UNIVERZA V LJUBLJANI

FGG

Fakulteta za gradbeništvo in geodezijo

Presentation of the study programme

1st cycle academic study programme

WATER SCIENCE AND ENVIRONMENTAL ENGINEERING (BA)

Valid from study year 2025/2026 | Valid study programme from 1/10/2025

University of Ljubljana, Faculty of Civil and Geodetic Engineering

INFORMATION ABOUT THE STUDY PROGRAMME

1. Basic data

Programme name	**Water Science and Environmental Engineering**
Programme characteristics	
Type	academic
Cycle	first cycle
KLASIUS-SRV	Academic higher education (first Bologna cycle)/Academic higher education (first Bologna cycle) (16204)
ISCED	• architecture, urbanism and civil engineering (58)
KLASIUS-P	• Civil engineering (other) (5829)
KLASIUS-P-16	• Civil engineering (0732)
Frascati	• Technical sciences (2)
Level SOK	Level SOK 7
Level EOK	Level EOK 6
Level EOVK	First cycle
Areas/modules/orientations	• No subdivision (study programme)
Member of University of Ljubljana	• Faculty of Civil and Geodetic Engineering, Jamova 2, 1000 Ljubljana, Slovenia
Duration (years)	3
Number of ECTS per year	60
Implementation of study	full time

2. Basic goals of the programme

Graduates of the bachelor degree study programme Water Science and Environmental Engineering will acquire general fundamental knowledge of natural and social sciences, as well as applicable expert (civil) engineering skills for solving elementary administrative procedures and designing, planning, implementing and maintaining less demanding (according to the actual legislation) civil engineering structures (according to the uniform classification of types of constructions CC-SI) in the areas of water management, municipal and environmental engineering.

Besides gaining general theoretic knowledge, students will also learn the traditional principles of water science and the latest achievements of the profession, presented in a modern way using state-of-the-art technology. By working in groups, involvement in project work, field work and by solving problem tasks, students will acquire the essentials of interdisciplinary teamwork and public speaking skills and will be able to coherently present scientific and engineering ideas to expert and lay public. They will become acquainted with business with clients in administrative procedures, procedures of public procurement, and design of structures and interventions. Students will have the opportunity to test all the acquired theoretical knowledge to the largest possible extent within practical exercises and real-life case studies, which will help them, together with practical training as part of the study, to get involved in practical work after the finished bachelor study. Another goal of the programme is also to provide students with sufficient basic engineering knowledge to allow the development of abstract thinking and successful continuation of the study at different second cycle (i.e. master degree) programmes.

3. General competences

General competences acquired by the graduates of the bachelor degree study programme Water Science and Environmental Engineering are:

- general overview of academic areas,
- development of abilities to frame, comprehend and creatively solve problems, principles and theories,
- high level of creativity and innovation as a result of the interdisciplinary nature of the study,
- critical reading and understanding of relevant literature, independent knowledge gathering and literature search,
- development of the abilities of critical, analytical and synthetic thinking,
- competences for transferring and applying theoretical knowledge into practice and solving professional and practical problems,
- development of professional and ethical responsibilities,

- development of verbal and numerical literacy, public speaking skills and competences to communicate with clients as well as the lay and professional public,
- ability to use a foreign language in professional written and oral communication,
- ability to use information and communication technologies, also in an international setting,
- ability to establish local and international interdisciplinary connections,
- compliance with safety, functional, economic and environmental aspects of work,
- development of high ethical and moral standards (maintaining integrity when working with clients, providing unbiased advice, sustaining independence and expertise according to valid legislation),
- developing an objective view of the environment and society,
- accepting responsibilities to customers and employers as well as the society as a whole,
- ability to design and implement constructions in compliance with quality and price standards and carry out independent technical evaluations supported by scientific analysis and synthesis, all based on the acquired fundamental knowledge of basic natural and social sciences and fundamental expertise from the area of civil engineering, water science and municipal engineering,
- ability to consider the basics of engineering economy and the issues of environment protection in designing structures in the area of environmental civil engineering.

4. Course-related competences

Course-specific competences students acquire within the programme Water Science and Environmental Engineering are mainly the following:

- understanding the role and importance of water management in modern society,
- taking part in planning, organisation, management and implementation of the construction of less demanding civil engineering structures in the area of water management,
- independently designing of individual elements of less demanding civil engineering structures in the area of water management but does not design the entire structures,
- independently and creatively performing certain (less demanding) tasks from the area of water management, environmental and municipal engineering,
- taking part (within a group) in planning, design and implementation of different interventions into the aquatic environment
- involvement in the preparation of spatial planning acts,
- coordinating work between investors, designers and contractors,
- knowing the basics of legal, institutional and administrative system essential for water management and for managing and recording water resources,
- graduates are qualified to oversee smaller water management companies.

5. Conditions for enrolment

The first cycle bachelor degree study programme Water Science and Environmental Engineering is available to the candidates who:

a) passed the general matura exam,
b) pass vocational matura exam from one of the four-year secondary school programmes Electrician, Pharmaceutical Technician, Surveyor, Geotechnician, Forestry Technician, Civil Engineering Technician, Chemical Technician, Agricultural Enterprise Technician, Ship Mechanical Technician, Wood Technician, Metallurgical Technician, Environmental Protection Technician, Mechanical Technician, Technician of Economic Communications, Technician of Electronic Communications, Technician of Laboratory Biomedicine, Mechatronic Technician, Computer Technician, and exam from the general matura exam from mathematics;

c.) finished any of the four-year secondary school programmes before 1. 6. 1995.
The study programme is also available for candidates who acquired equivalent education abroad.

6. Selection criteria when enrolment is restricted

In case of restricted enrolment, the following conditions shall be considered:

candidates under items a) and c) shall be selected according to their:
general success in general matura exam or school-leaving exam 60 %,
general success in the 3rd and 4th years of the secondary school 40 %;

candidates under item b) shall be selected according to:
general success in the professional matura exam 40 %,
general success in the 3rd and 4th years of the secondary school 40 %,
success in extra matura exam from mathematics 20 %.

7. Criteria for recognising knowledge and skills acquired before enrolment in the programme

Certain knowledge and skills comparable to the content and scope of the programme Water Science and Environmental Engineering can be recognised by the Study Board of the Department of Environmental Civil Engineering of UL FGG. The Board makes decisions regarding the recognition of knowledge and skills acquired before enrolment based on student's written application, enclosed certificates and other documents evidencing successfully acquired knowledge and skills, and in accordance with the Rules on the procedure and criteria for the acknowledgement of informally acquired knowledge and skills, adopted on 29 May 2007 at the 15th meeting of the UL Senate.
The recognition process considers the following:

- certificates and other documents (recognition of »non-typical certificates«, portfolios, documents about finished courses and other forms of education),
- evaluation of finished products, services, publications and other original works of the student (possibility of performing study obligations – e.g. exams, preliminary exams, etc. - by evaluating student's products, e.g. projects, before the enrolment),
- evaluation of knowledge student acquired with self-education or empirical learning (possibility of completing study obligations – e.g. exams, preliminary exams, etc. - without participation at lectures, practical work, seminars),
- adequate work experience (e.g. recognition of practical training and other course units of the programme that are based on practical work and experience).

Should the Study Board of the department establish that the acquired knowledge may be recognised, this shall be evaluated with the same number of credits according to ECTS as the number of credits in the course.

8. Methods of assessment

The assessment methods are in accordance with the Statute of University of Ljubljana and listed in the Course Syllabi.

9. Conditions for progression through the programme

Conditions for progression from one year to another

Student may enrol in the second year if he/she has completed the prescribed obligations by the end of the academic year and achieved 52 ECTS credit points from the first year. Student may enrol in the third year if, by the end of the academic year, he/she has completed the prescribed obligations and achieved at least 50 ECTS credit points from the second year and completed all the prescribed obligations and achieved 60 ECTS credit points from the first year.

Under exceptional circumstances, students may be permitted to proceed without successful completion of the obligations defined to proceed to the higher year of the study programme, provided they have justifiable reasons as defined by the UL Statute (maternity, extended illness, exceptional family and social circumstances, certified status of a person with special needs, active participation in top expert, cultural and sports events, active participation on University bodies).

Under the conditions set out in the above paragraph, students may enrol in a higher year with at least 45 ECTS credits collected. The decision to permit enrolment is adopted by the Study Board of the Department of Environmental Civil Engineering of UL FGG.

Faculty of Civil and Geodetic Engineering has an established tutorship and supervision system in place for its students, offered also in the framework of the bachelor degree study programme Water Science and Environmental

Engineering. Students have class mentors in all three years, and smaller groups of students have individual tutors who will either be academic staff members or higher year students who will help their protégés in choosing study orientations, elective courses etc.

Students with above average study results will be allowed faster advancement, if applicable with regards to the study process. Based on the student's application the decision is adopted by the Study Board of the Department of Environmental Civil Engineering of UL FGG. With a decree of the Study Board the principles of faster progress are determined.

Conditions for repeated enrolment in the same year

Failing to meet the obligations defined by the study programme for advancement in the next year, students may enrol in the same year for the second time, provided that they have obtained at least 30 ECTS credits.

10. Transfers between study programmes

Transfer between programmes shall mean termination of education in the student's original study programme (first programme) and continuation of education in the first cycle bachelor study programme of Water Science and Environmental Engineering (second programme), in which a part of the completed study requirements from the first study programme are recognised as completed.

Transfers are possible from the first cycle study programmes, and until their expiration also from the undergraduate academic study programmes adopted before June 11 2004, where the competences of the finished studies are comparable and according to the acknowledgement criteria at least half of the obligations according to ECTS from the first study programme related to compulsory courses of the second study programme can be acknowledged. Considering the scope of acknowledged obligations from the first study programme in the Republic of Slovenia or abroad student may enrol to the same or higher year in the second study programme. Transferring students shall fulfil the conditions for the enrolment to the second study programme.

Applications of candidates for the transfer to the first cycle bachelor study programme Water Science and Environmental Engineering and the scope of acknowledged obligations in the study programme will be examined individually by the Study Board of the Department of Environmental Civil Engineering. If in the procedure of acknowledging obligations for the purpose of transfer approves the candidate at least the amount of credit points and those points that are required for the enrolment to the higher year of the first cycle bachelor study programme Water Science and Environmental Engineering, the candidate may enrol to the higher year of the first cycle bachelor study programme Water Science and Environmental Engineering.

11. Conditions for completion of the study

Students finish the study by accomplishing the prescribed obligations totalling 180 credit points according to ECTS, including practical training and diploma thesis.

12. Conditions for completion of individual parts of the programme

The study is uniform.

13. Qualification, professional or academic title (male)

- diplomirani inženir okoljskega gradbeništva (UN)

(First cycle graduate in water science and environmental engineering)

14. Qualification, professional or academic title (female)

- diplomirana inženirka okoljskega gradbeništva (UN)

(First cycle graduate in water science and environmental engineering)

15. Qualification, professional or academic title (abbreviation)

dipl. inž. ok. grad. (UN)

SYLLABUS OF STUDY PROGRAMME WITH FORESEEN COURSE COORDINATORS

16. No subdivision (study programme)

1st year, mandatory

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0033791	Mathematics I	Gašper Jaklič, Marjeta Kramar Fijavž	75	0	75	0	0	150	300	10	1st semester	no
2.	0033792	Physics	Zvonko Jagličić	75	15	45	0	0	135	270	9	1st semester	no
3.	0038800	Fundamentals of freshwater ecology	Gorazd Urbanič	30	0	0	20	10	60	120	4	1st semester	no
4.	0038801	Introduction to Environmental Engineering	Dušan Žagar, Nataša Atanasova, Simon Rusjan	45	15	30	0	0	90	180	6	1st semester	no
5.	0033793	Mathematics II	Marjeta Kramar Fijavž, Nik Stopar	60	0	60	0	0	120	240	8	2nd semester	no
6.	0038803	Basic chemistry	Romana Cerc Korošec	30	0	0	30	0	60	120	4	2nd semester	no
7.	0038804	Geodetic engineering	Dušan Kogoj	30	0	0	30	0	60	120	4	2nd semester	no
8.	0038805	Hydrology	Mojca Šraj	30	25	0	30	5	90	180	6	2nd semester	no
9.	0038806	Construction and Building Materials	Violeta Bokan-Bosiljkov, Vlatko Bosiljkov	30	0	0	30	0	60	120	4	2nd semester	no
10.	0038807	Digital Design and Programming	Tomo Cerovšek	15	0	0	60	0	75	150	5	2nd semester	no
		Total		420	55	210	200	15	900	1800	60		

2nd year, mandatory

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0038808	Hydromechanics	Gorazd Novak, Matjaž Četina	45	0	0	30	0	75	150	5	1st semester	no
2.	0038809	Introduction to Structural Mechanics	Dejan Zupan	75	0	45	0	0	120	240	8	1st semester	no
3.	0038810	Mathematics III	Marjeta Kramar Fijavž	60	0	45	0	0	105	210	7	1st semester	no
4.	0038811	Secondary and Waste Materials Management	Violeta Bokan-Bosiljkov	45	0	45	0	0	90	180	6	1st semester	no
5.	0038887	Elective course Statistics		30	0	30	0	0	60	120	4	1st semester	yes
6.	0038812	Introduction to Sanitary Engineering	Mario Krzyk, Nataša Atanasova	30	0	15	15	0	60	120	4	2nd semester	no
7.	0038813	Hydraulics	Gašper Rak	30	15	0	30	0	75	150	5	2nd semester	no
8.	0038815	Soil Mechanics and Engineering Geology	Boštjan Pulko, Vladimir Vukadin	60	0	0	40	5	105	210	7	2nd semester	no
9.	0038816	Communal Technical Infrastructure	Maruška Šubic-Kovač	30	0	30	0	0	60	120	4	2nd semester	no
10.	0038817	Organization of Construction Works and Operation	Robert Klinc	45	0	45	0	0	90	180	6	2nd semester	no
11.	0643634	Fundamentals of steel structures	Jože Korelc, Primož Može	30	0	30	0	0	60	120	4	2nd semester	no
		Total		480	15	285	115	5	900	1800	60		

3rd year, mandatory

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0038821	Roads and Traffic	Peter Lipar	45	0	0	45	0	90	180	6	1st semester	no
2.	0038823	Geotechnical Engineering	Janko Logar	45	10	0	30	5	90	180	6	1st semester	no
3.	0038825	Fundamentals of Spatial Planning	Alma Zavodnik Lamovšek	45	0	0	60	0	105	210	7	1st semester	no
4.	0643631	Fundamentals of earthquake engineering	Matjaž Dolšek	30	0	30	0	0	60	120	4	1st semester	no
5.	0643629	Elective course economic analysis		45	0	0	0	0	45	90	3	1st semester	yes
6.	0038824	Introduction to Drainage Engineering	Andrej Kryžanowski, Matjaž Mikoš	40	0	15	0	5	60	120	4	2nd semester	no
7.	0038826	Introduction to Concrete and Masonry Structures	Jože Lopatič, Sebastjan Bratina	45	0	45	0	0	90	180	6	2nd semester	no
8.	0038827	Practical Training	Andreja Istenič Starčič	6	0	0	0	80	34	120	4	2nd semester	no
9.	0643632	Introduction to Timber Structures	Jože Lopatič	30	0	30	0	0	60	120	4	1st semester	no
10.	0643633	Elective corses		90	0	75	0	0	165	330	11	All-year	yes
11.	0038819	Diploma Work		0	0	0	0	75	75	150	5	2nd semester	no
		Total		421	10	195	135	165	874	1800	60		

Elective courses

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0038892	Basic Statistics in Water Science	Dejan Zupan, Goran Turk	30	0	30	0	0	60	120	4	1st semester, 2nd semester	yes
2.	0038896	Advanced Statistical Methods in Water Science	Dejan Zupan, Goran Turk	30	0	30	0	0	60	120	4	1st semester, 2nd semester	yes
3.	0038788	Construction Technologies in Water Works	Andrej Kryžanowski	30	0	30	0	0	60	120	4	2nd semester	yes
4.	0038897	Operational Research in Civil Engineering	Goran Turk, Marijan Žura	45	0	30	0	0	75	150	5	2nd semester	yes
5.	0038789	Hydroinformatics	Mateja Škerjanec	10	10	0	40	0	60	120	4	2nd semester	yes
6.	0038787	Hydrometry	Matjaž Mikoš , Simon Rusjan	30	0	20	0	10	60	120	4	2nd semester	yes
7.	0038898	Natural Disasters and their Impact on Environment and Society	Andrej Kryžanowski, Primož Banovec	60	30	0	0	0	90	180	6	1st semester, 2nd semester	yes
8.	0106791	Introduction to Environmental Technologies	Mario Krzyk, Nataša Atanasova	20	10	0	30	0	60	120	4	2nd semester	yes
9.	0038814	Applied Ecology and Ecotoxicology	Damjana Drobne	30	0	0	30	0	60	120	4	2nd semester	yes
10.	0038820	Introduction to Economic Analysis	Polona Domadenik Muren	45	0	0	0	0	45	90	3	1st semester	yes
11.	0643630	Advanced Methods of Economic Analysis	Polona Domadenik Muren	45	0	0	0	0	45	90	3	1st semester	yes
		Total		375	50	140	100	10	675	1350	45		

17. Possibilities of elective courses and mobility

The bachelor degree study programme Water Science and Environmental Engineering foresees elective courses totalling 19 ECTS. One elective course is foreseen in the 3rd semester and two in 6th semester. 8 ECTS may be selected freely (from other study programs at the University of Ljubljana). Students are recommended to select their courses from the four professional elective courses proposed at the study programme Water Science and Environmental Engineering or among other professional elective courses proposed at the first cycle study programmes of UL FGG. They are recommended to select courses from the areas of civil engineering in either municipal or traffic module, and from the area of geodesy and geoinformation.

Students may transfer 30 ECTS credits of the programme (one study semester, regardless of compulsory and elective units) from any other water science and environmental engineering programme in Slovenia or abroad, provided that UL FGG has a signed agreement with the institution in question.