

STANDARD 1: STUDY PROGRAMME STRUCTURE

The Programme of Doctoral Academic Studies on Pharmaceutical Sciences lasts for a minimum of three years with the total of 1905 active classes (480 of which are lectures) granting 180 ECTS points upon their completion (60 ECTS points per academic year). The programme includes 12 elective domains – modules: Drug Analysis, Bromatology, Cosmetology, Medical Biochemistry, Social Pharmacy and Pharmacy Practice Research, Toxicology, Pharmacokinetics and Clinical Pharmacy, Pharmacognosy, Pharmacology, Pharmaceutical Microbiology, Pharmaceutical Technology and Pharmaceutical Chemistry. All the modules include 3 compulsory, common courses (40 ECTS points). Each module has 2-6 mandatory courses (20-45 ECTS points) and 2-3 blocks of elective courses (10-30 ECTS points). According to the requirements of European Universities, doctoral academic studies are based on research during all the period of three years of study. Preparing the doctoral thesis is planned since the first year of doctoral studies (in total 80 ECTS points). The third year is intended for research work only (10 ECTS points), which is directly related to the doctoral thesis. Within the compulsory courses of the modules, students study the subjects important for given elective domain - module, while within the elective block of courses students choose the courses directly regarded to the topic of doctoral thesis. Teaching is carried out through individual (mentorial) work or in small groups of students. Working methods are adequately adapted to the conception of doctoral studies (consultations, seminars, analysis of papers from original scientific literature, presentation of their own research results). Experimental work is complex and typically includes the applying of many complementary approaches, techniques and methods being realized in collaboration with scientific teams in the country or abroad. The Programme includes an extensive, individual, research work of a student on solving scientific problems resulting in scientific publications in the prominent international journals (two papers from SCI Journal Publication List in relation to the topic of doctoral thesis) in the field of pharmaceutical and related sciences. Once the results are published in the international journals, the PhD candidate submits the doctoral thesis draft.

The PhD candidate may access to public doctoral thesis defence after receiving the positive report from the Committee for Postgraduate Studies – Doctoral Studies as well as the decision of the Academic Council of the Faculty of Pharmacy and the decision of the Academic Council of Faculty Groups of the University of Belgrade.

SUPPLEMENTS AND TABLES

[Supplement 1.1. Faculty of Pharmacy website](#)

STANDARD 2: PURPOSE OF STUDY PROGRAMME

The goal of the Programme of Doctoral Academic Studies on Pharmaceutical Sciences is to prepare students, who fulfilled the requested prerequisites and are prone to research to be capable for systematic understanding of certain areas of pharmaceutical sciences: Drug Analysis and Chemistry, Molecular and Experimental Pharmacy, Pharmacognosy, Pharmacology, Pharmacokinetics, Clinical Pharmacy, Medical Biochemistry, Toxicology, Bromatology, Pharmaceutical Technology, Cosmetology and Social Pharmacy.

Students who successfully complete this study programme are capable to:

- critically analyse available scientific literature
- assess, check and create new and complex ideas
- define the scientific problems
- solve scientific hypothesis by knowing research methods
- prepare and realize individual scientific work
- organise work within the research team in accordance with the highest professional and ethical principles
- adopt research process by keeping the required degree of academic integrity
- prepare and conduct individual research
- take part in interdisciplinary research
- present scientific results at scientific meetings and in scientific journals
- transfer knowledge and ideas within academic community and society in general

It is expected that students who chose this type of postgraduate improvement continue their career at universities, research institutes and other specialized institutions with programmes having a demand for implementation and application of different kind of research activities. This programme should create young scientists and researchers able to lead scientific projects during their professional career, to reach the original discoveries – analytical solutions from pharmaceutical disciplines, to promote teaching in the field of pharmacy by merging research and educational activities and, become competent mentors to students on integrated undergraduate, master and doctoral academic studies.

In a broader sense, the purpose of the Programme of Doctoral Academic Studies on Pharmaceutical Sciences is to promote knowledge, ideas, and scientific-technological progress within academic society and society in general to be obtain the institutional recognition of scientific contribution as a market value, as well as the possibility of internationalization of the studies through different types of cooperation.

STANDARD 3: GOALS OF THE STUDY PROGRAMME

The main goal of the Programme of Doctoral Academic Studies on Pharmaceutical Sciences is to provide the students with the knowledge needed to acquire the systematic understanding of certain fields of pharmaceutical sciences as well as to get diploma recognized and accepted by the European institutions of higher education. The Programme of Doctoral Academic Studies on Pharmaceutical Sciences is conceived to enable students their professional affirmation and to continue their education via postdoctoral studies in the field of pharmaceutical and related scientific disciplines at domestic or foreign European universities. The goals of Doctoral Academic Studies of Pharmaceutical Sciences may be grouped into two categories: scientific-educational and general social goals. Scientific-research work that is conducted within the frames of pharmaceutical sciences is directly related to the solutions directed towards the improvement of human quality of life and health.

Scientific-educational goals:

- gaining knowledge and skills in the specific field of pharmaceutical sciences
- ability to critically analyse scientific literature and define scientific problems
- synthesis of new ideas and research methods in accordance with established hypothesis
- realization of individual research work
- adoption of the highest professional and ethical principles
- interpretation and presentation of scientific results
- implementation and application of scientific research results
- recognition of the need for continuous scientific improvement
- managing projects and skills to communicate within research group
- ability for quality work in interdisciplinary surroundings
- raising of young researchers and scientists,
- integration of research and scientific activities and teaching improvement in the field of pharmacy
- organization of teaching including electivity and mobility in wide academic community
- encouraging the development of academic spirit, inventiveness and creativity

General social goals:

- promotion of knowledge, ideas and scientific-technological progress within academic community and society at all
- institutional acceptance of scientific work as market value
- international affirmation through scientific-research collaboration and presentation of scientific results

STANDARD 4: COMPETENCIES OF GRADUATED STUDENTS

Upon graduation of Doctoral Academic Studies on Pharmaceutical sciences student gains general and specific knowledge and skills. Students are capable to conduct complex research in the field of pharmaceutical and related sciences, individually or as team members, and to apply their knowledge in practice, especially by solving specific problems and finding certain solutions. They are capable to critically observe and analyse certain problems, and the results of their own research, to recognize new scientific challenges and to approach individually in finding their solution. They are also capable to establish different forms of scientific collaboration and communication in country and abroad. All competencies of graduated students are in line with ethical principles of scientific-research work (fight against frauds and plagiarism), respect to patients' rights, experimental animal well-being along with responsible behaviour towards social community and environment.

Knowledge:

- methodology of scientific research in pharmacy
- biostatistics and informatics
- knowledge of experimental models in pharmacy
- knowledge of ethical principles of research in pharmacy
- knowledge of using modern instruments
- professional knowledge related to certain field of pharmaceutical sciences and to the topic of doctoral thesis

Skills:

- finding relevant scientific literature by using information technologies
- critical assessment of scientific data
- setting original research question, hypothesis and objective of research
- setting plan and protocol of research
- application of modern research methods
- working on instruments used for research in pharmacy
- working on experimental animals
- processing and interpretation of scientific results
- writing scientific articles based on own results
- presenting results at scientific meeting
- active participation in multidisciplinary team

SUPPLEMENTS AND TABLES

Supplement 4.1.1: Diploma supplement in Serbian language

[Supplement 4.1.2: Diploma supplement in English language](#)

STANDARD 5: CURRICULUM

Doctoral Academic Studies on Pharmaceutical Sciences enables students to improve their knowledge, skills and competencies acquired during Integrated Undergraduate and Master Academic Studies of Pharmacy and related disciplines. The set goals are accomplished by active teaching, comprised of theoretical teaching and research, and individual scientific work.

Doctoral Academic Studies includes 12 elective domains – modules and lasts 6 semesters. Elective modules include compulsory common courses, compulsory module courses (2-6) and blocks of elective courses (2 or 3). Compulsory common courses of all modules take place in the first two years of study and comprise general methodology and specific methodology courses.

Course contents are aimed to acquire knowledge and skills from the bases of scientific work, ethics in research, scientific methodology, statistics; they involve making seminars, professional discussions and meetings related to searched references, preparing seminars, presentations and other forms of public displays. The contents are focused on training students for elaboration and defense of their doctoral thesis.

The first year of the study, depending on the elective module, includes 2, 3 or 4 compulsory module courses, and one or two courses from the block of elective courses; at the second year students have one or two compulsory module courses and 1, 2 or 3 elective courses from the block of elective courses.

Elaboration of doctoral thesis starts in the second semester of the first year of the study and continues during the rest of the study under the supervision of elected mentor. By choosing elective courses student defines more precisely his/her field of research. At the second year of study – the fourth semester, preparation and defense of doctoral thesis proposal is compulsory. The third year, according to recommendations, includes final preparation and defense of doctoral thesis and research work which is directly related to doctoral thesis.

Study research work is recognized through published results, which are two papers in category M20, where the candidate is the first author at least in one of the papers, and one of the first three authors in the other paper. Doctoral thesis represents an individual scientific work of Ph.D. student that may be defended when candidate fulfil all the requirements provided by the Statute of the Faculty and by the Rulebook of the Doctoral Academic Studies at the Faculty of Pharmacy.

SUPPLEMENTS AND TABLES

Supplement 5.1. The Statute of the Faculty of Pharmacy

[Supplement 5.2. The book of courses \(printed or electronic form at the institution website\)](#)

Table 5.1: Specifications of courses included in The Programme of Doctoral Academic Studies

[Table 5.2: Semesters and year of studies timetables](#)

Table 5.3: Requirements regarded to preparation of doctoral thesis

[Table 5.4: List of courses included in The Programme of Doctoral Academic Studies](#)

[Block Table](#)

STANDARD 6: QUALITY, MODERNITY AND INTERNATIONAL HARMONISATION OF THE STUDY PROGRAMME

Quality assurance policy at the Faculty of Pharmacy is in line with the strategic goals, mission and vision set in the Quality Assurance Strategy at the Faculty of Pharmacy, self-evaluation procedures and quality assessment (available at the Faculty website). The Faculty of Pharmacy is active member of the International Pharmaceutical Federation (FIP) and European Association of the Faculties of Pharmacy (EAFP).

Within the programme Tempus IV in 2009 was approved the project entitled "Postgraduate Qualification in Pharmacy: The WayForward" (PQPharm), which coordinator was the Faculty of Pharmacy, University of Belgrade. The primary goal of this project was the improvement of postgraduate studies. The Doctoral Academic Studies Programme on Pharmaceutical Sciences includes 12 modules that completely emphasize the fields of research i.e. scientific research projects at the Faculty of Pharmacy. Modules of Doctoral Academic Studies on Pharmaceutical Sciences comply with recognized European education programmes on the fields of Pharmaceutical Sciences, allowing the student to be equally engaged in domestic and foreign multidisciplinary scientific-research projects and development projects by professional advancement. This study programme is established on the principles based on a large number of documents of the European system of higher education, starting from the Bologna Declaration (1999), recommendations of the Salzburg Seminar on doctoral programmes for European University Association (2005), with respect to the priorities of The Leuven Communiqué (2009), and Bucharest Communiqué (2012), held during the economic crisis, and defining priorities in three points: quality, mobility and employment opportunities. In this study programme are also incorporated *Standards for PhD Education in Biomedicine and Health Sciences in Europe*, ORPHEUS-AMSE-WFME, 2012 by the *Organization for PhD Education in Biomedicine and Health Sciences in the European System* – ORPHEUS. Also, structure and contents of this programme are compatible with other similar programmes in Europe (Great Britain, Slovenia and Czech Republic) creating in that way prerequisites for students' and teachers' mobility.

In summary, Doctoral Academic Studies on Pharmaceutical Sciences are realized within institutionalized strategy and politics, last for three years, teaching is carried out through common courses of all modules, compulsory courses of the individual module, and elective block of the module, which by their concepts and contents promote a strategy of deepening acquired knowledge, diversity, individual research work and interdisciplinarity, with defined role and responsibility of the mentor, and the evaluation system of scientific activity by publications in internationally recognized journals. Sustainability of Doctoral Academic Studies is guaranteed by different sources of financing: material funds of projects of the Ministry of Education, Science and Technological Development of the Republic of Serbia, own Faculty funds, and available European Union funds.

SUPPLEMENTS AND TABLES

Supplement 6.1. Three accredited foreign programmes (copies of the programme or institution website)

Supplement 6.2. Evidence that the programme complies with the European standards

STANDARD 7: ENROLMENT OF STUDENTS

Enrolment conditions are in line with The Law on Higher Education, The University Rulebook on enrolment in the third study cycle, and The Rulebook on Doctoral Academic Studies at the Faculty of Pharmacy. The strategic goal is to achieve high quality of the Doctoral Academic Studies, not only by reaching position of the accepted programme in Europe, but also by quality of enrolled students, which is one of the prerequisites for the formation of competent staff. The candidate who applies for the Doctoral Academic Studies is required to provide diploma.

At the admission, the student is required to provide diploma in Integrated Academic Studies on Pharmacy or other appropriate studies, as well as the other documents specified by the admission policy of the University, and approved by the respective Ministry.

The number of students being admitted to the study programme is 60, which is determined by the general admission plan of the Faculty of Pharmacy. Decision on the admission is made by the Academic Council of the Faculty of Pharmacy based on the proposal of the Committee for Postgraduate Studies – Doctoral Studies.

Candidates having completed four-year high schools may enrol to the integrated academic studies of Pharmacy, if they fulfil the conditions of the call.

Students may enrol at Doctoral Academic Studies after they collect 300 ECTS points, if they have average grade higher than 8 (eight), or those with average grade lower than 8 and have published scientific papers according to the Rulebook of the University of Belgrade and the Faculty of Pharmacy (two papers published in journals from SCI Journal Publication List, whereas the candidate is one of the first three authors). Call for the admission of applicants is open, announced by the University of Belgrade on the proposal of the Faculty of Pharmacy, and published in mass media.

The ranking list is formed according to the:

- average grade from previous studies
- average grades in relevant courses
- duration of previous studies
- knowledge of English
- previously achieved scientific results (scientific publications, participation in projects, congresses, education seminars, etc.)
- individual candidate motivation assessed through interview with candidate

SUPPLEMENTS AND TABLES

Supplement 7.1. Open call for admission in Doctoral Academic Studies

Supplement 7.2. Decision on the relevant courses list of importance for ranking of students applying for Doctoral Academic Studies

Supplement 7.3. Decision on the appointment of Committee for Postgraduate Studies – Doctoral Studies

Table 7.1. Review of the number of students being admitted to the study programme

STANDARD 8: EVALUATION AND PROGRESS OF STUDENTS

Students' evaluation is based on the monitoring of students' scientific work, points acquired through exam prerequisites and the final exam. Final exams may be written and/or oral. Teaching plan and programme of each of the courses defines the way the exam and evaluation is performed. The final grade for the course represents the sum of the achievements during the course (participation in lectures, by passing the colloquia, writing and presenting seminars etc.). Students' achievements are represented through scores from 5 (five) to 10 (ten), formed on the basis of the acquired points. Student may collect up to 100 points fulfilling the exam prerequisites and passing the final exam (numerically equal to grade 10).

The collected points and passing grade are registered in student's dossier and index. The Office of Teaching and Students' Affairs keeps permanently the record on the passed exams.

Mentorial work is applied during Doctoral Academic Studies. Student in consultation with mentor individually studies certain topics, performs research work in accordance with the theme of doctoral thesis, and publishes at least two scientific papers in the prominent international journals from SCI Journal Publication List, whereas in one is the first author, and in the other is one of the first three authors. These papers are compulsory for doctoral thesis defence.

SUPPLEMENTS AND TABLES

Supplement 8.1. The Statute of the Faculty of Pharmacy

Supplement 8.2. Institution Rulebook on doctoral thesis evaluation

Supplement 8.3. Decision on the amendment to the Rulebook on Doctoral Academic Studies

Table 8.1. The List of the doctoral thesis defended in the institution during past three academic years including the list of published papers or papers accepted for publishing

STANDARD 9: TEACHING STAFF

Criteria for the election of full-time teachers at the University of Belgrade – Faculty of Pharmacy are clearly defined in the Rulebook regarding the criteria of teachers' election on the Faculty of Pharmacy. Besides the teachers employed at the Faculty of Pharmacy, teaching on Doctoral Academic Studies is held by teachers from other scientific institutions. Their election is also based on strict criteria evaluating competencies in the field of scientific-research work and success in teaching.

Teachers' competency is assessed and proved by the list of scientific papers published in international and domestic journals, articles published in proceedings at international scientific meetings, monographs, patents, books, novel products and significantly improved products. All the teachers participating in Doctoral Academic Studies at the Faculty of Pharmacy have at least one paper published or accepted for publishing in journal from SCI Journal Publication List. Additionally, one of the criteria for teacher's competence evaluation is his/her participation in domestic and international scientific-research projects.

The total numbers of teachers involved in Doctoral Academic Studies is 96: 81 are full-time teachers, 1 part-time teacher, and 13 teachers employed by contract. From the total number of teachers, 42 are professors (38 are full-time employees), 19 are associate professors (18 are full-time employees), 27 are docents (24 are full-time employees), 1 is guest professor, 1 is professor emeritus, and 6 are with scientific title (one scientific advisor, three high scientific associates, and two scientific associates). From the total number of 102 full-time teachers, 99 are engaged in scientific projects funded by the Ministry of Education, Science, and Technological Development of the Republic of Serbia. Average teaching engagement for teachers on the study programme of Doctoral Academic Studies is 1.95 classes per week and in the Institution 6.32 classes per week. Percentage of lectures held by full-time teachers is 91.91%.

Mentors are teachers having affirmed research filed and internationally verified results. They have at least five published papers or papers accepted for publishing in journals from SCI Journal Publication List in particular scientific field in the last ten years. Also, the teacher may be mentor for maximum five students at the same time. At the Faculty of Pharmacy all the teachers fulfil this requirement and may be mentors. On Doctoral Academic Studies at the Faculty of Pharmacy 81 mentors are teachers from the specific scientific fields of provided modules.

SUPPLEMENTS AND TABLES

Supplement 9.1. The Rulebook on the election of teachers

Supplement 9.2. Decision of competent court on appointing mentors

[Supplement 9.3. Book of teachers engaged in Doctoral Academic Studies Programme](#)

[Supplement 9.4. Book of teachers engaged in Doctoral Academic Studies Programme who may be mentors](#)

Supplement 9.5. Parameters of the Study Programme

Supplement 9.6. Copies of work cards or work contracts of teaching staff

Table 9.1.a. List of teachers engaged in Doctoral Academic Studies

Table 9.1.b. Number of teachers per scientific areas

Table 9.2. List of teachers engaged in scientific-research and art-research projects

Table 9.3. Teachers' competencies

Table 9.4. List of mentors for the past three academic years

Table 9.5. List of mentors

STANDARD 10: ORGANIZATION AND RESOURCES

University of Belgrade – Faculty of Pharmacy has a short-term and long-term plan and budget for the accomplishment of scientific-research work. Scientific-research work plan of the Faculty of Pharmacy (available at the Faculty website) is document that includes equipment supply as well as providing technical and material conditions for scientific-research work. Financial resources for the realisation of Doctoral Academic Studies are provided from the funds of the Ministry of Education, Science and Technological Development of the Republic of Serbia, own Faculty funds, and through cooperation with other institution of higher education, accredited scientific institutions, and international organisation.

The Faculty of Pharmacy disposes of the appropriate number of modern and well-equipped laboratories. Students have access to equipment documented in the list of equipment with characteristics for conducting scientific-research work. Students may also use equipment of other appropriate institutions which is possible due to the agreements on cooperation with these institutions. Considerable part of equipment is provided according to public calls from the Ministry of Education, Science and Technological Development of the Republic of Serbia on the basis of realised projects at the Faculty of Pharmacy and from the funds/ resources that were provided before – IPA 10 Projects of the Ministry of Education, Science and Technological Development of the Republic of Serbia.

Availability of scientific literature is provided by present bibliographic fund regularly completed by recent publications and editions.

The Faculty of Pharmacy also has modern computer network and computer classrooms with constant access to internet and data bases via University Academic Network.

The Faculty possesses appropriate technical, laboratory and other specific equipment. Amphitheatres are equipped (besides classic equipment) with LCD projectors, project panels, and amphitheatres 1 and 2 with modern PA systems. The Faculty is connected to Eduroam service (free service for internet access) provided by Academic Serbian Network (AMRES), and this enables all employees and students to access internet through access points widespread all over the world. Also, the Faculty provides permanent approach to different kinds of information in electronic form, and through academic network KOBSON access are provided to significant international and national scientific journals.

The Faculty building complex includes: Faculty building consisting of several building units connected through communicational halls and 6.9 acres of land property. Teaching activity, scientific research, professional, administrative and technical procedures are performed in the building of Faculty in 4 amphitheatres, 18 departments comprising laboratories and 9 libraries, 48 teacher's cabinets, computer classrooms, great hall, vivarium, computer room, laboratory-simulating pharmacy, faculty bookstore and rooms for services which perform professional, administrative and technical jobs.

The Faculty of Pharmacy possesses adequate space for teaching (amphitheatres, classrooms, laboratories, and library and reading rooms), work space for teachers and associates, as well as space for administrative jobs. The total area of the Faculty building is 15 000 m², 7 804 m² of which is net space for teaching, which is for total number of 2 164 students, 7.5 m² gross per student, and 3.61 m² net per student. All available capacities are equipped with computers. One room with video link and interactive board are also available

for teaching. Experimental research work is conducted in modernly equipped laboratories and vivarium projected and equipped to fulfil necessary criteria and in that way to assure the high quality of obtained results.

SUPPLEMENTS AND TABLES

Supplement 10.1. Plan and budget for scientific-research work realisation

Supplement 10.2. Contracts of cooperation with other higher education institutions, accredited institutes, and international organisations

Supplement 10.3. Annex on available data bases and library resources

Table 10.1. List of equipment used for scientific-research work

Table 10.2. Rooms for teaching on Doctoral Academic Studies and suitable laboratories required for experimental work

STANDARD 11: QUALITY CONTROL

Quality assurance policy at the Faculty of Pharmacy is in accordance with strategic goals, mission and vision set in the Quality Assurance Strategy at the Faculty of Pharmacy, self-evaluation procedures and quality assessment (available at the Faculty website). The first self-evaluation and quality assessment for a period 2008 – 2009 was conducted for all the processes (that is all 14 standards) and self-evaluating document was adopted by the Academic Council of the Faculty of Pharmacy on 24th February 2010 (available on the Faculty website). National standards for self-evaluation and quality assessment of higher education institutions are adopted and implemented at the Faculty. The Faculty of Pharmacy, University of Belgrade possesses professional boards for quality assurance and their rights and responsibilities in quality assurance process are precisely defined by appropriate documents.

The quality of the study programme is ensured by monitoring and verification of its goals, structure, student engagement, and by contents' modernization and constant gathering of information on the programme quality from appropriate organisations in the region. At the Faculty of Pharmacy the quality of the Programme of Doctoral Academic Studies is constantly monitored and improved. A great number of rule-books adopted by the Academic Council of the Faculty of Pharmacy between 2008 and 2011 contribute to this.

Monitoring of the Doctoral Academic Studies quality is responsibility of the Committee for Postgraduate Studies – Doctoral Studies. The Committee meets once a month and solves all the questions related to the Programme of Doctoral Academic Studies, and these are: considering Ph.D. candidates' applications and proposing titles of doctoral thesis, giving opinions and reports on the suitability of candidates and proposed titles of their thesis, and completed thesis, considering proposals of new study programmes, participating in the preparation of new Rulebooks, etc.

The responsibility for the quality of study programmes lies also on the Commission for quality assurance which, in cooperation with the Commission for monitoring and improving quality of teaching, contributes to the improvement of programmes' success through the development of standard operation procedures, development strategies and other documents (instructions for elaboration of doctoral thesis, etc.).

Students' active participation in the quality control of study programme is ensured and their evaluation of study programme quality is obtained via voluntary, anonymous surveys.

SUPPLEMENTS AND TABLES

Supplement 11.1a. Report on self-evaluation on the Programme of Doctoral Academic Studies

Supplement 11.1b. Survey results

Table 11.1 List of members of the Commission for Quality Control on the Programme of Doctoral Academic Studies