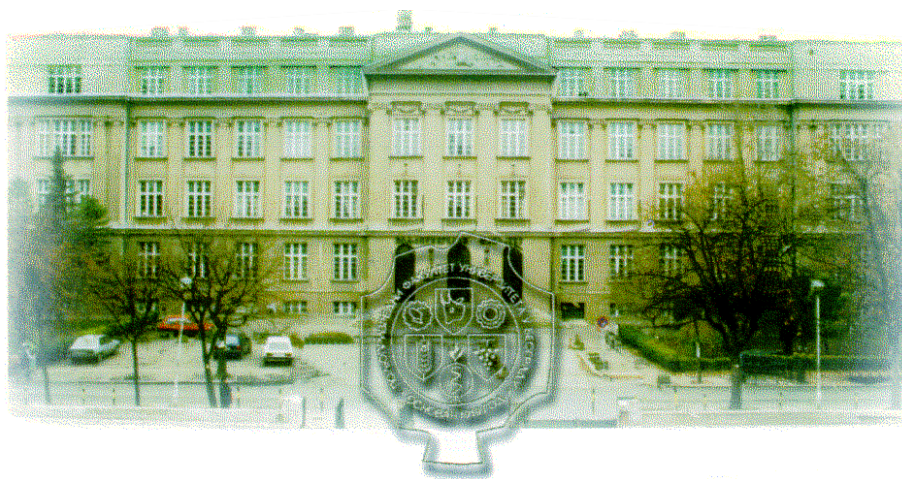


**University of Belgrade**

**Faculty of agriculture**



**DOCUMENTS FOR ACCREDITATION OF THE MASTER  
STUDY PROGRAMME: ENVIRONMENTAL PROTECTION IN  
AGRICULTURE**

**Belgrade, November 2014**

## **History of the faculty**

Faculty of Agriculture was established in 1919 as one of the six faculties of the University of Belgrade. Faculty got its own building in Zemun in 1932, where is still located. After World War II, the Faculty had very intensive development and reached the level of the first higher education institution of its kind in the country for education of students in all agricultural branches. Since its foundation in 1919 about 15.600 students have gained BS degree, 866 MS degree and 699 PhD degrees. The enrolment of students is up to 1.000 students per year, 370 students graduate, 30 receive MS degree and 20 receive PhD degrees, annually. The teaching and research activities involved 71 full professor, 52 Associate professors, 36 assistant professor, 1 senior lecturer, 4 teachers of foreign languages, 66 assistants, 32 assistants and 17 interns in the teaching staff, 140 professional and technical staff.

The Faculty's professional departments have 55 employees. Faculty of Agriculture is educational and scientific institution and covers educational and scientific/research activities in the area of farming, fruit growing and viticulture, livestock, soil management, crop protection and food products, agricultural techniques, food technology and biochemistry and agroecomics.

Faculty conducts classes (lectures, exercises, professional practices and other forms of teaching), in its frame of educational activity, in compliance with the curriculum for undergraduate, graduate, postgraduate and doctoral studies, also conducts knowledge tests (exams, tests etc.), additional training and professional examinations for people with diploma of academic studies in this area of education.

Faculty independently and in collaboration with other organizations performs scientific research and professional activities through basic, applied and developmental research, studies and projects, engineering, expertise, consulting, certificates, licenses, certificates and control in all areas of agricultural production and food technology.

## **Mission of the faculty**

Faculty of Agriculture in Belgrade is known throughout the world as higher education and scientific research institution. This modern Faculty achieves its mission in three interrelated groups of activities: higher education, scientific research and implementation of professional expertise in agriculture and food technology. The main mission of the Faculty is formulation and implementation of high-quality academic study programs at all levels of study, development of relevant scientific research, as well as the implementation of the acquired knowledge and skills in agriculture, food technology, and other related industries and society as a whole.

The primary mission of the Faculty of Agriculture is in the development of study programs in accordance with the Bologna process, its continuous modernization and harmonization with modern world trends and the state of science in engineering and biotechnical sciences and technical technological scientific field.

Since its foundation in 1919 the Faculty of Agriculture is committed to achieving its mission, which is based on the successful results of scientific research work and its application in practice. Over time, Faculty of Agriculture, according to the observed needs of the economic environment, and the current needs of society, developed the relevant academic programs that educate students for current and upcoming technical, technological and socio-economic conditions, developing in parallel its own, competent human and material resources.

Faculty of Agriculture continually improves educational programs, the quality of the work process, human and material resources with the desire to achieve the highest standards. In this way, the Faculty provides the satisfaction of the educational needs of students, scientific and professional needs of the economy and the financial needs of employees, and as part of a wider educational - scientific system, it represents the driving force of development of Serbian society as a whole.

The mission of the Faculty of Agriculture consists in a continuous and systematic work to improve all areas of quality assurance work (study programs, teaching, research, evaluation of students, textbooks and literature, resources, non-teaching support, process management), raising efficiency in education, linking educational, scientific research and professional activities, as well as construction and improvement of internal organization.

Agricultural University of Belgrade highly appreciates wisdom, dedication to work and ethic. Teachers and staff conduct research in all areas of agricultural and food technology, which are invaluable for the development of society. They generously provide academic services to local communities through various training programs to improve the economic, social and agricultural situation in Serbia, and improving quality of life, and foster sustainable development in rural areas.

Faculty will in future be accessible and meaningful. Faculty's mission is characterized by seven basic principles:

- Continuous improvement of the quality of teaching and learning, research, management and governance,
- A maximum of achievement and improvement of all students and staff persons potential,
- Improving the European and international dimension in all activities of the Faculty,
- Contribution to the creation of a democratic society which values the cultural heritage, and is characterized by social wealth and openness,
  
- Encouraging the development of humanity in building a stronger environment for excellence in teaching and learning,
- Supporting and promoting sustainable, secure and aesthetically pleasant environment and
- Increase the role of the Faculty as well as regional, national and international center of education, research and professional activities.
  
- In view of the fact that the higher education is the base for development of knowledge-based society and its further economic and cultural progress, promoting

human rights and fundamental freedoms, the mission of the Faculty is to provide the highest of academic standards and provide the knowledge and skills to meet the needs of society and projected national development.

To achieve its mission the Faculty seeks the permanent improvement of the quality of higher education and to the inclusion in unique European area of higher education.

### Specific mission

Education of professional staff should provide:

- Contribution to development of agriculture and food technology
- Contribution to rural development of the country
- Contribution to sustainable economic development
- Contribution to regional development.

### **Vision of the faculty**

As the most important institution in the field of Agriculture and Food Technology, the Faculty of agriculture has a leading role in the development of education and science in Serbia and in the southeastern region of Europe. The main objective of the Faculty is building the organizational structure for quality assurance in all areas (study programs, classes, study, evaluation of students, literature, resources, non-teaching support, process management). The strategic development plan defines the short-term and long-term goals. Through continuous quality improvement activities in all areas of quality assurance and the establishment of regional cooperation, long-term goal of the Faculty is taking a significant place in the European educational space.

The basic vision of the Faculty of Agriculture is to define all aspects of the development of modern education and scientific research compatible with the relevant faculties in EU member states. This vision contains elements of sustainable continuous improvement at all levels of education, scientific research and professional work. Primarily it takes into account the improvement of skills of teachers and teaching assistants and a gradual and sustainable improvement of competencies and skills of students. In order to achieve the vision it especially emphasizes the role of mobility of students and teachers in order to make these entities capable for participating in the European area of education. Long-term vision of the Faculty is an equal participation in education and science in the European space.

Vision Faculty of Agriculture is reaching the highest levels of excellence and partnership in the unified European space of higher education and research.

On the way to fulfilling its vision the Faculty's scope of work expands and complements its partner relationships with universities and business organizations from all continents of the world, adopting the positive trends of the global system of education and research, as well as active participation in European research projects.

Orientation to the modern study programs and quality studies creates conditions for faster growth and development with real understanding of educational needs in a typical environment. A large number of international research projects and extensive implementation of the results obtained in the economy creates value and competence of participants in the educational process, in order to realize the set vision.

In all aspects the development of Faculty is based on providing quality study programs at all levels of higher education, continuous improvement of quality of work (teaching, research, evaluation of students, textbooks and literature, resources, non-teaching support, process management), raising efficiency in the educational process, linking education, scientific research and professional services, construction and improvement of internal organization.

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<b>Title of the study programme</b>	Environmental protection in agriculture
<b>University</b>	University of Belgrade
<b>Faculty</b>	Faculty of agriculture
<b>Educational/scientific field</b>	Field 2: Technical and technological field
<b>Scientific area</b>	Engineering of the environmental protection
<b>Type of studies</b>	Master
<b>ECTS</b>	60
<b>Title of diploma</b>	Master engineer of the environmental protection
<b>Duration of studies</b>	1 school year, 2 terms
<b>School year in which study programme begun</b>	2009/2010
<b>Number of students studying</b>	22
<b>Number of students planned to study</b>	32
<b>Date of study programme acceptance</b>	???.???.2014. – Faculty Teaching Council ???.???.2015. – University Senat
<b>Language</b>	Serbian, English
<b>Year in which programme was accredited</b>	2010
<b>Web adress with the details of the programme</b>	<a href="http://www.agrifaculty.bg.ac.yu">http://www.agrifaculty.bg.ac.yu</a>

### **Standard 1. Structure of the study programme**

Study programme «Environmental protection in agriculture» is the multidisciplinary master programme. By completing it student gets a degree: Master engineer in environmental protection. The aim of this programme is achieving generic and subject specific competences at the end of the study programme (student competences, Standard 4), as well as skills for the continuation of studies. Study programme lasts 1 year, 2 terms. The first group of subjects has 4 compulsory subjects: Ecology and agroecosystems, Applied ecophysiology, Ecotoxicology and Ecological microbiology. This group provides a good basis in the area of applied ecology which will help students to follow next, more specialized subjects. The second group of compulsory is in the area of economics and environmental management giving students knowledge and skills in evaluation and economy of natural resources and environmental protection, economic aspects of evaluation of the environmental pollution etc. The third group of compulsory subjects provides insight in the natural resources: biodiversity, water and soil, their protection and management in agriculture. For the sustainable use of natural resources in agriculture knowledge and skills are provided by subject: GIS and precision farming. At the end of studies student can choose one elective subject from the last group providing knowledge and skills in the area of environmental protection in the particular cropping system, fruit and viticulture, animal husbandry or aquaculture.

Every compulsory subject has 4 ECTS, while elective subjects have 6 or 4 ECTS. Practical work has 2 and master thesis 8 ECTS. All of these have 60 ECTS.

List of compulsory and elective subjects as well as their ECTS values is shown in Table 5.1.A, while subject content in Tables 5.2.a.

Students graduated at all study programmes with 240 ECTS are eligible for this study programme. In case more students than 32 are registered, they will be ranked according their previous success.

Teaching methods are: lectures, practicals in the laboratory, field trips, interactive teaching/learning methods such as: team work, cooperative and collaborative exercises, elements of e-learning. Interactive methods are both, group (debates, workshops, joint learning sessions) and individual (student projects, study cases, diary, evaluation of teaching etc.) of the special importance in this type of active teaching/learning process are stimulating discussions, cooperative and joint learning, conceptual mapping, mini research projects.

At all subjects students knowledge will be continuously evaluated by tests and colloquia and final exam is planned at the end of the teaching process.

Evidence: Faculty publication (printed or electronic, web site <http://www.agrif.bg.ac.rs/>)

## **Standard 2. Objectives of the study programme**

There are 2 aspects of the objectives for creating this study programme: its relevance for the labour market and its relevance for the continuation of studies. The objective is achieving educational, expert and research goals of environmental protection in the area of agriculture. Type and structure of the programme are adjusted to the needs of the development and application of environmental and natural resources protection in agriculture. Its major objective is educating experts qualified to work in the area of protection and proper use of natural resources (soil, water and biodiversity) in agriculture. Students will get functional knowledge and skills that will enable them solving problems related to the bad practices in agriculture resulting in environmental pollution. Programme provides analysis of physical, technical and agronomical aspects in soil, water and biodiversity management their mutual relationships in agriculture. Priorities of the study programme are that in future these experts contribute to the protection of natural resources enabling conditions for ecological agricultural production as well as for the safety in food production and thus improving quality of agricultural product and protect environment for future generations.

This study programme provides competences necessary for achieving short-term and long-term goals in serbian agriculture since graduates will be qualified for creative and inovative work, use of knowledge and skills, experimental work, witting and presenting data. Programme is created for students who want challenge facing threats of pollution to find inovative methods enabling them to improve environment in a sustainable way. Basics of this programme is in the natural, technical and social sciences. Its objective is to give a better insight in socio-economic causes and consequences of pollution and degradation of environment on people, other organisms and ecosystems. Using interdisciplinary approach students learn to develop analitical tools, models and technologies in environmental protection and socio-political and economical instruments in the control of environmental problems.

Graduates can get employment in companies and public institutions, governmental or non



governmental in the area of agriculture and environmental protection working on optimization and adjusting agriculture to the existing laws requirements, fulfilling high standards in environmental protection, human health and animal welfare. In addition to that graduates can work in agricultural companies, stations, associations, state and local offices, inspectorates, education (secondary and high).

In the creation of this study programme it was taken into account that Serbia is in the period of economical and social transitions. In the process of EU integration environmental protection is of very high priority. As a mostly agricultural country, Serbia has a lot of problems with pollution deriving from agriculture, especially because of the bad agricultural practices. Lot of work has to be done for fulfilling all requirements and EU standards in this area. On the other side there are no experts qualified in the area of environmental protection in agriculture. It was the result of the labor market research by interviewing people from governmental and nongovernmental sector. Questionnaires were distributed in Labour market agency, Chamber of Commerce, Conference of cities and municipalities, agricultural institutes (Maize research institute, Belgrade; Institute for field and vegetable crops, Novi Sad), agricultural companies (Victoria group, MK group, PK Bečej, Agromarket, Bojoni DOO, Milurović komerc, IMT Agromehanika), consultative companies (FIDEKO, Pediment, Libertas). Based on answers of the competent people from these institutions list of student competences was created. The need for qualifications in environmental monitoring, strategic planning and evaluation of the impact of agricultural companies on the environment was especially emphasised.

Competences acquired are, also good basis for the further studies such as skills in applying new methods and practices for sustainable agriculture and environmental and natural resources protection.

Evidence: Faculty publication (printed or electronic, web site <http://www.agrif.bg.ac.rs/>)

### **Standard 3. Aims of the study programme**

Goal of the study programme is achieving competences at the end of the studies that provide students with certain level of specialization and enable them to do research in the area of environmental protection in agriculture and sustainable use of natural resources.

Goal of the programme is to develop both generic (objectivity, critical thinking, communication skills, professional ethics, planning, management etc.) and subject specific competences such as knowledge and skills of principles of agroecology, ecotoxicology, ecological microbiology and plant ecophysiology, natural resources and their management, economy, legislation in the area of environmental protection, use of IT for monitoring pollution deriving from agriculture and measures for protection.

These goals are achieved by diverse teaching methods (classical lectures, laboratory practicals, field trips and interactive teaching such as team work, cooperative and collaborative methods). Goal of the programme is development of the learning skills to enable continuation of studies.

This programme has a goal to educate socially-responsible expert graduated engineer capable to face complex problems of management of natural resources in agriculture and environmental protection. Graduates should be capable to do monitoring and apply preventive measures to protect environment from agricultural pollution.



Goals of the programme are in accordance with basic tasks and goals of the Faculty of agriculture to follow the principles of Bologna and enable students inclusion in European higher education area and realisation of European common agricultural policies.

Basic orientatiton of the study programme is promoting european cooperation in quality assurance by acceptance european criteria in high education, inter-institutional cooperation and mobility and integrated studies in the area of environmental protection. Goal of the study programme is the introduction of the concept of life-long learning nad e-learning for what has project provided resources.

Goals of this programme are realistic and could be achieved concerning resources, both human and material. Development of new study programmes is within the mission of the Faculty which is periodically evaluated in the process of planning and allocating resources.

Evidence: Faculty publication (printed or electronic, web site <http://www.agrif.bg.ac.rs/>)

#### **Standard 4. Student competences**

By completeing this study programme student acquires the following generic competences: capability to apply the knowledge into the practice, objectively evaluate his own work and work of others, capability to analyze and synthetize, capability to work in the team and to communicate with other professions, possesses professional ethics, capable to plan and organise production, to work individually, to run research, analyse and present results, to be crative, to learn continuously, to possess social responsibility in regard to environmental pollution, to prevent and protect environment according to the principles of sustainable development.

By completeing this study programme student acquires the following subject-specific competences: detailed knowledge of types of agricultural pollution, changes in biodiversity due to agriculture, physical, chemical and economical aspects in management of soil, water and biodiversity as well as their interactions in agricultural practices. Student also gets the following skills: application of the IT - communication technologies for detecting environmental pollution from agriculture, creation of efficient and economically justified solutions for prevention soil, water and biodiversity pollution, strategic planning nad management and raising public awareness about need to protect environment.

All competences could be useful for evaluating influence of different tecnologies used in agriculture on environment.

Evidence: Diploma supplement

## Faculty of agriculture

### **DIPLOMA SUPPLEMENT** **Diploma no....**

#### 1. DATA ABOUT THE DIPLOMA/QUALIFICATION HOLDER

Surname:

Name:

Date of birth (day/month/year):

Student identification number and JMBG:

#### 2. DATA ABOUT THE QUALIFICATION

2.1. Title of the qualification: Master engineer in environmental protection

2.2. Main area of studies: Environmental protection

2.3. Title and status of the institution issuing diploma:

University of Belgrade, Faculty of agriculture, state institution

2.4. Title of the institution organising the studies (if different from 2.3.)

2.5. Teaching and examination language: serbian and english

#### 3. DATA ABOUT THE TYPE AND LEVEL OF QUALIFICATION

Level of qualification: master studies, second level of studies

Official length of studies: 2 terms, 1 year, 60 ECTS additional activities (practical work, SIR)

Terms of entry:

240 ECTS

#### 4. DATA ON THE CONTENT OF THE STUDY PROGRAMME AND RESULTS ACHIEVED

Way of studying: regular

Title and requirements of the study programme: Environmental protection in agriculture

All exams passed and master thesis defended. This study programme lasts 2 semesters. By completing it student gets 60 ECTS credits. All subjects are single term. Student has to pass 10 compulsory and 2 elective subjects, to complete practical work and SIR in certain subjects and to complete and defend master thesis.

### 4.3. Details of the study programme

Subject code	Subject	Contact hours				Exam		Teacher
		Lectures	Practicals	DON	Other	ECTS	Mark	
<b>Compulsory subjects</b>								
EKAG	Ecology and agroecosystems	2	1		1	4		Snežana Oljača
PREK	Applied ecophysiology	2	1		1	4		Marina Mačukanović-Jocić
EKOT	Ecotoxicology	2	1		1	4		Dragica Brkić
EKMI	Microbial Ecology	2	1		1	4		Vera Raičević
EKMP	Environmental management in agriculture	2	1		1	4		Nataša Petrović
EPRS	Environmental and natural resource economics	2	1		1	4		Radmilo Pešić
BPBR	Biodiversity and natural plant resources in agriculture	2	1		1	4		Zora Dajić Stevanović
ZZR	Soil pollution and remediation	2	1		1	4		Svetlana Antić-Mladenović
AEM	Aquatic ecology and monitoring	2	1		1	4		Zorka Dulić
GIS	GIS and precision farming	2	1		1	4		Goran Topisirović
<b>Elective subjects I</b>								
ZBOS	Plant protection and environment	3	2		1	6		Aleksa Obradović
ZSRP	Environmental protection in field crop and vegetable production	3	2		1	6		Dušan Kovačević
ZSBS	Environmental protection and biodiversity in animal production	3	2		1	6		Vladan Bogdanović
ZSVV	Environmental fruit growing and viticulture	3	2		1	6		Branislava Sivčev, Milica Fotirić Akšić, Zorica Ranković-Vasić
<b>Elective subjects II</b>								
EKGB	Ecological farming of non domestic animals	2	1		1	4		Vesna Poleksić, Bojan Stojnić, Zorka Dulić, Božidar Rašković

EKAK	Ecological aquaculture	2	1		1	4		Zoran Marković
TOTV	Wastewater treatment	2	1		1	4		Vera Raičević
EPZO	Environmental epizootiology	2	1		1	4		Slavča Hristov, Branislav Stanković
	Practical work					2		
MAS	Master thesis					8		

### Standard 5. Curriculum

Master study programme «Environmental protection in agriculture» has 2 semesters. By completing it student gets 60 ECTS credits. All subjects are single term, and have certain number of ECTS credits. Their sequence is logical, based upon the knowledge of the previous subjects and also knowledge needed for the next subjects. List of compulsory and elective modules, as well as their ECTS are presented on table 5.1.A. In the structure of this programme 10 subjects are compulsory and 2 are elective. First elective subject student selects from the list of 4 subjects, and the second also from the list of 4 subjects presented on table 5.3.

Curriculum has description of all subjects (on table 5.2. for every subject) presented in Book of subjects. In table 5.2 are presented goals of the subject, content, teaching and examination methods, learning outcomes. During the course of the programme practical work of 2 ECTS is planned.

At the end of the studies student defends master thesis and gets 8 ECTS. By completion of the study programme student gets 60 ECTS and degree of master in environmental protection. Diploma supplement presents all details of the study programme.

Evidence: Lessons schedule - Annex 5.1, Book of subjects – Annex 5.2, Decisions of acceptance of the study programme by faculty Council and University Senate- Annex 5.3

Lessons schedule - Annex 5.1

#### LESSONS SCHEDULE ON THE STUDY PROGRAMME ENVIRONMENTAL PROTECTION IN AGRICULTURE SCHOOL YEAR 2014/15

##### Subject **Ecology and agroecosystems** - Snežana Oljača

1a. block: 21-23 November

1b. block: 28-30 November

##### Subject **Applied ecophysiology** - Marina Mačukanović-Jocić

2a. block: 05-07 December

2b. block: 12-15 December

##### Subject **Ecotoxicology** - Vesela Karan

3a. block: 19-21 December

3b. block: 26-28 December

Subject **Microbial ecology** – Vera Raičević

4a. block: 09-11 January

4b. block: 16-18 January

Subject **Environmental and natural resource economics** - Radmilo Pešić

5a. block: 13-15 February

5b. block: 20-22 February

Subject **Environmental management in agriculture** - Nataša Petrović

6a. block: 27 February -01 March

6b. block: 06-08 March

Elective subject 1 (choose one)

7a. block: 13-15 March

7b. block: 20-22 March

1. **Plant protection and environment** – Aleksa Obradović
2. **Environmental protection in field crop and vegetable production** - Dušan Kovačević
3. **Environmental protection and biodiversity in animal production** - Vladan Bogdanović
4. **Environmental fruit growing and viticulture** - Branislava Sivčev, Milica Fotirić Akšić

Subject **GIS and precision farming** - Goran Topisirović

8a. block: 27-29 March

8b. block: 03-05 April

Subject **Biodiversity and natural plant resources in agriculture** - Zora Dajić Stevanović

9a. block: 17-19 April

9b. block: 24-26 April

Subject **Soil pollution and remediation** - Svetlana Antić Mladenović

10a. block: 08-10 May

10b. block: 15-17 May maj

Предмет **Water pollution and remediation** - Zorka Dulić

11a. block: 22-24 May

11b. block: 29-31 May

Elective subject 2 (choose one)

12a. block: 05-07 June

12b. block: 12-14 June

1. **Ecological farming of non domestic animals** - Vesna Poleksić, Bojan Stojnić
2. **Ecological aquaculture** – Zoran Marković

Table 5.1A. Distribution of subject during the school year and during semesters

	Code	Subject	Term	Subject status	Contact hours				Other classes	ECTS
					Lectures	Practicals	SIR	Other		
1	EKAG	Ecology and agroecosystems	1	C	2	1	1		4	
2	PREK	Applied ecophysiology	1	C	2	1	1		4	
3	EKOT	Ecotoxicology	1	C	2	1	1		4	
4	EKMI	Microbial ecology	1	C	2	1	1		4	
5	EKMP	Environmental management in agriculture	1	C	2	1	1		4	
6	EPRS	Environmental and natural resource economics	1	C	2	1	1		4	
7		Electives 1	1		3	2	1		6	
	ZBOS	Plant protection and environment		E						
	ZSRP	Environmental protection in field crop and vegetable production		E						
	ZSBS	Environmental protection and biodiversity in animal production		E						
	ZSVV	Environmental fruit growing and viticulture		E						
8	BPBR	Biodiversity and natural plant resources in agriculture	2	C	2	1	1		4	
9	ZZR	Soil pollution and remediation	2	C	2	1	1		4	
10	AEM	Aquatic ecology and monitoring	2	C	2	1	1		4	
11	GIS	GIS and precision farming	2	C	2	1	1		4	
12		Electives 2	2		2	1	1		4	
	EKGB	Ecological farming of non domestic animals		E						
	EKAK	Ecological aquaculture		E						
	TOTV	Wastewater		E						

		treatment							
	EPZO	Environmental epizootiology		E					
		Practical work	2	C					2
13	MAS	Master thesis	2	E					8
Укупно ЕСПБ									60

Table 5.1. Б: Distribution of subject during the school year with teachers and assistants

Subjects		Contact hours (L+P+SIR)	Teacher	Assistant
<b>First term</b>				
<b>Compulsory subjects</b>				
EKAG	Ecology and agroecosystems	2+1+1	Snežana Oljača	Snežana Oljača
PREK	Applied ecophysiology	2+1+1	Marina Mačukanović-Jocić	Ilinka Pećinar
EKOT	Ecotoxicology	2+1+1	Dragica Brkić	Dragica Brkić
EKMI	Microbial Ecology	2+1+1	Vera Raičević	Jelena Jovičić Petrović
EKMP	Environmental management in agriculture	2+1+1	Nataša Petrović	Nataša Petrović
EPRS	Environmental and natural resource economics	2+1+1	Radmilo Pešić	Radmilo Pešić
<b>Elective subjects 1</b>				
ZBOS	Plant protection and environment	3+2+1	Aleksa Obradović	Nemanja Kuzmanović
ZSRP	Environmental protection in field crop and vegetable production	3+2+1	Dušan Kovačević	Dušan Kovačević
ZSBS	Environmental protection and biodiversity in animal production	3+2+1	Vladan Bogdanović	Vladan Bogdanović
ZSVV	Environmental fruit growing and viticulture	3+2+1	Branislava Sivčev, Milica Fotirić Akšić, Zorica Ranković-Vasić	Branislava Sivčev, Milica Fotirić Akšić, Zorica Ranković-Vasić
<b>Second term</b>				
<b>Compulsory subjects</b>				
BPBR	Biodiversity and natural plant resources in agriculture	2+1+1	Zora Dajić Stevanović	Zora Dajić Stevanović
ZZR	Soil pollution and remediation	2+1+1	Svetlana Antić-Mladenović	Svetlana Antić-Mladenović
AEM	Aquatic ecology and monitoring	2+1+1	Zorka Dulić	Zorka Dulić
GIS	GIS and precision farming	2+1+1	Goran Topisirović	Goran Topisirović
	Practical work	2+1+1		
<b>Elective subjects 2</b>				
EKGB	Ecological farming of non domestic animals	2+1+1	Vesna Poleksić, Bojan Stojnić, Zorka Dulić, Božidar Rašković	Vesna Poleksić, Bojan Stojnić, Zorka Dulić, Božidar



				Rašković
EKAK	Ecological aquaculture	2+1+1	Zoran Marković	Zoran Marković
TOTV	Wastewater treatment	2+1+1	Vera Raičević	Jelena Jovičić Petrović
EPZO	Environmental epizootiology	2+1+1	Slavča Hristov, Branislav Stanković	Slavča Hristov, Branislav Stanković
MAS	Master thesis			

Table 5.3. Elective subjects in the study programme

	Code	Subject	Contact hours				ECTS
			L	P	DON	SIR	
1	ZBOS	Plant protection and environment	3	2		1	6
2	ZSRP	Environmental protection in field crop and vegetable production	3	2		1	6
3	ZSBS	Environmental protection and biodiversity in animal production	3	2		1	6
4	ZSVV	Environmental fruit growing and viticulture	3	2		1	6
5	EKBG	Ecological farming of non domestic animals	2	1		1	4
6	EKAK	Ecological aquaculture	2	1		1	4
7	TOTV	Wastewater treatment	2	1		1	4
8	EPZO	Environmental epizootiology	2	1		1	
9	MAS	Master thesis				7	8

Anex 5.3. Decission on acceptance of the study programme of the Faculty Council  
Anex 5.3.a. Decission of the University Senate

**Standard 6. Quality, contemporariness and similarity with other international study programmes**

Quality assurance of the study programme is done by continous modernisation of the curriculum, checking programme goals and collecting information on student evaluation of the

teaching process and examination procedures. In addition to the questionnaires given to students we are introducing expert peer-review control of the teaching process. International experiences in the quality assurance and assesment (QAA) is also regularly collected.

Faculty continously checks and revizes programme goals and their accordance with the falculty mission and goals, study programme structure, content and learning outcomes as well as student competences and possibilities of employment. Faculty has developed procedures for QAA through faculty bodies: departments, institutes, commision for quality control and sefevaluation and faculty council. Faculty also collects informations from the stakeholder community (agricultural companies, governmental and nogovernmental organisations etc.) on the quality of the study programme. Students are enabled to take part in QAA by evaluating teaching process. Faculty is permanently modernising its curricula and makes it comparable to the international programmes.

Conditions and procedures for acheiving particular degree are clearly defined and made public in, both, electronic and printed format nad also in accordance with goals of the faculty. Study programme is tuned with the modern concept in simmlar study programmes abroad, especially within european higher education area.

This study programme is tuned and compatible with simmlar programmes of the master studies in Zagreb, Hohenheim and Maribor. Quality of the programme is reflected by standards requested for the accreditation process. It is also in agreement with the strategic and specific goals regarding environmental protection in our countray and in EU.

<http://www.agr.hr/cro/nastava/ms/ms04.htm> (Anex 6.1)

<https://www.uni-hohenheim.de/aw-msc.html> (Anex 6.2)

<http://fk.uni-mb.si> (Anex 6.3)

Evidence: Documents proving international accordance with 3 master study programmes – Annex 6.1,2,3. Annex 6.4. Accordance with a good practices at other higher education institution

Annex 6.1. Documentation on master programme at the Faculty of agriculture, University of Zagreb

## Diplomski studij

### Novi program

#### ddiplomski studij

- **Diplomski studij**

- Agrobiznis i ruralni razvitak Agroekologija

### Ekološka poljoprivreda i agroturizam

Svojom strukturom ovaj diplomski studij prilagođen je

- Biljne znanosti prvostupnicima sa drugih studija
- Ekološka područja biotehničkih znanosti
- poljoprivreda i agroturizam (Šumarski i Prehrambeno-
- Popis modula biotehnološki fakultet), kao i
- Fitomedicina srodnih studija u zemlji i
- Genetika i inozemstvu. Visoka je
- oplemenjivanje životinja zastupljenost izbornih modula (60
- Hortikultura ECTS bodova), a njihov izbor
- Hranidba maksimalno prilagođen
- životinja i hrana sklonostima i potrebama studenta.
- Krajobrazna Dio studija u trajanju od 1-2
- arhitektura semestra može se slušati na
- Poljoprivredna drugom fakultetu Sveučilišta u
- tehnika Zagrebu ili izvan AFZ (tuzemstvu
- Proizvodnja i ili inozemstvu).
- prerada mesa
- Proizvodnja i prerada mlijeka
- Ribarstvo i lovstvo
- Raspored nastave
- **Poslijediplomski studij**

## Anex 6.2. Documentation on master programme at the University of Hohenheim

### Coordination Office

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### Sustainable Agriculture and Integrated Watershed Management



Watersheds are of significant importance for the global ecosystem and are characterized by a high degree of ethnic, cultural and ecological diversity. They span from small mountain

catchments to transboundary river basins. Interdependencies between upstream and downstream agriculture and resource management pose particular challenges for the development of sustainable agricultural practices. High population growth, climate and land use change, and extraction of natural resources by a variety of actors are increasing the pressure on fragile watershed areas. In order to stop the downward spiral of resource degradation, landscape instability, reduced biodiversity, rural poverty and food insecurity, interdisciplinary analysis and new approaches to sustainable agriculture and integrated watershed management are needed that identify sustainable land use practices, strengthen local institutions and knowledge systems, and increase the resilience of watershed ecosystems and rural livelihoods.



The new International Master Program (starting summer semester 2009) jointly offered by Universität Hohenheim, Germany, and Chiang Mai University, Thailand seeks to lay the foundation for such integrated approaches in education and training. It addresses post-graduate students from Southeast and South Asia, Latin America and Africa, who want to deepen their knowledge of the complexity of:

- watershed agro-ecosystems
- sustainable agricultural practices and
- new pathways of integrated watershed management

Students from Europe, East Asia and North America are also welcome. Both universities have long-standing experience in research on sustainable agriculture and integrated watershed management and have developed an extensive network of partner universities and research organizations in the Southeast Asian region and beyond.

Anex 6.3. Documentation on master programme at the University of Maribor

Študij

Na podlagi 49. člena Zakona o visokem šolstvu (Ur. l. RS, št. 100/04-UPB2) in na podlagi Meril za akreditacijo visokošolskih zavodov in študijskih programov (Ur. l. RS, št. 101/04) je Svet RS za visoko šolstvo na svoji 7. seji, 18. novembra 2005, sprejel sklepe s katerimi daje Fakulteti za kmetijstvo soglasje k izvajanju novih študijskih programov, ki se zaključujejo s pridobitvijo diplom, na prvi, drugi in tretji (doktorski) stopnji.

Informacije za srednješolce oz. vse, ki jih zanima študij na Fk Fakulteta za kmetijstvo izvaja na prvi stopnji, kamor se lahko vpišete po končani srednji šoli, naslednje študijske programe:

- Univerzitetni študij - Kmetijstvo - traja 3 leta (180 ECTS) - za vpis potrebujete:
  - opravljeno gimnazijsko maturo ali
  - poklicno maturo v kateremkoli srednješolskem programu in izpit iz enega od maturitetnih predmetov; izbrani predmet ne sme biti predmet, ki ga je kandidat že opravil pri poklicni maturi.Vpišejo se lahko tudi kandidati, ki so:
  - zaključili višješolski študijski program na enakem strokovnem področju ali
  - pred 01.06.1995 končali katerikoli štiriletni srednješolski program
  
- Visokošolske strokovne študijske programe - trajajo 3 leta (180 ECTS) - za vpis potrebujete:
  - opravljen zaključni izpit v kateremkoli štiriletnem srednješolskem programu, poklicno maturo ali maturo

#### Annex 6.4. Accordance with a good practices at other higher education institution

For realising the mission, Faculty is permanently committed to improve its education system and to get included into the european heigher education area. Leading agricultural universities/ faculties in Europe which belong to the associatoion EUROLIGUE (KVL-Danmark, BOKU – Austria, Hohenheim – Germany, Wageningen- Holland, Upsala – Sweden and Newcastle – UK) permanently develop good academic practices and spred to other faculties/universities of agriculture in Europe through the activities of ICA (International Consortium of Agricultural Faculties). Faculty of Agriculture is an active member of this association. Group of teachers of the faculty are also taking part in the regular biannual meetings of ICA (ECHAЕ) presenting new reformly orientated aspects of the teaching process and examples of the good teaching practices at the faculty since the year 2000. Thirty teacher of the faculty have participated a course in active teching/learning and good scientific practices during

school years 2003/4 and 2005/6. During school year 2008/9 they had a course in interactive e-learning through WUS MSDP project to develop this master programme. This group of teachers is a core of the implementation of modern concept of university teaching according to European agricultural Universities.

Publications of the FoA teaching staff related to the Bologna process relevant to prove continuous implementation of good teaching practices at the faculty that is tuned with European higher education institutions:

1. Poleksic, V., Pekic, S., Mratinic, E., Quarrie, S. (2002): Managing changes at the Faculty of Agriculture, University of Belgrade. 6<sup>th</sup> European Conference on Higher Agricultural Education (ECHAE), Conference Proceedings, School of Agricultural Technology, TEI Crete, 137 – 145.
2. Pekić, S. and Quarrie, S. (2002) Reform of the Faculty of Agriculture, University of Belgrade. *In: Perspectives in Higher Education Reform. Proceedings of the 12<sup>th</sup> Annual Conference of Alliance of Universities for Democracy (AUDEM), Belgrade, November 2001.* Pp 121-125.
3. Pekić, S. (2002) Proposal for reform of the Faculty of Agriculture at the University of Belgrade. *In: Perspectives in Higher Education Reform. Proceedings of the 12<sup>th</sup> Annual Conference of Alliance of Universities for Democracy (AUDEM), Belgrade, November 2001.* Pp 126-135.
4. Poleksic, V., Quarrie, S., Pekic, S., Pesikan, A. (2004): Competence building of teachers: Case of the Faculty of Agriculture, University of Belgrade. *Proceedings of the 7<sup>th</sup> European Conference on Higher Agricultural Education (ECHAE), Rethinking Higher Education in the Food Chain and Environment: Profiling the graduate of the future, KVL, Copenhagen, 71-76.*
5. Nikolić, R., Malbaša, V., Rajić, Lj., Jovanović, V., Pekić, S., Dolićanin, Dž., Latković, Z., Šogorov, S., Stojanović, B., Nikolić, I., Quarrie, S.A. (2004) Instructions and criteria for evaluation and accreditation of Higher Education. Ed. Alternative Academic Educational Network, Belgrade. (in Serbian).
6. Pekić, S., Poleksić, V., Vucelić-Radović, B., Quarrie S.A., Pešikan A. (2005) First steps in improving academic skills at the Faculty of Agriculture, Belgrade University (In Serbian). *In: Proceedings of Conference Serbian Higher Education on the Road to Europe – Four Years Later. October 2004, Belgrade.* Ed. Alternative Academic Educational Network. Pp 121-128.
7. Pešikan, A., Poleksić, V. & Antić, S. (2005) How to improve competencies of academics? Case of the Faculty of Agriculture, University of Belgrade (Summary). *Proceedings of the First ISCAR Conference (International Society for Cultural and Activity Research): „Acting in changing worlds: learning, communication, and minds in intercultural activities“, Seville, Spain, pp.510-512.*
8. Poleksic, V., Pekic Quarrie, S., Cupina, B., Petric, D., and Drochner, W. (2006): Curricular reform at Serbian Agricultural Faculties: achievements of the TEMPUS JEP towards meeting the needs for rural development. *Proceedings of the 8th European Conference on Higher Agricultural Education (ECHAE): The Public and the Agriculture and Forest Industry.* 194-197.
9. Pekić Quarrie, S., Pešikan, A., Poleksić, V., Quarrie, S. (2006): Developing students' professional competences for decision making by active learning methodology.

- Proceedings of the 8th European Conference on Higher Agricultural Education (ECHAЕ): The Public and the Agriculture and Forest Industry. 184-189.
10. Pekić Quarrie, S. (2007). Examples of student peer review at the faculty of agriculture, University of Belgrade to improve quality assurance and reduce corruption. AEGEE Conference on “Bologna process best practices”, Niš.
  11. Pekić Quarrie, S. (2007). Student peer review as a tool for efficient achievement of both subject-specific and generic learning outcomes: examples in botany at the Faculty of Agriculture, University of Belgrade. Higher Education.32: 206-214.
  12. Pekić Quarrie, S., Poleksić, V., Vucelić, B. (2008). Active learning at Faculty of Agriculture: student perspective. In: Student centred teaching. Edited by Ivić, I., Antić, S., Pešikan, A. Faculty of agriculture, Belgrade University, Education Forum, Belgrade, 174pp.
  13. Pekić Quarrie, S, Poleksić, V., Vucelić-Radović B., Pešikan, A., Quarrie, S. (2008): Student self-assessment as a tool for improving generic competences and reduce corruption. Exercises at Faculty of Agriculture, Belgrade University. Proceedings of the 9th European Conference on Higher Agricultural Education (ECHAЕ). (in press)
  14. Pekić Quarrie, S, Poleksić, V., Pešikan, A., Antić, S., Quarrie, S. (2010): Bologna works or does it? Reflections on challenges at the Faculty of Agriculture in Belgrade. 10th European Conference on Higher Agricultural Education (ECHAЕ), Zagreb, june 2010.
  15. Antić, S., Poleksić, V., Pešikan, A., Pekić Quarrie, S, Vucelić-Radović B., Quarrie, S. (2010): Student-centred curriculum: Improving students’ learning or just “the Emperor’s new clothes”. 10th European Conference on Higher Agricultural Education (ECHAЕ), Zagreb, june 2010.

Faculty has realised 13 European projects in the area of education and 3 in the area of science (Framework programme –FP). Faculty is also coordinating with the national project in the area of education financed by Ministry of education and technology. „Improving quality and efficiency of teaching/learning at University“ (no 159010).

### **List of European scientific projects**

Framework programme 6 (FP6)

1. Agro economic policy analysis of the New Member States, the Candidate States and the countries of the Western Balkan (CEEC Agri Policy), prof. dr Natalija Bogdanov, [www.agripolicy.net](http://www.agripolicy.net), 15 participating countries. Objectives: enhancing interactions between experts from the agricultural sectors and policy makers and supporting the formulation of community agricultural policies by developing an open and interactive network of experts involved in agricultural policy analysis.
2. Balkan agrofood network (BAFN), prof. dr Milica Mojašević, [www.bafn.eu](http://www.bafn.eu), 8 participating countries. Objectives: creation of a network of agrifood research groups, researchers and companies.
3. Water Resource Strategies and Drought Alleviation in Western Balkan Agriculture (WATERWEB), prof. Radmila Stikić, [www.waterweb.dk](http://www.waterweb.dk), 7 participating institutions from 5 countries. Objectives: to contribute to development in the Western Balkans by introducing strategic water management for drought alleviation and sustainable agricultural practices in



the WB and to establish and reinforce research expertise in the WB in a range of technologies for water and crop management.

4. Safe and High Quality Food Production using Low Quality Waters and Improved Irrigation Systems and Management (SAFIR), prof. Radmila Stikić, [www.safir4eu.org](http://www.safir4eu.org), 17 institutions from 10 countries. Objectives: new irrigation systems for safe and high quality food crops: technology development and research activities; quality and safety of fresh and processed food from farm to fork: impact and risk assessments; feasibility and applications to food production sectors: economic and financial assessments, decision support and dissemination.

5. A Centre for Sustainable Crop-Water Management (CROPWAT), FP6-SSA, prof. Radmila Stikić, [www.cropwat.agrifaculty.bg.ac.yu](http://www.cropwat.agrifaculty.bg.ac.yu), faculty is only participating institution. Objectives: creation of the centre of excellence aiming to improve the efficiency of using existing water resources in a country faced with increasing problems of agricultural droughts and health risks of using contaminated water for irrigation.

Framework programme 7 (FP7)

1. Reinforcement of sustainable aquaculture (ROSA), FP7-REGPOT-3, prof. Zoran Marković, website creation in progress, 3 participating countries. Objectives: development of Serbian and WB aquaculture by reinforcing existing expertise and developing research in selective breeding of carp at the faculty.

### Standard 7. Student entry

Number of students enrolling this master programme is confirmed every year by decision of the faculty teaching and scientific council. In 2014/15 32 students were planned for enrollment. This number of students is reflection of the resources available as well as the needs of the society. Decision about the students that will be financed by budget is brought by government.

Faculty publishes information related to the entry as well as study programme in printed form as well on the faculty web site. Call for entry is announced in the newspapers. Faculty commission is responsible for the regular entry procedures.

Equality (race, sex, sexual orientation, national and social origin, language, religion, political or different opinion, birth and material status and handicap) of students is guaranteed by Constitution Law.

The only precondition for the entry to this study programme is that student has 240 ECTS. In case more than 32 students apply, their ranking will be done according to the success in their previous studies, length and equivalence of previous studies.

Evidence: Table 7.1 Number of the students enrolled in current and previous two school years, Table 7.2 Number of the students enrolled on study program in current school year by study year; Call for student enrollment to master study programme - Annex 7.1, Decision about nomination of the Commission for entry - Annex 7.2, Conditions for enrollment (from the faculty statute)- Annex 7.3.

Table 7.1 Number of the students enrolled in current and previous two school years

	Current school year 2014/2015.	2013/2014. school year	2012/2013. school year	Planned to enroll in the next school year
Average mark of enrolled students	22 students 7,52	32 students 7,83	32 students 7,89	32 students

Table 7.2 Number of the students enrolled on study program in current school year by study year

I year	II year	III year	IV year	V year	VI year
33 students	-	-	-	-	-
<b>Total number of students in current school year</b>			33		

### **Standard 8. Student examination and progress**

Examination of students is done according to the previously stated rules, criteria, procedures stated in the Book of regulations for examination procedures and also the date presented in Table 5.2. for every subject.

Methods of student examination are complementary to the aims and content of the study programme. Student outcomes are evaluated during the teaching process and at the final exam. Student attendance to the classes is obligatory and they are motivated to be active during the teaching process and collect point for various activities stated in table 5.2. for every subject. Total points during teaching process and points obtained at the final exam could be maximum 100. Out of this total number of points minimum 30 and maximum 70 could be earned during the teaching process.

Teacher evaluates the knowledge at the final exam with the marks: 10 – excellent-extraordinary, 9-excellent, 8-very good, 7-good, 6-enough to pass and 5-not enough to pass. The final mark is the sum of points from the pre-exam activities and final exam.

Faculty is permanently keeping evidence on student exams. Teachers are obliged to regularly analyse the results of exams, and to suggest measures for improving examination procedures.

Students have, both, right and obligation to participate in this process, to give suggestions on criteria or exam procedures to the faculty Commission for QAA and faculty Teaching-research Council through their representatives or in direct communication with the heads of the departments.

Faculty systematically analyses, evaluates and improves methods of examination, if it is adjusted to the nature of the subject, are learning outcomes evaluated during the teaching process, the ratio between points earned before and at the final exam, criteria for evaluating knowledge application and for the final mark, etc.

Faculty also permanently checks student marks in all subjects and takes measures if there are irregularities in the mark distributions (to much high or low marks) in the longer period, if the pass rate is too small etc. Vice-dean for teaching informs faculty Teaching-research Council on the exam results for every exam term. The council brings the corrective measures if necessary.

Student parliament also does analysis of student exam results, study conditions and gives suggestions for improvement.

Evidence: Book of subjects, other publication, faculty web-site; Table 8.1 Total list of points by subjects that student can earn during the teaching process and at the final exam; Table 8.2 Statistical data about student progress on study program of 60 ECTS

Table 8.1 Total list of points by subjects that student can earn during the teaching process and at the final exam

No.	Subject name	lessons	pre-exam activities	final exam
1	Ecology and agroecosystems		50	50
2	Applied ecophysiology		40	60
3	Ecotoxicology	10	50	40
4	Microbial ecology		60	40
5	Environmental management in agriculture	10	50	40
6	Environmental and natural resource economics	10	20	70
7	Plant protection and environment		70	30
8	Environmental protection in field crop and vegetable production	10	50	40
9	Environmental protection and biodiversity in animal production		40	60
10	Environmental fruit growing and viticulture	5	45	50
11	Biodiversity and natural plant resources in agriculture		50	50
12	Soil pollution and remediation		40	60
13	Aquatic ecology and monitoring	10	40	50
14	GIS and precision farming	20	30	50
15	Ecological farming of non domestic animals		60	40
16	Ecological aquaculture	10	30	60
17	Wastewater treatment		60	40
18	Environmental epizootiology		70	30

Table 8.2 Statistical data about student progress on study program of 60 ECTS

	Student progress in current 2014/2015. school year	Student progress 2013/2014. school year	Student progress 2012/2013. school year	Student progress..... school year
Enrolled	33			
Quit	-			
Finished	5			
<b>Average mark</b>	8,92			

### **Standard 9. Teaching staff**

Quality of the teaching staff is enabled by: long-term planning and tuning of the number of teachers and assistants with national and international standards, applying high criteria for elections, providing conditions for permanent improving to both teachers and assistants, checking the quality of their teaching and research performance and applying policy of long-term good selection of young teaching staff.

Total number of teachers in this programme is 22. Work load of all teachers is according to the standards. All teachers are permanent staff at the faculty, with exception of 2 teachers from the other institutions with 30% of work time. All teachers are PhDs and number of teachers and assistants is appropriate for achieving quality in the teaching process. The quality of their teaching is monitored by student questionnaires done by faculty Commission for evaluation of the pedagogical activities of teachers and by peer reviewing. In the teaching process 3 assistants are included with 100% of work time. Data on teachers and assistants (CV, elections, references) are publicly available (on faculty and university web site). All teachers have at least 5 references in the area of their subjects.

Evidence: Fotocopies of the working documents. – Anex 9.1, Act on regulation of teaching staff elections - Anex 9.2, Book of teachers - Anex 9.3, Proof that data on teachers are publicly available - Anex 9.4.

Table 9.2. List of teachers

Лични подаци					Часови активне наставе				Радни статус		
	Матични број	Презиме, средње слово и име	Зва ње	Датум избора	ЧСП	ЧССП	ЧДВУ	УЧАН	% радног времена у установи	Допунски рад (%) или рад по уговору	Н Д В У
1	2004960715414	Ољача И. Снежана	РП	23.03.2009.	1,75	10,31	0	10,31	100		
2	1012954880097	Ковачевић Ђ. Душан	РП	27.12.2001.	1,38	9,61	0	9,61	100		
3	0210960744130	Христов В. Славча	РП	07.07.2004.	0,44	5,77	0	5,77	100		
4	0802959798442	Раичевић Б. Вера	РП	01.03.2007.	1,88	10,87	0	10,87	100		
5	1802957710045	Пешић В. Радмило	РП	25.02.2000.	1,75	7,55	0	7,55	100		
6	0909962715123	Дајић- Стевановић П. Зора	РП	18.06.2008.	1,75	5,22	0	5,22	100		
7	2210957715631	Полексић Д. Весна	РП	01.12.2005	0,22	4,63	0	4,63	100		
8	1401963790013	Марковић З. Зоран	РП	18.06.2008.	0,88	7,76	0	7,76	100		
9	0404966715263	Петровић Б. Наташа	РП	13.06.2013.	1,75	1,75	8,23	9,98		30	
10	0406965710198	Тописировић Р. Горан	РП	27.11.2013.	1,75	9,60	0	9,60	100		
11	3107965760024	Обрадовић Ж. Алекса	РП	13.07.2011.	0,88	5,47	0	5,47	100		
12	2707953715558	Сивчев В. Бранислава	РП	06.10.2009.	0,46	4,08	0	4,08	100		
13	0606967710135	Богдановић Т. Владан	ВП	20.12.2005.	1,38	7,29	0	7,29	100		
14	2206964757512	Антић- Младеновић Б. Светлана	ВП	28.09.2010.	1,75	6,73	0	6,73	100		
15	2906966715320	Мачукановић -Јоцић П. Марина	ВП	06.06.2012.	1,25	5,23	0	5,23	100		
16	2001969715205	Дулић П. Зорка	ВП	22.01.2014.	1,97	5,02	0	5,02	100		
17	2905979710429	Рашковић С. Божидар	Д	18.03.2014.	0,22	8,79	0	8,79	100		
18	0906965710131	Станковић М. Бранислав	Д	06.12.2012.	0,44	5,50	0	5,50	100		
19	1807963710040	Стојнић С. Бојан	Д	27.02.2007.	0,22	5,66	0	5,66	100		
20	2505966715237	Бркић В. Драгица	Д	01.02.2011.	1,75	3,36	0	3,36		30	
21	0704972715325	Фотирић Акшић М.	Д	28.09.2010.	0,46	7,05	0	7,05	100		

		Милица									
22	1501974778214	Ранковић- Васић З. Зорица	Д	13.05.2014.	0,46	3,27	0	3,27	100		
Укупно часова активне наставе коју држе наставници					25						
Укупно наставника са пуним радним временом у установи који изводе наставу на студијском програму = 20											

Table 9.3 Total review of teaching staff by scientific fields

Р.Б.	Област	Ужа научна или уметника област (предмети)	П	ПС	Д	ВП	РП	укупно
1	Биотехничке науке	Агроекологија (предмет Екологија и агроекосистеми)					1	1
2	Биотехничке науке	Пољопривредна ботаника (предмети: Примењена екофизиологија и Биодиверзитет и природни биљни ресурси у пољопривреди)				1	1	2
3	Биотехничке науке	Пестициди (предмет Екотоксикологија)			1			1
4	Биотехничке науке	Еколошка микробиологија (предмет Еколошка микробиологија, Третман отпадних вода)					1	1
5	Организационе науке	Менаџмент технологије, иновације и развоја (предмет Еколошки менаџмент у пољопривреди)					1	1
6	Биотехничке науке	Фитопатологија (предмет Заштита биља и очување животне средине)					1	1
7	Биотехничке науке	Одржива пољопривреда (предмети Заштита животне средине у ратарству и повртарство и Заштита животне средине у воћарству и виноградарству)			2		2	4
8	Биотехничке науке	Опште сточарство и оплемењивање домаћих и гајених животиња (Предмет Заштита животне средине и биодиверзитета у сточарству)				1		1
9	Биотехничке науке	Агрохемија (Предмет Загађење земљишта и ремедијација)				1		1
10	Биотехничке науке	Примењена зоологија и рибарство (предмети: Акватична екологија и			2	1	2	5

		мониторинг; Еколошко гајење бескичмењака, Еколошка аквакултура)						
11	Биотехничке науке	Механизација сточарске производње (Предмет ГИС и прецизна пољопривреде)					1	1
12	Ветеринарске науке	Зоохигијена (предмет Епизоотиологија и животна средина)			1		1	2
13	Економске науке	Теоријска економија (предмет Економика природних ресурса и животне средине)					1	1
редовни професор-РП, ванредни професор:ВП, доцент-Д, Професор струковних студија-ПС, Предавач-П, или друга звања..								

**Table 9.4** List of assistants



Матични број	Презиме, средње слово и име	Звање	Датум избора	ЧСП	ЧСПП	ЧДВУ	УЧАН	% радног времена у установи	Допунски рад (%) или рад по уговору	НДВУ
3007983775069	Петровић-Јовичић П. Јелена	АС	02.06.2011.	0.75	12.70	0	12.70	100	0	
1710978795022	Пећинар М. Илинка	АС	11.04.2012.	0.5	11.41	0	11.41	100	0	
1306986710154	Кузмановић С. Немања	ИС	7.12.2012.	0.5	0.50	0	0.50	100	0	
Укупно часова активне наставе коју држе сарадници = 1,75										
Укупно сарадника са пуним радним временом у установи који изводе наставу на студијском програму =3										

### Standard 10. Teaching and learning infrastructure

22 teachers are included in this programme. All of them have a suitable working place. For teaching are used 1 amphitheater, 4 class-rooms, 7 laboratories, 1 microscopy laboratory, 1 reading room, 1 computer room. Bruto working space 1.345 m<sup>2</sup>, or 684 m<sup>2</sup> net. Teaching is in 2 shifts and what satisfies need of 312 students of the undergraduate studies and 32 students of this study programme. They have more than 4 m<sup>2</sup> space each. In addition to that students have school estate and library as well as learning platform «Moodle». Library has all teaching material: textbooks, scripts, monographs.

Faculty has positive financial results in the period longer than 3 years and the financial plan during the study programme.

Anex10.2. Proof on possessing the information technologies, no of internet accessions, etc.

Table 10.1. List of rooms available for the study programme

Укупна бруто површина у установи			1.345 m <sup>2</sup>		
R.b.	просторија	broj mesta	Površina m <sup>2</sup>	Навести адресу на којој се налази просторија	
		oznaka			
	Amfiteatri	24/Priz.	58	85	Немањина 6, Zemun

	Slušaonice				
	Učionice				
	Vežbaonice	229/230/II	28	105	
		041/Sut.	50	88	
		205/II	40	65	
		17/Priz.	30	50	
	Kompjuterske laboratorije				
	Laboratorije	32/Priz.	28	52	
		29/Priz.	20	40	
		29A/Priz.	10	27	
		045/Priz.	10	28	
		043/Sut.	15	59	
		032/Sut.	5	10	
		ББ/II	10	20	
	Radionice				
	Biblioteke	20/Priz.	20	25	
	Čitaonice				
	Sale				
	Klijalište	039/Sut.	-	10	
	Mikroskopska laboratorija	012/Sut.	-	10	
	Nastavnički kabineti		-	661	
	Ukupan broj mesta		324		
	Ukupna neto površina			684	

Table 10.2. List of equipment necessary for running the programme

	Oprema	tip	Namena	broj
1.	Server HP ML350T05		nastava	4
2.	Ethernet Switch Allied Telesis AT-8000S/48-50		nastava	1
3.	PC HP dx 2420		nastava	45
4.	Laptop računari		nastava	17
5.	Pasivne mrežne komponente		nastava	
6.	Štampač multifunkcionalni		nastava	2
7.	Higromer	Dalmacija	Мерење vlažnosti	2
8.	Пољопривредна kolica		Rad na ogledima	1
9.	Zagrtlač sa gredicom		Za setvu	1

10	Video bim	Filips	Video prezentacije	3
11	Precizna vaga	Zora	Laboratorijska merења	8
12	Sušnica	Sutjeska	Sušење uzoraka	5
13	Termostat	Sutjeska	Laboratorijski rad	2
14.	Klijalište	Sutjeska	Naklјјavanje semena	1
15.	Mikroskop	Laika	Laboratorijski rad	28
16.	Digestor		Laboratorijski rad	2
17.	Kalorimetar	Iskra	Laboratorijska merења	1
18.	Vibrator	Tehnica	Laboratorijski rad	1
19.	Devarot	R 4	Laboratorijski rad	1
20.	Destilacioni aparat	Sutjeska	Destilovanje vode	1
21.	Besprašna komora	Iskra	Laboratorijski rad	1
22.	Grafoskop	Vega	Nastavni rad	3
23.	Peć za žагење	Iskra	Laboratorijski rad	1
24.	Ph – metar	Jenway	Određivanje kiselosti	3
25.	Sistem za navodњavanje	T–tape	Praktična nastava	2
25.	Makaze električne	Stihl	Praktični rad	1
27.	Kamera digitalna	Sony	Terenski rad	7
28.	Fotoaparat	Canon	Terenski rad	3
29.	Frižider	Obodin	Laboratorijski rad	2
30.	Sistem kap po kap	T–tape	Praktična nastava	1
31.	Lux–metar	Plum 4	Merење svetlosti	1
32.	Apar. za merење prijema svetlosti	Sun scan	Terenski rad	1
33.	Aparat za merење površine lista	Cid–inc	Praktična nastava	1
34.	Centrifuga	Tehnica	Laboratorijski rad	1
35.	Sterilizator	Sutjeska	Laboratorijski rad	1
36.	Vlagomer	Sutjeska	Terenski rad	1
37.	Vodeno kupatilo	Sutjeska	Laboratorijski rad	1
38.	Mlin za mlevenje	Borac	Laboratorijski rad	1

Table 10.3. List of relevant units in the library

	Наслов	Аутор	Издавач	Година
1.	Agricultural Systems: Agroecology and Rural Innovation for Development	Snapp Sieglinde, Pound Barry	Academic Press	2008
2.	Agroecological Economics: Sustainability and Biodiversity	Wojtkowski Paul	Elsevier, Imprint: Academic Press	2007
3.	Multi-Scale Integrated Analysis of Agroecosystems	Giampietro Mario	CRC Press	2003
4.	The Agri-Environment	John Warren, Clare Lawson, Kenneth Belcher	Cambridge University Press	2008
5.	Crop Ecology. Productivity and Management in Agricultural Systems	Loomis R. S., Connor D. J.	Cambridge University Press	1992
6.	Environmental Impact Assessment. Cutting Edge for the 21st Century	Gilpin Alan	Cambridge University Press	1994
7.	The Conversion to Sustainable Agriculture: Principles, Processes,	Gliessman S. R., Swezey S. L.,	CRC Press	2009

	and Practices.	Rosemeyer Martha		
8.	Field Crop Ecosystems	Pearson C.J.	Imprint: Elsevier	1992
9.	An Introduction to pollen analysis.	Erdtman G.	Waltham: Chronica Botanica Company	1943
10.	Plants and honey bees: An Introduction to their relationships.	Aston, D., Bucknall, S.	Mytholmroyd: Northern Bee Books.	2004
11.	Nectaries and Nectar	Nicolson, S.W., Nepi, M., Pacini, E.	Dordrecht, Springer	2007
12.	Plant Ecology	Schulze, E.D., Beck, E., Müller-Hohenstein	Berlin: Springetr.	2005
13.	Ecological Toxicity Testing: Scale Complexity and Relevance	Cairns, John, Niederlehner, B.R.	Boca Raton, CRC Press	1995
14.	Ecotoxicology, a Comprehensive Treatment	Newman, C. Michael, William H. Clements	Boca Raton, CRC Press	2008
15.	Fundamentals of Ecotoxicology ,	Newman, C. Michael	Boca Raton, Lewis Publishers	2003
16.	Handbook of Ecotoxicology	Calow, P. Peter	London, Blackwell Science	1994
17.	Introduction to Ecotoxicology	Connel, W. Des, Paul L. Richardson, Rudolf W.U.	Oxford, Blackwell Science Ltd	2005
18.	Modern soil microbiology	CJan Dirk van Elsas, Janet K. Jansson, Jack T. Trevors,	RC Press, Taylor & Francis Group	2007
19.	Enviromental microbiology, 2nd edition,	Ian L. Pepper and Charles P. Gerba	ELSEVIER Academic Press	2004
20.	Fungi in bioremediation	G. M. Gadd	Cambridge University Press	2001
21.	Environmental bioremediation technologies	Shree N. Singh and Rudra D. Tripathi	Springer-VerlagBerlin Heidelberg	2007
22.	Microbiology of fruits and vegetables	Gerald M. Sapers, James R. Gorny and Ahmed E. Yousef	CRC Press Taylor & Francis Group	2006
23.	Principles and applications of soil microbiology, 2nd edition	David M. Sylvia, Jeffry J. Fuhrmann, Peter G. Hartel, David A. Zuberer	Pearson Prentice Hall	2005
24.	Microbial Ecology An Evolutionary Approach	J.Vaun McArthur	Elsevier	2006
25.	Soil microbiology, ecology, and Biochemistry	Eldor A. Paul	ELSEVIER Academic Press	2007
26.	Biology of microorganisms, 8th edition	Thomas D. Brock	Prentice-Hall, Inc. Simon & Schuster	1997
27.	Microbiology, 4th edition	Lansing M. Prescott, John P. Harley, Donald A. Klein	McGraw-Hill	1999
28.	Handbook of Microbial Biofertilizers	M. K. Rai	Food Products Press	2005
29.	Ecological Management of Agricultural Weeds	Liebeman M., C. Mohler, C. Staver	Cambridge Uneversity Press	2001
30.	Pesticides Health, Safety and the Environment	Matthews G. A.	Oxford Uneversity Press	2006
31.	A Dictionary of Ecology	Allaby M.	Oxford University Press	2006

32.	Environmental Law	Kubasek, Silverman		2008
33.	Essentials of Environmental Law	Simonsen		2007
34.	Structure and organic matter storage in agricultural soils	Carter M., B. Stewart	Lewis Publishers	1996
35.	Recent Developments in Ecological Economics, Vol. I i II	Joan Martinez-Alier and Inge Ropke (eds.)	Edward Elgar, An Elgar Reference Collection, Cheltenham UK and Northampton MA, USA	2008
36.	Grassland Ecosystems of the World: Analysis of Grasslands and their Uses.	Coupland, R.T. (ed.)	Cambridge University Press	1979
37.	Agronomy of Grassland Systems (second edition).	Pearson, C.J., Ison, R.L.	Cambridge University Press	1997
38.	Grasslands: Ecology, Management and Restoration.	Schröder, H.G. (ed.).	Nova Science Publishers, Inc., New York.	2008
39.	Systematic Botany	Bhattacharyya, B.	Alpha Science International Ltd., Harrow, UK.	2005
40.	Biodiversity: An Introduction (second edition).	Gaston, K.J., Spicer, J.I.	Blackwell Publishing, Oxford, UK.	2004
41.	Textbook of Biodiversity..	Krishnamurthi, K.V.	Science Publishers, Inc., Enfield, NH, USA	2003
42.	Grassland Biomes.	Woodward, S.L.	Greenwood Press, Westport, Connecticut, London.	2008
43.	Systematic Botany of Flowering Plants.	Spichiger, R-E., Savolainen, V., Figeat, M., Jeanmonod, D.	Science Publishers, Inc., Enfield, NH, USA, Plymouth, UK.	2004
44.	Agriculture and Soil Pollution: New Research	James V. Livingston	Nova Science Pub Inc	2006
45.	Soil pollution & Soil Protection	M I Visser-Reyneveld	Purdue University Press	2002
46.	Phytoremediation and Rhizoremediation: Theoretical Background (Focus on Biotechnology)	Martina Mackova; David Dowling; Tomas Macek (Editors)	Springer	2006
47.	Soil Pollution: Processes and Dynamics	Bruno Yaron, Raoul Calvet , Rene Prost	Springer	1996
48.	A Manual on Methods for the Assessment of Secondary Productivity in Fresh Waters. IBP Handbook No 17	Edmundson W. T.,G. G. Winberg	Blackwell Scientific Publications, Oxford and Edinburgh	1971
49.	Biological Monitoring of Aquatic Systems	Stanford L. L., Spacie	CRC-Press	1994
50.	Екологија загађених средина, биоиндикатори и мониторинг систем,..	Џвијан М.	Биолошки факултет, Београд	2000
51.	ICES Zooplankton Manual	Harris R., Wiebe P.H., Lenz, J., Skjoldal, H-R., Huntley, M	Elsevier Academic Press	2006
52.	Monitoring Ecological Change	Spellerberg Ian F.	Cambridge University	2005

			Press	
53.	Plankton: A Guide to their Ecology and Monitoring for Water Quality	Suthers, I. M., Rissik, D	CSIRO Publishing	2009
54.	Rotifera Collection at The Academy of Natural Sciences: The Whole Collection in Digital Images	Myers, F.J.	Diane Publishing Co.	2003
55.	System of Water Quality from the Biological Point of View (Limnology Report)	Sladacek, V.	Lubrecht & Cramer Ltd	1973
56.	Water and the Environment.	Gowing, J. W.	Taylor & Francis	2007
57.	Water Pollution Biology	Abel, P. D.	Taylor & Francis Ltd.	1996
58.	Water Pollution: Bioindicator, Sewage treatment, Industrial wastewater treatment, Agricultural wastewater treatment, Urban runoff, Clean Water Act	McBrewster, J., Miller, F. P., Vandome A. F.	Alphascript Publishing	2009
59.	Water Quality Assessments: A guide to the use of biota, sediments and water in environmental monitoring	Chapman, D.	Taylor & Francis	1996
60.	Зоолошки приручник	Полексић, В., Дулић З., Живић И., Рашковић, Б.	Пољопривредни факултет. Београд	2007
61.	Precision Agriculture	Brase, A.T.	Thomson Delmar Learning	2006
62.	Integrated Geospatial Technologies: A Guide to GPS, GIS, and Data Logging	Jeff Thurston, Thomas K. Poiker, J. Patrick Moore	John Wiley and Sons, Ltd	2003
63.	Intelligent Positioning: GIS-GPS Unification	George Taylor, Geoff Blewitt	John Wiley and Sons, Ltd	2006
64.	Geographic Information Systems: An Introduction	Bernhardsen, T	John Wiley and Sons, Ltd	2002
65.	GIS u gazdovanju prirodnim resursima.	Lojo, A., Ponjavić, M.	Gauss d.o.o. Tuzla. Bosna i Hercegovina.	2004
66.	Геоматски техники во земјоделството.	Чукалиев, О., Вукелић Шутоска, Марија, Арнаудова, Жулиета, Иванов, И	Медиана д.о.о. Скопје. Македонија.	2005
67.	Geographic Information Systems and Science.	Longley, A.P., Goodchild, F.M., Maguire, J.D., Rhind, W.D.	John Wiley and Sons, Ltd. Chichester, England.	2001
68.	Handbook of Precision Agriculture: Principles And Applications	Ancha Srinivasan	The Haworth Press Inc., New York	2007
69.	Introduction to Geographic Information Systems	Kang-tsung Chang	McGraw-Hill Companies Inc.	2010
70.	The Design and Implementation of Geographic Information Systems	Harmon, John E., Anderson, Steven J	John Wiley and Sons Inc	2003
71.	GPS Quick Course; Technology, Systems and Operation	Lawrence Harte, Ben Levitan	Althos	2007
72.	GIS - a Short Introduction	Schuurman, Nadine	Blackwell Publishers	2008
73.	Precision Farming	Sharma, Premjit	Gene - Tech Books	2007
74.	Introduction to GPS The Global Positioning System	El-Rabbany, Ahmed	Artech House	2006
75.	Geographic Information Analysis	O'Sullivan, D., Unwin,	John Wiley and Sons	2003

		David J.	Ltd	
76.	Geographical Information Systems: Principles, Techniques, Management and Applications	Paul A. Longley, Michael F. Goodchild, David J. Maguire	John Wiley & Sons	2005
77.	World Agriculture and the Environment.	Clay Jason	Island Press	2004
78.	Ecological Management of Agricultural Weeds.	Liebman Mat, Mohler Charles, Staver Charles	Cambridge University Press	2001
79.	Ecology of Weeds and Invasive Plants. Relationship to agriculture and natural resource management	Radosevich Steven, Holt Jodie, Ghersa Claudio	John Wiley & Sons Inc.	2007
80.	The Grape Grower: A Guide to Organic Viticulture	Rombough, Lon	White River Junction: Cheisea Green Publishing	2002
81.	Sunlight into Wine. A handbook for Wine grape Canopy Management	Smart, R, Robinson, M.	Winetitles PTY Ltd.	2008
82.	Grape Varieties	Galet, Pierre	Catherine Montalbetti	2002
83.	Précis de Viticulture	Galet, Pierre	Acheve d'imprimer sur les press	2000
84.	Precision Viticulture – A new era in vineyard management and wine production	Proffitt Tony, Bramlay Rob, Lamb David, Winter Erika	Winetitles Pty Ltd	2006
85.	Temperate Crop Breeding Germplasm to Genomics	Hancock, James	Springer	2008
86.	Soils for Fine Wines	White, Robert	Oxford University Press	2003
87.	Wine Grape Production Guide for Eastern North America	Wolf, Tony	NRAES	2008
88.	Winter Injury to Grapevines and Methods of Protection	Zabadal, T., Dami, Goffinet, M., Martison, T., Chein, M.	Extension Bulletin E2930	2007
89.	Ecological Infrastructures. Ideabook on Functional Biodiversity at the Farm Level	Boller, F., Fritz, H., Poehling, H.M.	LBL, CH-8315 Lindau, Switzerland	2004
90.	Podizanje višegodišnjih zasada	Vulić, T., Sivčev, B., Aleksić, V., Ruml, M., Urošević, M	Poljoprivredni fakultet, Univerzitet u Beogradu	2004
91.	Organska poljoprivredna proizvodnja	Kovačević, D. Oljača, V.	Poljoprivredni fakultet, Univerzitet u Beogradu	2005
92.	Managing Biodiversity in Agricultural Ecosystems	D. I. Jarvis, C. Padoch, H. D. Cooper	Columbia University Press	2007
93.	Environmental Management of Concentrated Animal Feeding Operations (CAFOs)	Frank R. Spellman, Nancy E. Whiting	CRC;	2007
94.	Resource Allocation Theory Applied to Farm Animal Production	W Rauw	CABI	2008
95.	Ammonia emissions in agriculture	Gert-Jan Monteny and Eberhard Hartung	Wageningen Academic Publishers	2007
96.	Livestock production and society	R. Geers and F. Madec	Wageningen Academic Publishers	2006
97.	Sustainable animal production. The challenges and potential	A. Aland and F. Madec	Wageningen Academic Publishers	2009

	developments for professional farming			
98.	Earthworm Ecology	Edwards, Clive A.	Boca Raton: CRC Press	2004
99.	Natural Enemies of Terrestrial Molluscs	Barker, G	CABI	2004
100.	Freshwater Crayfish Aquaculture in North America, Europe, and Australia	Huner, Jay V.	Haworth Press	1994
101.	Sustainable Freshwater Aquaculture: The Complete Guide from Backyard to Investor	Romanowski, Nick	UNSW Press	2007
102.	Terrestrial Slugs. Biology, ecology and control	South, A	Chapman & Hall	1992
103.	The Earth Moved: On the Remarkable Achievements of Earthworms	Stewart, Amy	Algonquin Books	2004
104.	Crustacean Farming: Ranching and Culture	Wickins, J. F. & Daniel O. L	Blackwell Science	2002
105.	Crayfish	Grimm, P. W. & Boucher, J	Lerner Publications	2000
106.	Small Scale Crayfish Farming for Food and Profit	Wilson, D. R	Atlas Publications	1990
107.	Калифорнијске глисте и производња хумуса	Дугоњић, Б.	Божидар Дугоњић, Загреб	2007
108.	Гајење глиста Лумбрикултура	Митровић, М.	КИЗ „Центар“ Београд	1995
109.	Узгој калифорнијских глиста, производња и примјена хумуса: властита искуства	Мандек, С.	Зелена мрежа алтернативних група З.М.А.Г., Велика Горица	2003
110.	Глисте – хумус	Рајковић, Н. и Минић, Б	Економски биро, Београд	1986
111.	Gajenje puževa	Poleksić, V.	Nolit. Evro. Beograd	2000
112.	Zoološki priručnik	Poleksić, Vesna, Dulić Zorka, Živić Ivana, Rašković, B.	Poljoprivredni fakultet. Beograd	2007

Table 10.4. List of textbooks available to students

Р.Б.	Наслов	Аутор-и	Издавач	Предмет-и
1.	Агроекологија	Ољача, С	Пољопривредни факултет, Земун	Екологија и агроекосистеми
2.	Агроеколошке основе органске пољопривреде. У монографији Органска пољопривредна производња	Ољача, С	Пољопривредни факултет, Земун	Екологија и агроекосистеми
3.	Заштита агроекосистема	Кастори, Р.	Фелтон д.о.о., Нови Сад	Екологија и агроекосистеми
4.	Pilot analysis of global ecosystems: Agroecosystems	Wood, S., Sebastian, K., Scherr, S.J.	IFPRI and World Research Institute, Washington D.C	Екологија и агроекосистеми



5.	Екологија и агроекосистеми	Ољача Снежана	Пољопривредни факултет Земун	Екологија и агроекосистеми
6.	Екофизиолошке основе отпорности кукуруза према суши	Пекић С	Научна књига, Београд	Примењена екофизиологија
7.	Physiological Plant Ecology	Larcher, W.	Springer-Verlag	Примењена екофизиологија
8.	Environmental Physiology of Plants	Fitter, A H., Hay R.K.M.	Academic Press	Примењена екофизиологија
9.	Екологија биљака са основама физиолошке екологије биљака	Стевановић Б., Јанковић, М.	NNK International, Београд	Примењена екофизиологија
10.	Water deficits: plant responses from cell to community	Smith, J.A., Griffiths, H.	Bios	Примењена екофизиологија
11.	Примењена екофизиологија	Марина Мачукановић Јоцић Софија Пекић Quarrie	Пољопривредни факултет WUS Austija	Примењена екофизиологија
12.	Основи токсикологије са елементима екотоксикологије	Виторовић, Ј. С., Милошевић, П.М	Визартис, Београд	Екотоксикологија
13.	Risk Assessment of chemicals, An introduction	Van Leeuwen and Hermens, J.L.M.	Kluwer Academic Publishers	Екотоксикологија
14.	Fundamentals of Aquatic Toxicology, Effects, Environmental Fate, and Risk Assessment	Rand, M.G	Taylor&Francis	Екотоксикологија
15.	Guidelines for testing of chemicals	OECD	OECD, Paris	Екотоксикологија
16.	Екотоксикологија	Весела Каран	Пољопривредни факултет WUS Austija	Екотоксикологија
17.	Микробиологија земљишта	Говедарица, М, Јарак	Универзитет у Новом Саду	Еколошка микробиологија
18.	Soil microbiology, ecology and biochemistry	Paul, E. A.	Academic press Elsevier	Еколошка микробиологија
19.	Microbiology of Fresh Produce	Matthews R. Karl	ASM Press, American Society for Microbiology	Еколошка микробиологија
20.	Environmental microbiology	Varnam, A. H., Evans, M. G.	Manson publishing, London	Еколошка микробиологија
21.	Еколошка микробиологија	Вера Раичевић	Пољопривредни факултет WUS Austija	Еколошка микробиологија
22.	Практикум из микробиологије земљишта са радним листовима	Јовичић-Петровић Ј. и Кљујев И.	Пољопривредни факултет Београд	Еколошка микробиологија
23.	Еколошки менаџмент у пољопривреди	Петровић Н	Пољопривредни факултет WUS, Београд	Еколошки менаџмент у пољопривреди
24.	Еколошки менаџмент	Петровић Н.	ФОН, Београд	Еколошки менаџмент у пољопривреди
25.	Environmental Management-Principles and Practice	Barrow C. J		Еколошки менаџмент у пољопривреди
26.	Environmental Science-Earth as a living planet	Botkin D., E. Keller	John Wiley&Sons, Inc	Еколошки менаџмент у пољопривреди
27.	Менаџмент животне средине у	Наташа Петровић	Пољопривредни	Еколошки

	пољопривреди		факултет WUS, Београд	менаџмент у пољопривреди
28.	Економија природних ресурса и животне средине	Пешић Радмило	Пољопривредни факултет, Београд	Економика природних ресурса и животне средине
29.	Recent Developments in Ecological Economics	J.M. Alier and I Ropke	Edward Elgar Publ	Економика природних ресурса и животне средине
30.	Natural Resource and Environmental Economics	Perman, R. Ma, Y. and McGilvray J.	Longman: London and New York	Економика природних ресурса и животне средине
31.	The Economics of the Environment and Natural Resources	Quentin Grafton R., Adamowicz W., Dupont, D., Nelson H., Hill, R.J., Renzetti, S.	Blackwell Publ	Економика природних ресурса и животне средине
32.	Економика животне средине и природних ресурса	Радмило Пешић	Пољопривредни факултет, Београд и Завод за уџбенике, Београд	Економика природних ресурса и животне средине
33.	Биодиверзитет Југославије са прегледом врста од међународног значаја	Група аутора	Еколибри и Биолошки факултет, Београд	Биодиверзитет и природни биљни ресурси у пољопривреди
34.	Ливаде и пашњаци Србије	Којић, М., Мрфат-Вукелић, С., Дајић, З., Борђевић-Милошевић, С.	Институт за истраживања у пољопривреди "Србија" Београд	Биодиверзитет и природни биљни ресурси у пољопривреди
35.	Екологија биљака	Стевановић, Б., Јанковић, М.	ННК Интернационал	Биодиверзитет и природни биљни ресурси у пољопривреди
36.	Биодиверзитет и природни биљни ресурси у пољопривреди	Зора Дајић Стевановић	Пољопривредни факултет WUS, Београд	Биодиверзитет и природни биљни ресурси у пољопривреди
37.	Заштита земљишта од деградације	Секулић, П., Кастори, Р., Хаџић, В.	Научни институт за ратарство и повртарство, Нови Сад	Загађење земљишта и ремедијација
38.	Soil Pollution: Origin, Monitoring and Remediation	Mirsal, I.A.	Springer	Загађење земљишта и ремедијација
39.	Soil Pollution and Soil Protection	De Haan, F.A.M. and Visser – Reyneveld, M.I.	PHLO Wageningen Agricultural University	Загађење земљишта и ремедијација
40.	Trace elements in the rhizosphere	Gobran, G.R., Wenzel, W.W., Lombi, E.	CRC Press, Boca Raton	Загађење земљишта и ремедијација
41.	Phytoremediation of contaminated soil and water	Terry, N. and Banuelos, G.	CRC Press, Boca Raton	Загађење земљишта и ремедијација
42.	Загађење земљишта и ремедијација	Светлана Антић Младеновић	Пољопривредни факултет WUS, Београд	Загађење земљишта и ремедијација
43.	Екологија загађених средина, биоиндикатори и мониторинг	Цвијан, М.	Биолошки факултет, Београд	Акватична екологија и

	СИСТЕМ			МОНИТОРИНГ
44.	Monitoring water quality using zooplankton organisms as bioindicators at the Dubica fish farm	Дулић, З., Митровић- Тутунџић, В., Марковић, З., Живић, И.	Arch. Biol. Sci., Belgrade	Акватична екологија и мониторинг
45.	Monitoring Ecological Change	Spellerberg Ian F.	Cambridge University Press. Cambridge	Акватична екологија и мониторинг
46.	Зоолошки приручник	Полексић, Весна, Дулић Зорка, Живић Ивана, Рашковић, Б.	Пољопривредни факултет. Београд	Акватична екологија и мониторинг
47.	Water Quality Assessment: A guide to the use of biota, sediments and water in environmental monitoring.	Чарман, D.	Taylor and Francis	Акватична екологија и мониторинг
48.	Загађење воде и ремедијација	Зорка Дулић	Пољопривредни факултет WUS, Београд	Акватична екологија и мониторинг
49.	GIS Applications in Agriculture	Pierce, F.J., Clay, D.	CRC Press. Taylor and Francis Group. Boca Raton, USA	ГИС и прецизна пољопривреда
50.	Precision Agriculture	Brase, A.T.	Thomson Delmar Learning, Clifton Park New York, USA	ГИС и прецизна пољопривреда
51.	Principles of Geographical Information Systems	Burrough, A.P., McDonnel, A.R.	Oxford University Press Inc., New York. USA	ГИС и прецизна пољопривреда
52.	An Introduction to Geographical Information Systems	Heywood, I., Cornelius, Sarah, Carver, S.	Pearson Education Limited, Essex, England	ГИС и прецизна пољопривреда
53.	Geographic Information Systems and Science	Longley, A.P., Goodchild, F.M., Maguire, J.D., Rhind, W.D.	John Wiley and Sons, Ltd. Chichester, England	ГИС и прецизна пољопривреда
54.	ГИС у газдовању природним ресурсима	Лојо, А., Поњавић, М.	Гаусс д.о.о. Тузла. Босна и Херцеговина	ГИС и прецизна пољопривреда
55.	Геоматски техники во земјоделството	Чукалиев, О., Вукелић Шутоска, Марија, Арнаудова, Жулиета, Иванов, И.	Медиана д.о.о. Скопје. Македонија	ГИС и прецизна пољопривреда
56.	Getting to Know ArcGIS desktop	Ormsby, T., Napoleon, E., Burke, R., Groess, Carolyn, Feaster, Laura	ESRI Press. Redlands	ГИС и прецизна пољопривреда
57.	ГИС и прецизна пољопривреда	Горан Тописировић	Пољопривредни факултет WUS, Београд	ГИС и прецизна пољопривреда

58.	Заштита поврћа од болести, штеточина и корова	Мијатовић М., Обрадовић А., Ивановић М	Агро-Мивас, Смедеревска Паланка	Заштита биља и очување животне средине
59.	Болести воћака и винове лозе и њихово сузбијање	Ивановић, М., Ивановић, Д.	Пољопривредни факултет Универзитета у Београду	Заштита биља и очување животне средине
60.	Основи патологије биљака	Бабовић, М.	Пољопривредни факултет Универзитета у Београду	Заштита биља и очување животне средине
61.	Атлас болести ратарских биљака	Марић, А., Јевтић, Р.	Пољопривредни факултет Нови Сад	Заштита биља и очување животне средине
62.	Коровске биљке	Шинжар, Б., Јањић, В.	Пољокњига, Београд	Заштита биља и очување животне средине
63.	Фитофармација	Јањић, В.	Друштво за заштиту биља Србије	Заштита биља и очување животне средине
64.	Good Plant Protection Practice	EPPO	EPPO Standards PP2	Заштита биља и очување животне средине
65.	Опште ратарство. Уџбеник	Душан Ковачевић	Пољопривредни факултет, Земун	Заштита животне средине у ратарству и повртарству
66.	Органска пољопривредна производња	Душан Ковачевић, Ољача Снежана	Пољопривредни факултет, Земун	Заштита животне средине у ратарству и повртарству
67.	Pollution Processes in Agri- Environment. A New Approach	Lang Istvan, Marton Jolankai, Tamas Komives	Akaprint publishers. Budapest	Заштита животне средине у ратарству и повртарству
68.	General Farming. Field and laboratory investigations	Душан Ковачевић, Долијановић З.	Faculty of Agriculture, University of Belgrade	Заштита животне средине у ратарству и повртарству
69.	Заштита животне средине у ратарству и повртарству	Душан Ковачевић	Пољопривредни факултет, Београд	Заштита животне средине у ратарству и повртарству
70.	Биолошке основе сточарства	Гајић И	Пољопривредни факултет, Београд	Заштита животне средине и биодиверзитета у сточарству
71.	Гајење коза на мини фармама	Богдановић В	Нолит, Београд	Заштита животне средине и биодиверзитета у сточарству
72.	Livestock's long shadow - Environmental issues and options	H. Steinfeld, P. Gerber, T. Wassenaar, V. Castel, M. Rosales, C. de Haan	LEAD FAO, Rome	Заштита животне средине и биодиверзитета у сточарству
73.	Secondary Guidelines for Development of National Farm Animal Genetic Resources	FAO UNEP, Rome	FAO UNEP, Rome	Заштита животне средине и биодиверзитета у

	Management Plans - Management of small populations at risk			сточарству
74.	Заштита животне средине и биодиверзитета у сточарству	Владан Богдановић	Пољопривредни факултет WUS, Београд	Заштита животне средине и биодиверзитета у сточарству
75.	Подизање вишегодишњих засада	Вулић, Т., Бранислава Сивчев, Мирјана Румл, Алексић, В., Урошевић, М.	Пољопривредни факултет, Универзитет у Београду	Заштита животне средине у воћарству и виноградарству
76.	Органска пољопривреда	Снежана Ољача и Ковачевић Д	Пољопривредни факултет, Универзитет у Београду	Заштита животне средине у воћарству и виноградарству
77.	Климатске промене принос и квалитет грожђа	Невена Петровић, Ивана Тосић, Бранислава Сивчев	Пољопривредни факултет, Универзитет у Београду	Заштита животне средине у воћарству и виноградарству
78.	Ecological Infrastructures. Idea book on Functional Biodiversity at the Farm Level Temperate Zones of Europe	Boller, E.F., Fritz, H., Poehling H.M.	Swiss Centre for Agricultural Extension and Rural Development	Заштита животне средине у воћарству и виноградарству
79.	Organic fruit growing	Lind, K., Lafer, G., Schloffer, K., Innerhofer G., Meister, H.	CABI Publishing, Wallingford, Oxon, UK.	Заштита животне средине у воћарству и виноградарству
80.	Organic fruit production and viticulture, a complete guide.	Cubison, S.	The Crowood Press Ltd, Ramsbury, Marlborough, UK.	Заштита животне средине у воћарству и виноградарству
81.	Insect pest management in agro ecosystems of the future	Altieri M.	Atti Accademia Nazionale Italiana di Entomologia Anno LX 137-144.	Заштита животне средине у воћарству и виноградарству
82.	Заштита животне средине у воћарству и виноградарству	Бранислава Сивчев	Пољопривредни факултет WUS, Београд	Заштита животне средине у воћарству и виноградарству
83.	Гајење пужева	Весна Полексић	Нолит. Београд	Еколошко гајење бескичмењака
84.	Гајење пужева у Србији	Полексић, Весна., Стојнић, Б., Дајић Стевановић, З., Тописировић, Г., Зарић, В., Мишчевић, М	Пољопривредни факултет Универзитета у Београду	Еколошко гајење бескичмењака
85.	Зоолошки приручник	Полексић, Весна, Дулић Зорка, Живић Ивана, Рашковић, Б.	Пољопривредни факултет. Београд	Еколошко гајење бескичмењака
86.	Гајење глиста Лумбрикултура	М. Митровић	КИЗ „Центар“ Београд	Еколошко гајење бескичмењака
87.	Глисте – хумус	Н. Рајковић и Б. Минић	Економски биро Београд	Еколошко гајење бескичмењака
88.	Possibilities of alternative aquaculture in Serbia	Marković, Z., Poleksić, Vesna,	Ichthyologia, Vol. 33, No. 1	Еколошко гајење бескичмењака

		Dulić-Stojanović, Zorka, Ljubić, Biljana		
89.	Интегрално гајење бескичмењака: речног рака, дафнија, глиста и других бескичмењака са рибама – облик еколошке и економичне производње	Полексић, Весна и Дулић Стојановић, З	Пољопривредни факултет. Београд	Еколошко гајење бескичмењака
90.	Гајење пужева у Србији – концепти и прва искуства	Полексић, В., Стојнић, Б., Тописировић, Г.	Biotechnology in Animal Husbandry 20 (5-6). 333-340	Еколошко гајење бескичмењака
91.	Edible snail farming in Serbia: present and future	Полексић, В, Стојнић, Б., Дајић-Стевановић, З., Тописировић, Г., и Зарић, В	Савремена Пољопривреда. 54, 1-2, 42-46	Еколошко гајење бескичмењака
92.	Еколошко гајење бескичмењака	Весна Полексић Бојан Стојнић	Пољопривредни факултет WUS, Београд	Еколошко гајење бескичмењака
93.	Гајење риба	Марковић, З. Митровић Тутунџић В.	Задужбина Андрејевић	Еколошка аквакултура
94.	Рибарство – скрипта	Марковић, З. Митровић Тутунџић В.	Пољопривредни факултет. Београд	Еколошка аквакултура
95.	Рибарство	Треер Т, Сафнер Р., Аничич И., Ловринов М	Накладни завод, Глобус, Загреб	Еколошка аквакултура
96.	Monitoring Ecological Change	Spellerberg, I.	Cambridge University Press	Еколошка аквакултура
97.	Aquaculture Science E2	Parker R O, Parker РН	Thomson Delmar Learning	Еколошка аквакултура
98.	Pollution and Freshwater Fish	Lloyd, R.	Blackwell Scientific Publications Ltd.	Еколошка аквакултура
99.	Standard methods for the examination of water and wastewater	Greenberg, A. et al.	American Public Health Association, Washington, D.C	Еколошка аквакултура
100.	Хемија и Микробиологија вода – практикум	М. Јаковљевић, С. Благојевић, Вера Раичевић	Пољопривредни факултет, Београд – Земун.	Третман отпадних вода
101.	Хемија и Микробиологија вода – универзитетски уџбеник	М. Јаковљевић, С.Благојевић, Вера Раичевић	Пољопривредни факултет, Београд – Земун.	Третман отпадних вода
102.	Wastewater engineering. Treatment and reuse	Tchobanoglous, G., Burton, F.L., Stensel, H.D	McGraw Hill	Третман отпадних вода
103.	Зоохигијена	Христов С.	Пољопривредни факултет, Универзитета у Београду	Епизоотиологија и животна средина
104.	The control of neglected zoonotic diseases. A route for poverty alleviation.	WHO	Report of a joint WHO/DFID-AHP meeting with the participation of FAO	Епизоотиологија и животна средина

			and OIE	
105.	Hazard characterization for pathogens in food and water. In: Microbiological Risk Assessment Series No. 3.	FAO/WHO.	Food and Agriculture Organization of the United Nations and World Health Organization; Rome	Епизоотиологија и животна средина
106.	Општа епизоотиологија	Валчић М.	Univerzitet u Београду, Факултет Ветеринарске Медицине.	Епизоотиологија и животна средина
107.	Специјална епизоотиологија	Валчић М.	Ветеринарска Комора Србије, Београд	Епизоотиологија и животна средина
Ови подаци треба да буду у складу са подацима који су наведени у Књизи предмета Подаци који се наводе у овој табели могу бити приказани и на други начин, у зависности од специфичности студијског програма. Установа може и на други начин документовати да испуњава стандард.				

Table10.5. Coverage of the subjects by various sources of literature

Subject	Textbook written by teacher	Textbook by other author	Practicals	Foreign books	Other literature
Applied ecophysiology	+	+		+	+
Ecotoxicology	+	+		+	+
Microbial Ecology	+	+		+	+
Environmental management in agriculture	+	+	+	+	+
Environmental and natural resource economics	+			+	+
Applied ecophysiology	+	+		+	+
Plant protection and environment	+	+		+	+
Environmental protection in field crop and vegetable production	+	+		+	+
Environmental protection and biodiversity in animal production	+	+		+	+
Environmental fruit growing and viticulture	+	+		+	+
Biodiversity and natural plant resources in agriculture	+	+		+	+
Soil pollution and remediation	+			+	+
Aquatic ecology and monitoring	+	+			+
GIS and precision farming	+	+			+
Ecological farming of non domestic animals	+	+			+

Ecological aquaculture	+	+		+	+
Wastewater treatment	+	+	+	+	+
Environmental epizootiology	+	+		+	+

### Standard 11. Quality control

Faculty has strategy for quality assurance and assesment for all aspects of its work: teaching, science and management. The document is publicaly available. Faculty has a Comission for quality assurance which works in 4 groups.

Quality control will be realized regularly by external evaluation (every 5 years) and by selfassesment (every 3 years). Commision for Quality assurance is in charge of these proceses. Students are also involved in these activities. At the end of every term students evaluate teaching process as well as examination procedureds. Students are also involved in the process of permanent improvement of teaching, development of evaluation methods etc.

Evidence: Anex 11.1. Report on self-evaluation of the study program, Anex 11.2. Rules on quality assurance; Anex11.3. Rules on textbook; Anex 11.4. Part of the Statute regulating quality assurance

Table 11.1. List of the members of Comission for quality assurance

	Name and surname	Title
1.	Slavča Hristov, chairman	Full professor
2.	Snežana Oljača	Full professor
3.	Dragoljub Žunić	Full professor
4.	Zoran Popović	Full professor
5.	Vladimir Pavlović	Full professor
6.	Dušan Radivojević	Full professor
7.	Radojka Maletić	Full professor
8.	Radmila Stikić	Full professor
9.	Nevenka Đurović	Associate professor
10.	Goran Delibašić	Associate professor
11.	Mališa Antić	Associate professor
12.	Slavica Dučić	Head of the student office
13.	Bogdan Mladenović	Faculty secretary
14.	Aleksandar Krstić	Student
15.	Vladimir Pršić	Student
16.	Jelena Radovanović	Student
17.	Strahinja Lazarević	Student



## **SELF ASSESSMENT REPORT ON STUDY PROGRAM**

### **Fulfilment of standards**

Standards related to the study program structure, aims, objectives, student competences are fully fulfilled. All aspects of standards related to curriculum (list of subjects, no of ECTS, number of contact hours, subject content, teachers competences, teachers work load) are fulfilled and completed. Detailed specification of all subjects (aims, content, teaching and examination methods, pre-exam activities) are given in the Book of subjects. Standard describing quality, contemporariness and similarity with other international study programs was tested by comparing this study programme with similar programmes in Europe. As benchmarks are used faculties for Universities in Hohenheim, Zagreb and Maribor. Comparative analysis shows similarities up to 70% in the type subjects, number of subjects, its content and ratio of elective and compulsory modules.

Standard related to the student entry is very detailed. Number of students for the year 2014/15 is adjusted with the study programme – 32. Student examination and progress is described in details in standard 8. Fulfilling this standard requires active role of both teachers and students. Teachers fulfill the necessary standard by their expertise, total engagement and their promotion. All teachers fulfill criteria for teaching in the master program with adequate scientific contributions. Book of teachers is completed.

Working space for this study program fulfills the required standards – 4 m<sup>2</sup> per student. It is equipped with the adequate teaching equipment. New equipment was purchased for applying electronic learning platform Moodle. Library is full of relevant textbooks, scripts, monographs relevant to the subjects topics.

### **Strengths and opportunities for the success of this program**

This study program has been created due to the need for experts in environmental protection in the most important sectors of the economy in Serbian agriculture. Today, when new modern technologies are introduced in agricultural production, the needs of the market for safe food is increasing. All this requires sophisticated system of pollution monitoring and prevention and, consequently, need for specialised experts in this area. Labour market analysis has shown that this study program is needed and that competences stated are relevant.

Quality assurance and assessment are well defined. Elective subjects provide student with possibilities to select according to their affinities. Master studies are multidisciplinary and enable student mobility. It also enables students from other faculties to enroll.

Possibility of successful realization of the study program is reflected in the availability in space, equipment of class rooms and laboratories and excellent literature. Teachers have, also provided scripts and text books for this program. Teachers are competent and enthusiastic to improve their teaching and examination methods. They are available to students for consultations.

Structure of the program enables students to gradually enter the problem of natural resources and their protection by series of compulsory subject and also to specialize their protection in the particular area of agriculture (field crop and vegetable production, fruit production and viticulture, animal husbandry, aquaculture and plant protection) by selecting particular elective subjects.

This level of multidisciplinary will induce the increase of the student interest and motivation for enrolling this program what is in line with the requirements of the labor market to produce experts of the certain qualifications who will be quickly employed or be able to self-employ. This is strengthened by carefully planned practical work coupled with expertise gained during preparation of diploma work. During study program contacts of students with companies, governmental and non-governmental organisations are made to get practical expertise in the type of problems they will face once they get the job. In previous period students are shown big interest for enrolment on this study program that can be seen in table 7.1. Structure of enrolled students was very various and over half of them finished some of other faculties. For the successful learning students have library, computer center with new software packages, 2 computer class-rooms and e-learning platform. Library has relevant domestic and international literature. Faculty services are helpful for students. Time table is made to enable regular attendance to lectures and rational use of their time. All relevant informations related to this study programme students can get at the faculty web-site.

### **Weaknesses and threats for the successful realisation of the study programme**

Risk of not being able to run the programme according to the standards for accreditation is in the student mobility that can be prevented due to the unfavourable economic circumstances. There is also a risk regarding skills that students have to achieve during their practical work in case of not selecting good company etc.

If the present arrangement for financing this program changes, there is risk for achieving certain number of students since none of the master students have governmental stipends. In addition to the very good library, new literature is a permanent need of this program.