – passed
Statics of Linear Structures 1 – *enrolled*

1.3. Expected course learning outcomes

1. Distinguish the typological characteristics of building structures and interpret the function of their elements and parts.
2. Distinguish the basic layout solutions of building structures.
3. Distinguish between basic physical and mechanical properties and types of basic building materials in the design and typology of structures.
4. Identify key factors for determining basic actions on structures and distinguish between budget situations and combinations of actions.

1.4. Course content

Planar and spatial structural systems, layouts and structural elements of buildings.
Specific design considerations for buildings depending on structural system, material and essential requirements for structures.
Legislative framework (technical and legal framework) and the Eurocode design system.
Materials and products.
Actions on structures.
Limit states and design situations.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☒ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70%
Completion of activities used to assess learning outcomes (preparation and defence of individual assignments)

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	
Portfolio		independent assignments	X				

1.8. Student assessment during classes and at the final examination

Evaluation and grading is carried out during classes 60% and 40% of points during the exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Markulak, D., Zovkić, J., Kraus, I.: Building Structures in Buildings, Josip Juraj Strossmayer University of Osijek, Faculty of Civil Engineering and Architecture Osijek, Osijek, 2021.	10	80

1.10. Supplementary reading

1. Podhorsky, I.: Load-bearing structures, Golden Marketing – Technical Book and Faculty of Architecture, University of Zagreb, Zagreb, 2003.
2. Sulyok-Selimbegović, M.: Steel Structures, Golden Marketing and Faculty of Architecture, University of Zagreb, Zagreb, 2003.
3. Salvadori, M.: Load-bearing Structures in Architecture, UPI-2M, Zagreb, 1995.
4. Ching, F. D. K.: Building Construction Illustrated, Wiley, 2020.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Rozarija Mikić, Ph.D.	
Course	**Probability and Statistics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	2.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**15+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Students will become familiar with:
- basic rules of probability theory,
- the most important random variables (the experiments in which they occur and their mathematical properties),
- numerical measures used in descriptive statistics,
- basic methods of inferential statistics: confidence interval estimation and parametric hypothesis testing.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

After passing the course exam, students will be able to:
1. explain concepts such as event, probability of an event, random variable, probability distribution, mathematical expectation and variance,
2. apply basic probability calculation procedures,
3. recognize the Markov chain and determine the transition matrix,
4. argumentatively apply the most common probability distributions,
5. descriptively and statistically process the collected data, and present and interpret them,
6. apply basic techniques of inferential statistics (interval assessments, tests).

1.4. Course content

Probability of events. Conditional probability. Markov chains. Discrete random variables. Continuous random variables. Limit theorems. Descriptive statistics. Point and interval estimation of parameters. Statistical tests.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70% of classes. Passing the point threshold for both tests: the colloquium and the final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. During classes, it is possible to earn a maximum of 70 points. A maximum of 30 points can be earned on the final exam. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Elezović, N.: Probability and Statistics, 1st edition, Element, Zagreb, 2018.	2	80

1.10. Supplementary reading

1. Vranić, V.: Probability and Statistics, 3rd edition, Tehnička knjiga, Zagreb, 1971.
2. Pauše, Ž.: Introduction to Mathematical Statistics, Školska knjiga Zagreb, 1993.
3. Bernstein, S.; Bernstein, R.: Elements of Statistics I: Descriptive Statistics and Probability, Schaum's Series, McGraw-Hill, New York, 1999.
4. Bernstein, S.; Bernstein, R.: Elements of Statistics II: Inferential Statistics, Schaum's Series, McGraw-Hill, New York, 1999.
5. Johnson, R.A.; Bhattacharyya, G.K.: Statistics: Principles and Methods, Wiley, New York, 5th edition, 2006.
6. Kreyszig, E.: Advanced Engineering Mathematics, Wiley, New York, 9th edition, 2006.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	supervisor	
Course	**Undergraduate Thesis**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	compulsory	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**0+0+150**

1. COURSE DESCRIPTION

1.1. Course objectives

A successful completion of the final thesis exam is proof that the student is able to independently create and present a large-scale seminar paper or a professional project (conceptual solution or solution to a theoretical or practical problem in civil engineering) related to the planning or design of a certain less complex building structure or system.

1.2. Course enrolment requirements

Achieved 120 ECTS credits.

1.3. Expected course learning outcomes

1. Define a professional problem.
2. Design and independently conduct research.
3. Solve a practical problem/task independently.
4. Apply the acquired knowledge and general competencies acquired through the study.
5. Apply the acquired knowledge and specific competencies in the relevant subject.
6. Apply the methodology of writing a professional and scientific work.
7. Make a presentation of the results of the conducted research using multimedia tools.
8. Use presentation skills in interpreting research results.

1.4. Course content

Students prepare their undergraduate thesis during the allocated 150 hours of work (5 ECTS credits).
The undergraduate thesis may address a practical or theoretical topic related to civil engineering and closely connected to the content of existing courses.
The undergraduate thesis may take the form of:

- a conceptual design of a relatively simple civil engineering structure (small-span bridge, rural road, simple drainage or water supply system, or similar),
- a construction organisation plan for a relatively simple structure,
- a structural calculation for a concrete, metal or timber structure,
- an analytical or numerical study of a civil engineering problem requiring additional theoretical analysis.

During the preparation of the undergraduate thesis, students actively collaborate with their supervisor, normally the lecturer responsible for a course relevant to the chosen topic. A co-supervisor may also take part if required by the thesis content.

1.5. Types of teaching (tick as appropriate)	☐ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☒ mentoring ☐ other _____

1.6. Student obligations

Preparation and defense of the final thesis according to the defined topic and task of the work, and the instructions of the mentor (and commentator).

1.7. Monitoring student work (mark the applicable category with X)

Class attendance		Class participation		Seminar paper	X	Experimental work	X
Written examination		Oral examination	X	Essay		Research	
Project	X	Continuous assessment		Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation of the final paper.
Oral presentation of the work and oral answers to questions in front of the committee.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Depending on the topic.		

1.10. Supplementary reading

Depending on the topic.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Vedran Jagodnik, Ph.D.	
Course	**Experimental Soil Mechanics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**15+15+30**

1. COURSE DESCRIPTION

1.1. Course objectives

Familiarity with standards related to the conduct of laboratory experiments; Introduction to the devices necessary for conducting laboratory experiments on fine-grained and coarse-grained materials; Independent planning and implementation of basic laboratory experiments.

1.2. Course enrolment requirements

Soil and Rock Mechanics – passed

1.3. Expected course learning outcomes

1. Distinguish between types of laboratory tests.
2. Ability to conduct experiments: specific density, mechanical sieving, sedimentation, plasticity limit.
3. Ability to conduct experiments: yield strength, compaction, consolidation, shear.
4. Understanding topics: specific density, mechanical sieving, sedimentation, consistency limit.
5. Understanding the topics: compaction, consolidation, shear.

1.4. Course content

Soil classification. Sieve and hydrometer analysis of particle-size distribution
Particle density, compactness, moisture content. Determination by laboratory testing
Liquid, plastic and shrinkage limits. Swelling.
Compressibility parameters. Oedometer testing.
Determination of soil strength parameters in the laboratory.
Soil strength testing using a direct shear apparatus.
Preparation of a laboratory report.
Introduction to advanced soil mechanics.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at classes and laboratory exercises, preparation of reports.

1.7. Monitoring student work (mark the applicable category with X)							
Class attendance	X	Class participation	X	Seminar paper		Experimental work	X
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Attendance at lectures and exercises.
Solving prepared tasks individually and in a team.
Discussing solutions.
Discussion on a given topic (oral presentation and argumentation).
Preparation and presentation of the seminar paper.
Two written and one oral examination of acquired competencies (colloquia).

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
R. D. Holtz, W. D. Kovacs, T. C. Sheahan: An Introduction to Geotechnical Engineering, Pearson, New York, 2011.	3	25

1.10. Supplementary reading

-

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Saša Čohar Mančić, Senior Lecturer	
Course	**English Language**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	1.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**10+15+5**

1. COURSE DESCRIPTION

1.1. Course objectives

Training students to use English in spoken form in everyday communication and in spoken and written form as a profession.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Define basic vocabulary terms from a specific area of construction.
2. Define specific vocabulary terminology from certain areas.
3. Successfully use the acquired vocabulary and grammatical structures.
4. Apply the acquired knowledge in everyday communication and in communication in the function of the profession.
5. Successfully solve tasks related to the acquired vocabulary and grammatical structures.
6. Present the topic of the assigned seminar paper orally and in writing.

1.4. Course content

Lexical topics (general vocabulary and specialist and professional terminology):
- fields of work, construction materials, ancient structures, transportation, environmental protection, bridges, tunnels, airports, hydraulic structures, notable architects
- phrases and idioms used in everyday communication that originate from words whose primary meaning relates to buildings or construction.

Grammar topics (general rules of English grammar and specific grammatical structures characteristic of technical language):
- word formation and morphology (parts of speech, morphological changes, word formation)
- syntactic level (types of sentences, sentence elements, word order; use and agreement of verb tenses; active and passive voice).

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☒ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☒ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at classes in accordance with the Study Regulations. One written and one oral colloquium and a presentation on a given topic. The points achieved in the activities are added up (written 50%, oral 30%, presentation 20% of points). The condition for passing the course and entering the grade and ECTS credits is a total of 50% of the points achieved.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination		Oral examination	X	Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

The written colloquium contains tasks of an objective type.
The oral test assesses acquired speaking competence (20% vocabulary, 50% independent oral summary of content, 30% oral translation).
The presentation evaluates linguistic expression on a given topic and the acquisition of grammatical and lexical

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Kralj Štih, A.: English in Civil Engineering, Croatian University Press, Zagreb, 2004.	5	100

1.10. Supplementary reading

1. Thomson, A. J., Martinet, A. V.: A Practical English Grammar, Exercises 1, Oxford University Press, Oxford, 1986.
2. Thomson, A. J., Martinet, A. V.: A Practical English Grammar, Exercises 2, Oxford University Press, Oxford, 1986.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Aleksandra Deluka-Tibljaš, Ph.D.	
Course	**Urban Roads and Intersections**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION		
1.1. Course objectives		
The aim of the course is for students to master the basics of designing traffic infrastructure in urban conditions (city roads, intersections and parking spaces) taking into account the satisfaction of functional requirements – traffic safety, capacity and overall sustainability of urban traffic.		
1.2. Course enrolment requirements		
Fundamentals of Road Design 1 – passed		
1.3. Expected course learning outcomes		
1. Explain the basic impacts on urban traffic and the requirements to be met by transport infrastructure in urban areas 2. Define and explain the characteristics of individual categories of roads in cities 3. Explain the elements and application of different types of intersections 4. Define the basic characteristics and design conditions for non-motorized modes of traffic in cities 5. Conduct a simple traffic survey 6. Develop a project solution for a city intersection under the given conditions 7. Design a smaller parking lot		
1.4. Course content		
Specific characteristics of urban traffic and its impact on cities Basic traffic surveys Sustainable urban transport Urban roads – planning: function, classification and characteristics Urban roads – design elements Urban intersections – types and applications Urban intersections – fundamentals of at-grade intersection design (conventional and roundabout intersections) Non-motorised urban transport – systems and planning and design methods Parking – planning and design of urban parking facilities		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Periodic examination of knowledge, creation of a program assignment, attendance and active participation in classes.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation of a design solution for an urban intersection and an off-street car park.
Periodic examination of knowledge.
Final knowledge test.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Legac, Ivan: Intersections of Public Roads, University of Zagreb, Faculty of Transport and Traffic Engineering, Zagreb, 2008.	3	25
Legac, Ivan: City Roads, University of Zagreb, Faculty of Transport and Traffic Engineering, Zagreb, 2011.	20	

1.10. Supplementary reading

1. Maletin, M.: Planning and Design of Roads in Cities, OrionArt, Belgrade, 2005.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Vanja Travaš, Ph.D.	
Course	**Hydrotechnical Measures for Adaptation to Climate Change**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**30+0+15**

1. COURSE DESCRIPTION

1.1. Course objectives

To ensure that students acquire basic knowledge about the impact of climate change on water resources, hydrotechnical structures and systems and about available hydrotechnical measures for adaptation to climate change.

1.2. Course enrolment requirements

Hydrology – passed

1.3. Expected course learning outcomes

1. Identify and explain the impact of climate change on water resources, hydrotechnical structures and systems.
2. Define hydrotechnical measures for adaptation to climate change.
3. Implement a climate change adaptation strategy.

1.4. Course content

Introduction. Water resources. Water systems (natural and artificial). Traces of climate change (overview of cartographic databases of relevant and available satellite programs). The impact of climate change on freshwater quantities and quality (with an emphasis on coastal water supplies). The impact of climate change on protection against the harmful effects of water (with an emphasis on flood protection in coastal areas). Temporal and spatial distribution of water (accumulation and retention of water). Climate Change Adaptation Strategy. Urban water systems from the perspective of climate change (management, monitoring, modelling, optimization, adaptation, construction and maintenance of systems). An approach to blue-green infrastructure planning. Drafting spatial planning regulations in the context of climate change.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☒ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☐ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Regular attendance and active participation in classes.
Independent development, presentation and defense of the seminar paper.
Attendance at the oral colloquium.

1.7. Monitoring student work (mark the applicable category with X)							
Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

The student's work will be evaluated and evaluated 100% during the class (the activities marked in the previous table are evaluated). A detailed elaboration of the methods of monitoring and evaluating the work of students will be presented in the curriculum.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Climate Change Adaptation Strategy in the Republic of Croatia for the period until 2040 with a view to 2070, Official Gazette 46/2022.	online	

1.10. Supplementary reading

1. Harber, R. J.: Planning and Managing Reliable Urban Water Systems, 1997.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	External lecturer	
Course	**Communication Skills**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	2./3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**15+15+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is for students to acquire knowledge about communication, its verbal and non-verbal aspects, and to develop the skills of effective oral and written communication through exercises.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Explain the key elements in the communication process
2. Distinguish between types and styles of communication
3. Develop forms of (business) written expression
4. Conduct a public appearance

1.4. Course content

1. Successful Communication: Components and Process of Communication. Types of communication. Obstacles to successful communication. Cultural influences on communication.
2. Verbal communication: Language. Meaning. Clarity of expression. Formality of language.
3. Nonverbal communication: Types of nonverbal communication. Functions. Non-verbal expressiveness and sensitivity. Discrepancy between verbal and non-verbal communication. Self-presentation.
4. Communication Skills
   - Listening. The importance of listening. Components of listening. Active listening techniques.
   - Conflict and negotiation. Types, causes and consequences of conflict. Conflict resolution.
   - Communication styles. Assertiveness. What is assertiveness? Causes of non-assertiveness. Specific techniques of assertive behaviour.
   - Workplace communication: interviews; organisational communication; communication climate; team communication; leadership; public communication.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70%
Satisfaction of activities that evaluate the acquisition of learning outcomes: preparation and defense of

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	
Portfolio	X	Public presentation	X				

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam. The total proportion of points that can be earned is 100% during classes. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
		25

1.10. Supplementary reading

1. Matijaš, M., The Art of Public Speaking, A Complete Guide to Improving Communication Skills and Public Speaking, Creation, Banjole 2019.
2. Matijaš, M., Small Language Advisor for Better Business Communication, Creation, Banjole 2017.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Saša Čohar Mančić, Senior Lecturer	
Course	**Building and Constructing English**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	2./3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**15+10+5**

1. COURSE DESCRIPTION

1.1. Course objectives

Training students for advanced use of English in spoken form in everyday communication and spoken and written form in the function of the profession.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Define advanced vocabulary terms from a specific area of construction.
2. Define specific vocabulary terminology from certain areas.
3. Successfully use the acquired vocabulary and grammatical structures.
4. Apply the acquired knowledge in everyday communication and in communication in the function of the profession.
5. Present the topic of the assigned seminar paper orally and in writing.

1.4. Course content

Lexical topics (general vocabulary and specialist and professional terminology; notable architects
- phrases and idioms used in everyday communication that originate from words whose primary meaning relates to buildings or construction.

Grammar topics (specific grammatical structures characteristic of general and technical language:
- correct use of acquired competences in written and spoken communication).

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☒ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at classes in accordance with the Study Regulations. One written and one oral colloquium, an activity in class and a presentation on a given topic. Points achieved in activities are added up (written 30%, oral 10%, presentation 20% of points, activity in class 15% + 25%). The condition for passing the course and entering the grade and ECTS credits is a total of 50% of the points achieved.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper	X	Experimental work	
Written examination	X	Oral examination	X	Essay		Research	
Project		Continuous assessment		Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

The written colloquium contains tasks of an objective type.
At the oral colloquium, the acquired competence of verbal expression on a given topic is evaluated.
The presentation evaluates linguistic expression on a given topic, the acquisition of grammatical and lexical (10% + 5% + 5%).
Activity in class is evaluated by creating a quiz on a given topic (15%) and active participation in discussions (25%).

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
		25

1.10. Supplementary reading

1. Watcy-Jones, P.: Test Your Idioms, Pearson, Edinburgh, 2022.
2. Morris, S., Stanton, A.: Test Yourself for First Certificate, Nelson House, Edinburgh, 1989.
3. Vince, M.: Advanced Language Practice, Macmillan Heinemann, Oxford, 2001.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Ivan Marović, Ph.D.	
Course	**Construction Management**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**30+0+15**

1. COURSE DESCRIPTION

1.1. Course objectives

By mastering the broader conceptual knowledge necessary for modern management of construction companies. Recognizing and acknowledging business risk, its dimensioning and management. Training for making business decisions in conditions of risk and uncertainty.

1.2. Course enrolment requirements

Civil Engineering Regulations – passed

1.3. Expected course learning outcomes

1. Interpret the basic concepts of management and management in construction.
2. Compare the differences between strategic, tactical and operational management.
3. Apply learned models and decision-making procedures appropriately to the given decision-making conditions.
4. Recognize messages conveyed through both verbal and non-verbal communication.
5. Use different elements of financial and non-financial motivation.
6. Recognize organizational culture.
7. Recognize the importance of ethical business and business communication.
8. Recognize the stages of managing an organization on a practical example.

1.4. Course content

General principles of management. The modern construction company, its structure and operations. Current and long-term business objectives. Business policy as a means of achieving objectives and its methods. Decision-making theory.
Combining and strategically coordinating the business functions of a modern construction company.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☐ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Students are required to attend lectures regularly, pass a colloquium, create and present a seminar paper.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination		Oral examination		Essay		Research	X
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation and presentation of a seminar paper, attendance at classes, colloquium – 100%.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Buble, M. et al.: Strategic Management, Sinergija, Zagreb, 2005.	1	
Medanić, B.: Management in Civil Engineering, Josip Juraj Strossmayer University, Faculty of Civil Engineering, Osijek, 1997.	9	
Sikavica, P. et al.: Business Decision-Making, Školska knjiga, Zagreb, 2014.	1	

1.10. Supplementary reading

1. Bovee, C.L., Thill, J.V.: Contemporary Business Communication, Mate, 2012.
2. Drucker, P.: The Most Important Thing About Management, MEP Consult, Zagreb, 2005.
3. Heller R.: Handbook for Managers, Profil, Zagreb, 2007.
4. Kelly, J., Male, S., Graham, D.: Value Management of Construction Projects, Blackwell Publishing, Oxford, 2004.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Ivana Štimac Grandić, Ph.D.	
Course	**Bridges**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**30+15+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Acquiring basic knowledge about the design and construction of bridges.

1.2. Course enrolment requirements

Introduction to the Design of Civil Engineering Structures – passed
Solid Body Mechanics 1 – passed
Solid Body Mechanics 2 – passed
Statics of Linear Structures 2 – *enrolled*

1.3. Expected course learning outcomes

1. Define the basic parts of a bridge and describe the elements of bridge design.
2. Define structural systems of bridges and list the advantages and disadvantages of each structural system.
3. Describe traffic conditions and determine the minimum free profiles on and under the bridge (depending on the type of bridge and its position in the area)
4. Enumerate the equipment of the bridge, define the basic features of each piece of equipment, sketch the elements of the equipment.
5. Define, differentiate and determine loads and actions on bridges depending on the type of bridge and its position in space.
6. Describe and distinguish the basic ways of building bridges.
7. Draw the longitudinal and transverse layout of the bridge, the view and the floor plan of the bridge based on the given parameters, combining the knowledge of load-bearing systems, design, free profiles and bridge equipment.

1.4. Course content

History of bridge construction; terminology; types of bridges; bridge layout elements; bridge aesthetics and design; traffic requirements; bridge load-bearing structures and equipment.
Loads and actions on bridges.
Bridge construction.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☒ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance at least 70%
Satisfaction of activities that evaluate the acquisition of learning outcomes:

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination	X	Essay		Research	
Project	X	Continuous assessment		Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and grading is carried out during classes (50% of points) and at the final exam (50% of points). Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Marić, Z.: Bridges I, Faculty of Civil Engineering, Osijek, 2016.	10	25
Radić, J.: Bridges, Home and World, Zagreb, 2002.	12	

1.10. Supplementary reading

1. Tonković, K.: Designing Bridges, Tehnička knjiga, Zagreb, 1985.
2. Šram, S.: Bridge Construction, Golden Marketing, Zagreb, 2002.
3. Pržulj, M.: Bridges, Association Construction, Belgrade, 2014.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Saša Čohar Mančić, Senior Lecturer	
Course	**German Language**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	1.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**10+15+5**

1. COURSE DESCRIPTION
1.1. Course objectives
Training students to use English in spoken form in everyday communication and in spoken and written form as a profession.
1.2. Course enrolment requirements
-
1.3. Expected course learning outcomes
1. Define basic vocabulary terms from a specific area of construction. 2. Define specific vocabulary terminology from certain areas. 3. Successfully use the acquired vocabulary and grammatical structures. 4. Apply the acquired knowledge in everyday communication and in communication in the function of the profession. 5. Successfully solve tasks related to the acquired vocabulary and grammatical structures. 6. Present the topic of the assigned seminar paper orally and in writing.
1.4. Course content
Lexical topics (general vocabulary and specialist and professional terminology): - fields of work, construction materials, ancient structures, transportation, environmental protection, bridges, tunnels, airports, hydraulic structures, notable architects - phrases and idioms used in everyday communication that originate from words whose primary meaning relates to buildings or construction. **Grammar topics (general rules of German grammar and specific structures characteristic of technical language):** - word formation and morphology (parts of speech, morphological changes, word formation), - syntactic level (types of sentences, sentence elements, word order; use and agreement of verb tenses; active and passive voice).

1.5. Types of teaching (tick as appropriate)		
	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at classes in accordance with the Study Regulations. One written and one oral colloquium and a presentation on a given topic. The points achieved in the activities are added up (written 50%, oral 30%, presentation 20% of points). The condition for passing the course and entering the grade and ECTS credits is a total of 50% of the points achieved.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination	X	Oral examination	X	Essay		Research	
Project		Continuous assessment		Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

The written colloquium contains tasks of an objective type. At the oral colloquium, the acquired competence of speech expression is evaluated (20% vocabulary, 50% free retelling of content, 30% oral translation). The presentation evaluates linguistic expression on a given topic and the acquisition of grammatical and lexical content (50% + 50%).

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Kralj Štih, A.: Deutsch im Bauingenieurwesen, Croatian University Press, Zagreb, 2004.	4	25
Engler, T.: Deutsche Grammatik – kein Problem, Školska knjiga d.d., Zagreb, 2002.	4	

1.10. Supplementary reading

1. N. Thulen – Exercises (online)
2. Grammar Training German, Langenscheidt, Berlin and Munich, 2001.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	
Course	**Maintenance of Structures**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+15+0**

1. COURSE DESCRIPTION		
1.1. Course objectives		
Acquiring the knowledge necessary to manage and manage building maintenance projects.		
1.2. Course enrolment requirements		
-		
1.3. Expected course learning outcomes		
1. Interpretation of basic and specific concepts related to the maintenance of buildings 2. Appropriate use of positive legislation 3. Recognize the required level of maintenance of the building (regular maintenance, reconstructions, repairs and emergency interventions) and priorities in the maintenance of buildings 4. Plan, organize and manage the execution of maintenance works on buildings taking into account the specifics of buildings protected by law 5. Develop a project for the maintenance of a simpler building with cost calculation		
1.4. Course content		
Introduction and general concepts Regulatory framework for the maintenance of structures Routine maintenance, reconstruction, repairs and emergency interventions Maintenance cost structure Maintenance of structures within the overall construction process Management of structural maintenance Maintenance project Planning and organisation of maintenance works Maintenance of historic and legally protected structures Models for prioritising the maintenance of structures Information system supporting decisions on maintenance priorities		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at classes 70%, program, exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	
Portfolio		Assignment	X				

1.8. Student assessment during classes and at the final examination

Preparation and submission of coursework, attendance and participation in classes – 70%; examination – 30%. In accordance with the current Regulations on Studies of the University of Rijeka and the Regulations on the Evaluation and Assessment of
Students' Work at the Faculty of Civil Engineering, University of Rijeka

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Lectures and exercises on the Merlin LMS	online	25
Marenjak, S.; Krstić, H.: Maintenance of Public Buildings, Faculty of Civil Engineering and Architecture Osijek, 2021.	4	
Ordinance on Maintenance of Buildings, Official Gazette 122/2014-2343	online	
Regulation on the maintenance of buildings, OG 64/1997	online	

1.10. Supplementary reading

1. Wood, B.: Building maintenance, Blackwell Publishing, 2009.
2. Spedding A.: CIOB Handbook of Facilities Management, Longman Scientific & Technical, 1994.
3. Aničić, D.: Planning of the Useful Life of a Building, Construction Yearbook 03/04, Zagreb, 2004.
4. The Royal Academy of Engineering: The Long-Term Costs of Owning and Using Buildings, London, 1998.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Prof. Adriana Bjelanović, Ph.D.	
Course	**Fundamentals of Timber Structures**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to the methodology of designing wooden structures and practical application of the acquired basic knowledge by creating a simplified main project of a simple wooden structure in a team. The acquired basic knowledge about the properties of wood and wood materials and products, typology and ensuring spatial stability of simple wooden structures, dimensioning of structural elements, the influence of joining techniques on the structural design of connections and the calculation of joints will enable students to acquire professional competencies for the design of simple wooden structures, cooperation in the design of more complex structures and future training in the field of wooden structures and load-bearing structures in general.

1.2. Course enrolment requirements

Introduction to the Design of Civil Engineering Structures – passed
Solid Body Mechanics 1 – passed
Solid Body Mechanics 2 – passed
Statics of Linear Structures 2 – *enrolled*

1.3. Expected course learning outcomes

1. Apply basic knowledge about the physical and mechanical properties of wood to the design of timber structures and recognize the importance of other properties for the design, durability and fire resistance of timber structures.
2. Distinguish between wood materials and products for longitudinal and slab structural elements and the impacts of application on the typology of construction and techniques of joining structural elements.
3. To create a layout plan of a simple timber structure with a solution for spatial stability.
4. Calculate the effects of actions for the relevant design combinations and check the limit states of the structural elements.
5. Make drawings (design solutions) of characteristic connections in simple timber structures and calculate the joints (at the basic level).
6. Define systems of measures to ensure the durability of the timber structure and fire resistance.
7. To create a (team) simplified main design of a simple timber structure using design methodology and professional regulations, as well as computer programs for drawing and static analysis.
8. Work systematically and as part of a team on a design project, respecting professional and ethical principles, design methodology and relevant regulations, and justify the chosen technical solution.

1.4. Course content

An overview of the historical development of timber structures and the basics of the ecological significance of the application. Basics of spatial stability of timber structures. Properties of wood as a construction material and the influence of properties on the design, durability and fire resistance of wooden structures. Construction materials and products made of wood and based on wood – overview and application for duty and panel structural elements, strength classes and grading procedures for duty wood products. Calculation of serviceability and mechanical resistance of cross-section and stability of elements of timber structures. The basics of joining techniques – traditional and engineering. Calculation of compounds. Joints in timber structures – inspection, construction and installation. The basics of durability and protection of timber structures. Basics on the behavior of wood and timber structures exposed to fire. Type lattice main beams and the influence of joining techniques – principles of force transmission and connection design. Design solutions for connections in connection systems and lattice couplings of simple timber structures.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70% of classes (lectures, auditory and design exercises).
Completion of activities assessing learning outcomes: class participation, preparation and discussion of a simplified design of a simple timber structure in teams of three, tests and final examination.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and grading are carried out during classes (70% of grade points) and at the final exam (30% of grade points). The final exam is numerical and the use of all materials is allowed. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Bjelanović, A., Rajčić, V.: Wooden Structures According to European Standards, Croatian University Publishing and Faculty of Civil Engineering, University of Zagreb, Zagreb, 2005, reissue, 2007, e-edition 2020.	12 + online	25

1.10. Supplementary reading

1.Excerpts from lectures / internal scripts and excerpts from auditory exercises (course website)
2.Examples of solved examination problems and theoretical questions for continuous assessment (course website)

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Neira Torić Malić, Ph.D.	
Course	**Fundamentals of Building Physics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	2./3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**15+0+15**

1. COURSE DESCRIPTION		
1.1. Course objectives		
Training for independent solving of practical engineering problems in this subject.		
1.2. Course enrolment requirements		
-		
1.3. Expected course learning outcomes		
1. Independent solving of practical engineering problems from the mentioned subject. 2. Knowledge of the basic equations of diffusion and heat. 3. Know how to calculate thermal resistance and moisture transfer resistance of high-rise buildings using special computer programs. 4. Know how to calculate thermal resistance and moisture transfer resistance of high-rise buildings according to Croatian standards.		
1.4. Course content		
Introduction to building physics and its importance in civil engineering. Basic concepts and laws of heat transfer (conduction, convection and radiation). Moisture diffusion and capillary transport in construction materials. Modelling the fundamental equations of building physics. Application of computational tools to analyse physical processes. Regulatory frameworks.		
1.5. Types of teaching (tick as appropriate)	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____
1.6. Student obligations		
Attending lectures, creating program tasks on the computer.		

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	**X**
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are conducted during classes.
All available points (100%) are awarded during classes.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Pintarić, Marko: Building Physics: From Principles to International Standards, Springer International Publishing, 2017.	1	25
A. C. van der Linden, I. M. Kuijpers-Van Gaalen, A. Zeegers: Building Physics, Faculty of Architecture and the Built Environment, Architectural Engineering and Technology Group, TU Delft, 2024.	25	

1.10. Supplementary reading

1. Sašo Medved: Building Physics: Heat, Ventilation, Moisture, Light, Sound, Fire, and Urban Microclimate, Springer, 2022.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Petra Jagodnik, Ph.D.	
Course	**Fundamentals of Engineering Geology**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**15+20+10**

1. COURSE DESCRIPTION

1.1. Course objectives

The course prepares students to understand the fundamental principles of engineering geology and its role in civil engineering. Students will know possible engineering problems in different types of geological materials conditioned by their genetic characteristics. Students will be able to recognize geomorphological phenomena on modern topographic bases. Students will know the possibilities of applying engineering geological research methods for various engineering purposes. The course prepares students for the next courses of the Graduate University Study, primarily in the field of Geotechnics.

1.2. Course enrolment requirements

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1.3. Expected course learning outcomes

1. Understand the principles of engineering geological research and the role of an engineering geologist.
2. Know the most common types of engineering problems in rocks and soil conditioned by their genesis.
3. List the types of geohazards. Understand their impact on construction conditions.
4. Recognize the types of geomorphological processes and phenomena on topographic substrates.
5. Know the possibilities of application and limitations of field research methods for various engineering purposes.

1.4. Course content

Introduction to engineering geology: basic principles and investigation procedures, importance for civil engineering practice.
Engineering geological map of the Republic of Croatia.
Sedimentation processes and depositional environments – significance for engineering geological conditions.
Engineering problems in rock arising from its genesis.
Engineering problems in soil arising from its genesis.
Geohazards.
Planning and application of field investigation methods for different engineering purposes.
Remote sensing in engineering geology.
Engineering geology and spatial planning.
Engineering geological design documentation.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☐ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attending lectures and exercises. Making a field diary. Presentation of the seminar paper.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Creating exercises assignments.
Preparation of a field report.
Presentation of a short seminar paper made by a team of students.
Taking a written final exam.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Vlahović, T.: Geology for Civil Engineers. University of Split, Faculty of Civil Engineering and Architecture, 2011	5	25
Šestanović, S.: Fundamentals of Engineering Geology - Application in Construction. Geoing, Split 1993.	5	
Gonzalez de Valleyo, L., Ferrer, M.: Geological Engineering. CRC Press, 2011.	2	

1.10. Supplementary reading

1. Tišljar, J: Sedimentology of Clastic and Silica Precipitations, Institute for Geological Research, Zagreb, 2004.
2. Tišljar, J.: Sedimentary Rocks. Školska knjiga, Zagreb, 1994.
3. Pollak, Z.: Hydrogeology for Civil Engineers. Poslovna knjiga, Zagreb, 1995.
4. Benac, Č.: Dictionary of Terms in Applied Geology, www.gradri.uniri.hr

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Asst. Prof. Josip Peranić, Ph.D.	
Course	**Fundamentals of Unsaturated Soil Mechanics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+0+10**

1. COURSE DESCRIPTION

1.1. Course objectives

Introducing students to the basic aspects of soil behavior under conditions of partial saturation. The student is able to describe the influence of moisture change on the hydro-mechanical behavior of the soil in unsaturated conditions. The student knows the basic methods of measuring and estimating nonlinear functions of unsaturated soil features.

1.2. Course enrolment requirements

Soil and Rock Mechanics – passed

1.3. Expected course learning outcomes

1. Enumerate and describe the basic variables that quantify the volume and mass ratios of individual phases in unsaturated soil.
2. Describe, select and interpret the hydraulic characteristics of different soil types.
3. Describe the influence of moisture changes on the strength of unsaturated soil.
4. Enumerate, describe and select methods for measuring and evaluating the functions of unsaturated soil characteristics.

1.4. Course content

Basic problems of unsaturated soil mechanics
Typical unsaturated soil profiles
Phase diagram and basic characteristics of phases in unsaturated soil
Surface tension and capillarity
Variables describing volume and mass relationships in unsaturated soil
Stress state in unsaturated soil
Soil-water retention curve of unsaturated soil
Hydraulic conductivity function of unsaturated soil.
Shear strength of unsaturated soil
Basic methods for measuring and estimating unsaturated soil property functions

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☒ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☐ practical classes	☒ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Attendance of at least 70%
Performing measurements (experimental work), and preparing and presenting an individual seminar paper
Passing continuous assessment tests

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	X
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment is carried out during classes. The total proportion of points that can be earned is 100% during classes. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
		25

1.10. Supplementary reading

1. Lu, N. & Godt, J.: Hillslope Hydrology and Stability, Cambridge University Press, 2013.
2. Zhang, L., Li, J., Li, X., Zhang, J., & Zhu, H.: Rainfall-Induced Soil Slope Failure: Stability Analysis and Probabilistic Assessment (1st ed.). CRC Press, 2016. https://doi.org/10.1201/b20116

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Nino Krvavica, Ph.D.	
Course	**Fundamentals of Coastal Engineering**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**5.0**
	Number of hours (L+E+S)	**30+30+0**

1. COURSE DESCRIPTION

1.1. Course objectives

To ensure that within the course students master the basic elements of physical oceanography and wave mechanics, as well as engineering perception and solving the problem of the interaction of the sea with coastal/underwater/protective structures and the natural coast, as well as the dimensioning of protective maritime and port structures. To train students to independently solve basic tasks in the field of coastal engineering.

1.2. Course enrolment requirements

Hydrology – passed

1.3. Expected course learning outcomes

1. Define and describe basic processes in the field of physical oceanography and wave mechanics.
2. Describe and calculate the processes of generation and deformation of waves from the deep-water area to the coast.
3. Describe and explain the characteristics of the basic types of coastal structures.
4. Describe and calculate the effect of the sea on coastal structures.
5. To size and graphically depict the basic types of coastal structures.
6. To identify the impact of climate change on coastal structures.

1.4. Course content

Sea motion, winds, waves and marine currents
Mechanics of sea waves
Statistical description of sea waves and sea levels
Forecasting deep-water wind waves
Transformation of sea waves in coastal and shallow-water areas
Characteristics of offshore maritime structures (breakwaters and wave barriers)
Wave actions and design of breakwaters and quay walls
Impacts of climate change on coastal structures and coastal flooding

1.5. Types of teaching (tick as appropriate)	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☒ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes: attendance, program, periodic testing of knowledge and final exam.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
The total proportion of points available is 70% during classes and 30% in the final examination.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
US Army Corps of Engineers (2013): Coastal Engineering Manual (CEM), EM-1110-2-1100, USA.	online	

1.10. Supplementary reading

1. J. Kirinčić (1991): Ports and Terminals, Školska knjiga, Zagreb.
2. Bosboom, J., Stive M.J.F (2022): Coastal Dynamics, TU Delft, Delft, Netherlands.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Bojan Bilić, Senior Lecturer	
Course	**Fundamentals of Spatial Planning**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**20+0+10**

1. COURSE DESCRIPTION

1.1. Course objectives

Introducing students to the theory and practice of urban and spatial planning and standard types of spatial planning documentation (features, components, methodology of making, adoption and management), so that builders can participate in understanding and connecting jobs in construction with the process of planning and managing space.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Explain the basic terms according to the regulations of spatial planning and recognize their meaning and characteristics
2. List the types of spatial plans
3. Explain the objectives of spatial planning
4. List the phases of spatial planning and explain them
5. Recognize entities in spatial planning and their roles
6. Identify the parts of the spatial plan and explain their roles
7. Define the spatial planning team
8. Explain and recognize the importance and phases of urbanism
9. Analyze and/or create a spatial plan in the given segments

1.4. Course content

Spatial planning regulations
Types of plans (including basic plans)
Objectives and process of preparing spatial plans
Stakeholders in spatial planning and their roles
Components of a spatial plan
Interdisciplinary nature of spatial planning
Urban planning – its importance
The importance of cities and the historical development of urban planning
Urban structure – physical, functional and social aspects
Zoning
Housing in urban plans – primary and secondary functions, infrastructure and organisation

1.5. Types of teaching (tick as appropriate)	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☒ independent assignments ☒ multimedia and internet ☐ laboratory ☒ mentoring ☐ other _____

1.6. Student obligations

Attending classes 100% Satisfaction of activities that evaluate the acquisition of learning outcomes: class activity, colloquium, seminar, etc.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper	X	Experimental work	
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are conducted during classes. All available points (100%) are awarded during classes. Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.
Active teaching and independent work
Preparation of a seminar paper on an assigned topic. Presentation of the completed paper and discussion/assessment of acquired knowledge. Tests/assessment of knowledge acquisition.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Štimac, M., Spatial Planning in Practice, Gloss, 2010.	16	25
Ambruš, D., Mechanical City, STRAND, 2020.	1	
Marinović-Uzelac, A.: Settlements, Cities and Spaces. - Zagreb: Technical Book, 1986.	3	
Marinović-Uzelac, A.: Spatial Planning. - Zagreb, Home and World, 2001	8	
Spatial Planning Act and relevant implementing regulations (Official Gazette website)	online	

1.10. Supplementary reading

1. Marinović-Uzelac, A.: Social Space of the City. - Zagreb: SN Liber, 1986. Meise, J., Volwahsen, A.: Stadtund Regionalplanung, - Wiesbaden: Vieweg & Sohn, 1980.
2. Mumford, L.: The City in History: A Translation from English. - Zagreb: Forward, 1968.
3. Marinović-Uzelac, A.: Theory of Surface Use in Urbanism. - Zagreb: Technical Book, 1989.
4. Milić, B.: The Development of Cities Through the Centuries - Part I and Di II - Zagreb, Školska knjiga, 1994.
5. Le Corbusier, Ch.-Ed.: Mindset in Urbanism. - Belgrade, Construction Book, 1974.
6. Spatial planning documents (municipality, city, county, state, European Union).

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Iva Mrak, Ph.D.	
Course	**Building Design**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**20+25+0**

1. COURSE DESCRIPTION

1.1. Course objectives

Understanding the importance of construction in creating human living environments. Understanding the development of construction throughout history. Understanding the stages of conceiving and implementing spatial development – from spatial planning to construction. Knowledge of approaches to the design of housing as a fundamental building category. Preparation of a project for a small residential unit and elaboration of part of the detailed design using modern construction products and technologies.

1.2. Course enrolment requirements

Building Elements 1 – passed

1.3. Expected course learning outcomes

1. Enumerate and identify types of residential buildings and smaller public buildings.
2. Analyze the basic principles of design.
3. Apply the basic principles of design.
4. List the basic characteristics of the historical development of construction, especially housing.
5. List the key people, plans and projects that defined the emergence of a modern approach to design, especially housing.
6. Indicate the stages and characteristics of the development of the plan and projects, including the role of the different actors in planning and design.
7. Distinguish the basic types of residential construction and list their characteristics, residential and urban.
8. Organize individual living spaces and one smaller housing unit.
9. Prepare a conceptual design for a small residential unit and/or elaborate part of the detailed design using modern construction products and technologies.

1.4. Course content

1. Elements of historical development.
2. Approach to design, from spatial plan to detailed design, site analysis, program, orientation, building physics, technical construction conditions, regulations, fire protection, at work, conservation protection.
3. Development of housing, individual and multi-dwelling. Function, construction, design.
4. Typological division of residential buildings.
5. Multi-apartment buildings.
6. Elements of the function of the apartment, horizontal and vertical layout, equipment, usable space. Function groups, living room, farm, sleeping tract, auxiliary spaces.
7. Staircases, installation guides, heating of individual buildings, common areas.
8. Selection of materials, structures and construction technologies for residential buildings.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☒ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Class attendance: 100%.
Satisfaction of activities that evaluate the acquisition of learning outcomes: class activity, colloquium, program, etc.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation	X	Seminar paper		Experimental work	
Written examination		Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment is carried out during classes. The total proportion of points that can be earned is 100% during classes. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Biondić, Lj., Introduction to the design of residential buildings, Golden marketing - Technical book, 2011.	2	25
Technical Encyclopedia, Miroslav Krleža Institute of Lexicography, Zagreb, 1963-1997	1	
Knežević G., Kordiš I.: Residential and Public Buildings, Tehnička knjiga, Zagreb 1984.	6	
Knežević, G.: Residential Buildings, Tehnička knjiga, Zagreb 1984.	5	
Neufert: Elements of Architectural Design, Golden Marketing, Zagreb 2002	13	
Vrkljan Z.: Equipment of Construction Drawings – Detailed Drawings, Zagreb 1965.	6	
Štulhofer, A. and Veršić, Z.: Drawing Architectural Designs: Accessories and Basics, Zagreb, 1998.	3	

1.10. Supplementary reading

1. Ching, F. D. K., Architecture: Form, Space, & Order, Wiley, 2014.
2. Cornoldi, A., L' architettura della casa, Officina, Milan, 1988.
3. Pleština, L., Modular (modulated) family houses, 12[2004] 2[28] SPACE
4. Pleština, L., Traditional Elements in Croatian Architecture of Family Houses during the 20th Century, 4(1996), No. 2(12) SPACE
5. Fawcett, A. P.: Architecture: Design Notebook, Architectural Press, Oxford, 1998.
6. Production programs of construction products.
7. Magazines Oris, Detail...
8. Additional literature according to the topics of lectures recommended during classes.
9. Other sources: www.archdaily.com, europaconcorsi.com, www.greatbuildings.com, www.oma.eu, www.rpbw.com, www.mvrdv.nl, www.miessociety.org, www.fondationlecorbusier.fr ... 120

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Neira Torić Malić, Ph.D.	
Course	**Computer Programs**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	2./3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**0+30+0**

1. COURSE DESCRIPTION
1.1. Course objectives
Enable students to work independently in CAD and basic BIM environments, using advanced functions to produce 2D/3D models and generate basic technical documentation.
1.2. Course enrolment requirements
-
1.3. Expected course learning outcomes
1. Explain the fundamental differences between CAD and BIM approaches to design, including geometric drafting versus information modelling. 2. Use advanced CAD functions to prepare and organise technical drawings and create a simple 3D model of a structure in a CAD or BIM environment. 3. Apply basic BIM functions to model building elements and create a simple BIM model with fundamental attributes. 4. Generate basic technical documentation from a digital model (plans, sections, elevations, dimensions, scales and print settings). 5. Apply basic data exchange procedures and recognise common challenges in model coordination and software interoperability.
1.4. Course content
Introduction to CAD and BIM in civil engineering Digital design process and organisation of models/drawings Advanced CAD drafting (organisation, editing, fundamentals of 3D) Fundamentals of BIM modelling (elements, attributes, model structure) Generating technical documentation from models Dimensioning, scales and print settings (layouts, sheets, print preparation) Fundamentals of data exchange (DWG and the IFC concept) Fundamentals of model coordination and clash detection Preparation of a design assignment (model and documentation)

1.5. Types of teaching (tick as appropriate)		
	☐ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Students must attend lectures regularly, pass the test, participate actively in exercises and complete all assignments set during exercises.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance		Class participation	X	Seminar paper		Experimental work	
Written examination		Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Preparation of project work, activity in class, colloquiums - 100% through classes.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Autodesk AutoCAD Online Help – službena online dokumentacija za AutoCAD: https://www.autodesk.com/education/home	*online*	50
Allplan Campus – službeni edukacijski portal s tutorijalima i priručnicima za Allplan: https://campus.allplan.com	*online*	
ArchiCAD Manual – "Three Books in One" (based on Graphisoft e-manuals "ARCHICAD BIM Concept", "Conceptual Design", "Intermediate ARCHICAD"). 3D ART, Zagreb.	2	
Croatian Chamber of Civil Engineers. General Guidelines for the BIM Approach in Construction. URL: https://www.bim-hrvatska.hr	*online*	

1.10. Supplementary reading

Croatian Chamber of Civil Engineers. General Guidelines for the BIM Approach in Construction.
URL: https://www.bim-hrvatska.hr

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Martina Vivoda Prodan, Ph.D.	
Course	**Field Testing in Geotechnics**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**15+15+15**

1. COURSE DESCRIPTION

1.1. Course objectives

The course introduces students to field tests available for soils and rock masses and the standards governing geotechnical field testing.
Students will be able to independently plan and conduct basic geotechnical field tests using equipment available in the Geotechnical Laboratory, and independently process and interpret the results of field tests.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Know the types of field tests in soil and rock mass.
2. Know the standards and devices for conducting geotechnical field tests.
3. Ability to independently conduct basic geotechnical field tests in the soil to determine basic characteristics, strengths, deformation characteristics.
4. Ability to independently conduct basic geotechnical field tests in the rock mass to describe the rock mass, determine index parameters and strength.
5. Processing, understanding and interpretation of field geotechnical test results.

1.4. Course content

Introduction to geotechnical field testing.
Identification of geological structure elements.
Engineering description of rock masses.
Field determination of basic soil parameters (density, natural moisture content, etc.).
Field determination of soil strength (field vane, pocket penetrometer, portable direct shear apparatus).
Field determination of soil deformation properties (lightweight deflectometer).
Field measurement of groundwater level and soil pore pressures.
Field determination of rock mass index properties.
Field determination of rock strength (Schmidt hammer, portable point-load tester).
Field measurement of soil and rock displacement using an inclinometer.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Attending lectures and exercises. Processing of the results of field investigations and their presentation.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project		Continuous assessment		Report		Practical work	X
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are conducted during classes. All available points (100%) are awarded during classes. Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Holtz, R. D., Kovacs, W. D., Sheahan, T. C.: An Introduction to Geotechnical Engineering, Pearson, New Jersey, 853 pp., 2010.	3	25

1.10. Supplementary reading

1. Dunnicliff, J.: Geotechnical instrumentation for monitoring field performance, New York , Wiley, 1988

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Nina Čeh, Ph.D.	
Course	**Introduction to Programming**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	2./3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**10+20+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The course introduces students to fundamental programming concepts in civil engineering, with particular emphasis on using Python to solve engineering problems, process data and automate tasks.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Explain fundamental programming concepts and their role in civil engineering applications.
2. Formulate simple engineering problems using programming fundamentals.
3. Develop simple Python programs using variables, control structures and functions.
4. Apply programming tools to basic data processing and task automation.

1.4. Course content

Introduction to programming concepts and their application in civil engineering; programming languages and their classification; algorithms and basic problem-solving approaches; programming languages with an emphasis on Python for data processing, numerical analysis and automation of engineering tasks; use of Python libraries relevant to engineering.

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☐ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☐ fieldwork	☐ other _____

1.6. Student obligations

Class attendance, completion of assigned exercises, passing tests and presenting one program to other students during a seminar.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper		Experimental work	
Written examination		Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment are carried out during classes and at the final exam.
All available points (100%) are awarded during classes.
Details of the methods for monitoring and assessing students' work are provided in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Guttag, John: Introduction to Computation and Programming Using Python, MIT Press, 2013. ISBN: 9780262519632.	1	50

1.10. Supplementary reading

1. Allen B. Downey: Think Python: How to Think Like a Computer Scientist.

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Sanja Dugonjić Jovančević, Ph.D.	
Course	**Environmental Protection and Sustainable Construction**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**3.0**
	Number of hours (L+E+S)	**10+0+20**

1. COURSE DESCRIPTION

1.1. Course objectives

In addition to getting acquainted with the global challenges of the ecological system and the basic principles of nature and environmental protection, the goals of the course are to get acquainted with the fundamental impact of construction projects on the environment and the principles of sustainable construction and environmental protection.

1.2. Course enrolment requirements

-

1.3. Expected course learning outcomes

1. Connect global changes in the ecological system and the functioning of its components
2. Comment on the fundamental impacts of construction projects on the environment and the principles of environmental protection
3. Explain the course of procedures for obtaining a decision on the acceptability of the impact of the project on the environment
4. List the principles of sustainable development and sustainable construction
5. Explain the cycle of building materials and products
6. Connect the principles of energy efficiency and low-energy construction
7. Analyze the principles of using alternative energy sources
8. Analyze the challenges of waste management and the possibilities of its recovery

1.4. Course content

Global changes in ecosystems and their functioning.
Applicable legislation and fundamental principles of environmental protection.
Main environmental impacts of construction activities.
Procedures for obtaining a decision on the environmental acceptability of a proposed development.
Sustainable development and sustainable construction.
Life cycle of construction materials and products
Use of recycled products in construction.
Energy efficiency and low-energy construction.
Alternative energy sources.
Waste management and reuse.

1.5. Types of teaching (tick as appropriate)	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☒ independent assignments ☐ multimedia and internet ☐ laboratory ☐ mentoring ☐ other _____

1.6. Student obligations

Attendance at least 70%. Satisfaction of activities that evaluate the acquisition of learning outcomes: activities in class, preparation and defense of a seminar paper, colloquium.

1.7. Monitoring student work (mark the applicable category with X)

Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination		Oral examination		Essay		Research	
Project		Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Evaluation and assessment is carried out during classes. The total proportion of points that can be earned is 100% during classes. Details of the method of monitoring and evaluating the work of students are presented in the course implementation plan.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Lectures at LMS Merlin	online	25
Positive regulation and strategies of the Republic of Croatia related to the environment	online	

1.10. Supplementary reading

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

LIST_OF_COURSES

GENERAL INFORMATION		
Course leader	Assoc. Prof. Sanja Šurdonja, Ph.D.	
Course	**Railway Engineering**	
Study programme	University Undergraduate Study of Civil Engineering	
Course status	elective	
Year	3.	
Credit value and course delivery	ECTS credits	**4.0**
	Number of hours (L+E+S)	**25+20+0**

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is for students to master the basics of designing the railway route by applying different elements of the upper and lower structure.

1.2. Course enrolment requirements

Fundamentals of Road Design 1 – passed

1.3. Expected course learning outcomes

1. Define the basic horizontal and vertical geometric elements of the railway track route
2. Calculate the basic horizontal and vertical geometric elements of the track alignment
3. Describe lines and trains of different categories and define the basic properties and impact of them
4. Define the elements of the upper and lower structure of the line

1.4. Course content

Railways as a mode of transport
Historical overview and development of railways
Classification of railway lines and trains
Railway cross-section
Track superstructure and substructure
Vehicle dynamics calculations and resistances
Horizontal and vertical railway alignment
Elements of railway design: site plan, longitudinal profile, cross-sections, technical description
Railway infrastructure management and maintenance
Railway stations

1.5. Types of teaching (tick as appropriate)		
	☒ lectures	☐ independent assignments
	☒ seminars and workshops	☐ multimedia and internet
	☒ practical classes	☐ laboratory
	☐ distance learning	☐ mentoring
	☒ fieldwork	☐ other _____

1.6. Student obligations

Periodic examination of knowledge, preparation of program tasks, creation and presentation of seminar papers, attendance and active participation in classes.

1.7. Monitoring student work (mark the applicable category with X)							
Class attendance	X	Class participation		Seminar paper	X	Experimental work	
Written examination	X	Oral examination		Essay		Research	
Project	X	Continuous assessment	X	Report		Practical work	
Portfolio							

1.8. Student assessment during classes and at the final examination

Creation of program tasks.
Preparation and presentation of the seminar paper.
Periodic examination of knowledge.
Final knowledge test.

1.9. Required reading and number of copies relative to enrolled students

Title	*Number of copies*	*Number of students*
Marušić, D., Design and construction of railway lines, GF Split, Split, 1994.	8	25

1.10. Supplementary reading

1.11. Quality monitoring methods ensuring the attainment of learning outcomes, skills and competences

Quality monitoring procedures prescribed by the Quality Manual of the Faculty of Civil Engineering, University of Rijeka, are implemented.

3.2.1. Rationale for ECTS credits

The number of active teaching hours for all proposed courses was calculated based on the assumption that an average semester lasts 15 weeks. The academic year is planned to comprise 42 working weeks: two 15-week teaching periods and two examination periods of 3 × 2 weeks.
In each academic year, students earn a minimum of 60 ECTS credits in each of the proposed modules.

3.3. QUALITY ASSURANCE AND SUCCESSFUL COURSE DELIVERY

Continuous quality monitoring of the delivery of all courses is planned through various forms of evaluation and self-evaluation by teachers and students, together with quality assurance measures under the applicable regulations, particularly the Regulations on the Quality Assurance and Enhancement System of the Faculty of Civil Engineering, University of Rijeka.

3.4. STUDY STRUCTURE

In the first year of study, students enrol in courses according to the study programme as follows:

LIST OF COURSES							
	COURSE	COURSE LEADER	P	V	S	ECTS	STATUS
Year: 1.							
Semester I – winter	Physics	Prof. Boris Podobnik, Ph.D.	15	30	0	4	C
	Engineering Informatics	Assoc. Prof. Anamarija Perušić Pribanić, Ph.D. Asst. Prof. Franjo Šarčević, Ph.D.	5	45	0	5	C
	Constructive Geometry	Maura Jurić, Senior Lecturer	25	35	0	5	C
	Mathematics 1	Assoc. Prof. Anamarija Perušić Pribanić, Ph.D.	45	45	0	9	C
	Introduction to Civil Engineering	Assoc. Prof. Silvija Mrakovčić, Ph.D.	20	0	10	3	C
	Foreign language – choose one of the following:					3	C
	English Language	Saša Čohar Mančić, Senior Lecturer	10	15	5	3	E
	German Language	Saša Čohar Mančić, Senior Lecturer	10	15	5	3	E
Semester II – summer	Building Elements 1	Assoc. Prof. Iva Mrak, Ph.D.	30	30	0	6	C
	Geodesy	Andrej Marinović, Senior Lecturer	30	15	0	4	C
	Geology	Asst. Prof. Petra Jagodnik, Ph.D.	20	10	0	3	C
	Engineering Materials	Assoc. Prof. Silvija Mrakovčić, Ph.D.	25	20	0	4	C
	Mathematics 2	Asst. Prof. Rozarija Mikić, Ph.D.	45	45	0	8	C
	Fundamentals of Statics	Asst. Prof. Edita Papa Dukić, Ph.D.	30	30	0	6	C

In the second year of study, students enrol in courses according to the study programme as follows:

LIST OF COURSES							
	COURSE	COURSE LEADER	P	V	S	ECTS	STATUS
Year: 2.							
Semester III – winter	Hydrology	Prof. Nevenka Ožanić, Ph.D.	30	15	0	4	C
	Solid Body Mechanics 1	Prof. Leo Škec, Ph.D.	30	30	0	6	C
	Fundamentals of Dynamics	Assoc. Prof. Nina Čeh, Ph.D.	30	30	0	5	C
	Fundamentals of Road Design 1	Prof. Aleksandra Deluka-Tibljaš, Ph.D. Assoc. Prof. Sanja Šurdonja, Ph.D.	30	30	0	5	C
	Concrete and Asphalt Technology	Assoc. Prof. Natalija Bede Odorčić, Ph.D. Asst. Prof. Marijana Cuculić, Ph.D.	15	15	0	3	C
	Probability and Statistics	Asst. Prof. Rozarija Mikić, Ph.D.	15	30	0	4	C
	Elective courses					3	C
	Communication Skills	External lecturer	15	15	0	3	E
	Building and Constructing English	Saša Čohar Mančić, Senior Lecturer	15	10	5	3	E
	Fundamentals of Building Physics	Assoc. Prof. Neira Torić Malić, Ph.D.	15	0	15	3	E
	Computer Programs	Assoc. Prof. Neira Torić Malić, Ph.D.	0	30	0	3	E
	Introduction to Programming	Assoc. Prof. Nina Čeh, Ph.D.	10	20	0	3	E
	UNIRI course						E
	YUFE course						E
Semester IV – summer	Civil Engineering Regulations	Prof. Ivan Marović, Ph.D.	30	0	0	3	C
	Hydromechanics	Prof. Nevenka Ožanić, Ph.D. Asst. Prof. Elvis Žic, Ph.D.	30	30	0	5	C
	Solid Body Mechanics 2	Asst. Prof. Sara Grbčić Erdelj, Ph.D.	30	30	0	5	C
	Soil and Rock Mechanics	Assoc. Prof. Josip Peranić, Ph.D.	45	30	0	5	C
	Statics of Linear Structures 1	Asst. Prof. Teo Mudrić, Ph.D.	30	45	0	6	C
	Construction Machinery	Asst. Prof. Martina Šopić, Ph.D.	20	10	0	3	C
	Introduction to the Design of Civil Engineering Structures	Asst. Prof. Ante Džolan, Ph.D.	20	10	0	3	C

In the third year of study, students enrol in courses according to the study programme as follows:

LIST OF COURSES							
	COURSE	COURSE LEADER	P	V	S	ECTS	STATUS
Year: 3.							
Semester V – winter	Construction Organisation	Asst. Prof. Martina Šopić, Ph.D.	30	30	0	4	C
	Fundamentals of Concrete Structures	Prof. Davor Grandić, Ph.D.	45	30	0	6	C
	Fundamentals of Hydraulic Engineering	Prof. Barbara Karleuša, Ph.D.	30	30	0	5	C
	Fundamentals of Road Design 2	Asst. Prof. Marijana Cuculić, Ph.D.	20	25	0	4	C
	Statics of Linear Structures 2	Asst. Prof. Edita Papa Dukić, Ph.D.	30	30	0	5	C
	Professional Practice 1	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	0	0	90	3	C
	Elective courses					3	C
	Fundamentals of Unsaturated Soil Mechanics	Assoc. Prof. Josip Peranić, Ph.D.	20	0	10	3	E
	Fundamentals of Spatial Planning	Bojan Bilić, Senior Lecturer	20	0	10	3	E
	Environmental Protection and Sustainable Construction	Prof. Sanja Dugonjić Jovančević, Ph.D.	10	0	20	3	E
	Communication Skills	External lecturer	15	15	0	3	E
	Building and Constructing English	Saša Čohar Mančić, Senior Lecturer	15	10	5	3	E
	Fundamentals of Building Physics	Assoc. Prof. Neira Torić Malić, Ph.D.	15	0	15	3	E
	Computer Programs	Assoc. Prof. Neira Torić Malić, Ph.D.	0	30	0	3	E
	Introduction to Programming	Assoc. Prof. Nina Čeh, Ph.D.	10	20	0	3	E
	UNIRI course						E
	YUFE course						E

LIST OF COURSES							
	COURSE	COURSE LEADER	P	V	S	ECTS	STATUS
Year: 3.							
Semester VI – summer	Construction Economics	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	20	20	0	3	C
	Fundamentals of Steel Structures	Assoc. Prof. Paulina Krolo, Ph.D.	30	30	0	5	C
	Fundamentals of Geotechnical Engineering	Assoc. Prof. Martina Vivoda Prodan, Ph.D.	30	30	0	5	C
	Professional Practice 2	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	0	0	90	3	C
	Undergraduate Thesis	supervisor	0	0	150	5	C
	Elective courses					4	C
	Hydrotechnical Measures for Adaptation to Climate Change	Prof. Vanja Travaš, Ph.D.	30	0	15	4	E
	Construction Management	Prof. Ivan Marović, Ph.D.	30	0	15	4	E
	Bridges	Prof. Ivana Štimac Grandić, Ph.D.	30	15	0	4	E
	Fundamentals of Engineering Geology	Asst. Prof. Petra Jagodnik, Ph.D.	15	20	10	4	E
	Building Design	Assoc. Prof. Iva Mrak, Ph.D.	20	25	0	4	E
	Field Testing in Geotechnics	Assoc. Prof. Martina Vivoda Prodan, Ph.D.	15	15	15	4	E
	Railway Engineering	Assoc. Prof. Sanja Šurdonja, Ph.D.	25	20	0	4	E
	Elective courses					5	C
	Experimental Soil Mechanics	Assoc. Prof. Vedran Jagodnik, Ph.D.	15	15	30	5	E
	Building Elements 2	Assoc. Prof. Iva Mrak, Ph.D.	30	30	0	5	E
	Urban Roads and Intersections	Prof. A. Deluka-Tibljaš, Ph.D.	30	30	0	5	E
	Laboratory Testing of Materials	Assoc. Prof. Silvija Mrakovčić, Ph.D.	5	30	10	5	E
	Maintenance of Structures	Asst. Prof. Ksenija Tijanić Štrok, Ph.D.	30	15	0	5	E
	Fundamentals of Timber Structures	Prof. Adriana Bjelanović, Ph.D.	30	30	0	5	E
	Fundamentals of Coastal Engineering	Assoc. Prof. Nino Krvavica, Ph.D.	30	30	0	5	E

The sets of learning outcomes shown in Table 4 include the listed compulsory and elective courses. Students who pass the specified elective courses in a given set acquire field-specific competences.

Table 4.

Set of learning outcomes	Compulsory courses	ECTS	Elective courses	ECTS	Total ECTS credits
Structures	Introduction to the Design of Civil Engineering Structures	3,0	Environmental Protection and Sustainable Construction	3,0	**26**
	Fundamentals of Concrete Structures	6,0	Bridges	4,0	
	Fundamentals of Steel Structures	5,0	Fundamentals of Timber Structures	5,0	
Materials	Professional Practice 2	3,0	Fundamentals of Building Physics	3,0	**26**
	Engineering Materials	4,0	Environmental Protection and Sustainable Construction	3,0	
	Concrete and Asphalt Technology	3,0	Laboratory Testing of Materials	5,0	
			Maintenance of Structures	5,0	
Fundamentals of geotechnics	Geology	3,0	Fundamentals of Unsaturated Soil Mechanics	3,0	**25**
	Soil and Rock Mechanics	5,0	Fundamentals of Engineering Geology OR Field Testing in Geotechnics	4,0	
	Fundamentals of Geotechnical Engineering	5,0	Experimental Soil Mechanics	5,0	
Fundamentals of hydraulic engineering structures and systems	Hydrology	4,0	Environmental Protection and Sustainable Construction OR Fundamentals of Spatial Planning	3,0	**26**
	Hydromechanics	5,0	Hydrotechnical Measures for Adaptation to Climate Change	4,0	
	Fundamentals of Hydraulic Engineering	5,0	Fundamentals of Coastal Engineering	5,0	
Fundamentals of road planning and design	Geodesy	4,0	Environmental Protection and Sustainable Construction OR Fundamentals of Spatial Planning	3,0	**25**
	Fundamentals of Road Design 1	5,0	Railway Engineering	4,0	
	Fundamentals of Road Design 2	4,0	Urban Roads and Intersections	5,0	
Fundamentals of organisational and technological measures in construction	Construction Machinery	3,0	Environmental Protection and Sustainable Construction	3,0	**25**
	Civil Engineering Regulations	3,0	Construction Management	4,0	
	Construction Organisation	4,0	Maintenance of Structures	5,0	
	Construction Economics	3,0			
Fundamentals of building design and maintenance	Building Elements 1	6,0	Fundamentals of Building Physics	3,0	**24**
	Introduction to the Design of Civil Engineering Structures	3,0	Computer Programs	3,0	
			Building Design	4,0	
			Maintenance of Structures	5,0	

3.5. PACE OF STUDY

Student obligations are defined by applicable regulations, particularly the Regulations on Studies of the University of Rijeka, and by the course syllabi in this programme. Enrolment requirements for individual courses are stated in the course descriptions and listed separately in the table below.

3.6. LIST OF COURSES THAT STUDENTS MAY ENROL IN FROM OTHER STUDY PROGRAMMES

Students may enrol in courses from other study programmes at the Faculty of Civil Engineering, University of Rijeka, or another higher education institution. During their studies, the Committee for Academic Recognition and Recognition of Periods of Study may permit a student to enrol in and pass an elective course of up to 5 ECTS credits from a list of shared courses at another constituent unit of the University of Rijeka.

3.7. COMPLETION OF THE STUDY

The study is completed by passing all prescribed examinations, fulfilling all other obligations and preparing and orally defending the undergraduate thesis before a committee. The committee consists of the supervisor and at least one other teaching staff member, one of whom chairs the committee. Attendance by other teachers and students at the defence is encouraged.

4. CONDITIONS FOR STUDY DELIVERY

4.1. STUDY LOCATIONS

Since 24 October 2011, the Faculty has operated in its new building at Radmile Matejčić 3, on the University Campus at Trsat.
The building is owned by the University of Rijeka, while the Faculty is its user. The Faculty has a total net usable area of 8,870 m² for teaching, scientific and professional activities and related operations, corresponding to 11.76 m² of total area per student. The Faculty also has five modern fully equipped laboratories with a total net usable area of 969.62 m².

4.2. SPACE AND EQUIPMENT

The Faculty's new building on the University Campus allows all teaching activities to take place at a single location. Students and teachers have access to 21 lecture and practical classrooms, three rooms for student activities (independent work, graduate students and demonstration classes), and five modern fully equipped laboratories (Hydraulic Engineering, Geotechnics, Structures, Materials and Transportation Engineering). The two largest lecture halls, G-003 and G-004, each have 165 seats and state-of-the-art multimedia equipment for simultaneous interpretation and videoconferencing. Rooms G-206 and G-207 together form one 72-seat lecture hall with multimedia equipment but may be separated by a movable partition. Practical rooms G-109, G-111 and G-213 are computer classrooms with a total of 87 student computers. The remaining lecture and practical classrooms seat 30 to 60 people and are equipped with projectors and computers. All classrooms offer wireless and wired internet connections and air conditioning. The laboratories are used for practical teaching and student laboratory tests for graduate theses.

The Faculty has a library with a spacious reading room equipped with networked computers. Sanitary facilities and a student canteen allow students to spend extended periods at the Faculty. In addition to the 30-seat reading room, the new building offers students an independent study room with approximately 20 seats, a graduate student room with approximately 20 seats and a demonstration classroom with approximately 10 seats.

4.3. OPTIMAL NUMBER OF STUDENTS

Given the available space, equipment and teaching staff, the optimal intake for the university undergraduate study of civil engineering is 120 to 140 students.

5. LIST OF PROGRAMME AMENDMENTS

5.1. PROGRAMME AMENDMENTS OF APRIL 2008.

Section 2.6. Academic title or degree
The professional title was specified precisely on the basis of the List of Academic Titles and Degrees and Their Abbreviations (Official Gazette No. 45/2008).

Section 3.1. List of compulsory and elective courses
The numbers of teaching hours and ECTS credits for courses were amended following an analysis of study quality indicators (ECTS, student evaluations and success rates), as follows:

- The ECTS credits for Linear Algebra were changed from 5.5 to 6.0.
- The ECTS credits for Informatics were changed from 4.0 to 4.5.
- For Constructive Geometry, the active teaching hours (L+E+S) changed from 45+0+30 to 45+15+30, and the ECTS credits from 5.0 to 6.0.
- The ECTS credits for Physics were changed from 5.0 to 4.5.
- The Strength of Materials course in Semester II, worth 9.5 ECTS credits and comprising 60+60+0 active teaching hours, was divided into Strength of Materials I (5.5 ECTS, 30+30+0 teaching hours in Semester I) and Strength of Materials II (5.5 ECTS, 30+30+0 teaching hours in Semester II).
- Mechanics II is delivered in Semester II instead of Semester III, with 30+30+0 teaching hours and 5.5 ECTS credits.
- The ECTS credits for Geodesy were changed from 4.0 to 3.5.
- For Building Structures, the teaching hours were changed from 30+30+0 to 30+15+0, and ECTS credits from 5.0 to 4.0.
- **English Language and German Language are delivered entirely in Semester II, with 30+0+30 teaching hours and 3.5 instead of 5.0 ECTS credits.**
- For Mathematical Analysis II, teaching hours were changed from 60+45+0 to 45+45+0, and ECTS credits from 8.0 to 7.5.
- For Applied Geology, teaching hours were changed from 30+0+0 to 30+5+0, and ECTS credits from 2.5 to 3.0.
- For Materials I, the distribution of active teaching hours changed from 15+15+0 to 30+0+0.
- The ECTS credits for Structural Analysis II were changed from 7.0 to 6.5.
- The ECTS credits for Hydromechanics were changed from 5.0 to 5.5.
- For Engineering Geometry, the distribution of active teaching hours changed from 0+0+30 to 10+0+20.
- A new elective course, Introduction to Programming, with 10+20+0 teaching hours and 3 ECTS credits, was added to the elective group in Semester II.
- Building and Constructing English, with 15+10+5 teaching hours and 2 ECTS credits, was added to elective course group II.
- For Environmental Protection, the distribution of active teaching hours changed from 20+0+10 to 10+0+20.
- For Construction Management, the distribution of active teaching hours changed from 45+0+0 to 30+0+15.
- In the elective courses Fundamentals of Spatial Planning, Building Design, Building Physics and Environmental Protection, continuous assessment tests replaced examinations as a method of assessing learning outcomes.
- The elective hydraulic engineering course Urban Water Systems was replaced by Water Resources and Systems, with the same teaching hours (30+0+30) and ECTS credits (5.0).

Section 3.2.1. Description of compulsory and elective courses
In the section describing compulsory and elective courses, amendments to the course syllabi were based on Article 43 of the Amendments to the Regulations on Studies of the University of Rijeka. The amendments concern

examination methods and student assessment. In addition, the reading lists were supplemented or amended for almost all courses.

3.2.2.1. Rationale for ECTS credits by course
ECTS credits were redistributed across all student obligations: active teaching, coursework, laboratory exercises, seminar papers, continuous assessment tests and final examinations.

Section 3.3. Study structure:
In accordance with Article 43 of the Amendments to the Regulations on Studies of the University of Rijeka, the study structure was changed and the programme is no longer presented by semester, but as follows:

- courses enrolled in during the first year are defined by the study programme;
- in subsequent years, students enrol in courses according to the ECTS credits earned in the preceding academic year and the enrolment prerequisites; students must generally be guaranteed the possibility of enrolling in 60 ECTS credits.

Section 3.3.2.1. Requirements for enrolment in the following academic year
Progression through the study programme is defined by Article 34 of the Amendments to the Regulations on Studies of the University of Rijeka, and the programme has been adjusted accordingly.

Section 3.3.2.2. Prerequisites for course enrolment/completion
Prerequisites were established to enable students to enrol in up to 60 ECTS credits in each academic year (see the amendment to Section 3.3.2.1).

Section 4.3. Names of teaching staff and number of assistants involved in teaching
The teaching staff list was updated to include staff currently delivering the study programme.

5.2. PROGRAMME AMENDMENTS OF MAY 2010.

Decision-making level – Faculty Council and Senate:

- Change of course title accompanied by a change to part of the content:

Former course title	New course title	Change of content
Fundamentals of Concrete and Masonry Structures	Fundamentals of Concrete Structures	The amendment covers 2 ECTS credits

- Change of course title without a change in content:

Former course title	New course title
Materials I	Structure and properties of materials
Materials II	Engineering Materials
Building Physics	Fundamentals of Building Physics

5.3. PROGRAMME AMENDMENTS OF JULY 2012.

Decision-making level – Academic Council of the Centre for Studies and the Senate:

- **Replacement of the elective course Traffic Planning and Design by another elective in the same field, Urban Roads and Intersections, with the same teaching hours and ECTS credits.**

Former elective course	New elective course	Hours (L+E+S)	ECTS
Traffic Planning and Design	Urban Roads and Intersections	30+30+0 (60 hours in total)	5,0

- **Redistribution of teaching hours between forms of teaching within the allocated total for Environmental Protection:**

Course	Hours before (L+E+S)	Hours after amendment (L+E+S)
Environmental Protection	10+0+20 (30 hours in total)	15+0+15 (30 hours in total)

- **Changes to assessment methods in English Language, German Language, Engineering Geometry, Computer Programs, Introduction to Programming, Communication Skills, Fundamentals of Language Culture, History of Structures, Building and Constructing English, Fundamentals of Spatial Planning, Building Design, Fundamentals of Building Physics and Environmental Protection: assessment changed from "pass" to percentage, numerical and letter grades in accordance with the Regulations on the Evaluation and Assessment of Students' Work at the Faculty of Civil Engineering, University of Rijeka.**

5.4. PROGRAMME AMENDMENTS OF MAY 2014.

Decision-making level – Academic Council of the Centre for Studies and the Senate:

- **Changes in content and ECTS credits, and redistribution of teaching hours between different forms of teaching within the existing total, in Structural Analysis I and Structural Analysis II.**
- **Changes in content and ECTS credits: Mechanics II.**
- **Increase in ECTS credits for Strength of Materials I and Roads.**
- **Redistribution of teaching hours between forms of teaching within the existing total for Building Design.**
- **Introduction of a new elective course: Design of Civil Engineering Structures.**

Course (M – mandatory; E – elective)	Hours		ECTS		Other changes
	before (L+E+S)	amendment (L+E+S)	before	amendment	
Mechanics II (M)	30+30+0	No change	5,5	5,0	Reduction of content
Strength of Materials I (M)	30+30+0	No change	5,5	6,0	None
Structural Analysis I (M)	45+30+0 (75 hours in total)	30+45+0 (75 hours in total)	6,5	6,0	Reduction of content
Structural Analysis II (M)	45+30+0 (75 hours in total)	30+45+0 (75 hours in total)	6,5	6,0	Reduction of content
Roads (M)	30+30+0	No change	4,5	5,5	None
Building Design (E)	15+30+0 (45 hours in total)	25+20+0 (45 hours in total)	3,0	No change	None
Design of Civil Engineering Structures (E)	-	25+20+0 (45 hours in total)	-	3,0	New course

5.5. PROGRAMME AMENDMENTS OF JULY 2016.

Decision-making level – Faculty Council:

- **Redistribution of allocated teaching hours between forms of teaching in the elective courses History of Structures and Design of Civil Engineering Structures.**
- **Introduction of a new student obligation within the allocated ECTS credits in the elective course Construction Economics.**
- **Changes to reading lists in the elective courses Construction Economics and Civil Engineering Regulations, and the compulsory course Construction Organisation and Technology.**
- **Change of course leaders for the electives Civil Engineering Regulations, Construction Management and Environmental Protection.**

Course (M – mandatory; E – elective)	Hours		ECTS		Other changes
	before (L+E+S)	amendment (L+E+S)	before	amendment	
History of Structures (E)	15+0+15	25+0+5	2,0	None	None
Construction Economics (M)	30+15+0	None	4,0	None	Reading list, new obligation
Civil Engineering Regulations (E)	30+0+0	None	3,0	None	Reading list, course leader
Construction Management (E)	30+0+15	None	3,0	None	Course leader
Construction Organisation and Technology (M)	45+30+0	None	6,0	None	Reading list
Design of Civil Engineering Structures (E)	25+20+0	30+10+5	3,0	None	None
Environmental Protection (E)	15+0+15	None	2,0	None	Course leader

Decision-making level – Academic Council of the Centre for Studies and the Senate:

- **Increase in the number of hours for the compulsory course Applied Geology.**
- **Change of enrolment requirements for Applied Geology.**
- **Introduction of a new student obligation within the allocated ECTS credits for Applied Geology.**
- **Introduction of a new elective course, Experimental Soil Mechanics.**

Course (M – mandatory; E – elective)	Hours		ECTS		Other changes
	before (L+E+S)	amendment (L+E+S)	before	amendment	
Applied Geology (M)	30+5+0	30+15+0	3,0	None	Enrolment requirement, new obligation
Experimental Soil Mechanics (E)	-	15+15+30	-	5,0	New course

5.6. PROGRAMME AMENDMENTS OF JULY 2017.

Decision-making level – Faculty Council:

- **Redistribution of teaching hours between forms of teaching within the allocated total for the elective course Railway Engineering.**

- **Change of course leaders for Mechanics I, Structural Analysis I, Hydromechanics, Railway Engineering, Engineering Informatics and Computer Programs.**
- **Renaming Design of Civil Engineering Structures to Introduction to the Design of Civil Engineering Structures, and Informatics to Engineering Informatics.**

Course (M – mandatory; E – elective)	Hours		ECTS		Other changes
	before (L+E+S)	amendment (L+E+S)	before	amendment	
Railway Engineering (E)	45+15+0	30+15+15	5,0	none	course leader
Mechanics I (M)	30+30+0	none	5,5	none	course leader
Structural Analysis I (M)	30+45+0	none	6,0	none	course leader
Hydromechanics (M)	30+30+0	none	5,5	none	course leader
~~Informatics~~ Engineering Informatics (M)	30+25+5	none	4,5	none	course leader, course title
Computer Programs (E)	10+10+10	none	3,0	none	course leader
~~Design of Civil Engineering Structures~~ Introduction to the Design of Civil Engineering Structures (E)	30+10+5	none	3,0	none	course title
Fundamentals of Concrete Structures (M)	45+30+0	none	6,0	none	enrolment requirements
Fundamentals of Steel Structures (M)	30+30+0	none	5,0	none	enrolment requirements
Fundamentals of Timber Structures (E)	30+30+0	none	5,0	none	enrolment requirements
Bridges (E)	30+15+15	none	5,0	none	enrolment requirements

- **Changes to enrolment requirements for Fundamentals of Concrete Structures, Fundamentals of Steel Structures, Fundamentals of Timber Structures and Bridges.**

Course (M – mandatory; E – elective)	Existing enrolment requirements	Amended enrolment requirements
Fundamentals of Concrete Structures (M)	Strength of Materials I and Structural Analysis II	Strength of Materials II and Structural Analysis I
Fundamentals of Steel Structures (M)	Structural Analysis I	Strength of Materials II and Structural Analysis I
Fundamentals of Timber Structures (E)	Strength of Materials II	Strength of Materials II and Structural Analysis I
Bridges (E)	Engineering Materials	Structural Analysis I

5.7. PROGRAMME AMENDMENTS OF MAY 2018.

Decision-making level – Faculty Council:

- Following the activation of the Chair of Architecture and Urban Planning, course codes were harmonised. Courses of the Chair of Construction Organisation and Technology bear the code OT, while those of the Chair of Architecture and Urban Planning bear AU.
- **Redistribution of ECTS credits within the total assigned to individual courses (Section 3.2.2.1).**

Course	*Active teaching*		*Coursework/ Laboratory exercises*		*Seminar papers*		*Tests*		*Examination*		*Total ECTS*
	Before	*Amendment*	*Before*	*Amendment*	*Before*	*Amendment*	*Before*	*Amendment*	*Before*	*Amendment*	
Roads	2	1,5	1,5	1,75			1,25		0,75	1	5,5
Construction Economics		1	1				2	1	1		4
Experimental Soil Mechanics	1,5		1,5	0,5		0,5		1,5	2	1	5
English Language	2	1,5			0,5	0,75	1	1,25	-		3,5
Physics	2	1,5	0,5	0,75			1	1,25	1		4,5
Fundamentals of Building Physics	1	0,75	1			0,5		0,75	-		2
Geodesy	1,5	1	1				0,5	1	0,5		3,5
Geotechnical Engineering	2,5	1,75	1	1,25	0,5	0,75	1		1	1,25	6
Urban Roads and Intersections	1,5		1	1,5	0,5		1	1,25	1	0,75	5
Civil Engineering Regulations	1	0,75			0,5		1,5	1	-	1,25	3
Structural Analysis I	0,5	1,75		1,25	0,5		2	1,5	3	1,5	6
Structural Analysis II	0,5	1,75			0,5		2	1,5	3	2,25	6
Building Structures	1,5	1	0,5	1,5	0,5		0,5		1		4
Hydrology	1		0,5	0,9			1	0,75	0,5	0,35	3
Hydromechanics	2	1,5	0,5	0,2			2	2,8	1		5,5
Engineering Informatics	1,5		1		0,5	0,25	1	1,5	0,5	1,25	4,5
Engineering Geometry	1	0,75		1	1	1,25	1		-		3
Engineering Materials	2	1,5	1				1	2	1	0,5	5
Communication Skills	1	0,75	1	1,25					-		2
Building and Constructing English	1	0,75	0,5	0,75	0,5				-		2
Constructive Geometry	1,5	2	2	1,5	0,5	2	1		1	0,5	6
Linear Algebra	2	1,5					3	3,5	1		6
Mathematical Analysis I	3	2					3	4	1,5		7,5
Mathematical Analysis II	3,5	2					2,5	4	1,5		7,5
Mechanics I	2	1,5					2,5	3,0	1		5,5
Mechanics II		1,5	0,5				3	2,5	1,5	1	5
Soil and Rock Mechanics	2,5	1,75	0,5	0,75	1		0,5	0,75	1	1,25	5,5
Construction Management	1				1		0,5		0,5		3
Bridges	2	1,5	0,5	1,2	0,5	0,8	1		1	1,5	5
German Language	2	1,5			0,5	0,75	1	1,25	-		3,5
Construction Organisation and Technology	2,5	1,75	1,5	1,25			1	2	1		6
Fundamentals of Concrete Structures	2,5	1,75	1,5	2			1		1	1,25	6
Fundamentals of Steel Structures	2	1,5	1,5	1			0,5	1,6	1	0,9	5
Fundamentals of Timber Structures	2	1,5	1	1,5			1	1,5	1	0,5	5

Course	*Active teaching*		*Coursework/ Laboratory exercises*		*Seminar papers*		*Tests*		*Examination*		*Total ECTS*
	Before	*Amendment*	*Before*	*Amendment*	*Before*	*Amendment*	*Before*	*Amendment*	*Before*	*Amendment*	
Fundamentals of Hydraulic Engineering	2	1,5	1	1,5			1		1		5
Fundamentals of Language Culture	1	0,75	1	1,25					-		2
Fundamentals of Coastal Engineering	2	1,5	1	1,5			1	1,5	1	0,5	5
Fundamentals of Spatial Planning	1				1		1		-		3
Strength of Materials I		1,5	1				3,5	3,0	1,5		6
Strength of Materials II	2	1,5					2,5	2,5	1	1,5	5,5
History of Structures	1	0,75			1	0,5		0,75	-		2
Applied Geology	1	0,75	0,5				1	1,65	0,5	0,6	3
Building Design	0,5	1	1,5	1			1		-		3
Computer Programs	1	0,75	1		1	0,5		1,75	-		3
Structure and properties of materials	1	0,75					1	1,25	0,5		2,5
Fieldwork	1	0,75	1	1,25			1		-		3
Introduction to Programming	1	0,75	1	0,75	1			0,5	-		3
Introduction to the Design of Civil Engineering Structures	0,5	1	1,5	0,6		1	1	0,4	0		3
Water Resources and Systems	2	1,5	1			1	1	2	1	0,5	5
Environmental Protection	1	0,75			0,5	0,75	0,5				2
Railway Engineering	2	1,5	1	1,5			1	1,25	1	0,75	5
Undergraduate Thesis	1			0 – 3	3	0 – 3			1		5

Decision-making level – Academic Council of the Centre for Studies and the Senate:

- **Redistribution of teaching hours between Constructive Geometry and Building Structures.**

Course (M – mandatory; E – elective)	**Hours**		**ECTS**		**Other changes**
	before (L+E+S)	**amendment (L+E+S)**	**before**	**amendment**	
Constructive Geometry (M)	45+15+30	30+15+30	6,0	none	
Building Structures (M)	30+15+0	30+30+0	4,0	none	

5.8. PROGRAMME AMENDMENTS OF JUNE 2023.

Decision-making level – Faculty Council:

The following amendments to the study programme were adopted:

1. introduction of new and/or discontinuation of existing compulsory courses
2. changes to the learning outcomes of compulsory courses

3. increase or decrease in ECTS credits for compulsory courses
4. increase, decrease or redistribution of allocated hours for compulsory courses among different forms of teaching (lectures, exercises and seminars)
5. changes to course titles without changes to their content
6. introduction of new and/or discontinuation of existing elective courses
7. changes to the learning outcomes of elective courses
8. increase, decrease or redistribution of allocated hours for elective courses among different forms of teaching (lectures, exercises and seminars)

Amendments to compulsory courses expressed as percentage values (items 1–4), together with the changes under item 5 (not expressed as a percentage), are shown in Table 1 below. Shading indicates the amendment with the greatest impact factor. If two amendments to a course have the same highest impact factor, only one is marked, namely the one used in the calculation of the percentage of amendments.

Table 1. Amendments to compulsory courses

COMPULSORY COURSE (FORMER TITLE)	NEW	DISCONTINUED	INCREASE IN ECTS CREDITS	DECREASE IN ECTS CREDITS	CHANGE IN LEARNING OUTCOMES <50%	REDISTRIBUTION OF TEACHING HOURS
Engineering Informatics			0,5		Yes	Yes
Constructive Geometry				1	Yes	Yes
Introduction to Civil Engineering	3					
Mathematical Analysis 1		7,5				
Mathematics 1 (Linear Algebra)			3		Yes	Yes
Fundamentals of Statics (Mechanics 1)			0,5		Yes	
Physical Education		1				
Geodesy			0,5			
Building Elements (Building Structures)			2		Yes	
Physics				0,5		Yes
Fundamentals of Dynamics (Mechanics 2)					Yes	
Solid Body Mechanics 1 (Strength of Materials 1)					Yes	
Statics of Linear Structures 1 (Structural Analysis 1)					Yes	3
Introduction to the Design of Civil Engineering Structures	3					
Hydrology			1			
Mathematics 2 (Mathematical Analysis 2)			0,5		Yes	
Solid Body Mechanics 2 (Strength of Materials 2)				0,5	Yes	
Geology (Applied Geology)					Yes	Yes
Structure and properties of materials		2,5				
Fundamentals of Road Design 1 (Roads)				0,5	Yes	
Probability and Statistics	4					
Concrete and Asphalt Technology	3					
Statics of Linear Structures 2 (Structural Analysis 2)				1	2,5	Yes
Fundamentals of Road Design 2	4					
Hydromechanics				0,5		
Construction Technology	3					
Civil Engineering Regulations	3					
Engineering Materials				1	Yes	Yes
Soil and Rock Mechanics				0,5		Yes

COMPULSORY COURSE (FORMER TITLE)	NEW	DISCONTINUED	INCREASE IN ECTS CREDITS	DECREASE IN ECTS CREDITS	CHANGE IN LEARNING OUTCOMES <50%	REDISTRIBUTION OF TEACHING HOURS
Fundamentals of Geotechnical Engineering (Geotechnical Engineering)				1		Yes
Construction Organisation (Construction Organisation and Technology)				2	Yes	Yes
Construction Economics				1		Yes
Professional Practice 1 (Fieldwork)					Yes	Yes
Professional Practice 2	3					
Undergraduate Thesis						Yes

Amendments to elective courses listed above under items 6, 7 and 8, which are not expressed as percentage values, are shown in Table 2.

Table 2. Amendments to elective courses

ELECTIVE COURSE	NEW	DISCONTINUED	INCREASE IN ECTS CREDITS	DECREASE IN ECTS CREDITS	CHANGE IN LEARNING OUTCOMES	REDISTRIBUTION OF TEACHING HOURS
English Language				0,5		Yes
German Language				0,5		Yes
Fundamentals of Building Physics			1			
Building and Constructing English			1			Yes
Communication Skills			1		Yes	
Environmental Protection and Sustainable Construction (Environmental Protection)			1		Yes	Yes
Fundamentals of Spatial Planning					Yes	Yes
Fundamentals of Unsaturated Soil Mechanics	3					
Railway Engineering				1		Yes
Hydrotechnical Measures for Adaptation to Climate Change	4					
Bridges				1	Yes	Yes
Building Design			1		Yes	Yes
Fundamentals of Engineering Geology	4					
Field Testing in Geotechnics	4					
Maintenance of Structures	5					
Fundamentals of Language Culture		Yes				
History of Structures		Yes				
Water Resources and Systems		Yes				
Civil Engineering Regulations		Yes				
Introduction to the Design of Civil Engineering Structures		Yes				

5.9. PROGRAMME AMENDMENTS OF SEPTEMBER 2024.

Decision-making level – Faculty Council:

Changes to course enrolment requirements:
• For Probability and Statistics, the requirement to have passed Mathematics 1 is removed.
• For Fundamentals of Dynamics, the requirement to have passed Physics is removed.

5.10. PROGRAMME AMENDMENTS OF MAY 2025.

Decision-making level – Faculty Council:

- **Change of course leaders for courses**
- **Changes to course objectives or content without simultaneous changes to learning outcomes**
- **Change in teaching methods for the course**
- **Increase, decrease or redistribution of allocated hours among different forms of teaching**
- **Changes in methods of monitoring students' work in the course**
- **Changes in the assessment and evaluation of students' work in the course**

Course (M – mandatory; E – elective)	Hours		Other changes
	before (L+E+S)	amendment (L+E+S)	
Construction Economics (M)	-	-	Change of course leader
Civil Engineering Regulations (M)	-	-	Change of course leader
Engineering Materials (M)	30+15+0	25+20+0	Change of course leader, teaching methods, assessment methods and monitoring methods
Engineering Informatics (M)	-	-	Change of course leader
Mathematics 1 (M)	-	-	Change of course leader
Mathematics 2 (M)	-	-	Change of course leader
Soil and Rock Mechanics	-	-	Change of course leader
Maintenance of Structures (E)	-	-	Change of course leader
Construction Organisation (M)	-	-	Change of course leader
Fundamentals of Building Physics (E)	20+0+10	15+0+15	Change of course leader, objectives, content, monitoring methods and reading list
Fundamentals of Geotechnical Engineering (M)	-	-	Change of course leader and monitoring methods
Statics of Linear Structures 2 (M)	-	-	Change of course leader
Professional Practice 1 (M)	-	-	Change of course leader
Professional Practice 2 (M)	-	-	Change of course leader
Concrete and Asphalt Technology (M)	-	-	Change of course leader, assessment methods, monitoring methods and reading list
Construction Technology (M)	-	-	Change of course leader
Introduction to Programming (E)	-	-	Change of course leader
Introduction to the Design of Civil Engineering Structures (M)	-	-	Change of course leader
Probability and Statistics (M)	-	-	Change of course leader

5.11. PROGRAMME AMENDMENTS OF JULY 2026.

Decision-making level – Faculty Council:

- **Change of course leaders for courses**
- **Changes to course objectives or content without simultaneous changes to programme learning outcomes**
- **Change in teaching methods for the course**
- **Increase, decrease or redistribution of allocated hours among different forms of teaching**
- **Changes in methods of monitoring students' work in the course**
- **Changes in the assessment and evaluation of students' work in the course**

Course (M – mandatory; E – elective)	Hours		Other changes
	before (L+E+S)	amendment (L+E+S)	
Building Elements (M)	-	-	New course title: Building Elements 1; changes to content, teaching methods, assessment methods, monitoring methods and reading list
Building Elements 2 (E)	-	30+30+0	New course
Engineering Informatics (M)	5+30+15	5+45+0	Changes to content, learning outcomes, monitoring methods and reading list
Engineering Materials (M)	-	-	Change of course content
Constructive Geometry (M)	30+30+0	25+35+0	Changes to content and learning outcomes
Laboratory Testing of Materials (E)	-	5+30+10	New course
Construction Organisation (M)	-	-	Change of course leader
Fundamentals of Road Design 2 (M)	-	-	Change of course leader
Statics of Linear Structures 1 (M)	30+30+0	30+45+0	None
Computer Programs (E)	-	-	Changes to objectives, content, learning outcomes, teaching methods, monitoring methods and reading list
Construction Technology (M)	-	-	New course title: Construction Machinery; changes to course leader, objectives, learning outcomes, content, assessment methods and reading list
Introduction to Programming (E)	-	-	Changes to objectives, content and learning outcomes
Probability and Statistics (M)	30+15+0	15+30+0	None