

# UNIVERSITY STUDY PROGRAMME 1st CYCLE DEGREE SANITARY ENGINEERING

## Course information and outline

### 1 General information about the study programme

The first-cycle degree University Study Programme *Sanitary Engineering* lasts 4 years (8 semesters), comprising 240 ECTS credits in total. The professional title awarded to the first-cycle degree graduate is *diplomirani sanitarni inženir* (UN), or *diplomirana sanitarna inženirka* (UN).

### 2 Goals of the programme and general competences

The University Study Programme graduate of Sanitary Engineering will possess a broad range of core skills encompassing profession-specific and generic enabling skills in the field of hygiene, epidemiology and health ecology. Upon successful completion of the programme the diploma holder will be able to control hygienic processes in the working and living environment, protect people from environmental risk factors, protect the environment against harmful human interference and improve the quality of the environment for human benefit and welfare. They will develop the following competences:

- mastering the theoretical and scientific bases of the pertinent discipline,
- ability to apply theoretical knowledge into practice,
- ability to actively participate in research work,
- ability of cross-professional cooperation in problem solving,
- ability of professional integration of knowledge and reasoning,
- ability to analyse, synthesize, solve and anticipate professional problems and outcomes in the field of hygiene technology, epidemiology, health ecology and social medicine,
- ability to gather, interpret and critically evaluate information,
- ability of professional reasoning,
- ability of critical judgement,
- ability of autonomous decision-making,
- mastering of professional terminology,
- ability to conduct research in sanitary engineering education,
- ability of peer and inter-professional communication,
- ability of adequate oral and written communication,
- ability to report on hygienic and technical conditions in internal and external environments exerting impact on health; ability to initiate and participate in health promotion,
- ability to act in compliance with ethical principles and values,
- ability of independent knowledge acquisition,
- ability to use and adjust to the advanced IT in the field of sanitary engineering,
- responsibility for and commitment to life-long learning,
- ability to apply the contents and methods of sanitary engineering,
- ability of autonomous sanitary engineering practice.

### 3 Admission requirements and selection criteria

Admission to the study programme of Sanitary Engineering is open to those who have successfully completed:

- a) matura
- b) vocational matura and the exam of any matura subject from any four-year secondary school leaving exam. This subject should be different from the ones taken in professional matura.
- c) any four-year secondary school programme before June 1<sup>st</sup> 1995

45 students may enroll in the programme per year.

If the number of applicants exceeds the maximum availability of places, the applicants are selected according to their secondary school achievement weighted in the following way:

Applicants under a) above will be selected according to:

- |                                    |     |
|------------------------------------|-----|
| - overall score in the matura exam | 60% |
| - grade average in years 3 and 4   | 40% |

Applicants under b) above will be selected according to:

- |   |     |
|---|-----|
| - overall score in the professional matura exam | 50% |
| - grade in the additional exam                  | 10% |
| - grade average in years 3 and 4                | 40% |

Applicants under c) above will be selected according to:

- |                                     |     |
|-------------------------------------|-----|
| - grade average in years 3 and 4    | 60% |
| - overall score in the leaving exam | 40% |

### 4 Recognition of knowledge and skills acquired prior to admission

Recognition of the student's prior knowledge and skills may be granted if they match the contents and educational goals of the subjects in the Sanitary Engineering study programme and were acquired through other study programmes of the relevant degree. A decision regarding the recognition and crediting of the applicants' knowledge and skills is at the discretion of the Student Affairs Commission of the Faculty of Health Sciences. It is based on the students' individual application and the provision of certificates and other documents attesting to the acquired knowledge.

Recognition of prior knowledge will be based on the following criteria:

- the admission requirements;
- the comparability of the extent of education (the workload per subject);
- the comparability of content.

The knowledge acquired prior to admission will be recognized if:

- the admission requirements are equivalent;
- previous education covers at least 75% of the extent of the subject to be recognised and matches at least 75% of the content of the subject to be recognised.

If the Commission determines that the extent and contents of the acquired knowledge are adequate, the ECTS will be granted accordingly to the subject to be recognised.

The student's informal learning and skills can be recognised if the contents, scope and level of prior education partially or fully correspond to the general or subject-specific competences as defined by the Sanitary Engineering programme. In the validation process, the Student Affairs Commission follows the Rules and Guidelines for Validation of Informally Acquired Knowledge

and Skills, adopted by the Senate of the University of Ljubljana. The candidates must submit an application and provide the following documents attesting to their qualification:

- certificate of the educational institution on their successful completion of the programme,
- certificate of informal education,
- certificate of the institution where practical training, a project, etc. was undertaken,
- portfolios, projects, publications and additional candidate's work.

The recognition of informal education is based on the following criteria:

- the entrance and threshold competences based on educational objectives of the study programme of Sanitary Engineering;
- the acquired competences, attested and relevant to the programme are recognised irrespective of the time and place of acquisition.

The relevant study committee may take a decision as to recognition of the candidate's prior formal education through:

- a) verification of knowledge and skills
- b) assessment of the provided portfolio.

If the Commission determines that the acquired knowledge can be recognized, the ECTS will be granted accordingly to the subject to be recognised.

If informal learning and skills are recognised as completed study requirement, the amount of ECTS will be granted according to the criteria for credit evaluation of study programmes.

## **5 Promotion requirements**

To advance to the subsequent year of the undergraduate programme, the student must fulfill all the obligations defined by the programme and earn at least 54 ECTS of the previous year. To advance to the second study year, student has to complete all the exercises and earn at least 54 ECTS in the first study year. To advance to the third study year student has to fulfill all the obligations of the first study year, all the exercises of the second study year, professional practice of the second year and earn at least 54 ECTS in the second year. To advance to the fourth study year student has to fulfill all the obligations of first and second study year, professional practice of the third year and earn at least 54 ECTS in the third year.

In exceptional circumstances, as defined in the Statute of the University of Ljubljana (i.e. maternity leave, prolonged illness, exceptional family and social circumstances, recognized special needs status, active participation in professional, cultural and sporting events at highest level, active participation in the university bodies), the Student Affairs Commission can approve enrolment into the subsequent year only once throughout the entire course of study on condition that the student has earned at least 45 ECTS during the current study year.

A student with extraordinary educational achievements can be granted faster promotion, according to the discretion of the Senate of the Faculty of Health Sciences. It is based on the candidate's application and adequate justification provided by the Student Affairs Commission of the Faculty of Health Sciences.

A repeated enrolment or transfer is allowed only once during the entire course of studies. For re-enrolment in the same study year, a student is required to earn at least 30 ECTS during the current study year.

## 6 Completion of the study

The undergraduate programme is completed after all of the obligations given for the respective subjects have been satisfied and the total of 240 ECTS have been earned.

## 7 Transfer between programmes

The Higher Education Act, Criteria for Transfer between Study Programmes and other regulations define transfer between programmes as the process by which learners may transfer from one programme of education and training to another programme, having received partial or full recognition of the knowledge, skills and competences acquired.

Transfer between programmes is based on the following criteria:

- admission requirements,
- places available,
- satisfactory completion and recognition of the obligations of the former programme (years or semesters),

In compliance with the Criteria for Transfer between Study Programmes (Official Gazette of the Republic of Slovenia, No. 95/2010) transfer is possible from adequate higher professional education and university study programmes accredited in Slovenia or implemented in other EU member states and which provide acquisition of comparable competences by completion of the study. According to the criteria for recognition, at least half of the study obligations from the previous study programme regarding all subjects can be recognized in the European Credit Transfer System (ECTS) in the current study programme.

In accordance with the conditions laid down in The Higher Education Act, Criteria for Transfer between Study Programmes (Official Gazette of the Republic of Slovenia, No. 95/2010, 17/2011) and other regulations, transfer is possible:

1. between programmes of the same degree:  
The transfer is possible from study programmes similar to Sanitary Engineering programme accredited in Slovenia or implemented in the EU member states.
2. between college (two-year) study programmes and the first cycle degree study programmes:  
The transfer from college (two-year) study programmes is not planned for.
3. in the case of non-Bologna programmes accredited prior to June 11<sup>th</sup>, 2004, the transfer is possible also between university and higher professional education study programmes and the transfer from the above programmes to the first or second cycle degree study programmes:  
Transfer is possible from higher professional education and university study programmes similar to the Sanitary Engineering study programme which are accredited in Slovenia or implemented in other EU member states.

All transfers are subject to individual review performed by the Student Affairs Commission of the Faculty of Health Sciences. In transferring, all the fulfilled and recognised requirements of the prior programme determine the possibility of transfer and the academic year of further study. The final decision on transfer between study programmes is at the discretion of the Senate of the Faculty of Health Sciences. The latter recognizes the extent of previously completed study obligations and determines additional study requirements in the range of 10 to 60 ECTS.

## **8 Grading system**

Assessment strategies and methods complement the learning outcomes. Students' theoretical knowledge and/or practical skills are assessed for each individual subject by the end of the course. The assessment modes (oral or written examination, tests, seminar papers, diaries, reports, etc) are defined in the subjects' syllabi. The assessment regimes are defined in the Rules on Knowledge Assessment, adopted and approved by the Academic Senate of the Faculty of Health Sciences. The grading scale is in accordance with the Statute of the University of Ljubljana:

- 10 – excellent, extraordinary results with negligible mistakes
- 9 – very good, above average knowledge with some mistakes
- 8 – good, fairly good knowledge
- 7 – satisfactory, adequate knowledge with some major mistakes
- 6 – sufficient, knowledge meets minimum standards
- 5 to 1 – fail, knowledge does not meet the minimum standards

## **9 Study programme syllabi and the anticipated head lecturers**

The programme is comprised of 34 compulsory and 15 elective subjects. Presented in Table 1 is a list of subjects with anticipated head lecturers. Table 2 presents the sequence of subjects per each study year, the number of contact hours, the proportion of different study modes and the number of credits assigned to each subject.

Table1: A list of subjects and the anticipated head lecturers

<b>No.</b>	<b>Subject</b>	<b>Head lecturer</b>
1	Anatomy, Physiology with Pathology	Dahmane Gošnak Raja
2	Biophysics	Sevšek France Bohinc Klemen
3	Microbiology and Parasitology	Godič Torkar Karmen
4	Fundamentals of Hygiene and Professional Ethics	Jevšnik Mojca
5	Social Sciences in Health Care	Kovačev Asja Nina
6	Mathematics	Saksida Pavle
7	Chemistry	Trebše Polonca
8	Fundamentals of Ecology	Gaberščik Alenka
9	Professional Terminology in a Foreign Language	Tina Levec Kuštrin Irena
10	Special Topics in Biophysics	Sevšek France Bohinc Klemen
11	Biochemistry	Cigić Blaž
12	Analytical Chemistry	Trebše Polonca
13	Buildings and Constructional Complexes	Krainer Aleš Kristl Živa
14	Occupational Hygiene and Ergonomics	Eržen Ivan
15	Disinfection, Disinsection and Deratisation	Poljšak Borut Eržen Ivan
16	Municipal Hygiene	Poljšak Borut Jevšnik Mojca
17	Informatics	Boh Bojana
18	Epidemiology	Kraigher Alenka Eržen Ivan
19	Professional Practice I	Jevšnik Mojca
20	Sanitary Engineering in Emergency Situations and First Aid	Ahčan Golobič Uroš
21	Hygiene of Establishments and Processes	Jevšnik Mojca
22	Administrative Procedure Law, Public Health Law and Environmental Health Law	Ivanc Blaž
23	Bioclimatic Design	Krainer Aleš

	Kristl Živa
24 Statistics	Stare Janez
25 Occupational and Living Environments	Bilban Marjan
26 Professional Practice II	Ivanc Blaž
27 Air Pollution	Rakovec Jože Bizjak Mirko
28 Technology and Food Safety	Jevšnik Mojca Godič Torkar Karmen
29 Waste Management	Bulc Tjaša
30 Technology and Techniques of Drinking and Waste Waters	Panjan Jože Kompore Boris
31 Professional Practice III	Eržen Ivan
32 Energy and the Environment	Medved Sašo
33 Professional Practice IV	Eržen Ivan
34 Project Acquisition, Implementation and Management	Bulc Tjaša
35 Environmental Technologies and Ecoremediation	Bulc Tjaša
36 Good Practices in the Food Chain	Raspor Peter
37 Tourism Hygiene	Eržen Ivan
38 Public Health	Eržen Ivan Sočan Maja
39 Chemical Technologies	Trebše Polonca
40 Inspection Control	Ivanc Blaž
41 Dangerous Materials	Trebše Polonca
42 Professional Health and Safety	Bilban Marjan
43 Nutrition and Dietetics	Hlastan Ribič Cirila
44 Microbiological Analyses in the Environment	Godič Torkar Karmen
45 Noise and Vibrations	Čudina Mirko
46 Ecological Psychology	Kovačev Asja Nina
47 English Language	Levec Tina
48 Management in Health Care	Bohinc Marija

Table 2: ECTS crediting of the programme and subjects, the total student workload per year and per programme, total number of contact hours and contact hours per year.

1st year		Contact hours							ECTS	SW	
		L	S	SP	LP	CP	PP	FP			CH
	<i>1st semester</i>										
1	Anatomy, Physiology with Pathology	70			25				95	6	180
2	Biophysics	45			15				60	5	150
3	Microbiology and Parasitology	60			30				90	7	210
4	Fundamentals of Hygiene and Professional Ethics	60	15						75	6	180
5	Social Sciences in Health Care	60		30					90	6	180
	<i>Total number 1st semester</i>	295	15	30	70				410	30	900
	<i>2nd semester</i>										
6	Mathematics	60		60					120	10	300
7	Chemistry	60		15	30				105	10	300
8	Fundamentals of Ecology	30	15					15	60	5	150
9	Professional Terminology in a Foreign Language	30		30					60	5	150
	<i>Total number 2nd semester</i>	180	15	105	30			15	345	30	900
	<i>Total number 1st and 2nd semester</i>	475	30	135	100			15	755	60	1800



2nd year		Contact hours							ECTS	SW	
		L	S	SP	LP	CP	PP	FP			CH
	<i>3rd semester</i>										
10	Special Topics in Biophysics	45			15				60	5	150
11	Biochemistry	45			15				60	5	150
12	Analytical Chemistry	30		10	20				60	5	150
13	Buildings and Constructional Complexes	30			30				60	5	150
14	Occupational Hygiene and Ergonomics	45				30			75	5	150
15	Disinfection, Disinsection and Deratisation	45				30			75	5	150
	<i>Total number 3rd semester</i>	240		10	80	60			390	30	900
	<i>4th semester</i>										
16	Municipal Hygiene	75	15		15	75			180	12	360
17	Informatics	30	15		30				75	6	180
18	Epidemiology	45			15	15			75	6	180
19	Professional Practice I				20		160		180	6	180
	<i>Total number 4th semester</i>	150	30		80	90	160		510	30	900
	<i>Total number 3rd and 4th semester</i>	390	30	10	160	150	160		900	60	1800

<b>3rd year</b>		<i>Contact hours</i>							<b>ECTS</b>	<b>SW</b>	
		<b>L</b>	<b>S</b>	<b>SP</b>	<b>LP</b>	<b>CP</b>	<b>PP</b>	<b>FP</b>			<b>CH</b>
	<b><i>5th semester</i></b>										
20	Sanitary Engineering in Emergency Situations and First Aid	45			30				75	4	120
21	Hygiene of Establishments and Processes	75	15		15	60			165	12	360
22	Administrative Procedure Law, Public Health Law and Environmental Health Law	45			30				75	6	180
23	Bioclimatic Design	30			30				60	5	150
24	Elective subject								45	3	90
	<i>Total number 5th semester</i>	195	15		105	60			420	30	900
	<b><i>6th semester</i></b>										
25	Statistics	30		15	30				75	5	150
26	Occupational and Living Environments	60			15	45			120	10	300
27	Elective subject/s								135	9	270
28	Professional Practice II				20		160		180	6	180
	<i>Total number 6th semester</i>	90		15	65	45	160		510	30	900
	<b><i>Total number 5th and 6th semester</i></b>	285	15	15	170	105	160		930	60	1800

4th year		Contact hours							ECTS	SW	
		L	S	SP	LP	CP	PP	FP			CH
	<i>7th semester</i>										
29	Air Pollution	45	15	15					75	6	180
30	Technology and Food Safety	60			45	15			120	7	210
31	Waste Management	45	15		30				90	6	180
32	Technology and Techniques of Drinking and Waste Waters	45	15		15				75	5	150
33	Professional Practice III				10		80		90	3	90
	<i>Total number 7th semester</i>	195	45	15	100	15	80		450	27	810
	<i>8th semester</i>										
34	Elective subject/s								225	15	450
35	Energy and the Environment	45	15		15				75	6	180
36	Professional Practice IV				10		80		90	3	90
37	Project Acquisition, Implementation and Management	15	15		15				45	9	270
	<i>Total number 8th semester</i>	60	30		40		80		435	33	990
	<i>Total number 7th and 8th semester</i>	255	75	15	140	15	160		885	60	1800

<b>Professional elective subjects</b>		<i>Contact hours</i>								<b>ECTS</b>	<b>SW</b>
		<b>L</b>	<b>S</b>	<b>SP</b>	<b>LP</b>	<b>CP</b>	<b>PP</b>	<b>FP</b>	<b>CH</b>		
1	Environmental Technologies and Ecoremediation	30		15					45	3	90
2	Good Practices in the Food Chain	30	15						45	3	90
3	Tourism Hygiene	30			15				45	3	90
4	Public Health	30		15					45	3	90
5	Chemical Technologies	30			15				45	3	90
6	Inspection Control	30		15					45	3	90
7	Dangerous Materials	30			15				45	3	90
8	Professional Health and Safety	30	15						45	3	90
9	Nutrition and Dietetics	30			15				45	3	90
10	Microbiological Analyses in the Environment	10			35				45	3	90
11	Noise and Vibrations	30			15				45	3	90
12	Ecological Psychology	30	15						45	3	90

<b>General elective subjects</b>		<i>Contact hours</i>								<b>ECTS</b>	<b>SW</b>
		<b>L</b>	<b>S</b>	<b>SP</b>	<b>LP</b>	<b>CP</b>	<b>PP</b>	<b>FP</b>	<b>CH</b>		
1	English Language			45					45	3	90
2	Management in Health Care	30		15					45	3	90
3	Along with the proposed elective subjects in the Sanitary Engineering programme, a student can choose among the elective subjects of other programmes of the Faculty of Health Sciences, other faculties of the University of Ljubljana or other universities, amounting to 12 ECTS.										

**Legend:**

<b>L –</b>	<b>lectures</b>	<b>CP –</b>	<b>clinical practice</b>	<b>ECTS –</b>	<b>European Credit Transfer System (credit points)</b>
<b>S –</b>	<b>seminars</b>	<b>PP –</b>	<b>professional practice</b>	<b>SW –</b>	<b>student workload</b>
<b>SP –</b>	<b>seminar practice</b>	<b>FP –</b>	<b>field practice</b>		
<b>LP –</b>	<b>laboratory practice</b>	<b>CH –</b>	<b>contact hours</b>		

Table 3: Proportion of study modes

Study year	Contact hours							$\Sigma$	ECTS*
	L	S	SP	LP	CP	PP	FP		
1	475	30	135	100			15	755	60
2	390	30	10	160	150	160		900	60
3	285	15	15	170	105	160		750	48(12)*
4	255	75	15	140	15	160		660	45(15)*
<b>Total number</b>	<b>1405</b>	<b>150</b>	<b>175</b>	<b>570</b>	<b>270</b>	<b>480</b>	<b>15</b>	<b>3065</b>	<b>213(27)</b>
<b>Percentage (%)</b>	<b>45.8</b>	<b>4.9</b>	<b>5.7</b>	<b>18.6</b>	<b>8.8</b>	<b>15.7</b>	<b>0.5</b>	<b>100</b>	

Legend:

- L lectures
- S seminar
- SP seminar practice
- LP laboratory practice
- CP clinical practice
- PP professional practice
- FP field practice

\* ECTS in brackets refer to elective subjects

## **10. Data on the possibility of programme elective subjects and mobility**

The programme offers 14 elective subjects (11,25% ECTS), divided into two study blocks with 12 professional and 2 general elective subjects. 27 ECTS can be obtained through the two study blocks of elective subjects.

### **Conditions for implementation of elective subjects**

The professional elective subjects will be offered if at least 10 students apply and the general elective subjects will be offered if at least 30 students apply

### **External election**

Along with the proposed elective subjects in the Sanitary Engineering programme, a student can choose among the elective subjects of other programmes of the Faculty of Health Sciences, other faculties of the University of Ljubljana or other universities, amounting to 12 ECTS.

## 11. Course description

Anatomy, Physiology and Pathology (6 ECTS): structure and function of the human organism, environmental risk factors and the basics of pathological changes.

Biophysics (5 ECTS): basic methods in physics, physical units, standard prefixes, measurement errors, mechanics, biomechanics, oscillation and waves, heat, electricity, light, atomic physics.

Microbiology and Parasitology (7 ECTS): characteristics of individual cells, fundamentals of genetics, microbes and human life, isolation of microbes, pathogenic microorganisms, prevention of multiplication and destruction of pathogenic microorganisms, parasites.

Fundamentals of Hygiene and Professional Ethics (6 ECTS): significance of a healthy lifestyle, basic hygienic principles, professional ethics, ethical principles in prevention.

Social Sciences in Health Care (6 ECTS): psychological, sociological and legal aspects in health care.

Mathematics (10 ECTS): functions, derivatives, integrals, linear algebra, differential equations, probability, calculus.

Chemistry (10 ECTS): inorganic – general chemistry, organic chemistry.

Fundamentals of Ecology (5 ECTS): physical environment, organisms in the environment, comparative ecosystem ecology, global environmental changes.

Professional Terminology in a Foreign Language (5 ECTS): professional terminology, discourse analysis, simulation of situations, grammatical structures.

Special Topics in Biophysics (5 ECTS): hydrodynamics, acoustics, transport phenomena, radiation and photometry.

Biochemistry (5 ECTS): role of biochemistry in biological sciences, bioenergetics, basic biomolecules, enzymes and their function, mechanisms of significant biochemical processes.

Analytical Chemistry (5 ECTS): fundamentals of analytical chemistry, standard procedures, modern analytical methods, application of various methods in everyday analytical practice, practical examples of methods in analytical chemistry.

Buildings and Constructional Complexes (5 ECTS): origins of load bearing construction and systematization of elements, modular coordination, concept of organising relations between man and space, system analyses of constructional complexes, graphic communication, function and selection of material in constructional complex, intersections, heat and moisture.

Occupational Hygiene and Ergonomics (5 ECTS): risk factors related to working conditions, preventive and safety measures, ergonomics at work, analysis and health assessment of working conditions, biomechanics.

Disinfection, Disinsection and Deratisation (5 ECTS): kinds and characteristics of harmful organisms, DDT agents and mechanisms of their action, fundamentals of toxicology, methods and techniques of their application, monitoring and assessment of DDT efficiency.

Municipal Hygiene (12 ECTS): influence of the environment on human population, hygiene-epidemiological problems of pollution, sanitary technical requirements and criteria, relationship of communal hygiene and ecology.

Informatics (6 ECTS): information services, information pyramid, reference and citation rules, bibliographic and factographic databases, processing methods, relational databases, intellectual property, programme tools.

Epidemiology (6 ECTS): epidemiological methods and procedures, legislation on infectious diseases, epidemiological studies, etiology and management of incidences, diseases and conditions, solving of epidemiological problems, management of nosocomial infections, epidemiological statistics.

Professional Practice 1 (6 ECTS): performance of microbiological and chemical analysis, analysis of hygienic and technical conditions of a selected facility and project documentation, DDT application planning, DDT performance management and assessment, planning the contagious disease control in selected facilities.

Sanitary Engineering in Emergency Situations and First Aid (4 ECTS): sanitary engineering as a sub-system of rescue protection and support in emergency situations, safe and efficient first aid to the injured, intoxicated and suddenly taken ill.

Hygiene of Establishments and Processes (12 ECTS): analysis of technologies and criteria for the assessment of critical process stages, technical parameters and hygienic norms impacting processes and health, design of programmes and maintenance technologies, planning and implementation of various sampling techniques and methods for outcomes evaluation, analysis of the results, comparison to the accepted norms and standards, judgment and solution selection.

Administrative Procedure Law, Public Health Law and Environmental Health Law (6 ECTS): legal basis for the environment and health protection, sanitary engineering legislation, legal regulations on inspection and other forms of control.

Bioclimatic Design (5 ECTS): developments in the field of bioclimatic design, development of technologies, energy sources, passive systems, solar systems, thermal response of buildings, daylight, acoustics, fire protection, pollutants and radiation.

Statistics (5 ECTS): fundamentals of statistics, kinds of statistical variants, assessment of parameters and statistical testing of hypotheses, bivariate analysis, linear regression and correlation, basic analysis of curtailed data, basics and review of multivariate methods.

Occupational and Living Environments (10 ECTS): ecological conditions in the working environment, causes and sources of industrial pollution, essentials of living environment, influence of industrial and other production units on living environment, personal protective equipment at work, measurements, measuring instruments, methods.

Professional Practice II (6 ECTS): knowledge of the criteria, selection of methods and tools to manage the constructions, processes, personnel for the implementation of the entire administrative procedure, recognition of factors, selection of the measurement procedure, measurement performance and sanitary actions, analysis of work places.

Air Pollution (6 ECTS): atmosphere and its structure, transfer of energies in the atmosphere, weather forecast, climatology, spread of air pollution, sources of air pollution, influence on the health of humans, animals and plants, material damage, measurements, climatic changes.



Technology and Food Safety (7 ECTS): safety and quality of foods, food falsification, technological procedures of specific food production, food quality evaluation, defining the freshness of foods, alimentary infections and intoxications; microbiological and chemical analysis of foods.

Waste Management (6 ECTS): specific features of different wastes, processes and technologies of waste management, emissions and the impact of waste management on the environment and health, legislation and standards of waste management, socio-economical aspects of waste management.

Technology and Techniques of Drinking and Waste Waters (5 ECTS): rationale for water supply and purification methods of drinking waters, rationale for communal water treatment, protection against natural and other disasters.

Professional Practice III (3 ECTS): study of hygienic and technical requirements in a given case, designing a plan of training, cooperation in training and evaluation, study of the requirements in sampling planning, sampling.

Energy and the Environment (6 ECTS): importance of energy supply, sources of energy, thermodynamics, efficiency of energy transformation, purification technologies, living comfort and economic use of energy in buildings, methods of judgment on energy consumption and its impact on the environment.

Professional Practice IV (3 ECTS): performance of professional evaluation and designing of sanitary-technical measures for the sanitation of conditions (current or planned).

Project Acquisition, Implementation and Management (9 ECTS): acquisition of research and development projects, documentation preparation, filling in the application form in accordance with given instructions, project coordination, management, reporting.

Environmental and Ecoremediation Technologies (3 ECTS): function and structure of natural and co-natural ecosystems, ecological balance in nature, the assessment of anthropogenic influences on the environment, environmental technologies, ecoremediation in practice, planning the ecoremediation of the environment.

Good Practices in the Food Chain (3 ECTS): basic features of good practices, good practices as a tool to cope with hygienic-technical conditions in the food production units from the field to table, approaches and methods for the analysis of the current hygienic-technical and technological condition, preparation of the programme of good practice.

Tourism Hygiene (3 ECTS): sanitary and hygienic conditions in specific geographic locations, rules of hygiene in instructions for personal hygiene in specific conditions taking into consideration the type of travel, ecological burden.

Public Health (3 ECTS): development of public health, activities in the field of public health, main elements of the European health policy, basic programmes and approaches in the field of public health, planning the activities within public health care.

Chemical Technologies (3 ECTS): basic concepts and systems of technology (from chemical reactions to production procedure), basic technological processes for the production of inorganic and organic materials.

Inspection Control (3 ECTS): responsibilities, authorization, procedures of inspection control, organizational structure of inspection control, inspector's responsibilities, preparation of basic legal acts.

Dangerous Materials (3 ECTS): general knowledge of dangerous materials, dangerous materials in the environment, professional diseases resulting from dangerous and harmful materials present in the working and living environment.

Professional Health and Safety (3 ECTS): impact of individual safety areas on the entire safety level, security and health protection services in enterprises, institutions, accepted regulations and standards in the field of occupational health and safety, guidelines for occupational health and safety.

Nutrition and Dietetics (3 ECTS): healthy food, methods for the assessment of healthy food and nutrition, nutrition in different life stages and conditions, planning nutrition, menu composition.

Microbiological Analyses in the Environment (3 ECTS): methods of detection of microorganisms and the latest molecular methods, various methods of microscoping, performance of chain reaction with polymerase.

Noise and Vibrations (3 ECTS): sound, noise, the impact on human health, noise preventive measures, vibrations, the impact of vibration on organism, vibration prevention measures.

Ecological Psychology (3 ECTS): ecosystem and human involvement in the environment, socio-spatial conflicts, experiencing home and homelessness, ecological crisis.

English Language (3 ECTS): deepening and broadening of professional terminology as used in medicine and health care.

Management in Health Care (3 ECTS): selected theories, concepts and methods used in the management of processes, human and other resources; introduction of innovative, developmental modes and adaptations to various health systems and settings.