

ПРИЛОГ 3

Упоредивост студијског програма

Study programme: **Environmental Engineering**

 Type of study: **Bachelor study program**

 Study form: **full time form of study**

 Guarantor: **doc. Ing. Kristina Janečková, Ph.D.**

St. year: 1		2019/2020													
Code	Compulsory subjects	Winter semester						Summer semester						Guarantee	
		Le	Pr	FE	ECTS	Cr	Ex	Le	Pr	FE	ECTS	Cr	Ex		
ZEX108E	Fundamentals of Biology	2	0	-	6	cr	ex								prof. Mandák
ZOX102E	Geology	2	2	-	6	cr	ex								RNDr. Jetmar
RTX16Z	Physical Training	0	1	-	1	cr	-								PaedDr. Vavrla
ZXX103Z	Seminar I	1	0	-	2	cr	-								doc. Kumble
ZEX109E	Zoology	2	2	-	6	cr	ex								doc. Růžička
ZEX110E	Botany							2	2	-	6	cr	ex		doc. Kocourková
ZOX103E	Environmental Chemistry							2	2	-	6	cr	ex		prof. Chrastný
ZEX111E	Fundamentals of Ecology							2	1	-	6	cr	ex		prof. Šálek
ZUX105E	Landscape Ecology							2	2	-	6	cr	ex		doc. Skaloš
TAZ37E	Mathematics							2	2	-	6	cr	ex		doc. Gurka
RTX17Z	Physical Training							0	1	-	1	cr	-		PaedDr. Vavrla
APZ01E	Soil Science							2	2	-	6	cr	ex		prof. Borůvka
ZUX102Z	Workshop 1 - Global Environmental Issues							1	0	-	2	cr	-		Ing. Zdražil, Ph.D.
Σ		7	5	0	21	5	3	13	12	0	39	8	6		60

Le = lecture

Pr = practical lecture

FE = field excursions (days)

ECTS = credits

Cr = credit

Ex = exam

Study programme: **Environmental Engineering**

Type of study: **Bachelor study program**

Study form: **full time form of study**

Guarantor: **doc. Ing. Kristina Janečková, Ph.D.**

St. year: 2		2019/2020													
Code	Compulsory subjects	Winter semester						Summer semester						Guarantee	
		Le	Pr	FE	ECTS	Cr	Ex	Le	Pr	FE	ECTS	Cr	Ex		
ZVX107E	Air Pollution	2	2	-	6	cr	ex								Mgr. Waldhauserová, Ph.D.
ZEX112E	Environmental Data Collection and Processing	2	2	-	6	cr	ex								prof. Šálek
ZGX117E	GIS I	2	2	-	6	cr	ex								Ing. Moudrý, Ph.D.
ZUX103E	Hydrochemistry	2	2	-	6	cr	ex								prof. Komínková
ZVX108E	Hydrology	2	2	-	6	cr	ex								doc. Máca
ZXX104Z	Seminar II.	1	0	-	2	cr	-								doc. Kumble
ZUX104E	Ecotoxicology							2	2	-	6	cr	ex		Ing. Wimmerová, MSc.
ZBX101E	Landscape Architecture							2	2	-	6	cr	ex		doc. Kumble
ZXX105Z	Seminar III							1	0	-	2	cr	-		doc. Skaloš
ZUX106E	Waste Management							2	1	-	6	cr	ex		Ing. Hnátková, Ph.D.
ZBX102E	Water Resources Engineering							2	2	-	6	cr	ex		Ing. Kalibová, Ph.D., Dr. Ing. Kravka, Ing. Sucharda
ZBX101Z	Workshop 2 - Renewable Resources							1	0	-	2	cr	-		prof. Sklenička
Σ		11	10	0	32	6	5	10	7	0	28	6	4		60

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ECTS = credits

Cr = credit

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Study programme: **Environmental Engineering**
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 Guarantor: **doc. Ing. Kristina Janečková, Ph.D.**

St. year: 3		2019/2020													
Code	Compulsory subjects	Winter semester						Summer semester						Guarantee	
		Le	Pr	FE	ECTS	Cr	Ex	Le	Pr	FE	ECTS	Cr	Ex		
ZUX107E	Environmental Assessment	2	1	-	5	cr	ex								Ing. Keken, Ph.D.
ZVX109E	Global Change and Water Resources	2	1	-	5	cr	ex								doc. Hanel
ZBX103E	Land Management I.	2	2	-	6	cr	ex								doc. Janečková
ZBX104E	Ecological Restoration and Engineering							2	1	-	5	cr	ex		Mgr. Walmsley, Ph.D.
ZXX106Z	Thesis							-	-	-	30	cr	-		Supervisor
	Optional Subjects - Group 1	-	-	-	5	cr	-								
	Optional Subjects - Group 2							-	-	-	5	cr	ex		
Σ		6	4	0	21	3	3	2	1	0	40	3	2		61

Le = lecture

ECTS = credits

Pr = practical lecture

Cr = credit

FE = field excursions (days)

Ex = exam

Study programme: **Environmental Engineering**
 Type of study: **Bachelor study program**
 Study form: **full time form of study**
 Guarantor: **doc. Ing. Petra Šimová, Ph.D.**

Optional Subjects - Group 1

The student must take one core optional course Type 1 during the third years of the study.

LKX01Z	CAD	0	3	-	5	cr	-								doc. Böhms
ZEX103Z	Laboratory Methods	0	3	-	5	cr	-								doc. Kocourková

Optional Subjects - Group 2

The student must take one core optional course Type 2 during the third years of the study.

ZEX103E	Nature Conservation							2	1	-	5	cr	ex		doc. Vojar
ZBX105E	Planning for Ecotourism							2	1	-	5	cr	ex		doc. Kumble
ZBX106E	Spatial Planning							2	1	-	5	cr	ex		doc. Kumble

¹Select from 3000-level or higher CPSC courses or DPA 3070. No more than three credits of CPSC 3990 or 4810 may be applied to this requirement, and no more than six credits of CPSC 4820 may be applied. Up to three credits of ECE 3000-level or higher courses; or MATH 3650; or MATH 4000-level courses may be substituted.

²Select CPSC 3120 or 3500

³Select from ENGL 3040, 3120, 3140, 3150, 3330; AS 3090, 3100, 4090, 4100; ML 3010, 3020, 4010, 4020.

Notes:

1. For graduation, a candidate for the BS degree in Computer Science must have earned a grade of C or better in each CPSC course applied to the non-elective requirements of the degree.
2. A grade of C or better must be earned in all prerequisite courses (including CPSC and MATH courses) before enrolling in the next CPSC course.
3. General Education Cross-Cultural Awareness and Science and Technology in Society requirements must be satisfied.

ELECTRICAL ENGINEERING Bachelor of Science

Electrical engineers are in high demand for a wide range of influential positions. Professional duties range from analytical problem solving to the design of components and systems. The scope of employment requires a unique breadth and depth of knowledge and technical skills, which are reflected in the Electrical Engineering program. This program also offers an excellent preparation for graduate education. Detailed information can be found at www.clemson.edu/cecas/departments/ece/.

Building on a foundation of mathematical and physical sciences, students progress into the application of these in the engineering science areas of circuits, electronics, communications, controls, power, and electromagnetics. In these subjects, students also begin to apply the concepts and techniques learned to the design of circuits and systems. Senior technical design courses offer the opportunity to further develop expertise in a selected area.

In addition to these technical skills, students learn to communicate effectively, both orally and with the written word. Because engineers work for the benefit of society, the curriculum includes a strong component of humanities and social science courses. Also, many project design assignments enable the development of interpersonal, teamwork, and management skills, which are necessary for success in a professional engineering career.

Freshman Year

First Semester

- 4 - CH 1010 General Chemistry
- 3 - ENGL 1030 Composition and Rhetoric
- 2 - ENGR 1020 Engineering Disciplines and Skills¹
- 4 - MATH 1060 Calculus of One Variable I²
- 3 - Arts and Humanities Requirement³ or
3 - Social Science Requirement³

16

Second Semester

- 4 - CH 1020 General Chemistry
- 3 - ENGR 1410 Programming and Problem Solving⁴
- 4 - MATH 1080 Calculus of One Variable II²
- 3 - PHYS 1220 Physics with Calculus I²
- 3 - Arts and Humanities Requirement³ or
3 - Social Science Requirement³

17

Sophomore Year

First Semester

- 3 - CPSC 1110 Introduction to Programming in C²
- 2 - ECE 2010 Logic and Computing Devices²
- 3 - ECE 2020 Electric Circuits I²
- 1 - ECE 2090 Logic and Computing Devices Lab.
- 1 - ECE 2110 Electrical Engineering Lab. I²
- 4 - MATH 2060 Calculus of Several Variables²
- 3 - PHYS 2210 Physics with Calculus II²

17

Second Semester

- 1 - ECE 2120 Electrical Engineering Lab. II²
- 3 - ECE 2620 Electric Circuits II²
- 3 - ECE 2720 Computer Organization²
- 1 - ECE 2730 Computer Organization Laboratory
- 4 - MATH 2080 Intro. to Ordinary Diff. Equations²
- 3 - Arts and Humanities Requirement³ or
3 - Social Science Requirement³

15

Junior Year

First Semester

- 1 - ECE 3110 Electrical Engineering Lab. III²
- 3 - ECE 3200 Electronics I²
- 3 - ECE 3300 Signals, Systems, and Transforms²
- 3 - ECE 3600 Electric Power Engineering²
- 3 - ECE 3800 Electromagnetics²
- 3 - Advanced Mathematics Requirement³

16

Second Semester

- 1 - ECE 3120 Electrical Engineering Lab. IV
- 3 - ECE 3170 Random Signal Analysis²
- 3 - ECE 3210 Electronics II²
- 3 - ECE 3710 Microcontroller Interfacing²
- 1 - ECE 3720 Microcontroller Interfacing Lab.
- 3 - ECE 3810 Fields, Waves, and Circuits²
- 3 - ENGL 3140 Technical Writing

17

Senior Year

First Semester

- 3 - COMM 1500 Intro. to Human Comm. or
3 - COMM 2500 Public Speaking
- 3 - ECE 4090 Intro. to Linear Control Systems²
- 3 - ECE 4270 Communications Systems
- 2 - ECE 4950 Integrated Systems Design I²
- 3 - Electrical Engineering Technical Requirement⁶

14

Second Semester

- 2 - ECE 4960 Integrated System Design II
- 3 - Arts and Humanities Requirement³ or
3 - Social Science Requirement³
- 6 - Electrical Engineering Technical Requirement⁶
- 3 - Special Requirement⁷

14

126 Total Semester Hours

¹ENGR 1050 and 1060 may be substituted for ENGR 1020

²This course must be passed with a grade of C or better either to transfer into Electrical Engineering from General Engineering or to satisfy later course prerequisites.

³See General Education section of the Undergraduate Announcements. Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements.

⁴ENGR 1070, 1080 and 1090 may be substituted for ENGR 1410
⁵MATH 4190, 4340, 4350, 4530, or 4540

⁶Nine credits selected from BIOC 3700, 4310, 4350, 4710, ECE 2220, 4040, 4050*, 4060, 4180, 4190, 4200, 4220, 4300, 4320, 4360, 4370, 4380, 4400, 4420, 4460, 4550, 4570, 4600, 4610, 4670, 4680, 4730, 4910*, 4920*, 4930*, 4990*, or ME 3100. A maximum of three credits of courses marked with an asterisk may be used to satisfy this requirement.

⁷Three additional credits of university or college approved Arts and Humanities or Social Science courses; or ELE 3010 or 4010; or any additional three-credit, 4000-level course selected from footnote 6 above; or a course selected from the following list: ECE 3210, 4270, 4490; or one additional course selected from MATH 3110, 4120, 4190, 4340, 4350, 4400, 4410, 4530, or 4540.

Notes:

1. A student is allowed to enroll in ECE courses (excluding ECE 2070, 2080, 3080) only when all prerequisites have been passed with a grade of C or better.
2. All Electrical Engineering students must have a cumulative engineering grade-point average of 2.0 to enroll in any 3000- or 4000-level ECE courses.
3. No student may exceed a maximum of two attempts, excluding a W, to complete successfully any ECE course.

ENVIRONMENTAL ENGINEERING

Bachelor of Science

Our complex world faces many challenges, including contaminated water supplies, hazardous wastes, an increasing population and limited resources. Environmental engineers help to solve many of the environmental problems faced by society using the principles of biology, chemistry, physics, mathematics and earth sciences. An undergraduate degree in Environmental Engineering opens the door to a variety of rewarding career options. Environmental engineers protect water quality by designing water and wastewater treatment systems; ensure public safety by managing solid, hazardous and radioactive wastes; improve air quality by controlling emissions from mobile and stationary sources; reduce human health risks by tracking contaminants as they move through the environment; clean up toxic waste spills and restore historically contaminated sites; and design a more sustainable future by understanding our use of resources.

The curriculum for the Bachelor of Science degree in Environmental Engineering consists of 127 credit hours. All students participate in one professional seminar course and complete a capstone design project.

Freshman Year

First Semester

- 4 - CH 1010 General Chemistry
- 3 - ENGL 1030 Composition and Rhetoric
- 2 - ENGR 1020 Engineering Disciplines and Skills¹
- 4 - MATH 1060 Calculus of One Variable I
- 3 - Arts and Humanities Requirement² or
3 - Social Science Requirement²

16

Second Semester

- 4 - CH 1020 General Chemistry
- 3 - ENGR 1410 Programming and Problem Solving⁴
- 3 - HIST 1240 Environmental History Survey⁴
- 4 - MATH 1080 Calculus of One Variable II
- 3 - PHYS 1220 Physics with Calculus I

17

Sophomore Year**First Semester**

- 3 - BIOL 1030 General Biology³
- 1 - BIOL 1050 General Biology Lab⁵
- 3 - CE 2010 Statics
- 3 - EES 2010 Environmental Engineering Fund. I
- 4 - MATH 2060 Calculus of Several Variables
- 3 - PHYS 2210 Physics with Calculus II

17

Second Semester

- 2 - CE 2080 Dynamics
- 3 - CH 2010 Survey of Organic Chemistry⁶
- 4 - EES 2020 Environmental Engineering Fund. II
- 2 - ENGR 2100 Computer-Aided Design and Engineering Applications⁷
- 4 - MATH 2080 Intro. to Ordinary Diff. Equations

15

Junior Year**First Semester**

- 2 - EES 3030 Water Treatment
- 2 - EES 3040 Wastewater Treatment
- 1 - EES 3050 Water and Wastewater Treatment Lab
- 3 - MATH 3020 Statistics for Science and Engineering
- 4 - MICR 3050 General Microbiology
- 3 - Arts and Humanities Requirement² or
- 3 - Social Science Requirement²

15

Second Semester

- 4 - CE 3410 Introduction to Fluid Mechanics
- 3 - EES 4840 Municipal Solid Waste Mgt.
- 3 - EES 4850 Hazardous Waste Management
- 3 - GEOL 1010 Physical Geology⁹
- 1 - GEOL 1030 Physical Geology Lab⁹
- 3 - ME 3100 Thermodynamics and Heat Transfer

17

Senior Year**First Semester**

- 3 - EES 4300 Air Pollution Engineering
- 1 - EES 4500 Environ. Engr. Senior Seminar
- 3 - EES 4800 Environmental Risk Assessment
- 3 - EES 4860 Environmental Sustainability
- 2 - Engineering Economics Requirement⁹
- 3 - Engineering or Science Requirement¹⁰

15

Second Semester

- 3 - EES 4750 Capstone Design Project
- 6 - Engineering or Science Requirement¹⁰
- 6 - Arts and Humanities Requirement² or
- 6 - Social Science Requirement²

15

127 Total Semester Hours¹ENGR 1050 and 1060 may be substituted for ENGR 1020²See Policy on Humanities and Social Sciences for Engineering Curricula. Three of these credit hours must also satisfy the Cross-Cultural Awareness General Education requirement. Students are encouraged (but not required) to take PHIL 3450 (Environmental Ethics) to fulfill the non-literature humanities requirement.³ENGR 1070, 1080 and 1090 may be substituted for ENGR 1410⁴HIST 1240 satisfies three credit hours of the social science requirement and the Science and Technology in Society General Education requirement. If a student is unable to enroll in the second semester of the freshman year, this course may be taken at another time.⁵May substitute BIOL 1100 for BIOL 1030 and BIOL 1050; BIOL 1100 is five hours.⁶CH 2230 may be substituted.⁷ENGR 2080 may be substituted.⁸May substitute PES 2020 for GEOL 1010 and GEOL 1030.⁹Select CE 3520 or IE 3840.¹⁰Select from BCHM 3050, 3060, BE 3220, 4150, 4220, 4240, 4400, 4640, BIOL 2110, 4100, 4430, 4440, CE 2060, 2550, 3210, 3310, 3420, 4430, 4470, 4820, CH 3300, 3310, 4130, ECE 2070, 2080, EES 3000, 3010, 4000, 4100, 4110, 4120, 4370, 4910, 4950, ENSP 4000, GEOL 2700, 3000, 3180, 4210, 4820, ME 4260, MICR 3050, 4100, MATH 3110, 3650, 4340, PES 4850, PHYS 2400, 2450, 4200

Notes:

1. The following courses must be completed with a C or better: CE 2010, CE 2080, CE 3410, MATH 2060, MATH 2080, PHYS 2210.

GEOLOGY**Bachelor of Science**

Geology is the study of the Earth. It is an applied science that integrates principles from physics, chemistry, biology, engineering, and other disciplines to better understand the natural processes and human influences that shape our planet. Geology helps people deduce Earth's natural history, locate natural resources needed to support society, develop sustainable approaches to energy and resource management, and predict, assess, and manage global change and natural disasters.

Employment opportunities for geologists are numerous and varied. Examples include environmental and engineering consulting firms, energy exploration and production firms, mineral and metal industries, municipal, state, and federal governments, natural resource conservation organizations, and water authorities. Many students go on to graduate school in the geosciences, environmental sciences, or related fields. Geology is a professional degree and state certification as a Registered Professional Geologist is obtainable. Given the various career options that are possible, students are provided the opportunity to develop a broad range of skills and knowledge within the Geology program.

The Geology curriculum provides students with a well-rounded background in geology and related fields and is built around three critical themes: (1) appreciation for spatial and temporal scales, (2) knowledge of earth materials and compositions of environmental systems, and (3) understanding of geological and environmental processes. While providing solid fundamentals within science and engineering, the Geology program is also flexible, allowing students to choose among many electives to tailor their education to specific interests and career goals. The program has been carefully designed to help students develop quantitative and other critical skills, while familiarizing them with the topics, technologies, and resources needed for a variety of career paths in the geosciences. As students progress through the program they have multiple opportunities to enhance their skills of observation, computation, synthesis, communication and problem solving. Because Geology is inherently a field-based discipline, all students are required to take one or more courses that provide them with field experience. All Geology majors also participate in a multi-semester research program that provides them with hands-on experiences conducting geologic research and solving real-world problems in their chosen area of interest. It is also possible for Geology

majors to pursue the Engineering Cluster Minor; students interested in this pathway should consult with their advisor early in their program of study.

Within the Geology curriculum, students who are particularly interested in environmental or water resources issues may choose to specialize in the Environmental Science Concentration or the Hydrogeology Concentration. These two concentrations provide more structured course pathways through the curriculum and help prepare students for careers in these specific areas. The Environmental Science Concentration in Geology focuses on environmental aspects of geoscience and is well suited for students interested in topics such as environmental policy, natural hazard assessment and remediation, evaluation of land use impacts, understanding geochemical cycles, and environmental systems analysis. This concentration provides a rigorous background in the sciences so that students can scientifically address environmental issues and integrate material from several fields to solve complex environmental problems. The Hydrogeology Concentration in Geology is designed for students who want to specialize in areas such as surface- and ground-water systems, treatment of water and cleanup of contaminated sites, contaminant flow and fluid transport, and water resource sustainability.

Freshman Year**First Semester**

- 4 - CH 1010 General Chemistry
- 3 - ENGL 1030 Composition and Rhetoric
- 3 - GEOL 1010 Physical Geology
- 1 - GEOL 1030 Physical Geology Lab.
- 4 - MATH 1060 Calculus of One Variable I

15

Second Semester

- 4 - CH 1020 General Chemistry
- 3 - GEOL 1120 Earth Resources
- 4 - MATH 1080 Calculus of One Variable II
- 3 - Arts and Humanities (Non-Lit.) Requirement¹
- 3 - Social Science Requirement¹

17

Sophomore Year**First Semester**

- 3 - GEOL 2050 Mineralogy and Intro. Petrology
- 1 - GEOL 2070 Mineralogy and Intro. Petrology Lab.
- 1 - GEOL 2910 Introduction to Research I
- 3 - PHYS 1220 Physics with Calculus I
- 3 - Arts and Humanities (Literature) Requirement¹
- 3 - Social Science Requirement¹
- 3 - STEM Requirement²

17

Second Semester

- 4 - GEOL 2020 Earth History
- 1 - GEOL 2920 Introduction to Research II
- 3 - Quantitative Science Requirement³
- 7 - STEM Requirement²

15

Junior Year**First Semester**

- 4 - GEOL 3020 Structural Geology
- 2 - GEOL 3910 Research Methods I
- 3 - Quantitative Science Requirement³
- 3 - STEM Requirement²

12

REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>

GALLOGLY COLLEGE OF ENGINEERING

THE UNIVERSITY OF OKLAHOMA

For Students Entering the Oklahoma State System for Higher Education
Summer 2018 through Spring 2019

GENERAL REQUIREMENTS	
Total Credit Hours	125*
Minimum Retention/Graduation Grade Point Averages:	
Overall - Combined and OU	2.00
Major - Combined and OU	2.00
Curriculum - Combined and OU	2.00
A minimum grade of C is required for each course in the curriculum.	

Environmental Engineering

B390

Bachelor of Science in
Environmental Engineering

OU encourages students to complete at least 32 hours of applicable coursework each year to have the opportunity to graduate in four years.				
Year	FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
FRESHMAN	ENGL 1113, Prin. of English Composition (Core I)	3	ENGL 1213, Prin. of English Composition (Core I), or	3
	*CHEM 1315, General Chemistry (Core II)	5	EXPO 1213, Expository Writing (Core I)	
	HIST 1483, U.S., 1492-1865, or 1493, U.S., 1865-Present (Core IV)	3	*CHEM 1415, General Chemistry	5
	◆MATH 1914, Differential and Integral Calculus I (Core I)	4	◆MATH 2924, Differential and Integral Calculus II	4
	CEES 1112, Intro. to Civil Engr. & Environmental Science	2	PHYS 2514, General Physics for Engr. & Science (Core II)	4
	ENGR 1410, Freshman Engineering Orientation	0		
	TOTAL CREDIT HOURS	17	TOTAL CREDIT HOURS	16
SOPHOMORE	◆MATH 2934, Differential and Integral Calculus III	4	HSCI 3333, Technology and Society in World History, or approved substitute (Core IV, West. Civ. & Culture)	3
	PHYS 2524, General Physics for Engr. & Science	4	MATH 3113, Introduction to Ordinary Differential Equations	3
	**CEES 1000, CEES Seminar	0	**CEES 1000, CEES Seminar	0
	CEES 2213, CADD Fundamentals	3	CEES 2153, Mechanics of Materials	3
	CEES 2113, Statics	3	CEES 2223, Fluid Mechanics	3
	CEES 2313, Water Quality Fundamentals	3	CEES 2323, Environmental Transport and Fate Process	3
	TOTAL CREDIT HOURS	17	TOTAL CREDIT HOURS	17
JUNIOR	CHEM 3053, Organic Chemistry	3	ENGL 3153, Technical Writing	3
	**CEES 1000, CEES Seminar	0	**CEES 1000, CEES Seminar	0
	CEES 3213, Water Resources Engineering	3	CEES 3243, Water & Wastewater Treatment Design	3
	CEES 3363, Soil Mechanics	3	CEES 4253, Statistics and Probability	3
	CEES 3361, Soil Mechanics Lab	1	CEES 4943, Air Quality Management	3
	ENGR 3401, Engineering Economics	1	‡ Approved Elective: Social Science (Core III)	3
	§Professional Elective	3	ENGR 2461, Thermodynamics	1
	TOTAL CREDIT HOURS	14	TOTAL CREDIT HOURS	16
SENIOR	**CEES 1000, CEES Seminar	0	ANTH 4623, Approaches to Cross-Cultural Human Problems or approved substitute (Core IV, Non-Western Civ.)	3
	CEES 4114, Aquatic Chemistry	4	P SC 1113, American Federal Government (Core III)	3
	CEES 4263, Hazardous and Solid Waste Management	3	§Professional Elective	3
	CEES 4324, Environmental Biology and Ecology	4	‡ Approved Elective: Artistic Forms (Core IV)	3
	CEES 4921, Introduction to EE Capstone	1	**CEES 1000, CEES Seminar	0
	CEES 4951, Contemporary Topics in Professional Practice	1	CEES 4923, Environmental Engineering Capstone (Capstone)	3
	TOTAL CREDIT HOURS	13	TOTAL CREDIT HOURS	15
NOTE: Engineering transfer students may take ENGR 3410 in place of ENGR 1410.				
Courses designated as Core I, II, III, IV, or Capstone are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.				
‡To be chosen from the University-Wide General Education Approved Course List . Three of these 12 hours must be upper-division (3000-4000). See list in the Class Schedule.				
In the College of Engineering, in order to progress in your curriculum, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum. Please refer to the General Catalog for additional enrollment limitations.				
Students must successfully complete prerequisite courses (with a minimum C grade) before proceeding to the next course.				
** Students must complete a minimum of four semesters of CEES 1000.				
• Two college-level courses in a single foreign language are required; this may be satisfied by successful completion of 2 years in a single foreign language in high school. Students who must take foreign language at the University will have an additional 6-10 hours of coursework.				
§Professional electives can be chosen from any 3000-level or higher course in CEES. One three-hour professional elective can be taken outside CEES with adviser approval.				
◆MATH 1823, 2423, 2433, and 2443 sequence can be substituted for MATH 1914, 2924, and 2934.				
* CHEM 1315 and CHEM 1415 can be substituted with CHEM 1335 (Fall only) and 1435 (Spring only), respectively.				

Environmental Engineering—B390—Page 2

COURSES IN ANTHROPOLOGY (ANTH)

4623 Approaches to Cross-Cultural Human Problems. Prerequisite: 1113 or junior standing. Introduces students to the complex problems of contemporary global-scale cultures and helps them better understand their place on this global arena. This course will look at specific international issues or problems, and relate them to processes occurring in many parts of the world. (Irrreg.) [IV-NW]

COURSES IN CHEMISTRY AND BIOCHEMISTRY (CHEM)

1315 General Chemistry. Prerequisite: Mathematics 1503 or 1643, or math ACT equal to or greater than 23. General Chemistry is an overview of the chemical basis of natural phenomena. First of a two-semester sequence in general chemistry. Topics covered: basic measurement, atomic theory, electron configuration, periodicity, chemical reactivity and energetics, stoichiometry, gas laws and changes in state, bonding and molecular structure. A student may not receive credit for this course and CHEM 1335. **Laboratory.** (F, Sp, Su) [II-LAB]

1415 General Chemistry (Continued). Prerequisite: CHEM 1315 with a minimum grade of C or CHEM 1335 with a minimum grade of C or a satisfactory score on the chemistry placement examination. Topics covered include thermochemistry, equilibrium, thermodynamics, acid and base properties, kinetics and electrochemistry. A student may not receive credit for this course and CHEM 1435. **Laboratory.** (F, Sp, Su) [II-LAB]

COURSES IN CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCE (CEES)

1000 CEES Seminar. Seminar provides a common meeting time for students and faculty for department activities, such as invited speakers, project presentations, educational surveys, cross-course project coordination, and policy announcements. Students must enroll every semester that they are matriculated in CEES at OU after the freshman year, but in no case can a student graduate without successfully completing four semesters of seminar. (F, Sp)

1112 Introduction to Civil Engineering and Environmental Science. Prerequisite: freshman only. Introduction to fundamental concepts (mass/flow balance), problem solving and design, and simple computing software for architectural, civil or environmental engineers and environmental scientists. (F)

2113 Statics. Prerequisites: Physics 2514 and Mathematics 2433 or 2934 or concurrent enrollment in Mathematics 2433 or 2934. Vector representation of forces and moments; general three-dimensional theorems of statics; centroids and moments of area and inertia. Free-body diagrams, equilibrium of a particle and of rigid bodies, distributed loads, friction and internal shear and moment loads. Analysis of trusses, frames, and machines. (F)

2153 Mechanics of Materials. Prerequisites: 2113 or Aerospace and Mechanical Engineering 2113 or Petroleum Engineering 2113. Basic principles of mechanics, including the definition of stress and strain, transformations and principal values for the stress and strain tensors, kinematic relations, review of conservation equations and the development and application of constitutive laws for idealized materials. Elementary elastostatics utilizing Hooke's law; constitutive relations for a linear-elastic continuum, including elastic parameters such as Young's modulus, shear and bulk moduli and Poisson's ratio. Solution of elementary one- and two-dimensional mechanics problems, including thermal stresses and strains, beam flexure, shear and deflections, pressure vessels and buckling of columns. (Sp)

2213 CADD Fundamentals. Prerequisite: CEES Majors only and Sophomore standing. Introduction to computer aided design and drafting with a focus on the AutoCAD and MicroStation platforms. This course is primarily about learning to use the software and learning how to convey an engineering design graphically. (F)

2223 Fluid Mechanics. Prerequisites: 2113 or Aerospace and Mechanical Engineering 2113 or petroleum Engineering 2113, Mathematics 3113 or concurrent enrollment. Coverage of the fundamentals of fluid statics and dynamics. Formulation of the equation of fluid flow, i.e., Navier-Stokes equations, Euler equations, Bernoulli equations, etc. and their application. Examples of ideal fluid flow and viscous fluid flow, such as flow in open and closed conduits. (Sp)

2313 Water Quality Fundamentals. Prerequisite: CHEM 1415, MATH 2423 or MATH 2924. Introduction to environmental mass balance and fate processes. Studies of mass and energy transfer, introductory environmental chemistry, water quality parameters, mathematics of growth, statistics and data analysis, introduction to environmental laws and regulations. (F)

2323 Environmental Transport and Fate Process. Prerequisite: 2313. Physicochemical and biological processes controlling contaminant distribution and fate; hydrological processes controlling contaminant transport; sources, prevention and remediation of environmental pollutants. (Sp)

3213 Water Resources Engineering. Prerequisite: 2223 or permission of instructor. Municipal water demands, surface water hydrology, ground water hydrology, water distribution systems, pump design, wastewater collection systems, storm water management, water law. (F)

3243 Water and Wastewater Treatment Design. Prerequisite: 2223. Design of municipal water and wastewater treatment plants. Emphasis is placed on the characterization of water and wastewater and physical, chemical and biological treatment methods. Sludge processing advanced treatment methods and treatment plant hydraulics are also considered. (Sp)

3361 Soil Mechanics Lab. Prerequisite: CEES 2153 or PE 2153; CEES 3363 or concurrent enrollment (you must be enrolled in both lecture and lab section together the first time you attempt either). This is one of two complementary courses taken in the area of Geotechnical Engineering and serves as an introduction to soil mechanics. During this course, the student will conduct simple laboratory tests to identify and classify soils, characterize the compacted properties of soil, and quantify soil permeability, compressibility and strength. (F)

3363 Soil Mechanics. Prerequisite: CEES 2153 or PE 2153; CEES 3361 or concurrent enrollment (you must be enrolled in both lecture and a lab section together the first time you attempt either). General treatment of the physical and mechanical properties of soils. Topics include soil composition, classification, phase relationships, compaction, effective stress, consolidation, shear strength and permeability and seepage. (F)

4114 Aquatic Chemistry (Slashed with 5114). Prerequisite: Senior standing and one year of general chemistry. Environmental kinetics and thermodynamics in aquatic systems; acid/base, precipitation/solubility, metal complexation and oxidation/reduction reactions; environmental colloidal and solid-liquid interface chemistry. No student may earn credit for both 4114 and 5114 or Environmental Science 4114 and 5114. **Laboratory** (F)

4253 Statistics and Probability. Prerequisite: MATH 2423 or 2924 and PHYS 2524 or 2424. Designed to help students understand the fundamentals of probability, statistics, reliability, and risk methods in support of decision making for future engineers and scientists. Fundamental concepts in probability and statistics will be reviewed and used throughout the course.

Engineering decisions are often based on data that contain uncertainty; future scientists and engineers should understand how uncertainty affects calculated quantities, accuracy, precision, and reliability. (Sp)

G4263 Hazardous and Solid Waste Management. Prerequisite: Junior or above status in the CEES or permission of instructor. Sources and types of solid wastes; identification and classification of hazardous wastes; waste handling, transportation, treatment and disposal techniques, federal and state legislation; and environmental and health effects. (F)

4324 Environmental Biology and Ecology (Slashed with 5324). Prerequisite: CEES 2323. Examines applied environmental biology; biological consequences of environmental impacts; mitigation of environmental impacts via biogeochemical, ecological and microbial processes. No student may earn credit for both 4324 and 5324. **Laboratory** (F)

4921 Introduction to EE Capstone. Prerequisite: Senior standing in Environmental Engineering. Introduction to the capstone design project, which is a two-semester-long, open-ended engineering design problem that requires applying the skills and techniques acquired in earlier engineering course work. This course will focus on introducing the project requirements, forming multi-disciplinary teams of students, developing team identities, assigning team roles; evaluating project constraints; and developing a project design schedule. (F)

4923 Environmental Engineering Capstone. Prerequisite: CEES 3213, CEES 4114, CEES 4324, CEES 4921; CEES 4253 or concurrent enrollment. The capstone experience is a course where students draw upon their undergraduate course work for analysis of an open-ended, real world problem. Faculty coordinators serve in advisory capacities only. All in-class presentations will cover non-traditional (non-technical) topics. Students are presumed to have been trained in basic natural and engineering sciences and introduced to environmental sampling/analysis and impact/risk assessment methods. (Sp) [V]

4943 Air Quality Management. Prerequisite: MATH 2423 or 2924; and CHEM 1315. Important aspects of air quality will be covered, including air quality legislation, major sources and effects of air pollutants, monitoring, atmospheric dispersion, and air quality modeling. (Sp)

4951 Contemporary Topics in Professional Practice. Prerequisite: junior standing in Civil Engineering. Civil engineering is a dynamic profession, as methods of practice evolve to address the many pressing problems in today's built and natural environment. This course provides an introduction to contemporary topics in professional practice, such as basic concepts of sustainability in engineering design, modern tools for project management, and the role of business/policy considerations in practice. (F)

COURSES IN ENGINEERING (ENGR)

1410 Freshman Engineering Orientation. Prerequisite: freshman majoring in Civil Engineering, Architectural Engineering, Environmental Engineering, or Environmental Science. Required orientation course for specified majors. Covers a variety of topics including: majors and minors; career planning; advising; and extra-curricular activities. (F)

2002 Professional Development. Prerequisite: ENGR 1410 or ENGR 1411, or ENGR 3511 or ENGR 3410 or concurrent enrollment; ENGL 1213 or EXPO 1213, and sophomore standing. Develop an understanding of engineering ethics, teamwork, leadership, and professional responsibility through the concepts of contemporary, social, and global issues. (F, Sp)

2461 Thermodynamics. Prerequisite: Mathematics 2433 or 2934; and Physics 2524 or concurrent enrollment. Introduction to basic principles of thermodynamics. Topics include density, pressure, and temperature, the first law of thermodynamics for a system, the first law of thermodynamics for a control volume, the second law of thermodynamics, and psychometrics. (F)

3401 Engineering Economics. Prerequisite: MATH 1823 or 1914 and CEES 2153 or PE 2153 or AME 2153. Introduction to basic principles of engineering economics. Topics include value and interest, cash flow diagrams and patterns, equivalence of cash flow patterns, unusual cash flows and interest periods, evaluating alternatives (annual equivalent cost comparisons, present equivalent cost comparisons, incremental approach, rate of return comparisons, benefit/cost comparisons, MARR, replacement problems, always ignore the past, break-even analysis), income tax, depreciation, and inflation. (F, Sp)

COURSES IN ENGLISH (ENGL)

3153 Technical Writing. Prerequisite: 1213 and Engineering or hard science majors only. For students of the pure and applied sciences. Focuses on the forms of report writing most frequently encountered in research and industry. (F, Sp, Su)

COURSES IN HISTORY OF SCIENCE (HSCI)

3333 Technology and Society in World History. Prerequisite: junior standing, or completion of one History of Science lower-division course, or permission of instructor. A survey of the history of technology since 1500. Emphasizes historical contexts and cultural meanings, not technical details, as it explores the key steps in the construction of our modern technological world. Materials include literature and film as well as non-fiction. (Sp) [IV-WC]

COURSES IN MATHEMATICS (MATH)

1914 Differential and Integral Calculus I. Prerequisite: satisfactory score on the math assessment. Duplicates three hours of MATH 1823 and one hour of MATH 2423. Limits and continuity, differentiation, applications of differentiation to optimization and curve sketching, integration, the fundamental theorem of calculus, the substitution rule, applications of integration to computation of areas and volumes. (F, Sp, Su) [I-M]

2924 Differential and Integral Calculus II. Prerequisite: 1914 with a grade of C or better. Duplicates two hours of 2423 and two hours of 2433. The natural logarithmic and exponential functions, indeterminate forms, techniques of integration, improper integrals, parametric curves and polar coordinates, infinite sequences and series, vectors in two and three dimensions. (F, Sp, Su)

2934 Differential and Integral Calculus III. Prerequisite: 2924 with grade of C or better. Duplicates one hour of 2433 and three hours of 2443. Vectors and vector functions, functions of several variables, partial differentiation and gradients, multiple integration, line and surface integrals, Green-Stokes-Gauss theorems. (F, Sp, Su)

†G3113 Introduction to Ordinary Differential Equations. Prerequisite: MATH 2423 or MATH 2924. Duplicates two hours of 3413. First order ordinary differential equations, linear differential equations with constant coefficients, two-by-two linear systems, Laplace transformations, phase planes and stability. (F, Sp, Su)

COURSES IN PHYSICS (PHYS)

2514 General Physics for Engineering and Science Majors. Prerequisite: Mathematics 1823 or Mathematics 1914 with grade of C or better. Not open to students with credit in 1205. Vectors, kinematics and dynamics of particles, work and energy systems of particles, rotational kinematics and dynamics, oscillations, gravitation, fluid mechanics, waves. (F, Sp, Su) [II-NL]

2524 General Physics for Engineering and Science Majors. Prerequisite: 2514 and Mathematics 2423 or 2924 with a grade of C or better. Not open to students with credit in 1215. Temperature, heat, thermodynamics, electricity, magnetism, optics. (F, Sp, Su)

Универзитет у Новом Саду, Факултет техничких наука

Студијски програм: Инжењерство заштите животне средине 4+1+3

www.tf.uns.ac.rs

Р.бр.	Шифра предмета	Назив предмета	С	Тип	Статус	Активна настава			Остали часови	ЕСПБ
						П	В	ДОН		
ПРВА ГОДИНА										
1	06.Z101	Увод и принципи заштите окружења	1	ТМ	О	3	3	0	0.00	8
2	06.Z102	Техничка хемија	1	АО	О	2	0	2	0.00	4
3	06.Z103	Одабрана поглавља из физике 1	1	АО	О	2	0	2	0.00	4
4	06.Z104	Математика 1	1	АО	О	3	3	0	0.00	6
5	06.Z107	Електротехника, околина и заштита	1	НС	О	3	1	2	0.00	6
6	06.Z106	Математика 2	2	АО	О	3	3	0	0.00	6
7	06.Z105A	Енергија и окружење	2	НС	О	3	2	0	1.00	7
8	06.Z108	Основе механике	2	ТМ	О	3	2	0	0.00	7
9	06.Z109	Хемијски принципи у инжењерству заштите животне средине	2	НС	О	3	0	3	0.00	8
10	06.Z110	Одабрана поглавља из физике 2	2	АО	О	2	0	2	0.00	4
Укупно часова активне наставе:						52			1	
Укупно часова наставе:						53				
						Укупно ЕСПБ:			60	

Р.бр.	Шифра предмета	Назив предмета	С	Тип	Статус	Активна настава			Остали часови	ЕСПБ
						П	В	ДОН		
ДРУГА ГОДИНА										
11	06.Z201A	Основе рачунарских технологија	3	НС	О	2	0	2	1.00	5
12	06.Z202A	Градитељство и животна средина	3	СА	О	3	3	0	2.00	7
13	06.Z203	Статистичке методе	3	ТМ	О	2	2	1	0.00	6
14	06.Z210	Основе заштите вода	3	СА	О	2	1	0	0.00	4
15	06.Z205	Одрживо коришћење природних ресурса и систем заштите животне средине	3	ТМ	О	2	3	0	0.00	6
16	06.Z0101	Изборна позиција 1 (бира се 1 од 2)	3		ИБ	2	0	0	0.00	2
	06.EJ01Z	Енглески језик - основни	3	АО	И	2	0	0	0	2
	06.EJ03Z	Енглески језик - средњи	3	АО	И	2	0	0	0	2
17	06.Z206A	Алтернативна енергетика	4	НС	О	3	3	0	2.00	8
18	06.Z207A	Машинство у инжењерству заштите животне и радне средине	4	СА	О	3	1	2	1.00	7
19	06.Z208	Биохемијски и микробиолошки принципи	4	ТМ	О	3	2	1	0.00	7
20	06.Z204A	Мониторинг животне средине	4	СА	О	3	0	3	0.00	6
21	06.ZW2	Изборна позиција 2 (бира се 1 од 2)	4		ИБ	2	0	0	0.00	2
	06.EJ02L	Енглески језик - нижи средњи	4	АО	И	2	0	0	0	2
	06.EJ04L	Енглески језик - напредни средњи	4	АО	И	2	0	0	0	2
Укупно часова активне наставе:						51			6	
Укупно часова наставе:						57				
						Укупно ЕСПБ:			60	

Р.бр.	Шифра предмета	Назив предмета	С	Тип	Статус	Активна настава			Остали часови	ЕСПБ
						П	В	ДОН		
ТРЕЋА ГОДИНА										
22	06.M203	Основи термодинамике	5	ТМ	О	2	2	0	0.00	5
23	06.M205	Основи механике флуида	5	ТМ	О	2	1	1	0.00	5
24	06.Z301	Мерење и контрола загађења	5	НС	О	3	1	2	0.00	8
25	06.Z305A	Анализа података о стању околине	5	СА	О	3	0	3	0.00	6
26	06.Z310	Социјална екологија	5	ТМ	О	2	2	0	0.00	4
27	06.Z0121	Изборна позиција 3 (бира се 1 од 2)	5		ИБ	2	0	0	0.00	2
	06.EJ03Z	Енглески језик - средњи	5	АО	И	2	0	0	0	2
	06.NJ01Z	Немачки језик - основни	5	АО	И	2	0	0	0	2
28	06.Z307A	Моделовање и симулација у ИЗЖС	6	СА	О	3	2	0	1.00	7
29	06.Z309A	Управљање чврстим отпадом	6	НС	О	3	2	0	0.00	7
30	06.Z013WA	Изборни предмет 1 (бира се 1 од 4) (бира се 1 од 4)	6		ИБ	3	0-3	0-3	0.00-1.00	7
	13.Z416B	Системи за управљање заштитом животне средине	6	НС	И	3	0	3	0	7
	06.Z311	Процесни системи и постројења	6	НС	И	3	3	0	0	7
	06.Z0131A	Термоенергетска постројења	6	НС	И	3	2	0	1	7
	13.Z483	Управљање пословним ризицима предузећа у функцији жкс	6	НС	И	3	3	0	0	7
31	06.ZW4	Изборна позиција 4 (бира се 1 од 2)	6		ИБ	2	0	0	0.00	2
	06.EJ04L	Енглески језик - напредни средњи	6	АО	И	2	0	0	0	2
	06.NJT1	Немачки језик у техници 1	6	СА	И	2	0	0	0	2
32	06.Z315	Основе експеримента у заштити животне средине	6	ТМ	О	3	0	3	0.00	7
Укупно часова активне наставе:						49-50			1-2	
Укупно часова наставе:						50-52				
Укупно ЕСПБ:									60	

Р.бр.	Шифра предмета	Назив предмета	С	Тип	Статус	Активна настава			Остали часови	ЕСПБ
						П	В	ДОН		
ЧЕТВРТА ГОДИНА										
33	06.Z401B	Пројектовање и планирање у заштити животне средине	7	НС	О	3	3	0	0.00	7
34	06.Z014WA	Изборни предмет 2 (бира се 1 од 4) (бира се 1 од 4)	7		ИБ	3	3	0	0.00	5
	06.Z409B	Управљање опасним отпадом	7	НС	И	3	3	0	0	5
	06.Z420	Основи принципи управљања водама	7	СА	И	3	3	0	0	5
	13.Z481	Загађење амбијенталног ваздуха	7	СА	И	3	3	0	0	5
	06.Z475A	Инжењерство заштите животне средине у биосистемима	7	НС	И	3	3	0	0	5
35	06.Z0142A	Изборни предмет 3 (бира се 1 од 5) (бира се 1 од 5)	7		ИБ	3	0-3	0-3	0.00	5
	06.Z423A	Природни материјали у градитељству	7	НС	И	3	3	0	0	5
	06.Z412A	Процесни апарати за заштиту околине	7	СА	И	3	3	0	0	5
	06.Z413A	Акустика и заштита од буке	7	СА	И	3	1	2	0	5
	06.Z415A	Хазарди у животној средини	7	НС	И	3	3	0	0	5
	06.Z410A	Геоинформационе технологије и системи	7	СА	И	3	0	3	0	5
36	06.Z304A	Распрострањање поремећаја	7	НС	О	3	3	0	0.00	5
37	06.Z404	Стручна пракса	7	СА	О	0	0	0	4.00	3
38	06.Z450	Карактеризација рециклабилних материјала	8	НС	О	3	2	0	0.00	5
39	06.Z01GW	Изборни предмет 4 (бира се 1 од 4) (бира се 1 од 4)	8		ИБ	3	2-3	0-1	0.00	6
	12.ZC047	Технологије енергетског искоришћења отпада	8	НС	И	3	2	1	0	6
	13.Z417A	Поступци и постројења за третман вода	8	СА	И	3	3	0	0	6
	13.Z482	Анализа и процена стања квалитета ваздуха	8	НС	И	3	3	0	0	6
	06.Z476	Енергија и обновљиви извори енергије у руралним областима	8	НС	И	3	2	1	0	6
40	06.Z01G4	Изборни предмет 5 (бира се 1 од 4) (бира се 1 од 4)	8		ИБ	2	2	0	0.00	5
	06.Z451	Основе индустријске екологије	8	СА	И	2	2	0	0	5
	06.Z411	Основи инструментације и управљања	8	СА	И	2	2	0	0	5
	06.Z418	Геометрија еко-просторне визуализације	8	СА	И	2	2	0	0	5
	06.Z453	Инжењеринг енергетских система	8	СА	И	2	2	0	0	5
41	06.Z414	Савремене методе ремедијације земљишта	8	НС	О	3	2	0	0.00	6
42	06.ZN408	Дипломски рад	8	СА	О	0	0	0	8.00	15
Укупно часова активне наставе:						44			12	
Укупно часова наставе:						56				
Укупно ЕСПБ:									62	

Рударско-геолошки факултет Универзитета у Београду

Студијски програм: Инжењерство заштите животне средине 4+1+3 <https://rgf.bg.ac.rs>

Наставни план и програм

I година

Назив предмета	I семестар	II семестар	ЕСПБ	Статус	Професор
Инжењерска графика	2 +3		6	Обавезан	Милутиновић Александар Гојковић Зоран
Техничка физика	3 +2		7	Обавезан	Дамњановић Весна Јовковић Драгутин
Информатика 1	2 +3		7	Обавезан	Станковић Ранка Манић Милош
Основи геологије и минералогije	3 +1		6	Обавезан	Стојадиновић Урош Пачевски Александар
Енглески језик 1	2 +1		4	Обавезан	Беко Лидија
Математика 1		3 +3	8	Обавезан	Ћебић Дејан Ристић Маја
Механика 1		3 +3	8	Обавезан	Гроздановић Инес
Основи рударства		2 +1	4	Обавезан	Лутовац Сузана Глигорић Милош
Лежишта минералних сировина и основи петрографије		3 +1	6	Обавезан	Миладиновић Зоран Шарић Кристина
<i>Предмет изборног блока1</i>		2 +0			
Изборни блок1	I семестар	II семестар	ЕСПБ	Статус	Професор
Минералне сировине, друштво и одрживи развој		2 +0	4	Изборни	Бељић Чедомир
Заштита животне средине		2 +0	4	Изборни	Цвјетић Александар

II година

Назив предмета	III семестар	IV семестар	ЕСПБ	Статус	Професор
Математика 2	3 +3		8	Обавезан	Ћебић Дејан Ристић Маја
Механика 2	3 +2		6	Обавезан	Васовић Небојша
Технологија материјала	3 +2		6	Обавезан	Лутовац Сузана Глигорић Милош
Електротехника у рударству	2 +2		5	Обавезан	Александровић Снежана
<i>Предмет изборног блока2</i>	2 +2				
Машински елементи		3 +2	7	Обавезан	Танасијевић Милош Ивић Милица
Хемија		3 +2	7	Обавезан	Илић Марија Мијатовић Александар
Термодинамика		3 +2	6	Обавезан	Живковић Марија Маџаревић Александар
Вероватноћа и статистика		2 +2	5	Обавезан	Станковић Ранка Ћебић Дејан Ристић Маја Манић Милош
<i>Предмет изборног блока3</i>		2 +2			
Изборни блок2	III семестар	IV семестар	ЕСПБ	Статус	Професор
Отпорност материјала	2 +2		5	Изборни	Гроздановић Инес
Основи хидрогеологије	2 +2		5	Изборни	Докмановић Петар
Енглески језик 2	2 +2		5	Изборни	Беко Лидија
Изборни блок3	III семестар	IV семестар	ЕСПБ	Статус	Професор
Механика флуида		2 +2	5	Изборни	Васовић Небојша Станковић Ранка
Информатика 2		2 +2	5	Изборни	Манић Милош Ристић Маја

III година

Назив предмета	V семестар	VI семестар	ЕСПБ	Статус	Професор
Физичка и колоидна хемија	2 +2		5	Обавезан	Вучинић Душица
Систем управљања животном средином	2 +2		5	Обавезан	Ристовић Ивица
Карактеризација и управљање отпадом	2 +2		5	Обавезан	Кнежевић Динко Нишић Драгана
Механика стена и тла	2 +2		5	Обавезан	Гојковић Небојша Рупар Вељко
Геодезија са рударским мерењима	2 +2		5	Обавезан	Ганић Александар Гојковић Зоран
<i>Предмет изборног блока4</i>	2 +2				
Пречишћавање отпадних вода		2 +2	5	Обавезан	Вучинић Душица
Загађење и заштита ваздуха		2 +2	5	Обавезан	Лилић Никола Цвјетић Александар
Техничка заштита и безбедност на раду		2 +2	5	Обавезан	Лилић Никола Цвјетић Александар
Стручна пракса (ЗЖС)		0 +0 +6	5	Обавезан	Цвјетић Александар Нишић Драгана
<i>Предмет изборног блока5</i>		2 +2			
<i>Предмет изборног блокаб</i>		2 +2			
Изборни блок4	V семестар	VI семестар	ЕСПБ	Статус	Професор
Основе енергетике	2 +2		5	Изборни	Живковић Марија Ивезић Дејан
Нумеричка анализа	2 +2		5	Изборни	Ћебић Дејан
Анализа загађивача животне средине	2 +2		5	Изборни	Илић Марија
Експлоатација нафте и гаса	2 +2		5	Изборни	
Изборни блок5	V семестар	VI семестар	ЕСПБ	Статус	Професор
Технологија површинске експлоатације		2 +2	5	Изборни	Димитријевић Бојан
Основе метода подземног откопавања		2 +2	5	Изборни	Торбица Славко Лапчевић Вељко
Изборни блокб	V семестар	VI семестар	ЕСПБ	Статус	Професор
Припрема минералних сировина		2 +2	5	Изборни	Костовић Милена Никшић Ђурица
Техника бушења и минирања		2 +2	5	Изборни	Лутовац Сузана Глигорић Милош

IV година

Назив предмета	VII семестар	VIII семестар	ЕСПБ	Статус	Професор
Одлагање индустријског отпада	2 +2		5	Обавезан	Кнежевић Динко Нишић Драгана
Припрема и рециклирање отпада	2 +2		5	Обавезан	Костовић Милена
Процена утицаја објеката и технолошких процеса на животну средину	2 +2		5	Обавезан	Лилић Никола
Инжењерска економика	2 +2		5	Обавезан	Бељић Чедомир Лапчевић Вељко
<i>Предмет изборног блока7</i>	2 +2				
<i>Предмет изборног блока8</i>	2 +2				
Мониторинг у животној средини		2 +2	5	Обавезан	Кнежевић Динко Нишић Драгана
Бука у животној средини		2 +2	5	Обавезан	Џвјетић Александар
Стручна пракса (ЗЖС)		0 +0 +6	5	Обавезан	Џвјетић Александар Нишић Драгана
Завршни рад (ЗЖС)		0 +0	5	Обавезан	
<i>Предмет изборног блока9</i>		2 +2			
<i>Предмет изборног блока10</i>		2 +2			
Изборни блок7	VII семестар	VIII семестар	ЕСПБ	Статус	Професор
Сагоревање	2 +2		5	Изборни	Живковић Марија
Стабилност и санација косина	2 +2		5	Изборни	Чебашек Владимир Рупар Вељко
Геоинформатика	2 +2		5	Изборни	Станковић Ранка
Изборни блок8	VII семестар	VIII семестар	ЕСПБ	Статус	Професор
Машине и уређаји за рекултивацију терена и рад на депонијама	2 +2		5	Изборни	Јованчић Предраг Ђенадић Стеван
Законска регулатива из заштите животне средине	2 +2		5	Изборни	Ристовић Ивица Нишић Драгана
Изборни блок9	VII семестар	VIII семестар	ЕСПБ	Статус	Професор
Методе сепарације комуналног отпада и рециклажа		2 +2	5	Изборни	Лазић Предраг
Заштита од минирања		2 +2	5	Изборни	Лутовац Сузана Глигорић Милош
Изборни блок10	VII семестар	VIII семестар	ЕСПБ	Статус	Професор
Рекултивација површинских копова и одлагалишта		2 +2	5	Изборни	Димитријевић Бојан Шубарановић Томислав Илић Саша
Заштита на машинама и уређајима		2 +2	5	Изборни	Милисављевић Владимир

Универзитет У Загребу, Геотехнички факултет
Студијски програм: Инжењерство околиша, 3 године+ 2 мастер+3

3 Opis programa

3.1 Popis obveznih i izbornih predmeta i/ili modula

OBVEZNI PREDMETI			
MATEMATIKA I INFORMATIČKE ZNANOSTI	Predavanja	Vježbe	ECTS
Matematika I	4	3	8
Matematika II	4	3	8
Nacrtna geometrija	2	2	5
Primijenjena statistika	2	2	5
Računalno projektiranje	1	2	4
GIS	2	2	5

PRIRODNE ZNANOSTI	Predavanja	Vježbe	ECTS
Geologija I	2	1	4
Geologija II	2	1	4
Fizika I	2	1	4
Fizika II	2	2	5
Opća ekologija	3	0	4
Uvod u geokemiju okoliša	2	1	4
Kemija	2	2	5
Kemijski praktikum	0	2	3
Geofizika	2	2	5
Mehanika fluida	2	2	5
Analitička kemija okoliša	2	2	5

OSNOVE INŽENJERSTVA	Predavanja	Vježbe	ECTS
Osnove zaštite okoliša	3	2	6
Osnove zaštite zraka	2	1	4
Osnove gospodarenja otpadom	2	2	5
Tehnička mehanika	2	2	5
Geodezija	2	2	5
Inženjerska geologija	3	2	6
Otpornost materijala	2	2	5

DRUŠTVENE ZNANOSTI	Predavanja	Vježbe	ECTS
Strani jezik I	0	2	2
Strani jezik II	0	2	2
Pravo i okoliš	3	0	4

OBVEZNI PREDMETI

INŽENJERSTVO OKOLIŠA	Predavanja	Vježbe	ECTS
Geotehnički praktikum I	1	2	4
Mehanika tla I	3	2	6
Geotehnički i hidrotehnički strojevi	2	2	5
Geotehnička terenska istraživanja	2	2	5
Geotehničko-ekološki zahvati	2	2	5
Eksploatacija mineralnih sirovina	3	1	5

UPRAVLJANJE VODAMA	Predavanja	Vježbe	ECTS
Hidrologija	2	2	5
Hidrogeologija	2	2	5

IZBORNI PREDMETI

MATEMATIKA I INFORMATIČKE ZNANOSTI	Predavanja	Vježbe	ECTS
Računalni praktikum	1	2	4

OSNOVE INŽENJERSTVA

Elementi gradnje	2	1	4
Emisije u okoliš	2	2	5
Organizacija građenja	2	2	5
Prometnice	2	2	5

DRUŠTVENE ZNANOSTI

Sociologija i okoliš	2	1	4
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INŽENJERSTVO OKOLIŠA

Geotehničke građevine	2	2	5
Geotehnički i hidrotehnički strojevi	2	2	5
Tehnologija bušenja	2	2	5

UPRAVLJANJE VODAMA

Sanitarni problemi okoliša	2	1	4
Hidrotehničke građevine	2	2	5

1.godina

1. SEMESTAR

	PREDMET	P	V	ECTS	Nositelj
1.	Matematika I	4	3	8	Božičević
2.	Geologija I	2	1	4	Kapelj
3.	Osnove zaštite okoliša	3	2	6	Premur
4.	Nacrtna geometrija	2	2	5	Lončar
5.	Kemija	2	2	5	Sekovanić
6.	Strani jezik I	0	2	2	Dučakijević
	UKUPNO	12	13	30	
	Tjelovježba	0	2	0	Gušić

2. SEMESTAR

	PREDMET	P	V	ECTS	Nositelj
1.	Matematika II	4	3	8	Božičević
2.	Fizika I	2	1	4	Kranjčec
3.	Računalno projektiranje	1	2	4	Rezo
4.	Geologija II	2	1	4	Kapelj
5.	Opća ekologija	3	0	4	Stančić
6.	Uvod u geokemiju okoliša	2	1	4	Kapelj/Tepeš
7.	Strani jezik II	0	2	2	Dučakijević
	UKUPNO	13	11	30	
	Tjelovježba	0	2	0	Gušić

2. godina

3. SEMESTAR

	PREDMET	P	V	ECTS	Nositelj
1.	Osnove zaštite zraka	2	1	4	Vujević
2.	Tehnička mehanika	2	2	5	Petrović
3.	Kemijski praktikum	0	2	3	Tepeš
4.	Pravo i okoliš	3	0	4	Rumenjak
5.	Primijenjena statistika	2	2	5	Kovač I.
6.	Fizika II	2	2	5	Kranjčec
7.	Izborni predmet 3	2	1	4	-
	UKUPNO	13	10	30	
	Tjelovježba	0	2	0	Gušić
	IZBORNI PREDMET (3)	P	V	ECTS	Nositelj
1.	Sociologija i okoliš	2	1	4	Lay
2.	Računalni praktikum	1	2	4	Hip

4. SEMESTAR

	PREDMET	P	V	ECTS	Nositelj
1.	Geodezija	2	2	5	Rezo
2.	Geofizika	2	2	5	Strelec/Gazdek
3.	Inženjerska geologija	3	2	6	Biondić R.
4.	Otpornost materijala	2	2	5	Soldo
5.	Mehanika fluida	2	2	5	Hip
6.	Izborni predmet 4	2	1	4	-
	UKUPNO	13	11	30	
	Tjelovježba	0	2	0	Gušić
	IZBORNI PREDMET (4)	P	V	ECTS	Nositelj
1.	Elementi gradnje	2	1	4	Amadori
2.	Sanitarni problemi okoliša	2	1	4	Kapelj

3. godina

5. SEMESTAR

PREDMET		P	V	ECTS	Nositelj
1.	Geotehnički praktikum I	1	2	4	Strelec
2.	Hidrologija	2	2	5	Patrčević
3.	Mehanika tla I	3	2	6	Petrović
4.	GIS	2	2	5	Biondić R.
5.	Osnove gospodarenja otpadom	2	2	5	Anić Vučinić
6.	Izborni predmet 5	2	2	5	-
UKUPNO		12	12	30	
IZBORNI PREDMET (5)		P	V	ECTS	Nositelj
1.	Geotehničke građevine	2	2	5	Soldo
2.	Geotehnički i hidrotehnički strojevi	2	2	5	Strelec
3.	Hidrotehničke građevine	2	2	5	Patrčević
4.	Tehnologija bušenja	2	2	5	Strelec

6. SEMESTAR

PREDMET		P	V	ECTS	Nositelj
1.	Geotehničko-ekološki zahvati	2	2	5	Soldo
2.	Hidrogeologija	2	2	5	Biondić R.
3.	Analitička kemija okoliša	2	2	5	Tepeš
4.	Eksploatacija mineralnih sirovina	2	2	5	Mesec
5.	Izborni predmet 6	2	2	5	-
6.	Završni rad			5	-
UKUPNO		11	9	30	
IZBORNI PREDMET (6)		P	V	ECTS	Nositelj
1.	Emisije u okoliš	2	2	5	Vujević
2.	Organizacija građenja	2	2	5	Amadori
3.	Prometnice	2	2	5	Rezo
4.	Geotehnička terenska istraživanja	2	2	5	Soldo

Univerzitet u Ljubljani, Naravoslovno tehnički fakultet Ljubljana

Studijski program: [Študij](#) > [1. stopnja](#) > [Geotehnologija in okolje \(UN\)](#) 3+2+3

<https://www.ntf.uni-lj.si/en/>

Predmet	Kontaktne ure					ECTS
	P	S	V	D	Σ	
1. semester	285	0	165	0	450	30
Matematika I	60	0	30	0	90	6
Fizika I	45	0	30	0	75	5
Kemija I	60	0	15	0	75	5
Mehanika I	45	0	30	0	75	5
Geometrija v inženirstvu I	45	0	30	0	75	5
Računalništvo in informatika	30	0	30	0	60	4
2. semester	270	0	180	0	450	30
Matematika II	60	0	30	0	90	6
Fizika II	45	0	30	0	75	5
Kemija II	30	0	15	0	45	3
Mehanika II	45	0	45	0	90	6
Geometrija v inženirstvu II	45	0	30	0	75	5
Geologija z mineralogijo in petrologijo	45	0	30	0	75	5
SKUPAJ	555	0	345	0	900	60

Oznake v predmetniku pomenijo:

P – predavanja

S – seminar

V – vaje

D – druge oblike neposrednega pedagoškega dela (predvsem projektno delo)

ECTS – kreditne točke po evropskem sistemu prenosa kreditnih točk (1 kreditna točka pomeni 30 ur obremenitve študenta)

Siva – Sivo zapisani predmeti se v tem študijskem letu ne izvajajo

Predmet	Kontaktne ure					ECTS
	P	S	V	D	Σ	
3. semester	210	15	150	95	470	30
Ekonomika in organizacija dela v geotehnologiji in rudarstvu	45	0	45	0	90	6
Praktično usposabljanje I	0	0	0	80	80	4
Nižja geodezija I	30	0	15	0	45	3
Mehanika tal I	30	0	15	0	45	3
Mehanska procesna tehnika	45	0	45	0	90	6
Gospodarjenje in predelava odpadnih snovi	30	15	0	15	60	4
Osnove strojništva I	30	0	30	0	60	4
4. semester	225	30	180	15	450	30
Matematika III	30	0	30	0	60	4
Nižja geodezija II	30	0	15	15	60	4
Mehanika tal II	30	0	30	0	60	4
Ravnanje z okoljem	30	30	0	0	60	4
Osnove strojništva II	45	0	45	0	90	6
Splošni izbirni predmeti	60	0	60	0	120	8
SKUPAJ	435	45	330	110	920	60

Oznake v predmetniku pomenijo:

P – predavanja

S – seminar

V – vaje

D – druge oblike neposrednega pedagoškega dela (predvsem projektno delo)

ECTS – kreditne točke po evropskem sistemu prenosa kreditnih točk (1 kreditna točka pomeni 30 ur obremenitve študenta oz. 20 ur praktičnega usposabljanja)

Siva – Sivo zapisani predmeti se v tem študijskem letu ne izvaiaio

Študenti v 4. semestru izberejo predmete v obsegu 8 ECTS med predmeti drugih študijskih programov NTF, izbirnimi predmeti na drugih članicah Univerze v Ljubljani in na drugih univerzah doma in v tujini, s katerimi ima ali bo imela UL sporazum o priznavanju kreditnega sistema študija.

Predmet	Kontaktne ure					ECTS
	P	S	V	D	Σ	
5. semester	240	0	195	15	450	30
Inženirska geologija in hidrogeologija	45	0	45	0	90	6
Globinsko vrtanje I	30	0	30	0	60	4
Tehnično rudarstvo I	60	0	15	15	90	6
Temeljenje objektov	45	0	45	0	90	6
Modeliranje in simulacije	30	0	30	0	60	4
Strokovni izbirni predmet I	30	0	30	0	60	4
6. semester	195	30	120	105	450	30
Globinsko vrtanje II	30	0	15	0	45	3
Bogatenje mineralnih in sekundarnih surovin	45	15	15	15	90	6
Mehanika kamnin	45	15	30	0	90	6
Merstvo v geotehnologiji in rudarstvu I	30	0	15	0	45	3
Strokovni izbirni predmet II	45	0	45	0	90	6
Diplomsko delo	0	0	0	90	90	6
SKUPAJ	435	30	315	120	900	60
Izbirni predmeti	Kontaktne ure					ECTS
	P	S	V	D	Σ	
Geotehnične konstrukcije	45	15	30	0	90	6
Strokovna angleščina	0	15	45	0	60	4
Gradiva	30	0	30	0	60	4
Uporabna geofizika	45	0	45	0	90	6
Praktično usposabljanje II	0	0	0	120	120	6
Fluidi v geotehnologiji	30	0	30	0	60	4

Oznake v predmetniku pomenijo:

P – predavanja

S – seminar

/ – vaje

D – druge oblike neposrednega pedagoškega dela (predvsem projektno delo)

ECTS – kreditne točke po evropskem sistemu prenosa kreditnih točk (1 kreditna točka pomeni 30 ur obremenitve študenta oz. 20 ur praktičnega usposabljanja)

Siva – Sivo zapisani predmeti se v tem študijskem letu ne izvajajo

Študenti v 5. semestru izberejo predmete v obsegu 4 ECTS in v 6. semestru v obsegu 6 ECTS iz nabora strokovnih predmetov.

Универзитет у Источном Сарајеву, Технолошки факултет Зворник
Студијски програм: Хемијско инжењерство и технологија“ / модул
Инжењерство заштите животне средине , 4+1

<https://www.tfzv.ues.rs.ba/>

Прва година

Редни број	Шифра предмета	Назив предмета	Статус (О-И)	Условљени предмет	Семестар	П	В	ЛВ	ECTS
1	TF-1-1-НПТ-04-1-001-1-7-3-2	Општа хемија	О	не	1	3	1	2	7
2	TF-1-1-НПТ-04-1-002-1-6-3-1	Техничка физика I	О	не	1	3	1	1	6
3	TF-1-1-НПТ-04-1-003-1-6-3-0	Математика I	О	не	1	3	2	0	6
4	TF-1-1-НПТ-04-1-004-1-5-2-2	Примјена рачунара у инжењерству	О	не	1	2	0	2	5
5	TF-1-1-НПТ-04-1-005-1-4-2-0	Инжењерско цртање	О	не	1	2	1	0	4
6	TF-1-1-НПТ-04-1-006-1-2-1-0	Енглески језик I	О	не	1	1	1	0	2
7	TF-1-1-НПТ-04-1-007-2-7-3-2	Неорганска хемија	О	не	2	3	1	2	7
8	TF-1-1-НПТ-04-1-008-2-6-3-1	Техничка физика II	О	не	2	3	1	1	6
9	TF-1-1-НПТ-04-1-009-2-6-3-0	Математика II	О	не	2	3	2	0	6
10	TF-1-1-НПТ-04-1-010-2-5-2-0	Основе заштите животне средине	О	не	2	2	0	2	5
11	TF-1-1-НПТ-04-1-011-2-4-2-0	Основе машинства	О	не	2	2	1	0	4
12	TF-1-1-НПТ-04-1-012-2-2-1-0	Енглески језик II	О	не	2	1	1	0	2

Друга година

Редни број	Шифра предмета	Назив предмета	Статус (О-И)	Условљени предмет	Семестар	П	В	ЛВ	ECTS
1	TF-1-1-НИТ-04-1-013-3-6-2-3 002-1-6-3-1	Аналитичка хемија	О	не	3	2	0	3	6
2	TF-1-1-НИТ-04-1-014-3-7-3-0	Феномени преноса масе и енергије	О	не	3	3	3	0	7
3	TF-1-1-НИТ-04-1-015-3-6-3-0	Инжењерска термодинамика	О	не	3	3	2	0	6
4	TF-1-1-НИТ-04-1-016-3-4-2-0	Конструкциони материјали	О	не	3	2	1	0	4
5	TF-1-1-НИТ-04-1-017-3-5-2-0	Основе електротехнике	О	не	3	2	2	0	5
6	TF-1-1-НИТ-04-1-018-3-2-1-0	Енглески језик III	О	не	3	1	1	0	2
7	TF-1-1-НИТ-04-1-019-4-7-4-2	Органска хемија	О	не	4	4	0	2	7
8	TF-1-1-НИТ-04-1-020-4-7-3-2	Физичка хемија I	О	не	4	3	1	2	7
9	TF-1-1-НИТ-04-1-021-4-5-2-2	Инструменталне методе	О	не	4	2	0	2	5
10	TF-1-1-НИТ-04-1-022-4-5-2-0	Материјални и енергетски биланси	О	не	4	2	2	0	5
11	TF-1-1-НИТ-04-1-023-4-4-2-0	Хемијска термодинамика	О	не	4	2	1	0	4
12	TF-1-1-НИТ-04-1-024-4-2-1-0	Енглески језик IV	О	не	4	1	1	0	2

Трећа година									
Редни број	Шифра предмета	Назив предмета	Статус (О-И)	Условљени предмети	Семестар	П	В	ЛВ	ECTS
1	TF-1-1-НПТ-04-1-025-5-7-3-2	Физичка хемија II	О	не	5	3	1	2	7
2	TF-1-1-НПТ-04-1-026-5-7-3-2	Механичко процесно инжењерство	О	не	5	3	1	2	7
3	TF-1-1-НПТ-04-1-027-5-6-3-2	Корозија и заштита	О	не	5	3	0	2	6
4	TF-1-1-НПТ-04-1-070-5-5-2-1	Основе физичко-хемијских процеса у биосфери	О	не	5	2	1	1	5
5	TF-1-1-НПТ-04-1-071-5-5-2-2	Каталитички процеси у заштити животне средине	О	не	5	2	0	2	5
6	TF-1-1-НПТ-04-1-030-6-7-3-2	Топлотно и дифузионо процесно инжењерство	О	не	6	3	1	2	7
7	TF-1-1-НПТ-04-1-031-6-6-3-0	Основе реакцијског инжењерства	О	не	6	3	2	0	6
8	TF-1-1-НПТ-04-1-072-6-5-2-1	Загађујуће материје	О	не	6	2	1	1	5
9	TF-1-1-НПТ-04-1-073-6-5-2-1	Припрема воде за пиће и индустрију	О	не	6	2	1	1	5
10	TF-1-1-НПТ-04-1-074-6-7-3-2	Основе хемијске технологије	О	не	6	3	1	2	7

Четврта година

Редни број	Шифра предмета	Назив предмета	Статус (О-И)	Условљени предмети	Семестар	П	В	ЛВ	ECTS
1	TF-1-1-НПТ-04-1-035-7-3-2-0	Економика предузећа и менаџмент	О	не	7	2	1	0	3
2	TF-1-1-НПТ-04-1-075-7-7-3-1	Аерозагађење и заштита ваздуха	О	не	7	3	2	1	7
3	TF-1-1-НПТ-04-1-076-7-7-3-2	Пречишћавање отпадних вода	О	не	7	3	1	2	7
4	TF-1-1-НПТ-04-1-077-7-3-2-0	Енергетска ефикасност	О	не	7	2	1	0	3
5	TF-1-1-НПТ-04-2-078-7-4-2-1	Основе санитарне микробиологије	И1	не	7	2	1	1	4
5	TF-1-1-НПТ-04-2-079-7-4-2-1	Колоидна хемија	И1	не	7	2	1	1	4
5	TF-1-1-НПТ-04-2-080-7-4-2-1	Обновљиви извори енергије	И1	не	7	2	1	1	4
5	TF-1-1-НПТ-04-2-081-7-4-2-1	Моделовање процеса у ИЗЖС	И1	не	7	2	1	1	4
5	TF-1-1-НПТ-04-2-082-7-4-2-1	Методе анализе загађујућих материја	И1	не	7	2	1	1	4
6	TF-1-1-НПТ-04-2-083-7-3-2-0	Третман опасног отпада	И2	не	7	2	1	0	3
6	TF-1-1-НПТ-04-2-084-7-3-2-0	Третман отпадних гасова	И2	не	7	2	1	0	3
6	TF-1-1-НПТ-04-2-085-7-3-2-0	Зрачење и заштита од зрачења	И2	не	7	2	1	0	3
6	TF-1-1-НПТ-04-2-086-7-3-2-0	Солидификација и стабилизација	И2	не	7	2	1	0	3
6	TF-1-1-НПТ-04-2-087-7-3-2-0	Рециклажа отпадних материјала	И2	не	7	2	1	0	3
6	TF-1-1-НПТ-04-2-088-7-3-2-0	Међународни стандарди заштите животне средине	И2	не	7	2	1	0	3
7	TF-1-1-НПТ-04-1-056-7-3-0-0	Стручна пракса	О	не	7				3
8	TF-1-1-НПТ-04-1-057-8-7-3-2	Пројектовање процеса и постројења	О	не	8	3	1	2	7
9	TF-1-1-НПТ-04-1-089-8-5-2-0	Третман и одлагање отпада	О	не	8	2	1	1	5
10	TF-1-1-НПТ-04-1-090-8-5-2-1	Загађење и заштита земљишта и подземних	О	не	8	2	1	1	5

Редни број	Шифра предмета	Назив предмета	Статус (О-И)	Условљени предмети	Семестар	П	В	ЛВ	ECTS	
вода										
11	TF-1-1-НПТ-04-1-091-8-4-2-1	Основе ремедијације	О	не	8	2	1	1	4	
12	TF-1-1-НПТ-04-2-092-8-4-2-2	Припрема воде за енергетику	ИЗ	не	8	2	0	2	4	
12	TF-1-1-НПТ-04-2-093-8-4-2-2	Физичко-хемијски поступци третмана вода	ИЗ	не	8	2	0	2	4	
12	TF-1-1-НПТ-04-2-094-8-4-2-2	Електрохемијски поступци третмана вода	ИЗ	не	8	2	0	2	4	
12	TF-1-1-НПТ-04-2-095-8-4-2-2	Биолошки поступци третмана вода	ИЗ	не	8	2	0	2	4	
12	TF-1-1-НПТ-04-2-096-8-4-2-2	Третман муља из процеса обраде воде	ИЗ	не	8	2	0	2	4	
13	TF-1-1-НПТ-04-1-069-8-5-0-3	Дипломски рад	О		8	0	0	3	5	
						УК	25	8	17	60
						УП				
						НО				

Независни универзитет Бања Лука/ Одјељење Брчко
 Факултет за екологију Студијски програм: Заштита животне средине
[Zaštita životne sredine](http://nubl.org/)
<http://nubl.org/>

Akademski naziv: *Diplomirani inženjer zaštite okoline (životne sredine) – 240 ECTS* **I godina – I semestar**

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZA-001	Fizika 1	O	2	2	6
ZA-002	Hemija	O	3	2	7
ZA-003	Matematika	O	3	2	7
ZA-004	Ekologija i životna sredina	O	2	2	6
ZA-005	Engleski jezik 1	O	2	2	4
UKUPNO			12	10	30

I godina – II semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZA-006	Fizika 2	O	2	3	7
ZA-007	Statistika	O	2	3	7
ZA-008	Zaštita životne sredine	O	2	2	6
ZA-009	Hemijski parametri radne i životne sredine	O	2	2	5
ZA-010	Engleski jezik 2 – jezik struke	O	2	2	5
UKUPNO			10	12	30

II godina – III semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZA-011	Zaštita od buke	O	2	2	6
ZA-012	Inženjerska mjerenja	O	2	2	6
ZA-013	Elektromagnetizam	O	2	2	6
ZA-014	Osnovi sistema zaštite	O	2	2	6
ZA-015	Informatika	O	2	2	6
UKUPNO			10	10	30

II godina – IV semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZA-016	Tehnološki procesi	O	2	2	6
ZA-017	Ekotoksikologija	O	2	2	6
ZA-018	Fizičke metode mjerenja	O	2	2	6
ZA-019	Energetska efikasnost	O	2	2	6

ZAS-020	Krizni menadžment	O	2	2	6
UKUPNO			10	10	30

III godina – V semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZAS-021	Botanika	O	2	3	8
ZAS-022	Obnovljivi izvori energije	O	3	2	8
ZAS-023	Hazardni u životnoj sredini	O	2	2	7
ZAS-024	Klimatske promjene i globalna ekonomija	O	3	3	7
UKUPNO			10	10	30

III godina – VI semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZAS-025	Indikatori održivosti prostora	O	2	2	7
ZAS-026	Ekoremedijacije	O	2	3	8
ZAS-027	Prostorno planiranje i životna sredina	O	3	2	8
ZAS-028	Agroekologija i zaštita zemljišta	O	3	3	7
UKUPNO			10	10	30

IV godina – VII semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZAS-029	Zaštita vode	O	2	2	6
ZAS-030	Zaštita vazduha	O	2	2	6
ZAS-031	Zaštita prirode	O	2	2	6
ZAS-032	Zaštita hrane	O	2	2	6
ZAS-033	Izborni predmet 1*	I	2	2	6
UKUPNO			10	10	30

* bira se jedan od tri ponuđena: Projektni menadžment, Klimatologija sa meteorologijom ili Održivo upravljanje energijom

IV godina – VIII semestar

Šifra predmeta	Predmet	Izbornost	Predavanja	Vježbe	ECTS
ZAS-034	Pravni aspekti zaštite životne sredine	O	2	2	6
ZAS-035	Upravljanje otpadom	O	2	2	6
ZAS-036	Stručna praksa	O	2	4	7
ZAS-037	Izborni predmet 2**	I	2	2	6
ZAS-038	Diplomski rad	O	–	4	5
UKUPNO			8	14	30

** bira se jedan od tri ponuđena: Osnovi menadžmenta, Energetska efikasnost u zgradama ili Metodika nastave o životnoj sredini

<https://www.fzp.czu.cz/en>

Faculty of environmental sciences/ Environmental Engineering

<https://www.clemson.edu/cecas/>

College of Engineering, Computing and Applied Sciences/ ENVIRONMENTAL ENGINEERING

<https://www.ou.edu/coe>

THE UNIVERSITY OF OKLAHOMA / GALLOGLY COLLEGE OF ENGINEERING

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Civil Engineering and Environmental Science

Tablica 2. Neki primjeri studijskih programa inženjerstva okoliša razvijenih zemalja.

Država	Sveučilište	Fakultet / Odjel	Program / Akademski naziv
Velika Britanija	University of Cardiff	Cardiff School of Engineering	Civil and Environmental Engineering <i>BEng (Hons)</i>
	University of Nottingham	Department of Chemical and Environmental Engineering	Environmental Engineering <i>BEng (Hons)</i>
Irska	National University of Ireland	College of Engineering and Informatics	Environmental Engineering <i>Bachelor of Engineering</i>
Kanada	University of Toronto	Faculty of Applied Science and Engineering	Environmental Engineering
Australija	Griffith University	Griffith School of Engineering	Undergraduate Program in Environmental Engineering <i>Bachelor in Engineering</i>
SAD	Massachusetts Institute of Technology	Department of Civil and Environmental Engineering	Civil and Environmental Engineering <i>Undergraduate Degree</i>
	Tufts University, Medford, MA	Department of Civil and Environmental Engineering	<i>Bachelor of Science in Environmental Engineering</i>
	Colorado State University, Fort Collins	Department of Civil and Environmental Engineering	Environmental Engineering (B.S.)
Njemačka	Hamburg HAW (Hamburg University of Applied Sciences)	Department Umwelttechnik (Environmental Engineering)	Umwelttechnik <i>Bachelor of Science</i>
	Technische Universität München	Fakultät für Bauingenieur- und Vermessungswesen	Environmental Engineering Bachelor
	Technische Universität Bergakademie Freiberg	Institut für Thermische Verfahrenstechnik, Umweltverfahrenstechnik u. Naturstoffverfahrenstechnik	Environmental Engineering <i>Bachelor</i>
Austrija	Universität für Bodenkultur Wien	Institut für Angewandte Geologie	Kulturtechnik und Wasserwirtschaft (Environmental Engineering)
	Montanuniversität Leoben	Institute for Process Technology & Industrial Environmental Protection	Industrial Environmental Protection, Waste Disposal Technology and Recycling
Italija	University of Padova	Department of Hydraulics, Maritime Constructions, Environment, Soil Mechanics Engineering	First Cycle Degree Programme (<i>Bachelor level</i>) in Environmental Engineering
Švicarska	ETH Zürich	Department of Civil, Environmental and Geomatic Engineering	<i>Bachelor of Science ETH in Environmental Engineering</i>