



Co-funded by the
Erasmus+ Programme
of the European Union

Methodological Manual for Curricula Development

Work package 2

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



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1 Introduction

This manual, created by the ECAP project consortium under the supervision of the Slovak University of Agriculture in Nitra, the project coordinator and the Czech University of Life Sciences Prague is designed to provide resources and guidance for development and/or modification of programmes and courses taught at universities in Kazakhstan and Uzbekistan. University and/or faculty have a responsibility to recognize that any development, implementation, and evaluation which takes place at the university is done in an effort to meet the needs of the students.

Purpose of the Curriculum Manual is to facilitate development of study programmes, courses and syllabuses in study programmes related to the field of the environmental protection and land management.

For the purpose of assistance for Kazakh and Uzbek universities creating or modifying their study programmes, courses and syllabuses, the SUA in Nitra prepared template of the real study programme in the field of environmental protection tailored for conditions of Kazakh and Uzbek partners on the basis of particular problems the countries have to face.

Although the material starts from European standards concerning creation of study programmes, Kazakh and Uzbek partners creating their study programmes will have to reflect their national conditions of accreditation bodies and other relevant stakeholders.

The Curriculum Manual consist of:

- guidelines for creation of templates of study programmes
- guidelines for creation of templates of courses and syllabuses

2 European Credit Transfer System

In 1991, the European Union (EU) and Eastern European countries (including the former Czechoslovakia as a candidate country) created the European Convention on Assistance in the process of full integration in the fields of politics, economy, and trade. As a part of this binding document, the part *Freedom of movement for persons* was created. Its aim is to ensure that young people aspiring for quality education in the EU countries can study at universities of any EU Member State. In regard to this part, the European Union adopted also *Non-discrimination principle*, which does not allow to discriminate any nationality or ethnic group.

The EU provided help to the associated countries via the programme PHARE. However, it was the TEMPUS programme that had the crucial role in accepting the OECD principles and has helped most of the Slovak universities to make major changes in the organization and structure of education. The biggest problem the Slovak Republic and other entrants had to deal with was disunity of education systems. Each country had its own specifics that were decisive for them. To some extent, this problem has been solved by the OECD which had regularly innovated and united catalogues with science and study programmes. Within this process, the crucial document was “*Sorbonne Declaration*” (Paris La Sorbonne), that was based on three following principles:

1. Facilitating the mobility of students in the European area and their integration into the European labor market, thus related to the mobility of teachers.

2. Improving the international transparency and recognition of qualifications by means of gradual convergence towards a common framework of qualifications and cycles of study.
3. Supporting the return to study or study continuation in the same or another institution, or within European mobility.

Based on the principles mentioned above, the “*Bologna Declaration on European Higher Education Area*” was established in 1999 and declares six following principles:

1. Facilitating the readability and comparability of qualifications.
2. Implementing a system based essentially on two main cycles.
3. Establishment of a credit system such as ECTS.
4. Promoting European cooperation in quality assurance.
5. Extension of measures to promote mobility of students, teachers, and researchers.
6. Promoting the European dimension in higher education in terms of curricula and interinstitutional cooperation.

The Bologna Process is a collective effort of public authorities, universities, teachers, and students, together with stakeholder associations, employers, quality assurance agencies, international organizations, and institutions, including the European Commission (www.ec.europa.eu.)

The most important action in unification of European area of higher education was establishment of the university education form consisting of two degrees - bachelor and master degree. Almost all signatory countries of the Bologna Declaration supported and understood the importance of implementation of such system. Later, in 2003, Ministers of Education of the European Bologna Declaration signatory countries agreed to promote closer links between European educational and research space. Diversification of education system continued by addition of the third level of higher education (doctoral degree).

Why to introduce and use ECTS?

Development of the education system in Europe described above has its undoubted benefits. Particularly, it makes study programmes “easy to read” and allows to compare all students - local and foreign. The system facilitates mobility of students and recognition of the documents after completion of partial study, selected courses, or various forms of practice during their return to the home university. ECTS significantly helps universities to organize, connect and revise study programmes and can be used in all programmes provided by the university. ECTS is a modern system of higher education that attract the study for students from different continents.

2.1 European Credit Transfer System (ECTS) – the principle

ECTS was originally used as a basic credit transfer system for student mobility within the Erasmus programme. Along with the establishment of the Bologna Declaration, it has become the core of the process in which the European higher education was formed to be more consistent. ECTS has become the basis for the national credit systems not only in terms of “transfer system”, but also in terms of “accumulation”. According to the current definition, ECTS is regarded as implemented when it is:

- Included in the current legislation;
- Applies to all programmes offered by higher education institutions;
- Meets the requirements of 60 credit points in the annual study plan;
- Used to transfer and accumulation of credits.

ECTS also helps with the planning, delivery, and evaluation of study programmes, and makes them more transparent. ECTS has been adopted by most of the countries in the European Higher Education Area and is increasingly used elsewhere (ECTS Users' Guide).

The system facilitated the recognition of periods of study abroad and thus enhanced the quality and volume of student mobility in Europe.

ECTS is also used in other documents that help to organize students' learning mobility, including: The Course Catalogue, The Learning Agreement, The Transcript of Records.

ECTS is a system targeted at students – mainly because it helps an institution to develop and offer the study plan for the programme that is adapted to the needs and expectations of students. This system provides a choice of the course by its content. Teachers only encourage students to form their own ways of acquiring knowledge and own experience. Teacher gets into the position “to teach students to think” and not “to teach students the subject matter”.

Learning outcomes describe what a student should know, what he/she should understand and what he/she should be able to do after successful completion of study. Descriptions of learning outcomes normally describe understanding, ability to apply knowledge, analysis, synthesis, evaluation, etc. They are verifiable statements of what the students, who obtained a qualification or completed a programme or its part should know, what they should understand, and what they should be able to do. This underlines the link between teaching, educating and assessment.

For the comparison, in the approaches aimed at teachers (not the students) the requirements on course, teaching process as such, and amount of “learned knowledge” are considered as the main attributes of education. (Source: Eurydice, 2005)

2.2 Key Features of ECTS

ECTS is based on the convention that 60 credits measure the workload of a full-time student during one academic year. The student workload of a full-time study programme in Europe in most cases amounts to 36/40 weeks per year and in those cases one credit stands for 25 to 30 working hours. Workload refers to the notional time an average learner might expect to complete the required learning outcomes. Student workload in ECTS includes the time spent in attending lectures, seminars, independent study for and taking of examination, etc.

Credit system

A credit system is a systematic way of describing an educational programme by attaching credits to its components. The definition of credits is based on student workload and learning outcomes and contact hours. Credit is also a way of quantifying the outcomes of learning. Learning outcomes are sets of competences, expressing what the student will know, understand, or be able to do after completion of a process of learning, short or long.

Credits are numerical values assigned to the courses, expressing the amount of work required for the acquisition of prescribed learning outcomes. Allocation of the credits to the courses is part of the Curriculum development, and is done with respect to national qualifications framework, level of descriptors, and qualifications descriptors.

Credit allocation is the process of assigning a certain number of credits to qualifications, programmes or courses. ECTS credits are allocated based on a typical workload necessary to achieve the prescribed learning outcomes.

In general, the credits are allocated at the concerned institution and therefore it is responsibility of university and scholars (external subjects may be invited as well). Before credit allocation to individual components, the profile of specific study programme and graduate profile should be clearly defined. Profile means the description of the programme in terms of its main principles and specific objectives.

In the second step, the workload of the student should be estimated. This cannot be based only on contact hours (i.e. the hours that students spend by activities managed by pedagogical staff), but it includes all educational activities required to achieve the expected results, including the time spent on independent work, compulsory practice, preparation for tests and time needed to pass the exams. Estimation of workload should be regularly monitored and evaluated with regard to feedback of students (<http://www.rug.nl/let/tuningeu>).

The allocation of ECTS credits

Credits are allocated to all educational components of a study programme (modules, courses, placements, diploma thesis, dissertation thesis, coaching, team work, library study, self-directed studies, etc.) and reflect the quantity of the workload. ECTS credits represent the workload and defined learning outcomes (“what the individual knows, understands and is able to do”) of a given course or programme. 60 credits are the equivalent of a full year of study or work. In a standard academic year, 60 credits would be usually broken down into several smaller components:

- typical “first cycle” (or Bachelor's) Degree would consist of 180 or 240 credits,
- typical “second cycle” (or Master's) Degree usually consists of 90 or 120 credits, with at least 60 credits at second cycle level.

The use of ECTS at the “third cycle” (or PhD. level) may vary.

The performance of the student

The performance of the student is documented by a local/national grade. It is good practice to add an ECTS grade, particularly in case of credit transfer. The ECTS grading scale ranks the students on a statistical basis. Therefore, statistical data on student performance is a prerequisite for applying the ECTS grading system. Grades are assigned among students with a pass grade as follows:

- A best 10% of students
- B next 25% of students
- C next 30% of students
- D next 25% of students
- E next 10% of students

A distinction is made between the grades FX and F, which are used for unsuccessful students.

FX means “fail-some more work required to pass”.

F means: “fail-considerable further work required”.

The inclusion of failure rates in the Transcript of Records is optimal (ee.europa.eu).

2.3 ECTS Key Documents

Credits accumulation and their transfer is facilitated and supported by so-called ECTS key documents that include the Catalogue of Courses, the Transcript of Records, The Application Form, The Diploma Supplement, and other documents. Key documents that are characterized in the next section are considered as an acceptable way of transferring information and are important for students, academic and administrative staff, and other stakeholders. Proper use of ECTS key documents provides transparency and increases the quality of the educational process. Few years ago, SUA in Nitra has introduced university information system.

The Regular Course Catalogue

Course Catalogue is a guide for the students attending the university. Therefore, the information it contains should be detailed, written in accessible form, and must be up to date. The catalogue is published on the website of the university, so can be accessed by all stakeholders. It is published in both, national and English language (for increased transparency at the international level). It is important that it is published sufficiently in advance before the new academic year, so the students have the opportunity of individual choice when drawing up their curricula (<http://ec.europa.eu/education/lifelong-learning-policy/>).

For the illustration, this list of recommended content units of Course Catalogue is described below. This list presents information about the qualifications offered, teaching, evaluation procedures, the level of programmes, etc. Catalogue also provides information on the supervisor of a study programmes, student advisors, contact persons at the departments and other. It is recommended that it also includes information about how to contact these people.

Proposal of the content units of Course Catalogue (ECTS User's Guide)

1. Information about institution/university

- Name and address
- Academic calendar
- General description of the institution
- The list of programmes offered
- General admission requirements
- General rules for the recognition of prior learning
- Registration procedures
- General principles for the allocation of credits

2. Information about the study programmes

- Name of the study programme
- Level of qualification
- Specific admission requirements
- Specific measures for the recognition of prior learning
- Description of the programme
- Form of education (full-time, part-time)
- Characteristics of the graduate and professional description
- Possibility of further education
- Structure of the study programme (with credit evaluation)
- Examination regulations, assessment, and classification
- Requirements for graduation

Description of the study programme (courses)

- Code and name of the course
- Type of the course (obligatory, obligatory elective, elective)
- Level of education for which it is delivered (1st, 2nd and 3rd degree)
- Year of study (approximately, if it is recommended)
- Semester(s) in which the subject is taught
- Number of ECTS credits
- Name of the teacher (lecturer, instructor)
- Evaluation of the course and evaluation methods
- Pre-requisites
- Course content
- Teaching language
- The practical part of the course (practical seminars, field work, excursions)

3. General information for the students

- Study department
- Study rooms, library
- Accommodation and meals
- Health security
- Facilities for students with special needs
- Scholarships and social security
- International programmes, internships
- Sports and recreational facilities
- Cultural activities
- Student associations

The Learning Agreement

The Learning agreement contains the list of courses to be taken and agreed upon by the student and the responsible academic body of the institution concerned. In case of credit transfer, the Learning Agreement must be agreed upon by the student and the two institutions concerned before the students' departure and to be updated immediately when changes occur (Gemlich et al., 2008). The sample of the Learning Agreement is in the Annex 1.

The Transcript of Records

Transcript of records documents the performance of a student by showing the list of courses taken, the credits gained as well as the local grades and possibility of ECTS grades awarded. In case of credit transfer, home institution must issue the Transcript of Records for outgoing students before departure and by the host institution for incoming students at the end of their period of study (Gemlich et al., 2008). The sample of the Transcript of Records is in the Annex 2.

3 Guidelines for creation of templates of study programmes

This chapter provides an overview of the steps to be followed when developing the study programme. Also, it contains some instructions how to proceed when compiling such study programme.

Study programme is a set of courses consisting of training activities and their combination, and a set of rules compiled so that their successful completion together with the state examination allows the university education to be gained on the relevant study level.

Using and following rules of the credit system is the basis for creating study programmes. The credit system uses collection and transfer of credits. Credits are numeric values assigned to individual courses through which the load of the student connected with completion of individual courses within the study programme is assessed. Credit system allows the student to choose the pace of learning. After a successful completion of the course, the student gains a certain number of credits assigned to each course within the study programme and credits gained during completion of courses are summed up. During his/her study, the student is allowed to gain credits for each specific course only once. After the completion of the recommended study plan within the relevant study programme the student gains appropriate number of credits in each academic year. The recommended study plan is compiled so that the student gains prescribed number of credits necessary after its completion for a proper graduation.

Graduate profile and employability contains a brief framework and general characteristics of the graduate, i.e. especially his/her profile and supposed possible workplace in the practice. Graduate definition also involves the most important knowledge, abilities, and skills which the graduate must gain within the relevant study field. Knowledge introduced within the content of the study field must be integrated in the structure of each study programme created on the basis of description of the study field. In other words, the study programme must involve the complete content of the study field.

3.1 The objectives of the study programme

The objectives of the study programme are developed on the basis of general principles that include the needs of society in terms of the labor market.

When drawing up the objective, it is necessary to consider following strategies and principles:

- Development prognosis in relevant area
- Requirements of the labor market
- Strategic objectives of the university and faculty
- Opinions of teachers, potential coordinators as well as students of the Faculty
- Opinions of practitioners and graduates of the faculty

Guarantor of the study programme

Guarantor of the study programme guarantees that the curriculum meets the current requirements and trends of science and development of the society. Also, guarantor guarantees teaching means that include methods, forms, teaching aids, didactic techniques and information technologies belong to the most modern means and are optimal for achieving good study results. Coordinator must have complex vision about the graduate profile, since he/she complies appropriate profesioqram and suitable study plan. Coordinator ensures the flexibility of the study.

Flexibility of curricula provides more opportunities for students to create their own path to achieving qualification. An essential mechanism of flexibility is classification (or division) of courses to compulsory, selective, optional.

In terms of attendance obligation, study programme courses are divided into:



- a) obligatory – prescribed by the study programme,
- b) obligatory elective – completion of these courses with prescribed or higher number of credits in accordance with the student’s choice is required for completion of a part of the study or of the whole study programme,
- c) elective – other courses within the study programme, eventually courses within a different study programme, or courses within the study programme of a different faculty or university.

In terms of prerequisites, study programme courses are divided into:

- a) courses with no prerequisites – these courses can be registered without completion of any other courses
- b) courses with the prerequisite of completion of some other courses – registration of such course is conditioned by completion of some other course(s) (prerequisite courses).

In the bachelor degree, it is possible to imagine the course division in these categories as a reversed pyramid. Obligatory courses are compulsory for all students, and are set of basic knowledge that must be gained by all students. Selectivity of courses is greatly limited. In the later semesters of bachelor degree, the selectivity of courses increases with students’ interests, or his/her efforts to gain specialization (focus) in further studies. In case of elective courses, student chooses courses from Course Catalogue.

4 Proposal of study programmes at partner universities in CA countries

Based on the project focus on the environmental protection and land management and their substantial features we are providing partners at CA universities with proposal of specific study programmes which can be used either as new study programmes or for innovation of existing study programmes.

4.1 Environmental protection

4.1.1 Graduate Profile

Section “graduate profile” is an essential part of the study programme preparation. It contains information about the knowledge, skills, and competencies of graduate. Profile informs potential employers, businesses, public institutions, and institutions providing higher education. Last, but not least it also informs the applicant for study as well as other stakeholders interested in the assumptions about graduate pursuit of a profession in a field.

Graduate profile includes a brief description of the characteristics of the programme and their integrity with the structure of academic disciplines. It also includes the name of the profession if this is in accordance with the profession resulting from the title of the study programme (e.g. Environmental manager, Bc.).

Graduates of the study programme Environmental management (1st degree), have knowledge of human – environment system functioning and its multicausality and variability; and impact of decryption and definition of subsystems on personal, social, and economic (technological) problems. They are able to define basic environmental issues, prioritize solutions on how to solve them and describe possibilities of effective and considerate human actions in the environment. Graduates are qualified to work with all age groups in order to shape their environmental awareness.

Therefore, environmental management is a system of company management purposefully aimed at the environmental protection and creation in terms of sustainable development at global, regional, and local level. Experts are preparing to implement environmental principles and environmental policy at state, municipal and non-governmental level. The structure of the study programme reflects the methods of higher education and a holistic view of the existence of man and nature, with an emphasis on management, coordination, mediation, and assessment of human impact on the environment (Figure 1).

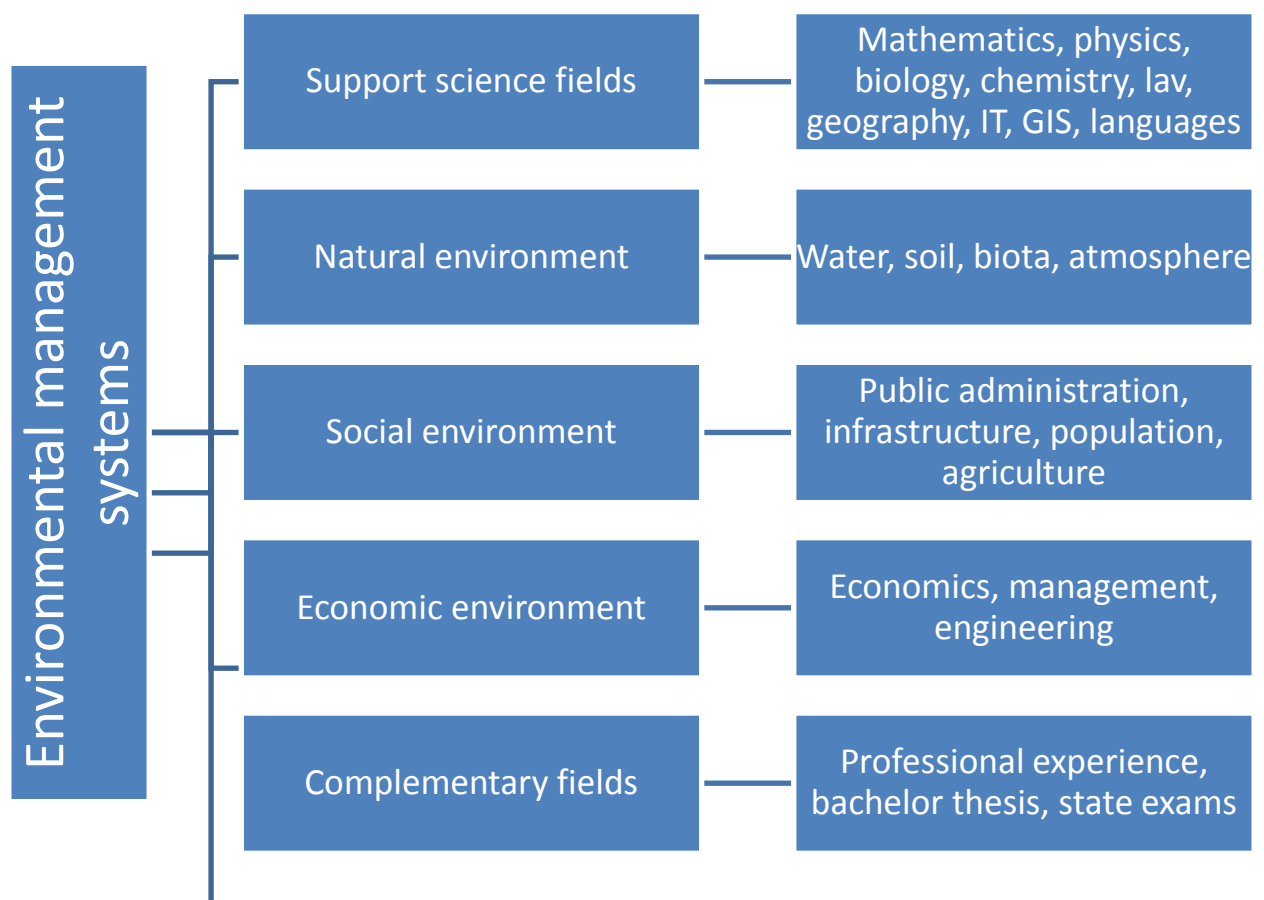


Fig.1 Structure of science areas involved in graduate profile of the study programme “Environmental management”. (Húska 2016)

Theoretical knowledge

- Structure of basic components of environment and environmental context
- Principles of rational use of natural resources

- Legislative limits and standards in the environmental field
- Management of environmental processes, including prevention of ecological risks and accidents
- Programme resources in processing of environmental projects
- Psychosocial and educational determinants of development of man and society development

Practical knowledge and skills

Graduate is able to analyse the components of environmental processes (biological, ecological, economic, social) and to propose their implementation at various levels. Graduate is able to make effective managerial decisions in a relation to sustainable development, knows and applies tools of effective performance on the population awareness processes.

Additional knowledge, abilities and skills

- Knowledge of the basic information technology
- Ability to work with information sources and to effectively evaluate and use them
- Knowledge of various communication tools and their appropriate use

Main themes of the core knowledge (1st degree) – in the range of 60 credits in each year

- | | |
|--|------------|
| 1. Courses of the general basis of the study field | 90 credits |
| - Natural science basis of the study field | |
| - Ecologic and environmental basis of the study field | |
| - Legislative and law in the environment | |
| 2. Courses of management basis | 50 credits |
| - Socio-psychological basis | |
| - Pedagogical and didactic basis | |
| ▪ eco-philosophical context | |
| ▪ environmental education and management | |
| 3. Complement courses | 30 credits |
| - Principles of computer science and database creation | |
| - English language | |

Bachelor thesis 10 credits

State exam (1st degree)

- Final thesis defence (abstract in foreign language)
- Commission examination from the basic selected themes of the core knowledge according to graduate professional profile

Graduate employability

Graduates may be employed as environmental instructors, coordinators, advisors for the public relations work in protected areas, at the level of state administration, local governments, the third sector and eco-centres.

4.1.2 Structure of the model study programme – environmental protection

Structure of 4 years´ study programme Environmental Protection										
	No. credits	I. Year		II. Year		III. Year		IV. Year		Course completion
		WS	SS	WS	SS	WS	SS	WS	SS	
1	5	Mathematics, basics of statistics	Environmental microbiology	GIS software and its application	Nature protection	Landscape ecology	Environmental management	Environmental monitoring	Environmental economics	
2	5	Environmental biology	Environmental chemistry	Economic geography	Basis of water management	Sustainable ecosystems	Environmental management systems	Environmental protection	Circular economy	
3	5	Climatology	Soil science	Basics of agriculture	Basics of forestry	Environmental ethics	Protection of biodiversity and landscape	Management of arid vegetation area	Socio-economic function of vegetation	
4	5	Informatics	Hydrology	Plant ecology	Protection of water resources	Methodology of scientific research	Project environmental management	Management of flooded areas	The concept of sustainability	
5	5	Environmental policies and law	Environmental ecology	Geo-ecology	Protection of natural resources	Eco-technology	Renewable resources in the environment	Ecological disasters	**	

6 *	5	World language	World language	Discussion on climate change	Practices of microbiology; Practices of environmental chemistry*	Eco-tourism and revitalization of flows	Methods of bioremediation *	Invasions and invasive organisms	***			
	30 cred./semester									Σ	%	
	Σ	30	30	30	30	30	30	30	30	240	100	
	Obligatory courses	5	5	3	3	2	2	2	2	24	50	
	Obligatory elective courses	0	0	2	2	2	2	2	2	12	25	
	Elective Courses	1	1	1	1	2	2	2	2	12	25	
	Courses	6	6	6	6	6	6	6	6	48	100	
Specialized practices											*	
Exercises in situ (summer school)											*	
State exams											**	
4 elective courses											***	

Table 1 – The proposed structure of the model study programme – environmental protection

Notes on the content and structure of the programme:

* 5 credits may be earned from more subjects

Study programme Environmental protection is a four-year bachelor’s degree programme which completion requires cumulation of 240 credits. Courses are divided into obligatory courses, obligatory elective courses, and elective courses.



There are 24 compulsory courses in total. They cover theoretical basis (8), the basis of the study programme (8), and 8 of them are profile courses.

To simplify the application of the credit system, 5 credits are proposed for each course. Student obtain 25 credits from compulsory and selective courses each semester. The rest of the credits is covered by elective courses that include courses on the basis of discussion, or practices, methodical seminar and others. These courses are completed only by credit and therefore, there will be no more than 5 exams.

Study programme Environmental Protection belongs to the environmental and ecological sciences focused on the problems arising from the interaction between man and the environment in which he/she lives. Study programme enables understanding of the scientific, political, and socio-economic problems of the country in the field of environment.

Study programme is designed to be appropriate for gaining the theoretical knowledge and practical skills for employment in the field of environmental protection. The graduate is able to solve technical problems, analyze and independently submit simple proposals and projects. Graduate is able to formulate, verify and interpret the obtained data as well as to decide on control mechanisms.

As part of the acquired skills, the graduate knows the basics of modern technologies. He/she is ready to perform the quality control of environment, to control and evaluation of a spatial planning projects, to manage interventions in the ecological and environmental disasters. During the study, students may specialize on protection against pests, soil and water protection, drainage and management during natural fires.

4.1.3 Possible focus of study programme on specific topics

Based on specific problems in partner countries as well as output of Target Group Needs Analysis we propose to consider also possible focus of above mentioned study programme into 2 directions:

1. Direction "Wild-fire restoration" belongs to current areas of study, particularly in countries where the natural catastrophic fires occur in higher frequency. Fires destroy ecosystems, pollute the atmosphere, disrupt the water cycle. As a consequence of natural fires there are extensive soil erosion, landslides slope and rapid runoff mainly due to the destruction of root stabilizing soil. Soil erosion and sudden outflow of large quantities of water represent the significant safety risk and are leading to serious damage to natural resources and property. Graduates of study direction can foresee and analyse the risk, prepare a precautionary measure (e.g. liquidation of invasive vegetation, slope reinforcement). Graduate is able to implement technical measure to ensure the stability of the area and to use of strategies and methods of forest regeneration.
2. Direction "Desertification prevention" - desertification is the degradation of land in arid (dry), semi-dry (semi-dry) and dry sub humid areas. Locally can even be caused by poor land management, deforestation, improper use and protection of water resources. The most significant factor is drought and global warming. Graduates know the factors causing desertification and understand principles of maintaining vegetation cover that protects the soil from erosion and soil salinization. Graduates know the basics of organic farming and other technologies for sustainable land management as well as principles of water regime he/she is able to identify the sources of water and it's storage in local conditions. Knowledge on the ecology of the flowing water and of lakes can be used for the revitalization of alluvial habitats.

Credits	Wild-fire restoration	Desertification prevention
5	Geomorphology	Soil degradation
5	Risk analysis	Soil and water conservation
5	Population biology	Soil water management
5	Invasive plants management	Wind erosion and soil protection
5	Prevention of wildfire	Water distribution technology
5	Post-fire erosion mitigation	Management of water resources
5	Wild-fire restoration	River and lake ecology
5	Hillslope restoration	Organic farming
5	Grassland foundation	Desertification prevention
5	Restoration strategies	Rain water harvesting

Table 2 – The proposed possible directions of the model study programme – environmental protection

4.2 Land Management

4.2.1 Structure of the model study programme – land management

5 Guidelines for creation of templates of courses and syllabuses

Each course within the study programme is realised through the training activities, especially lectures, seminars, semester work, project, laboratory work, internship, excursion, field practices, expert practices and diploma practices. All these activities are carried out by expert departments competent in the relevant field and teaching courses with relevant content within different study programmes without reference to their formal incorporation within the relevant faculty. Individual consultations terms which are published at the department by the teacher are completed by organised forms of training activities.

Gaining the credit confirms meeting of requirements defined by the supervisor in the information sheet of the course. Student is acknowledged with these requirements at the beginning of the semester. The exam verifies student's knowledge of the whole content of the course and his/her capability creatively to present gained theoretical and practical knowledge. There are written, oral, practical, or combined forms of exams. Student with specific needs is allowed to modify the form of the exam in accordance with the specifics of his/her needs.

The supervisor prepares the time and content schedule which contains information on teaching, content of lectures and seminars, conditions for credit assignment, exam requirements and obligatory and recommended literature.

5.1 The course syllabus

The course syllabus is an instrument for planning the course. It is a basic aid for the course supervisor when preparing the content and organising the course. It is recommended to take the sufficient time when preparing a detailed syllabus; it helps properly to determine objectives of the course. In fact, syllabus is a “flyer” reducing students' doubts on attending the course. It provides students with exact information on the course content, teaching methods and requirements on the course completion. It also encourages students to choose the course through

emphasizing the importance of the course. As the syllabus is openly available to students and teachers (through the university webpage, intranet, catalogue of courses, etc.), there is a possibility for the course supervisor to discuss the syllabus and its content with a wide audience. (Source: <https://teachingcenter.wustl.edu/resources/getting-started/preparing-a-syllabus/>)

Authors of syllabuses should take into account following characteristics:

1. description of the course – how will the course contribute to the student’s expert profile; what will be the benefit for student when attending the course; where is the relation between the course and the content and principles of the discipline; emphasized knowledge and abilities; definition of main advantages for students attending the course – will the student gain something from the course?
2. teaching philosophy – describing the approach of teacher, defining the teaching methods;
3. the way of evaluation – it is necessary to clearly define the method by which students will be evaluated:
 - is only credit enough or is the exam necessary?
 - if only credit, what is required from the student (final project, semester work, oral interview, written test)?
 - if exam is required, it is necessary to differ between assigning the credit (e.g. final project is required for assigning the credit) and the examination (e.g. 2 parts of exam – 1st part written test and 2nd part oral interview);

(Source: https://distance.fsu.edu/docs/instruction_at_fsu/Chptr3.pdf)

Additionally, to the above-mentioned characteristics, the syllabus fulfils further tasks, especially the task of the reference guide. It provides students with complex information on the course:

- university and faculty;
- course unit code;
- course title;
- level of study (bachelor or master);
- coordinator (name);
- supervising department;
- semester (winter or summer);
- teaching hours per week (hours of lectures per week / hours of seminars per week);
- planned learning activities and teaching methods (lectures/hours, seminars/hours, excursions, field practices/hours, semester work/hours, individual work/hours);
- mode of delivery (face to face, distance learning);
- mode of completion and ECTS credits allocated (only credit, exam, when exam, then written test, oral exam or both);
- prerequisites for registration (is it necessary for student to complete other courses for attending this course?);
- assessment methods;
- objectives and learning outcomes of the course unit;
- course content;

- recommended literature, etc.

The above-mentioned points can be also used as a checklist when preparing the syllabus. Template of the course syllabus is in Annex 3.

(Source: <https://teachingcenter.wustl.edu/resources/getting-started/preparing-a-syllabus/>)

5.2 Teaching methods to achieve learning outcomes

For good learning outcomes, it is crucial to achieve harmony between outcomes of education, teaching methods and techniques (adequate teaching methods) and evaluation criteria.

University lecture

Lecture is the basic form of teaching at every university. Each lecturer is a teacher, educator and scientist. Before the teaching of the course, lecturer should start with self-reflection and questions:

- How to teach?
- How to motivate students?
- How to develop their thinking, creativity, etc.?

Thus, it is not enough to be good expert in the specialized field. A good teacher must be able to organize a well-structured teaching unit, to manage the teaching, to mobilize students in particular through group work and modern teaching methods, and to make the lesson interesting. A good teacher communicates with students outside the class, raises problems, lead students to system solutions, but leaves the own solution on them.

Other forms of university teaching

The so-called additional, but equally important forms of university teaching and learning are practical seminars, laboratory work, consultations, field work, seminars, team work, group presentations, non-university programmes. Proposals of the most appropriate teaching methods and forms is crucial in order to understand the subject properly. It is up to the teachers what methods and forms are proposed, but it always depends on the nature of the course. This requires a lot of skill and experience.

For example, to gain knowledge and proper understanding of the subject, the most appropriate form is the university lecture and seminar. In order to acquire the ability of analysis and synthesis but mainly to obtain problem-solving skills, the most appropriate form are practical seminars that can be implemented in workroom, laboratories, natural or field conditions. During such practical seminars, individually practical tasks and projects are assigned, and are subsequently presented and discussed during work in groups.

Professional experience – practice

The practice is an indispensable component of the educational process, is part of the professional development of student. It is also an opportunity to validate knowledge in specific working conditions.

The aim of the practice is:

- To gain knowledge on a specific technology and specific work processes,

- Acquisition of practical skills at the specific workplace.

During the professional experience, student may gain valuable knowledge, experience and contacts that may help him/her later in order to resolve the topic of final thesis, or even the searching employment.

5.3 Learning outcomes

Evaluation and assessment of knowledge must always be in accordance with the methods and forms of teaching as well as forms of assessment. Kennedy et al. (2006) critically reviewed so-called summative approach when assessing student. According to the authors, it is inappropriate if student performance is evaluated only at the end of the teaching process of the course. They recommend so-called formative approach, which creates favourable (during whole semester) environment for the characteristics of the student and for receiving the feedback. Modern and relatively objective approaches are so-called educational (didactic) tests, which should not be confused with the written form of examination. The least appropriate form is oral examination “face to face”.

5.4 Monitoring and review of study programmes according to standards and guidelines for the quality assurance

The quality of education system is defined as measurable and verifiable set of knowledge, skills and competences acquired by individual students after completion of education as a whole or after completion of its partial sections. These results are defined in the graduate profile of the study programme, as well as in the definition of minimum and maximum knowledge level of graduate. It is a tool for measuring the quality of education.

The learning outcomes are stated for each graduate also in the Diploma Supplement, which is part of the documentation of the study completion, knowledge, and skills the graduate dispose of. From that point of view, this is a very important document for the employer. Profile and knowledge level are also published for the study applicants in the promotional materials and websites of the faculty. Teachers, students, and the public are informed as well.

The monitored indicator for quality assessment of the study programme graduates' are also influenced by the conditions that are created for its implementation. The institution, its amenities, literature availability, information resources, technical support of education, and other support for students are evaluated. Regular feedback from employers and practice is monitored as well.

6 Literature

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