
	<p align="center"> <b>University of Novi Sad</b>  <b>Faculty of Agriculture</b>  21000 Novi Sad, Trg D. Obradovića 8  Tel: 021/485-3219; Fax: 021/459-761;  Email: <a href="mailto:nastava@polj.uns.ac.rs">nastava@polj.uns.ac.rs</a>; <a href="http://polj.uns.ac.rs">http://polj.uns.ac.rs</a> </p>		
	<p align="center"><b>Accreditation of the programme of study</b></p>		
	DOCTORAL STUDIES	AGRONOMY	

**ACCREDITATION DOCUMENTATION FOR THE DOCTORAL STUDY PROGRAMME**

**AGRONOMY**

Novi Sad, March 2013

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## INTRODUCTION

**Institution: Faculty of Agriculture, University of Novi Sad**

**Address: Trg D. Obradovića 8, Novi Sad**

**Web address: <http://polj.uns.ac.rs>**

<b>Arts and Sciences</b>				
Natural sciences	Social sciences	Medical sciences	<b><u>Technical and technological sciences</u></b>	Arts

<b>Number of students</b>		
	<b>Completed studies</b>	<b>Estimated number</b>
Undergraduate academic studies (Bachelor's)	8653	2900
Graduate academic studies (Master's)	259	273
Specialist academic studies	110	-
Magister's studies	903	-
Doctoral studies	700	99
<b>Total number of students</b>	<b>10625</b>	<b>3272</b>

<b>Teaching staff holding academic teaching ranks</b>	Lecturers	Assistant Professors	Associate Professors	Professors
Full-time employment	2	43	24	75
Part-time employment		3	2	2
<b>Total number</b>	2	46	26	77
<b>Teaching staff holding academic research ranks</b>	Teaching Fellows	Assistant Research Professor	Associate Research Professor	Research Professor
Full-time employment	44			
Part-time employment		4	2	
<b>Total number</b>	44	4	2	
<b>Total number of teaching staff</b>	46	50	28	77

<b>Facilities, Library</b>	
Facilities – Total work space available to doctoral students	24.660 m <sup>2</sup>
Total number of library items from the field studied at the doctoral studies	In total 51,471 items, 562 items in particular for this study programme and 127 in the students' library.
Total number of personal computers available to doctoral students (Appendix: Statement of the Number of Personal Computers)	524

<b>Title of the programme of study</b>	<b>Agronomy</b>
<b>Institution(s) participating in the administration of a joint study programme (if more than one institution participates)</b>	-
<b>Higher education institution administering the study programme</b>	Faculty of Agriculture, University of Novi Sad
<b>Arts and Sciences</b>	Technical and technological sciences
<b>Field of Arts or Sciences</b>	Biotechnology
<b>ECTS value of the study programme</b>	180
<b>Degree title</b>	Ph.D. in Biotechnology
<b>Duration of the studies</b>	3 academic years, or 6 semesters
<b>Initial year of the study programme</b>	2013/2014
<b>Administration year of the study programme (if the programme is new)</b>	2013/2014
<b>Number of students studying according to the study programme</b>	-
<b>Estimated number of the enrolled students within the study programme</b>	18+17=35
<b>Acceptance date of the study programme by an authorized body (State which)</b>	<b>21<sup>st</sup> February 2013</b> Council of the Faculty of Agriculture in Novi Sad <b>28<sup>th</sup> March 2013</b> Council of the University of Novi Sad
<b>Language(s) of instruction/examination within the study programme</b>	Serbian
<b>Accreditation year of the study programme</b>	2013
<b>Web address with the data on the study programme</b>	<a href="http://polj.uns.ac.rs">http://polj.uns.ac.rs</a>

**Special standard: Competence of a higher education institution to administer doctoral studies**

A higher education institution demonstrates its competence to administer doctoral studies on the basis of scientific and research indicators.

Description (maximum 100 words)

Faculty of Agriculture in Novi Sad boasts competent staff (**Table 9.3** Teaching staff competencies) who have proven their competence by publications (**Table 8.1**. List of defended doctoral dissertations...) and successful supervisions of doctoral dissertations (**Table II.7** List of fully-employed teaching staff...; **Table 8.1**. List of defended doctoral dissertations under the auspices of the institution...). Scientific and research work in various fields of natural, biotechnical, medical and social sciences takes place at the Faculty, (**Table II.2** Collective overview of current scientific and research projects at the University) which enables participation of doctoral students in scientific and research work.

The Faculty was accredited for scientific and research work – appended Decision on the Accreditation of the Scientific and Research Organisation (Appendix Table II.2. and II.3).

**Table II.1.** Collective overview of defended doctoral dissertations and publications

**Table II.2.** Collective overview of current scientific and research projects at the University

**Table II.3.** List of current scientific and research projects at the higher education institution

**Table II.4.** List of staff participating in scientific and art research projects at the institution

**Table II.5.** Collective overview of the scientific and research results at the institution during the previous academic year

**Table II.6.** List of national and international institutions in cooperation with the higher education institution

**Table II.7.** List of fully-employed teaching staff who supervised doctoral dissertations

Records:

**Appendix II.1** – Programme of Scientific and Research Work

**Appendix II.2** - Decision on the Accreditation of the Scientific and Research Organisation

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

Doctoral studies are worth at least 180 ECTS credits, in addition to at least 300 ECTS credits obtained at undergraduate and graduate academic studies, i.e. 360 ECTS credits at integrated undergraduate and graduate academic studies in the field of medical sciences. A doctoral dissertation is a final part of the doctoral study programme, with the exception of doctoral study programmes in arts.

Description (maximum 300 words)

Doctoral studies are administered via lectures, scientific and research work.

The study programme offers 2 compulsory and 6 elective subjects to doctoral students (out of 116 elective subjects in total within the study programme).

The total number of classes (hours of active teaching) is 20 per week in each of 6 semesters (120 classes in total), out of which 20 classes account for the theoretical instruction and 70 for the specialist research work pertinent to every subject (Table 5.2)

Students conduct research work during the first semester in order to select a topic of their doctoral dissertation and create an overview of required literature. During the following semesters, students conduct the research necessary for the completion of their doctoral dissertation; they process and analyse the obtained research data, and complete and structure their dissertations. The completion and defence of the dissertation is worth 70 ECTS credits.

Students are required to complete and publish three scientific papers worth in total 15 ECTS credits, one of which should be on the SCI list.

Two compulsory subjects are worth 15 ECTS credits, and every elective 10, which in total amounts to 75 ECTS credits.

The total number of ECTS credits within the study programme is 180.

Every subject is provided with: subject requirements, objectives, outcomes, content, research work, literature, the number of classes, the number of ECTS credits, teaching methods, examination requirements, examination, students' knowledge assessment and the name of the teacher in charge of instruction (Table 5.1).

Records:

**Appendix 1.1** – Publications of the institution – <http://polj.uns.ac.rs/>

**Standard 2. Purpose of the study programme**

The doctoral study programme has a clearly defined and published purpose and role within the educational system.

## Description (maximum 300 word)

The purpose of the doctoral study programme is to enhance the advanced students' knowledge obtained at graduate academic studies (Master's studies), as well as to enable students to master scientific and research methods and procedures in the chosen field via elective subjects and the topic of a doctoral dissertation. Therefore, students will be capable of conducting the individual and high-quality research which would meet the requirements of the society. Students will also be able to appraise the research of their peers and conduct the individual and scientifically relevant research which would enable the development of new and socially beneficial technologies and procedures. Moreover, the study programme contributes to the general development of society and science, since doctoral students will actively participate in projects and research at the Faculty.

The study programme provides competencies which are socially justified, beneficial and necessary.

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

The doctoral study programme has defined objectives.

Description (maximum 300 word)

The objective of the study programme is to educate and prepare students for the scientific and research work in the field of technical and technological sciences. Students should gain the comprehensive knowledge and systematic understanding of the chosen field of research in agriculture.

Students are required to conduct research on a chosen topic which is defined by two compulsory and six elective subjects. A great number of elective subjects (116) enable directions and possibilities for students to complete the research on a chosen topic. Students should learn to utilise contemporary scientific literature in order to determine the knowledge necessary for defending a doctoral dissertation, the topicality of a dissertation and further directions of the research.

Students should learn how to set a scientific hypothesis, plan and conduct research, select adequate methods, and process research results with simultaneous interpretation, scientific and critical analyses, and logical conclusions.

Upon completion of the doctoral study programme, students will become experts with the enhanced knowledge and competencies for scientific and research work, as well as the ability to apply scientific achievements and new technologies in the field of technical and technological sciences, i.e. Biotechnology.



#### **Standard 4: Competencies of graduates**

**Upon the completion of the doctoral study programme, students acquire general and subject-specific skills that contribute to the quality of performing professional, scientific and artistic activities.**

Description (maximum 300 words)

The outcome of attending the doctoral study programme in the scientific field of technical and technological sciences, specifically, the field of Biotechnical Sciences, is formation of professionals with academic qualifications, who will acquire significantly wider and more profound knowledge in the field of Agricultural Production, as an extension of the knowledge and skills acquired on Master studies and/or as a kind of special preparation for research in the given scientific field.

The knowledge gained through this doctoral programme enables application of the knowledge, insights and skills acquired during the doctoral studies for successful resolution of complex problems in new or unfamiliar environments, especially in the scientific field of Agricultural Production.

The acquired knowledge provides an opportunity for students to work in scientific laboratories and at research institutes, centres and faculties from this technical and technological field.

Upon the completion of the studies, the students with this level of education will have the following abilities (skills) and competencies:

- profound understanding of science and profession in the this technical and technological field;
- skills and ability to use modern research methods in this technical and technological field;
- ability to perform independent research of theoretical and practical problems in order to find innovative or improved solutions and their application;
- ability to work in teams and establish professional communication in order to contribute to the development of the science and profession;
- capacity for critical analysis and integration of the knowledge gained at previous levels of education with the purpose of developing new technologies;
- ability to transfer knowledge and ideas to colleagues and to the wider academic community and the society as a whole;
- an opportunity to personally contribute to expanding the limits of knowledge in the scientific fields of Agricultural Production through their original research, especially through the research results obtained in their doctoral dissertation.
- ability to promote technological and social progress in their academic and professional environment.

The acquired competencies of students are verified by publishing scientific papers and by writing and defending their doctoral dissertations.

## Standard 5: Curriculum

**The curriculum contains a list and structure of compulsory and elective courses and modules with their descriptions, as well as a doctoral dissertation as the final part of the study programme of doctoral studies, except for the doctoral degree in arts which is an artistic programme.**

Description (maximum 300 words)

The doctoral studies consist of two compulsory courses, which are of general significance for students' scientific and research work (Methods of Scientific Research and Biostatistics), and 6 elective courses, which are selected by the students. Elective courses are selected in cooperation with a supervisor and depending on the chosen topic for a doctoral dissertation (Table 5.2). The elective courses are from the scientific fields studied at the Faculty, while students have the option to elect one course from any study programme of doctoral studies at the Faculty, and one course from any study programme from other Faculties of the University.

In Tables 5.1 there are specifications of the two compulsory courses and 116 elective courses, out of which students opt for 6 courses. These tables contain the number of hours of active teaching on the weekly basis (lectures and research work), ECTS credits for every course, course content, course objectives and course outcomes, teaching methods, recommended literature, students' obligations, methods of assessment of students' knowledge and the name of the teacher in charge and responsible for teaching.

In Tables 5.1 it can be seen that the content of the courses is modern, dealing with current issues both in our country and in the world. Also, the teaching methods are modern and assessment and grading of students' knowledge is in accordance with the Bologna Convention. Students complete their studies by writing and defending a doctoral dissertation. A doctoral dissertation includes theoretical and methodological preparation necessary for profound understanding of the area of the dissertation, and research conducted using modern methods and equipment.

**Table 5.1** [Specification of the courses in the doctoral study programme](#)

**Table 5.2** Distribution of the courses in semesters or years of study

**Table 5.3** Requirements related to preparation of a doctoral dissertation

**Table 5.4** List of courses at the doctoral studies

Records:

Appendix 5.1 - The Statute

## **Standard 6: Quality, modernity and international compatibility of the study programme**

The study programme follows the global trends as well as scientific and professional developments in the corresponding educational-scientific, i.e. educational-artistic field, and the programme is comparable to similar foreign programmes at institutions of higher education within the European Educational Space.

### Description (maximum 300 words)

In 2006 the Teaching and Scientific Council and the Academic Council of the Faculty of Agriculture, Novi Sad, reached the decision to reform the teaching process agreeable with the European practice, and in accordance with the Bologna Process.

The recommendations of the European Union and the Bologna Process about the continuous assessment of students were also adopted: until the final exam students can earn up to 70 points, while the remaining 30 points can be earned at the final exam to collect the maximum of 100 points, which correspond to the grade ten (10), as defined by the standards of the Serbian Commission for Accreditation.

The Faculty also adopted the principles of credit transfer in order to facilitate the mobility of students in Serbia and Europe.

Finally, it can be concluded that the Faculty has adopted all the principles of the European Union related to improving the quality of the learning and increasing student and staff mobility within the European Space of Higher Education.

This study programme is designed to provide students with the latest scientific and technical knowledge in the field of Biotechnology, in an interdisciplinary, holistic and comprehensive manner.

The programme is consistent with the latest scientific and technical findings, and both formally and structurally comparable to other programmes at Agricultural Faculties of other universities in the region, which are signatories to the Bologna Declaration.

The basic principles of compatibility are reflected in the following:

1. The studies last for 3 years;
2. The courses last for one semester;
3. There is a credit system;
4. There are compulsory and elective courses;
5. There is a large number of elective courses;
6. There is research work (the study programme is very similar to European programmes and it is based on current scientific and research methods and findings in the field of Agricultural Production);
7. The aims and outcomes of studying, as well as the knowledge and skills acquired by students upon the completion of the doctoral studies are clearly defined.

### Records:

**Appendix 6.1** - Three foreign accredited programmes (copies of the programmes or web addresses of the institutions).

**Appendix 6.2** - Proof that the programme complies with European standards.

## Standard 7: Enrolment of students

Higher education institution admits students to the programme of doctoral studies, in accordance with the social needs, requirements for scientific, educational and cultural development and its own resources.

### Description (maximum 300 words)

The studies can be enrolled by candidates who have previously earned at least 300 ECTS credits at the undergraduate academic and graduate academic studies, or integrated studies. The candidates are enrolled also on the basis of achievements during the previous studies and results of testing their knowledge, aptitudes and skills.

Another requirement for admission in the doctoral studies is proficiency in at least one foreign language, assessed by the higher education institution.

The type of knowledge, aspirations and skills tested before enrolment at the doctoral studies, as well as the method of testing, are specified in a Public Call.

The admission of candidates in the first year of the doctoral studies is done on the basis of the Public Call. The decision on making the Public Call is reached by the University Senate, at the proposal of the Teaching and Scientific Council of the Faculty.

In accordance with the requirements specified in the Public Call, the candidates need to submit a biography, together with a list of the courses the candidate has passed, the number of classes (hours of active teaching) at the undergraduate and integrated studies, and the name of a potential supervisor. A Commission in charge of admission of candidates at the doctoral studies verifies if the proposed supervisor consents.

The doctoral studies of the study programme Agronomy can be enrolled by persons who have previously completed the undergraduate academic and graduate academic studies, or integrated studies (minimum 300 ECTS), or postgraduate – Magister’s studies completed at the Faculty of Agriculture, with the average grade during studies at least 8 (eight).

The coordinators of the study programme Agronomy submit to the Teaching and Scientific Council a proposal to establish the Commission which will approve the admission of candidates at the doctoral studies on the basis of the data obtained through the Public Call.

The doctoral studies can be enrolled also by persons who do not meet the above requirements if they pass appropriate examinations in subjects determined by the Rulebook for Doctoral Studies, and in accordance with the Statute of the Faculty, and upon the proposal of the Commission.

Other requirements of enrolment in this doctoral studies are defined by an appropriate act on doctoral studies, in accordance with the Statute of the Faculty.

**Table 7.1** The number of students enrolled in the study programme

Records:

**Appendix 7.1**–Public call for doctoral studies (if they have already commenced)

## **Standard 8: Student Assessment and Progress**

Students are assessed through constant monitoring of their work and on the basis of the points earned by fulfilling examination requirements and by passing exams. The doctoral dissertation is assessed on the basis of the indicators of its scientific or artistic contribution.

### Description (maximum 300 words)

The assessment of students is prescribed in detail for each course, which is presented in Table 5.1.

The assessment of seminar papers, practical work, tests and oral exams is prescribed within each course.

Students gain points during the course by working at the lectures, fulfilling examination requirements and passing the exam. The maximum number of points is 100, which corresponds to the highest mark 10. The percentage of points which students can earn through examination requirements ranges from 50% to 70% whereas the oral exam covers from 30% to 50% of the overall points.

Students gain points during the course by working at the lectures, fulfilling examination requirements and passing the exam. Each course in the study programme has clear and publicly announced rules for earning points.

The student's progress is monitored by all course professors and their associates, but immediately responsible for the student's work and progress is the doctoral supervisor who guides the student in their choice of courses, dissertation topic, scientific paper topics etc.

Students fulfil their duties within the study programme by passing exams, which enables them to gain the prescribed number of ECTS credits.

**Table 8.1** [The list of defended doctoral dissertations at the institution in previous three school years with results which were published or accepted for publishing](#)

Records:

**Appendix 8.1** – [Statute \(segment related to doctoral studies\)](#)

**Appendix 8.2** – [Institution regulations on assessment of doctoral dissertation](#)

## **Standard 9: Teaching staff**

For the purposes of the realization of the doctoral study programme, teaching staff with required scientific competencies is appointed.

### Description (maximum 300 words)

For the purposes of the realization of the doctoral study programme, teaching staff with required professional and scientific qualifications is appointed, which is confirmed by the list of papers and data on participation in national and international scientific research projects, as well as by the list of SCI papers.

This study programme includes 96 teachers fully employed at the Faculty with 100% engagement on teaching duties and 8 teachers with 30% engagement on teaching duties. The teachers' competencies are determined on the basis of scientific papers published in national and international magazines and proceedings from international and national scientific conferences, the number of published monographs, scientific books, textbooks etc. (Tables 9.1, 9.3 and 9.5). Altogether 71 professors and 27 assistant professors are engaged on the study programme. The number of teachers corresponds with the needs of the study programme, thus the number of teachers is sufficient to cover the total number of courses and teaching hours, and is in accordance with the recommended accreditation standards. The number of weekly active engagement hours ranges from 0.048 to 1.463, which is in accordance with the recommendations of accreditation standards.

The scientific and professional qualifications of the teaching staff correspond with the educational field of research and the level of their duties. Each teacher has at least 10 references in their field of research, that is, in the professional field which he teaches within the study programme.

**Table 9.1.** [List of fully employed teachers engaged on realization of doctoral studies](#)

**Table 9.1A.** [List of part-time employed teachers engaged on realization of doctoral studies](#)

**Table 9.2.** [List of teachers involved in scientific research and artistic research projects](#)

**Table 9.3.** [Teaching staff competencies](#)**Eng**

**Table 9.4.** [List of doctoral supervisors in the last three school years](#)

**Table 9.5.** [Doctoral supervisors](#)

Records:

**Appendix 9.1 -** [Criteria for the selection of teachers](#)

**Appendix 9.2 -** [Competent authority decision on appointment of supervisors](#)

## **Standard 10: Organizational and material resources**

For the purposes of realization of the study programme, appropriate human, spatial, technical/technological, library and other resources are provided, adequate for the character of the doctoral study programme and the number of the enrolling students.

Description (maximum 300 words)

For the purposes of realization of the study programme, appropriate human, spatial, technical/technological, library and other resources are provided, appropriate for this doctoral study programme and the number of enrolling students.

For the purposes of this study programme appropriate space for teaching is provided, as well as appropriate laboratory space necessary for experiments and equipment in accordance with modern needs and information technologies.

Teaching at the Faculty is conducted in two working shifts. Students are provided with 3.0 m<sup>2</sup> of space per person.

The Faculty owns appropriate laboratories with full research equipment. In addition, the Faculty owns the Laboratory for testing power machines and tractors, accredited by the international accreditation body for testing in accordance with the OECD rules in Paris, Oct 24 2006, and by the national certification house JUAT, Dec 12 2006 (presented in the appendix together with Special standard).

The Faculty has a library with a huge catalogue of its own and other sources (books, monographs, scientific magazines and other periodicals), consisting of 51471 units altogether. Apart from that, every department has its own library with a special catalogue available to students. Concerning this study programme, the Faculty owns 562 literature units available to students in the library. In addition, the Faculty owns an up-to-date and air-conditioned reading room.

The Faculty has a plan for realization of doctoral studies in the budget for scientific research work.

The Faculty grants students access to its equipment for research work.

**Table 10.1.** [List of equipment used in scientific research work](#)

**Table 10.2.** [Teaching space at doctoral studies and appropriate laboratory space needed for experimental work](#)

Records:

**Appendix 10.1** – [Plan and budget planned for realization of scientific research work](#)

**Appendix 10.2** – [Cooperation contracts with other university institutions and accredited institutes and international organizations](#)

**Appendix 10.3** – [Accessible data bases and library resources](#)

## Standard 11: Quality control

For each study programme the university institution regularly and systematically conducts quality control by means of self-evaluation and external quality review.

Description (maximum 300 words)

All preparations for self-evaluation of the doctoral study programmes have been finalized by the Faculty of Agriculture, including:

- The formation of the Council for accreditation of the Faculty
- The formation of Commission for the Faculty quality;
- The development and adoption of the Quality providing strategy;
- The development and adoption of Regulations on evaluation of studies, pedagogic work of teachers and working conditions
- The adoption of evaluation questionnaires.

Questionnaire 1: Evaluation of teachers and associates by students

Questionnaire 2: Evaluation of teaching, study programme and working conditions by students

Questionnaire 3: Evaluation of study programme by graduate students

Questionnaire 4: Evaluation of study programme by employed graduate students

Questionnaire 5: Evaluation of teaching process, study programmes and working conditions by teaching and non-teaching staff

Questionnaire 6: Evaluation of study programme by possible employers

Questionnaire 7: Evaluation of teaching by teachers and associates after surveying and interviewing students.

The Faculty has finalized all preparations for self-evaluation and external quality review of teaching process at all its study programmes, including the doctoral study programmes.

Regulations on self-evaluation of studies, pedagogic work of teachers and working conditions together with Survey questionnaires (Appendix 11.1) have been adopted.

Student surveys are planned during the studies (anonymously), upon graduation and after a certain period of students' employment. Surveying all employees and the employers of our graduates is also planned.

After processing survey feedback, the analysis of results is planned, as well as interviews with students with the ultimate goal of improving the quality and organization of the teaching process.

Due to the fact that the Faculty has not yet enrolled students on this doctoral study programme, the planned surveys have not been conducted. Only students at undergraduate programmes have been surveyed.

The 12-member commission (Table 11.1), consisting of professors, associates and the student representative, has a task to monitor and control the quality of teaching at doctoral study programmes with the aim of improving its quality.

Publication of at least three scientific papers by every candidate ensures additional quality of teaching at doctoral studies programme.

**Table 11.1.** [List of members in commission for quality control of study programme](#)

Records:



**Appendix 11.1 – [Report on self-evaluation of doctoral study programme](#)**