

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Introduction to Pharmacy			
Teachers: Krajnović M. Dušanka, Lakić M. Dragana, Odalović M. Marina			
Course status: Mandatory			
Semester: I	Year of studies: I		
ECTS points: 1	Course code: F107		
Requirements: none			
Course aims: Understanding the importance and role of pharmacy in the health system, the role of drugs in society, the role of the Faculty of Pharmacy in educating pharmacists and the importance and diversity of future occupations. Adoption of basic knowledge on the development of pharmacy and the scope of pharmaceutical practice and social responsibility of pharmacists in the protection of health, prevention and treatment of diseases. Facilitate the development of communication skills.			
Course outcomes: By the end of the course, the student will be able to: state the historical and cultural basics of pharmacy development (science and practice); describe the professional and social role of pharmaceutical care and work; describe the role and the need for continuous professional development; apply different communication skills.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Biology and Human Genetics			
Teachers: Biljana M. Potparević, Lada P. Živković			
Course status: Mandatory			
Semester: I		Year of studies: I	
ECTS points: 5		Course code: F1O1	
Requirements: none			
Course aims: The aim of the course is to introduce students with basic knowledge about the structure and function of the cell, with a special emphasis on the importance of genetic factors in its functioning. Also, the student needs to get acquainted with the basic changes in genetic material and the consequences that they have on their carriers and offsprings.			
Course outcomes: After completing the course, the student should be able to:· Know microscopy techniques· Describe the structure and function of the cell· Understand and explain the mechanisms of genetic material mutation formation and link the mentioned changes with the corresponding phenotype· Apply acquired knowledge in this subject to other biomedical subjects during the course of studies			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Human morphology			
Teachers: Popovic R. Dejana, Pešić R. Vesna, Jukić M. Marin			
Course status: Mandatory			
Semester: I	Year of studies: I		
ECTS points: 5	Course code: F1O2		
Requirements: none			
Course aims: To adopt elementary medical terminology and to acquire the basic knowledge about macroscopic (anatomical) and microscopic (hystological) structure of the human body and its interaction with function, with a reference to clinical use			
Course outcomes: To empower the student for the acquisition of additional knowledges in the domain of the organ system function in conditions of health and disease, considering the complexity of the human body structure and its interaction with the function			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: General and inorganic chemistry			
Teachers: Popović V Gordana, Tanasković B Slađana, Dražić P Branka			
Course status: Mandatory			
Semester: First (I)	Year of studies: First (I)		
ECTS points: 6	Course code: F103		
Requirements: No			
Course aims: Acquiring knowledge of chemistry necessary for understanding the structure and properties of simple and complex biopharmaceutical important compounds, as well as the mechanism of chemical processes in which they included. Acquiring practical and calculate knowledge necessary for successful work on other chemical and pharmaceutical subjects, as well as in the pharmaceutical practice.			
Course outcomes: After successful completion of this course, a student will be able to: <ul style="list-style-type: none"> • recognize and distinguish of chemical properties of compounds • predict and analyse chemical reactions • planning and organizing the safe laboratory working • develop skills in analytical thinking in problem solving 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Organic chemistry 1			
Teachers: Tokić-Vujošević N. Zorana; Petković R. Milos			
Course status: Mandatory			
Semester: I	Year of studies: I		
ECTS points: 6	Course code: F1O6		
Requirements: No			
Course aims: <ul style="list-style-type: none"> • Acquire knowledge about building chemical bonds, types of hybridization and electronic effects in organic compounds. • Learning about the basic classes of organic compounds (systematic naming, structure, and reactivity). • Learning of the mechanisms of ionic and radical reactions characteristic for organic compounds. 			
Course outcomes: <p>Acquire knowledge about the structure and reactivity of organic molecules. Understanding of the mechanisms of organic reactions. Acquisition of a logical framework for linking the structure and function of organic molecules.</p>			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Physics			
Teachers: Todorović-Vasović D. Neli Kristina			
Course status: Mandatory			
Semester: first (I)	Year of studies: first (I)		
ECTS points: 3	Course code: F104		
Requirements: no			
Course aims: Familiarisation with basic principles of physics required for understanding physical systems. Connecting the physical and biophysical systems. Connection of modern developments in physics with newly discovered phenomena in science. Identification of the basic theoretical and practical knowledge in physics necessary to easier adoption of the content of courses in pharmacy.			
Course outcomes: Students will have the possibility to understand the content of chemical and biological courses, as well as the ability to detect connections between physics and other sciences.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Mathematics			
Teachers: Ranković D. Dragana			
Course status: Mandatory			
Semester: first (I)	Year of studies: first (I)		
ECTS points: 4	Course code: F105		
Requirements: No requirements			
Course aims: To provide elementary mathematical knowledge about linear algebra, integral and differential calculus, differential equations, and applied mathematics.			
Course outcomes: A student will be able to comprehend subject related to physical, chemical, and pharmaceutical sciences.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Statistics in Pharmacy			
Teachers: Bogavac Stanojević B. Nataša, Kotur - Stevuljević M. Jelena			
Course status: Mandatory			
Semester: II	Year of studies: I		
ECTS points: 3	Course code: F1O13		
Requirements: no			
Course aims: Adopting statistical terminology, training for collecting, organizing and processing data, understanding simple statistical methods and results interpretation, understanding statistical evaluation of analytical methods, developing critical opinion and correct data analysis on pharmacy examples.			
Course outcomes: After completing the theoretical and practical program and passing the exam, the student will be able to: correctly select the sample and collect the data, select the appropriate statistical methods for data analyses, interpret the obtained results, define and distinguish the following terms: precision, accuracy, a random error, a systematic error, measurement uncertainty			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: General Biochemistry			
Teachers: Zeljković R. Aleksandra, Stefanović Ž. Aleksandra, Ninić R. Ana, Sopić D. Miron, Ivanišević M. Jasmina			
Course status: Mandatory			
Semester: Second (II)	Year of studies: First (I)		
ECTS points: 5	Course code: F1O12		
Requirements: None			
Course aims: Obtaining knowledge on basic catabolic, anabolic and joint metabolic pathways and their regulation in living cells.			
Course outcomes: After a successfully finished course, the student will be able to: 1) acknowledge the function and significance of individual biomolecules in metabolic processes; 2) describe the course of major catabolic, anabolic and joint metabolic pathways; 3) understand mechanisms of metabolic regulation; 4) understand different roles of regulatory molecules; 5) interpret the changes in metabolic processes caused by various intrinsic and extrinsic factors.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical physiology 1			
Teachers: Pešić R. Vesna, Jukić M. Marin, Stanić Dušanka, Batinić Bojan			
Course status: Mandatory			
Semester: II	Year of studies: I		
ECTS points: 5	Course code: F108		
Requirements: Biology, Human morphology			
Course aims: Provision of important knowledge from physiology of cell, tissue, organ systems and human body as whole, relevant to pharmaceutical practice. Provision of theoretical basis relevant for other courses (pathophysiology, pharmacology, medical biochemistry, pharmacognosy, pharmacotherapy, clinical pharmacy, pharmacotherapy, toxicology, bromatology).			
Course outcomes: After finishing this course student will be trained to: <ul style="list-style-type: none"> • properly use medical terminology • be familiar with function of individual organs, understand integrated function of organs and control mechanisms related to them. • understand interconnections of regulatory systems, which is important for organism adaptation to inner and outer environmental changes in everyday basis. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Organic chemistry 2			
Teachers: Savić M. Vladimir, Simić R. Milena			
Course status: Mandatory			
Semester: II	Year of studies: I		
ECTS points: 7	Course code: F1O10		
Requirements:			
Course aims: Theoretical classes: understanding of stereochemical properties of organic compounds; acquiring knowledge of general properties of heterocyclic compounds; acquiring basic knowledge of chemistry of biomolecules (carbohydrates, peptides, nucleic acids, lipids). Laboratory classes: learning about experimental technique applied in the synthesis and purification of organic compounds; developing skill to use knowledge in solving organic chemistry problems.			
Course outcomes: Theoretical classes: knowledge of stereochemical properties of organic compounds and chemical reactions; understanding of structural and chemical properties of heterocyclic compounds and biomolecules. Laboratory classes: acquired skill in experimental techniques used in synthesis and purification of organic compounds; ability to creatively use knowledge in solving organic chemistry problems			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Physical Chemistry			
Teachers: Aleksić M. Mara, Blagojević M. Slavica			
Course status: Mandatory			
Semester: II	Year of studies: I		
ECTS points: 5	Course code: F1011		
Requirements: HEMA			
Course aims: <p>The acquisition of fundamental knowledge from selected fields of physical chemistry which are necessary for understanding physicochemical processes significant for the education of pharmacists. Training a student to apply the acquired knowledge, in order to facilitate understanding and to be able to follow the content of courses where the knowledge of physicochemical principles is necessary. Encouraging a student to further development of the knowledge of physico-chemical processes relevant to pharmacy and biochemistry, continuously during studies.</p>			
Course outcomes: <p>Upon completion of this course, the student will acquire knowledge related to thermodynamic and kinetic values, surface phenomena, basics of colloid chemistry and radiochemistry. Student will be able to analyze and explain the phase transitions and apply the methods for determining the certain properties of liquids. Knowledge and understanding of physicochemical processes significant for pharmacy and biochemistry will enable student to follow the lectures at senior courses successfully.</p>			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Analytical Chemistry 1			
Teachers: Ražić S. Slavica, Uskoković-Marković M. Snežana, Odović V. Jadranka, Đogo Mračević M. Svetlana			
Course status: Mandatory			
Semester: second (II)	Year of studies: first (I)		
ECTS points: 4	Course code: F109		
Requirements: none			
Course aims: <ul style="list-style-type: none"> • This course will provide students with a background in qualitative chemical analysis capable for solving analytical problems important for professional courses • Basic knowledge about heterogeneous equilibria • Sample preparation and ion identification using selected reagents • Identification of unknown substances • Using chromatographic and extraction techniques for ions separation and identification. 			
Course outcomes: <p>Student become skilled to:</p> <ul style="list-style-type: none"> • Apply obtained knowledge about heterogeneous systems • To evaluate the conditions of precipitation and dissolution and to estimate influence of common ion, foreign ion, pH value, and complexation. • Use obtained knowledge to identify ions by application of selected reagents • Evaluate and apply appropriate sample preparation procedure • Use obtained knowledge to identify an unknown substance • Apply separation techniques in separation, purification and analyte preconcentration 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Introduction to professional training			
Teachers: Odalović M. Marina, Vidović B. Bojana, Tadić B. Ivana, Đekić M. Ljiljana, Vezmar Kovačević D. Sandra, Lakić M. Dragana, Drobac M. Milica, Vučićević M. Katarina, Tomić A. Maja, Micov M. Ana			
Course status: Mandatory			
Semester: II	Year of studies: I		
ECTS points: 1	Course code: FSOF1		
Requirements: none			
Course aims: Reinforce the work in pharmacy under the supervision. Understand the functioning and importance of pharmacy. Acquire the knowledge on regulatory framework for pharmacy work.			
Course outcomes: By the end of the course, the student will be able to: recognize the layout and parts of the pharmacy, recognize the internal arrangement in the pharmacy, recognize the layout and equipment in the pharmacy's divisions (public area, compounding laboratory, ...); indicate the personnel employed at the pharmacy and their professional responsibility; identify and recognize types of health-related products in the pharmacy; apply the principles of team work and communication with colleagues.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical physiology 2			
Teachers: Pešić P. Vesna, Jukić M. Marin, Dušanka D. Stanić, Bojan Batinić			
Course status: Mandatory			
Semester: III	Year of studies: II		
ECTS points: 5	Course code: F201		
Requirements: Pharmaceutical physiology 1			
Course aims: Provision of important knowledge from physiology of cell, tissue, organ systems and human body as whole, relevant to pharmaceutical practice. Provision of theoretical basis relevant for other courses (pathophysiology, pharmacology, medical biochemistry, pharmacognosy, pharmacotherapy, clinical pharmacy, pharmacotherapy, toxicology, bromatology).			
Course outcomes: After finishing this course student will be trained to: <ul style="list-style-type: none"> • properly use medical terminology • be familiar with function of individual organs, understand integrated function of organs and control mechanisms related to them. • understand interconnections of regulatory systems, which is important for organism adaptation to inner and outer environmental changes in everyday basis. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Immunology			
Teachers: Arsenović Ranin M. Nevena, Stojić-Vukanić M. Zorica, Jančić R. Ivan			
Course status: Mandatory			
Semester: III	Year of studies: II		
ECTS points: 5	Course code: F204		
Requirements: No			
Course aims: To provide knowledge about: <ul style="list-style-type: none"> • the components of the innate and adaptive immunity, the development and functions of immune responses. • main features of immunity to different types of pathogenic microorganisms • disorders caused by immune responses (hypersensitivity reactions, autoimmune diseases) and defective immunity (congenital and acquired immunodeficiencies) • immune responses against tumors and transplants • principles underlying some of the most commonly used laboratory methods in immunology 			
Course outcomes: After completing the course the student will be able to: <ul style="list-style-type: none"> • explain the effector mechanisms of innate and adaptive immunity in defense against infection • describe the pathogenesis and clinicopathologic manifestations of disorders caused by immune responses (hypersensitivity reactions, autoimmune diseases) and defective immunity (congenital and acquired immunodeficiencies) • explain immune responses against tumors and transplants • state immunological approaches in the treatment of diseases caused by immune response, treatment of malignant tumors and prevention and treatment of rejection of transplants • explain principles of the most commonly used immunoassays for qualitative and/or quantitative analysis of antigen and antibody 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Analytical Chemistry 2			
Teachers: Ražić S. Slavica, Uskoković-Marković M. Snežana, Odović V. Jadranka, Đogo Mračević M. Svetlana			
Course status: Mandatory			
Semester: III	Year of studies: II		
ECTS points: 7	Course code: F202		
Requirements: none			
Course aims: This course provides an introduction to the fundamental principles of quantitative chemical analysis in order to enable student for solving analytical problems: <ul style="list-style-type: none"> • Theoretical and practical approach to quantitative chemical analysis • Methods of classic quantitative chemical analysis • Basic principles of calculations in gravimetric and volumetric analysis • Analytical applications of selected instrumental methods in inorganic ion analysis • Processing, evaluation, and interpretation of results and validation of analytical methods. 			
Course outcomes: Student will be able to: <ul style="list-style-type: none"> • Assessment the equilibrium constants • Calculate titration curves • Select the appropriate indicator for titration • Select the method for determination of specific ion • Carry out all phases of quantitative chemical analysis • Calculate, evaluate and discuss obtained results 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY	
Study programme: Pharmacy		
Course title: Instrumental methods		
Teachers: Pejić D. Nataša, Janošević Ležaić M. Aleksandra, Pavun A. Lepasava		
Course status: Mandatory		
Semester: III	Year of studies: II	
ECTS points: 7	Course code: F203	
Requirements: Physical chemistry		
Course aims: <p>Understanding of physicochemical principles and procedures of the selected spectroscopic, electrochemical and separation instrumental methods, knowledge of instruments and possibilities for different instrumental methods applications that will be discussed and used in other courses during the pharmaceutical studies as well as in a pharmaceutical laboratory. Introduction to some chosen methods during the individual practical training.</p>		
Course outcomes: <p>Student is qualified (both theoretically and practically) to individually choose the appropriate instrumental method to complete the required task in accordance with all specificity of the pharmaceutical profession. Also, the student is able to solve the problems with basic instruments and apparatus using the supplied guideline.</p>		

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Chemistry 1			
Teachers: Erić M. Slavica, Marković D. Bojan, Dobričić D. Vladimir, Crevar Sakač A. Milkica			
Course status: Mandatory			
Semester: third (III)	Year of studies: second (II)		
ECTS points: 6	Course code: F205		
Requirements: Organic Chemistry 2			
Course aims: For student to acquire basic knowledge in pharmaceutical chemistry, which then will be used in mastering courses Pharmaceutical Chemistry 2 and 3, as well as Pharmacology and Pharmacokinetics.			
Course outcomes: Student is expected to obtain knowledge about physicochemical properties of pharmacologically active molecules, about reactivity of their functional groups, about chemical and metabolic stability of medicines, to understand target and mechanisms of drug effects on molecular level, to analyze relationships of chemical structure, properties and effects of medicines.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pathophysiology 1			
Teachers: Đuretić Jasmina			
Course status: Mandatory			
Semester: IV	Year of studies: II		
ECTS points: 5	Course code: F207		
Requirements: Physiology 1, Physiologys, Immunology			
Course aims: Course aims: To provide understanding of: <ul style="list-style-type: none"> • Concepts of health and disease: etiology, pathogenesis • Mechanisms underlying cell and tissue injury evoked by various etiological agents (ischemia, free radicals, biological agents) and mechanisms of local and whole body responses to tissue injury. • Etiology, pathogenesis and main clinical manifestations of the most important metabolic disorders. • Causes and mechanisms of neoplastic cell transformation; characteristics of neoplastic cells and tumour growth and cardinal alterations in the host organism. 			
Course outcomes: After completing the course, student is expected to be able to: <ul style="list-style-type: none"> • Be able to identify causes (etiology) and mechanisms of development (pathogenesis) of inflammation, shock, neoplasia and the most important metabolic disorders. • Have knowledge to relate clinical manifestations of shock, neoplasia and the most important metabolic disorders with causes and mechanisms of their development. • Understand diagnostic significance of clinical and laboratory tests and analyses used to diagnose inflammatory and metabolic disorders, shock and neoplasia. • Comprehend pathophysiological backgrounds for action of various drug and chemicals, and strategies to prevent and/or treat inflammation, malignant diseases and metabolic disorders. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Chemistry 2			
Teachers: Brborić S. Jasmina, Čudina A. Olivera, Ivković M. Branka, Marković D. Bojan, Nikolić M. Katarina, Oljačić V. Slavica			
Course status: Mandatory			
Semester: IV	Year of studies: II		
ECTS points: 8	Course code: F206		
Requirements: Pharmaceutical Chemistry 1			
Course aims: Acquisition of fundamental knowledge about chemistry of various groups of drugs. Adopted knowledge will be used in mastering medicinal, pharmaceutical-technological and pharmaceutical practice courses.			
Course outcomes: Introduction to physicochemical properties of pharmacologically active molecules and reactivity of their functional groups, fundamental mechanisms of action, chemical structure-biological activity relationships, drug-drug interactions, drug-receptor interactions, chemical aspects of drug metabolism.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Botany			
Teachers: Lakušić S. Branislava, Slavkowska N. Violeta, Stojanović LJ. Danilo			
Course status: Mandatory			
Semester: IV	Year of studies: II		
ECTS points: 7	Course code: F208		
Requirements: None			
Course aims: Developing knowledge about the importance of plants in pharmacy. Learning the basics of morphology, anatomy, physiology and ecology of pharmaceutically important plants and fungi. Understanding the importance of plant anatomy features and their use in pharmacy. Identification of selected taxa of medicinal plants and fungi.			
Course outcomes: After the course the student will be able to recognize and explain the morphological and anatomical characteristics of plant organs; describe and explain the basic physiological processes of plants; correctly name and classify selected pharmaceutically important taxa of plants and fungi; predict the properties of taxa based on their systematic affiliation; apply the acquired knowledge in further study and practice			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Microbiology			
Teachers: Milenković T. Marina, Antić Stanković A. Jelena			
Course status: Mandatory			
Semester: IV	Year of studies: II		
ECTS points: 7	Course code: F209		
Requirements: No			
Course aims: To provide knowledge regarding classification and characteristics of pathogenic microorganisms (bacteria, viruses, protozoa, helminthes, fungi) , principles of laboratory diagnosis of infectious diseases, pathogenesis, epidemiology, treatment , prevention and control of human infections (active and passive immunization). To provide knowledge regarding mechanisms of action of antimicrobial agents and molecular mechanisms of resistance to different antimicrobial drugs.			
Course outcomes: At the end of the course students will be able to: 1) describe and differentiate biological properties of medically important microorganisms, 2) identify the main pathogenic, commensal, opportunistic and saprophytic microbial species, 3) explain and relate mechanisms of virulence and microbial pathogenesis, 4) describe the properties of antimicrobial drugs and relate the mechanisms of antimicrobial resistance, 5) list the types of vaccines and discuss the importance of active immunization for the prevention of infectious diseases.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pathophysiology 2			
Teachers: Đuretić Jasmina			
Course status: Mandatory			
Semester: Fifth		Year of studies: Third	
ECTS points: 5		Course code: F301	
Requirements: Physiology I, Physiology II, Immunology, Pathophysiology I			
Course aims: To provide understanding of: <ul style="list-style-type: none"> • Basic medical terminology. • Causes (etiology) and cellular and molecular mechanisms of development (pathogenesis) of the most important disorders of various organs and pathophysiological basis of their clinical manifestations (symptoms and signs) 			
Course outcomes: After completing the course student is expected to be able to: <ul style="list-style-type: none"> • Understand and adequately use basic medical terminology in professional communications • Understand etiology and pathogenesis of the most important functional disorders of various organs, and their typical clinical manifestations. • Understand diagnostic significance of clinical and laboratory tests used to diagnose disorders of various organ functions • Comprehend pathophysiological backgrounds of various drug and chemical action, and therapeutic strategies and strategies to prevent development of various organ disorders. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacology 1			
Teachers: Stepanović-Petrović M. Radica, Savić M. Miroslav, Novaković N. Aleksandra, Tomić A. Maja, Micov M. Ana			
Course status: Mandatory			
Semester: fifth (V)		Year of studies: third (III)	
ECTS points: 6		Course code: F302	
Requirements: Pharmaceutical physiology 2			
Course aims: <ul style="list-style-type: none"> • acquiring knowledge on the pharmacological effects of drugs and the mechanisms of their action • understanding the therapeutic and adverse effects of certain drug groups • acquiring knowledge on the principles of therapeutic drug use 			
Course outcomes: <p>Upon completion of the course, a student is expected to:</p> <ul style="list-style-type: none"> • know the effects of certain groups of drugs, • know the mechanisms of action of certain groups of drugs, • link the therapeutic and adverse effects of certain drug groups with their pharmacological effects, • build up the personal critical attitude towards a drug. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Chemistry 3			
Teachers: Nikolić M. Katarina, Vujić B. Zorica, Olivera A. Čudina, Branka Ivković, Slavica B. Oljačić, Dobričić Vladimir			
Course status: Mandatory			
Semester: V	Year of studies: III		
ECTS points: 9	Course code: F304		
Requirements: Pharmaceutical Chemistry 1			
Course aims: Providing students with a solid grounding in principles and applications of medicinal and pharmaceutical chemistry and drug discovery of clinically significant drugs affecting CNS, immune system, and cardiovascular system. Adopted knowledge from this field is important for mastering courses of medicinal, pharmaceutical-technological group and courses of pharmaceutical practice.			
Course outcomes: Student is expected to obtain theoretical and practical knowledge in pharmaceutical chemistry and to analyze essential data related to physicochemical and chemical properties, mechanism of action on molecular level, biotransformation reactions, in vivo and in vitro interactions and stability of drugs in several pharmacotherapeutic groups.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacognosy			
Teachers: Kovačević N. Nada, Petrović D. Silvana, Maksimović A. Zoran, Kundaković D. Tatjana, Drobac M. Milica			
Course status: Mandatory			
Semester: Fifth (V), Sixth (VI)	Year of studies: Third (III)		
ECTS points: 10	Course code: F305		
Requirements: Botany, Organic chemistry 2, Physiology 2			
Course aims: Achievement of knowledge about pharmacologically active plant and animal metabolites (chemical and physical properties, distribution and biological activity, qualitative and quantitative analysis, principles of isolation and chemical characterization). Achievement of knowledge about natural medicinal raw materials – drugs and drug preparations (morphological and anatomical characteristics, chemical constituents, manufacturing process, identification, quality control, pharmacological activity and use).			
Course outcomes: Student is able to demonstrate knowledge on natural medicinal raw materials (drugs and drug preparations) that are used in the pharmaceutical industry for isolation of active constituents, and/or for the production of herbal medicinal products. Student is able to perform qualitative and quantitative analysis of natural medicinal raw materials constituents, as well as to develop and perform procedures of their extraction and separation in laboratory conditions. Student is able to carry out identification and quality control of drugs and drug preparations, and to demonstrate knowledge on their pharmacological activity and use. Student is competent to participate in the design, organization and management of the production process, as well as in quality assurance of drugs and drug preparations.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Bromatology			
Teachers: Šobajić S. Slađana, Stanković M. Ivan, Đorđević I. Brižita, Đuričić D. Ivana, Vidović B. Bojana, Ivanović Đ. Nevena			
Course status: Mandatory			
Semester: V	Year of studies: 3		
ECTS points: 5	Course code: F303		
Requirements: Organic Chemistry 2, General Biochemistry			
Course aims: Introduction to the fundamental properties of macro- and micronutrients and their physiological and nutritional functions; introduction to the chemical composition of foodstuffs and their potential to fulfill nutritive and energy needs of humans; basic information regarding nutritional additives and food contaminants; introduction to dietary products.			
Course outcomes: Upon completion of the course student is trained: to provide information on the appropriate choice of foodstuffs and foodstuffs combinations for various population groups; to be aware of the basic characteristics of the chemical composition and energy values of foodstuffs; to know basic concepts regarding food safety.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacology 2			
Teachers: Stepanović-Petrović M. Radica, Savić M. Miroslav, Novaković N. Aleksandra, Tomić A. Maja, Micov M. Ana			
Course status: Mandatory			
Semester: sixth (VI)		Year of studies: third (III)	
ECTS points: 6		Course code: F306	
Requirements: Pharmacology 1			
Course aims: <ul style="list-style-type: none"> • acquiring knowledge on the pharmacological effects of drugs and the mechanisms of their action • understanding the therapeutic and adverse effects of certain drug groups • acquiring knowledge on the principles of therapeutic drug use 			
Course outcomes: <p>Upon completion of the course, a student is expected to:</p> <ul style="list-style-type: none"> • know the effects of certain groups of drugs, • know the mechanisms of action of certain groups of drugs, • link the therapeutic and adverse effects of certain drug groups with their pharmacological effects, • build up the personal critical attitude towards a drug. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY	
Study programme: Pharmacy		
Course title: Pharmaceutical technology 1		
Teachers: Savić D. Snežana, Vasiljević D. Dragana, Krajišnik R. Danina, Đekić M. Ljiljana, Čalića R. Bojan, Pantelić N. Ivana		
Course status: Mandatory		
Semester: sixth (VI)	Year of studies: third (III)	
ECTS points: 9	Course code: F308	
Requirements: Physical chemistry, Introduction to pharmacy		
Course aims: Acquiring knowledge on the principles of formulation, preparation/manufacturing processes, pharmaceutical-technological and biopharmaceutical evaluations of various dosage forms (powders for oral and cutaneous application; granules, solutions, suspensions and emulsions for oral and cutaneous application, for nasal, ear and oromucosal application; ointments, gels, creams, cutaneous patches and medicated plasters) and homeopathic preparations; introduction to the types, preparation and application of herbal drug extracts in different dosage forms; training students for the preparation of extemporaneous and galenic drugs and their assessment; development of their ability to use professional literature, critically consider the selection of a suitable drug dosage form, the manner of its preparation, storage conditions and application.		
Course outcomes: Upon completion of this course, the student knows the types, characteristics and functions of excipients in the preparation of drug dosage forms; knows the types, characteristics, preparation/manufacturing processes, pharmaceutical-technological characterization of dosage forms (powders for oral and cutaneous application; granules, solutions, suspensions and emulsions for oral and cutaneous application, for nasal, ear and oromucosal application; ointments, gels, creams, cutaneous patches and medicated plasters) and homeopathic preparations; differentiates the types, preparation and application of herbal drug extracts in different dosage forms; after consulting professional literature, is able to propose the composition and preparation of an appropriate pharmaceutical dosage form and homeopathic preparation.		

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Medical biochemistry			
Teachers: Topić S. Aleksandra, Zeljković R. Aleksandra, Ninić R. Ana			
Course status: Mandatory			
Semester: 6		Year of studies: III	
ECTS points: 7		Course code: F309	
Requirements: General biochemistry			
Course aims: Acquiring knowledge about the role and importance of medical biochemistry in pharmacy (clinical studies, selection and dosage of the drug, monitoring of therapy, interference of the drug with biochemical markers, detection of adverse effects of the drug); acquiring knowledge about the metabolism of carbohydrates, proteins, lipids, water and electrolytes, and their disorders; getting acquainted with basic biochemical markers (their determination and clinical significance in the diagnosis of various diseases).			
Course outcomes: Upon completion of this course, the student will be able to: recognize the role of a biochemical laboratory in diagnosis, monitoring and treatment of the disease; to apply acquired knowledge on the characteristics of biochemical markers in the implementation of rational pharmacotherapy; to apply knowledge about the characteristics of biological fluids used in medical biochemistry; to correctly interpret the composition of biological specimens in healthy persons, in specific physiological conditions and certain diseases; to provide relevant information regarding factors that may affect the pre-analytical, analytical and post-analytical phases of laboratory testing.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacotherapy			
Teachers: Stepanović-Petrović M. Radica, Savić M. Miroslav, Novaković N. Aleksandra, Tomić A. Maja, Micov M. Ana,			
Course status: Mandatory			
Semester: seventh (VII), eighth (VIII)	Year of studies: fourth (IV)		
ECTS points: 9	Course code: F403		
Requirements: Pathophysiology 1, Pathophysiology 2, Pharmacology 1, Pharmacology 2			
Course aims: <ul style="list-style-type: none"> • acquiring knowledge necessary for understanding pharmacotherapy and nonpharmacological measures in the treatment and prevention of various diseases • recognition of the basic signs and symptoms of certain diseases and the reasons for referring the patient to the doctor • knowing of drugs efficacy and safety of in various diseases • training for critical evaluation of drugs and advising patient at the public pharmacy regarding the proper drug use and adverse drug effects. 			
Course outcomes: <p>Upon completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • understand and distinguish pathophysiology, clinical presentation, course, disease prognosis, pharmacological and nonpharmacological treatments of different diseases, • compare different pharmacological options for certain diseases based on their therapeutic efficacy/adverse effect potential, • present patients and healthcare professionals with evidence-based information or advise on drug use. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacokinetics			
Teachers: Miljković R. Branislava, Vezmar Kovačević D. Sandra, Vučićević M. Katarina, Jovanović N. Marija			
Course status: Mandatory			
Semester: seventh (VII)		Year of studies: fourth (IV)	
ECTS points: 7		Course code: F401	
Requirements: Physiology 2, Pharmaceutical chemistry 1, Pathophysiology 1			
Course aims: To understand pharmacokinetic (PK) processes, the place and role of PK in the drug development and drug use, types of PK data analysis and calculation of PK parameters, bioequivalence studies (BE) of medicinal preparations, sources of PK variability and PK drug interactions.			
Course outcomes: On completion of the course, the student is expected to: understand the importance and the place of the PK in the drug development and during drug use; knows the characteristics of PK studies and different methodologies used in the drug research and development; knows the method(s) of bioavailability and bioequivalence (BE) testing; knows PK processes that drug undergoes in the body; knows various PK approaches to data analysis; calculate PK parameters after an individual or repeated drug dosing after i.v. and p.o. administration; understands the application of PK parameters for designing and adjusting the dosing regimen; knows factors (demographic, clinical, genetic, external) that affect PK processes and PK parameters; predict drug interactions based on PK characteristics; knows the principles and the importance of therapeutic drug monitoring and how to interpret the measured concentrations in order to optimize therapy.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Technology 2			
Teachers: Savić D. Snežana, Vasiljević D. Dragana, Krajišnik R. Danina, Cvijić V. Sandra, Čalija R. Bojan			
Course status: Mandatory			
Semester: seventh (VII)	Year of studies: fourth (IV)		
ECTS points: 7	Course code: F4O4		
Requirements: Pharmaceutical Technology 1			
Course aims: Introducing students to the types, composition, characteristics, formulation, and pharmaceutical technical procedures for dosage forms for parenteral, ophthalmic, inhalation, rectal and vaginal application; providing an overview of the biopharmaceutical aspects of formulation and characterization of dosage forms for parenteral, ophthalmic, inhalation, rectal and vaginal application.			
Course outcomes: A student understands the types, composition, compounding/manufacturing procedures, pharmaceutical technical procedures and pharmacopoeial requirements regarding dosage forms for parenteral, ophthalmic, inhalation, rectal and vaginal application; a student is skilled to formulate the above mentioned dosage forms, and has knowledge on types, characteristics and the role of excipients in the formulation; a student knows and understands the principles related to the influence of biopharmaceutical (physiological, drug's physicochemical and formulation) factors on drug release from various dosage forms, and concomitant absorption process; consequently, a student is able to advise patients, and provide relevant information to other healthcare professionals.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Phytotherapy			
Teachers: Kovačević N. Nada, Petrović D. Silvana, Maksimović A. Zoran, Kundaković D. Tatjana, Drobac M. Milica, Marčetić D.. Mirjana			
Course status: Mandatory			
Semester: Seventh (VII)	Year of studies: Fourth (IV)		
ECTS points: 4	Course code: F405		
Requirements: Pharmacognosy			
Course aims: Achievement of knowledge about the position and role of phytotherapy in the system of primary helathcare and self-medication. Proper and safe use of herbal medicinal products for the treatment and prevention of diseases and health promotion.			
Course outcomes: Student knows the basic principles of rational phytotherapy; knows active constituents of herbal medicinal products; can explain the activity mechanisms of the constituents of herbal medicinal products. Student is able to provide the patient with relevant information on the use of herbal medicinal products and capable to critically evaluate selected natural product from the market.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Toxicology			
Teachers: Antonijević M. Biljana, Đukić M. Mirjana, Vujanović L. Dragana, Bulat L. Zorica, Đukić-Ćosić D. Danijela, Ćurčić M. Marijana, Buha Đorđević A. Aleksandra			
Course status: Mandatory			
Semester: Seventh (VII)	Year of studies: Fourth (IV)		
ECTS points: 8	Course code: F4O2		
Requirements: None			
Course aims: Evaluation of knowledge and skills about general toxicology and most important poisons. Acquiring skills for qualitative and quantitative analysis of poisons in biological and other relevant samples. Application of knowledge from toxicology in the analysis and risk assessment of exposition to toxic substances.			
Course outcomes: The student will be able to:- understand the importance of toxicology in the health system and wider social context; - understand the principles of general toxicology and apply them in the consideration of toxicological profiles of the most important poisons;- perform the selection of the sample for toxicological analysis, perform sample preparation and toxic substance analysis, and interpret the result of a toxicological analysis;- apply regulations in toxicology.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Dietetics			
Teachers: Šobajić S. Slađana, Sranković M Ivan, Đorđević I. Brižita, Đuričić D. Ivana, Vidović B. Bojana			
Course status:			
Semester: eighth (VIII)	Year of studies: fourth (IV)		
ECTS points: 4	Course code: F407		
Requirements: Bromatology			
Course aims: Adopt information on existing guides, recommendations and other tools used in the design of dietary regimes; types of studies used in nutrition tests; information on the specific nutritional needs of certain age and specific categories in the prevention and treatment of certain diseases; information on particular groups of dietary products tailored to the needs of specific population groups; interactions of food ingredients with drugs, introduction to intolerance to food ingredients.			
Course outcomes: Upon completion of the course, the student would be able to: provide interpretations of dietetic recommendations; provides basic advice on healthy eating habits of the general population and basic nutritional advice in chronic non-communicable diseases; to provide basic information about dietary products, interactions of medicines and food; to give advice on dietary regimen for food intolerances.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical technology 3			
Teachers: Parojčić V. Jelena, Ibrić R. Svetlana, Cviić V. Sandra, Đuriš D. Jelena, Đekić M. Ljiljana			
Course status: Mandatory			
Semester: eighth (VIII)	Year of studies: fourth (IV)		
ECTS points: 7	Course code: F4O6		
Requirements: Pharmaceutical technology 1			
Course aims: Introducing students to the types, composition, characteristics, approaches to formulation development, and pharmaceutical technical procedures for evaluation of solid oral dosage forms, and modified release dosage forms/drug delivery systems for different routes of administration; providing an overview of the biopharmaceutical aspects of formulation development and biopharmaceutical characterization of various dosage forms/drug delivery systems.			
Course outcomes: Student understands the types, composition, compounding/manufacturing procedures, pharmaceutical technical procedures and pharmacopoeial requirements regarding different solid oral dosage forms; student has knowledge on types, characteristics and the role of excipients in the formulation of solid oral dosage forms; a student knows and understands the principles related to the influence of physiological, drug's physicochemical, and formulation factors on drug release and absorption after administration of solid oral dosage forms and modified release dosage forms/drug delivery systems; student is able to advise patients on the relevant aspects of solid dosage forms administration, and provide relevant information to other healthcare professionals.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Cosmetology			
Teachers: Savić D. Snežana, Vasiljević D. Dragana, Lukić Ž. Milica			
Course status: Mandatory			
Semester: eight (VIII)	Year of studies: fourth (IV)		
ECTS points: 4	Course code: F4O8		
Requirements: Pharmaceutical technology 1			
Course aims: Introducing with legislative and regulations on cosmetic products and dermocosmetic preparations, the most important ingredients (raw materials) for preparation/manufacturing of cosmetic and dermocosmetic products, carriers for cosmetic active substances (CAS), with types, forms, preparation/manufacturing procedures, as well as with cosmetic/dermocosmetic products effects on skin and its adnexa; enabling of students for giving the adequate advices and recommendations on way of application and possible non-side effects of cosmetic and dermocosmetic products.			
Course outcomes: Upon finishing this course student has a knowledge on law regulations connected to cosmetic products and dermocosmetic preparations; knowledge on types, preparation/manufacturing procedures and quality control, as well as testing of cosmetic and dermocosmetic products efficacy; student is able for critical perceiving of marketing information on cosmetic products effects and developing of ability for advising on cosmetic products choice and their application; student has a knowledge on potentially non-side effects of different cosmetic products and is able to differentiate them.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacy practice			
Teachers: Krajnović M. Dušanka, Lakić M. Dragana, Odalović M. Marina, Tadić B. Ivana			
Course status: Mandatory			
Semester: eighth (VIII)	Year of studies: fourth (IV)		
ECTS points: 4	Course code: F409		
Requirements: Pharmacology 2, Pharmaceutical technology 1			
Course aims: Mastering the knowledge, concepts and skills of pharmaceutical practice at different levels of the health system. Understanding the essential and national list of drugs; classification of drugs, sources of information on medicines and medical devices. Application of the term pharmacy services and types of services. Mastering the processes and activities of pharmaceutical practice - direct contact with the patient and logistical aspects of the practice. Developing patient counseling skills. Understanding the concept of safe drug use.			
Course outcomes: By the end of the course, the student will be able to: describe different concepts of pharmacy practice, apply a national medicine list, evaluate different sources of information on drugs and medical devices, describe pharmacy services, implement and integrate various pharmacy practice activities, conduct patient counseling and interpret the concept of safe drug use.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY	
Study programme: Pharmacy		
Course title: Basics of Pharmaceutical Management		
Teachers: Marinkovic D Valentina, Krajnovic M Dusanka		
Course status: Mandatory		
Semester: eighth (VIII)	Year of studies: fourth (IV)	
ECTS points: 2	Course code: F4O10	
Requirements:		
Course aims: To introduce students into general and basic principles of modern business / management and the need for the improvement of work organization (in the micro and macro system); to master the management of health care system and the organization of pharmaceutical sector (from manufacturing to patient); to acquire the basic management skills in pharmaceutical market and pharmaceutical services and to recognise the values for society, economy and patient-centred care.		
Course outcomes: Student will: understand the specifics of pharmaceutical business in the economy and healthcare, their interrelations and importance for society (macro), pharmacy / producers (meso) and individual (micro); master the basic concepts of marketing (behavior on the pharmaceutical market) of new and generic drugs, and understand the health sector market; master the basic skills of organizing / managing pharmaceutical practice by the knowledge of basic work standards, process map-algorithms; understand and master the concepts of supply chain (manufacturer-wholesale-pharmacy-health system) and drug life cycle; able to apply and integrate pharmaceutical scientific knowledge and skills with the knowledge on the management of competitive pharmacy.		

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Professional training I			
Teachers: Vezmar Kovačević D. Sandra, Odalović M. Marina, Ibrić R. Svetlana, Tomić A. Maja, Vidović B. Bojana, Drobac M. Milica, Vasiljević D. Dragana, Vučićević M. Katarina, Lakić M. Dragana, Novaković N. Aleksandra			
Course status: Mandatory			
Semester: eighth (VIII)	Year of studies: fourth (IV)		
ECTS points: 1	Course code: FSOF2		
Requirements: Pharmaceutical technology 1, Pharmacognosy, Pharmacology 1 and 2			
Course aims: Implementation and improvement of knowledge and skills which the student acquired during the studies.			
Course outcomes: Upon completion of the professional practice I, it is expected that the student has improved knowledge about medicines (active substances and excipients, pharmaceutical dosage forms, storage and dispensing of medicines, mode of action), food supplements, cosmetic and other products used in healthcare, as well as related skills on the use of contemporary professional literature, pharmaceutical calculations, extemporaneous compounding, as well as skills for team work and communication with pharmacists in the pharmacy.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Clinical Pharmacy			
Teachers: Miljković R. Branislava, Vezmar Kovačević D. Sandra, Vučićević M. Katarina, Jovanović N. Marija			
Course status: Mandatory			
Semester: IX	Year of studies: V		
ECTS points: 7	Course code: F501		
Requirements: Pharmacotherapy, Pharmacokinetics			
Course aims: To acquire and apply the knowledge on Clinical pharmacy in primary, secondary and tertiary healthcare level; to explain the Pharmaceutical care concept and ways to improve the therapeutic outcomes through monitoring and managing drug interactions, side effects and adherence; to present the role of pharmacoconomics in the evaluation of rational drug therapy.			
Course outcomes: On completion of the course, the student should acquire: knowledge about the concept of evidence-based pharmacy/medicine; pharmaco-economic principles in decision making; the concept of identifying, solving and preventing drug-related problems; patient monitoring and counselling on medications; therapy assessment and medication use review to improve patient outcomes.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Industrial Pharmacy			
Teachers: Parojčić V Jelena, Ibrić R Svetlana, Đuriš D Jelena, Čalija R Bojan, Aleksić R Ivana			
Course status: Mandatory			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 6	Course code: F502		
Requirements: Pharmaceutical Technology 2, Pharmaceutical Technology 3			
Course aims: Getting students to know and understand the principles and specifics of industrial manufacturing of medicines in terms of: approaches to formulation development; stability of medicines; regulatory requirements related to the development, production and storage of medicines; requirements of Good manufacturing practices; assurance of the conditions required for the production of medicines; properties and selection of equipment used for the industrial manufacturing; quality systems and quality assurance.			
Course outcomes: Knowledge and understanding of different approaches to research and development in the pharmaceutical industry; knowledge of regulatory requirements related to the development, production, storage of medicines, release of medicinal products on the market and the requirements for a pharmaceutical quality system in the pharmaceutical industry; knowledge of the working principles and types of equipment used in the production of medicines; the student qualifies for several jobs in the pharmaceutical industry, in research and development, production and quality assurance.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Ethics and Legislation			
Teachers: Крајновић М. Душанка, Маринковић Д. Валентина			
Course status: Mandatory			
Semester: 9	Year of studies: 5		
ECTS points: 3	Course code: F504		
Requirements: none			
Course aims: 1. Understanding of national and European legislative rules in pharmaceutical services and developing appropriate skills for their practical implementation. 2. Introduction into core health care principles, rights and duties and the health care insurance of its provider, its user and the third party. Overmastering the basic principles of implementation of the applied ethics in pharmacy, that are indispensable for analysis and solving problems in pharmaceutical health services and biomedical research - from development to production and marketing. 3. Understanding the practical significance of ethical and legislative problems. 4. Development of critical thinking in the process of ethical analysis of specific problems from common environment in pharmacy practice (problem identification, choosing of ethical concept and justification of the certain decisions).			
Course outcomes: After completing the course, student will be able to: 1. perceive and apply the normative ethical principles and theories that are significant in solving problems; 2. implement regulations, subordinate regulations and professional regulations that regulate all aspects of pharmaceutical activities as well as the rights and the duties of pharmacists, patients and the third party; 3. make an ethical analysis of a case from pharmaceutical practice, distinguish legislative and ethical problems that pharmacists encounter in the professional work; 4. critically evaluate his own moral duties and the legal basis of his own professional activity.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Drug analysis			
Teachers: Zečević L. Mira, Malenović M. Anđelija, Otašević M. Biljana, Protić D. Ana			
Course status: Mandatory			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 8	Course code: F503		
Requirements: pharmaceutical chemistry			
Course aims: Acquiring knowledge and skills related to pharmacopoeial drug quality testing and methods used in these procedures. Training students for the selection of appropriate methods for drug control. Making students familiar with basic principles of the development of new methods for the control of drugs, as well as the validation process. Acquisition of expert knowledge on the structure of certificates of analysis and basic regulatory requirements to drug control.			
Course outcomes: After this course, students are expected to apply the knowledge in routine control of pharmaceutical substances and pharmaceutical dosage forms, to select the appropriate method for the control of drugs, demonstrate and explain the importance of the development and validation of new methods and to interpret and apply current regulatory requirements to drug control.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Professional training II			
Teachers: Vezmar Kovačević D. Sandra, Odalović M. Marina, Ibrić R. Svetlana, Tomić A. Maja, Vidović B. Bojana, Drobac M. Milica, Vasiljević D. Dragana, Vučićević M. Katarina, Lakić M. Dragana, Novaković N. Aleksandra			
Course status: Mandatory			
Semester: X	Year of studies: V		
ECTS points: 15	Course code: BSOBZ		
Requirements: completed exams for subjects in semester I-VIII			
Course aims: Implementation and improvement of knowledge which the student acquired during the studies. Obtaining and improving knowledge and skills in the field of pharmacotherapy, pharmaceutical technology, pharmaceutical practice, pharmaceutical care, clinical pharmacy, pharmacy administration, regulatory affairs and professional regulation, dietetics and phytotherapy. Gaining of personal and professional attitude, responsibility and action.			
Course outcomes: Upon completion of the professional practice, under supervision of the pharmacist, student is expected to be capable of conducting supply, receiving and storage of medicines, medical devices, food supplements, cosmetical and other products used in healthcare; to check the appropriateness of the medicine prescription; to perform extemporaneous compounding of medicines; to dispense medicines; to identify problems related to the usage of medicines; to monitor and register adverse reactions to medicines; to perform administrative data elaboration and keep the professional records. It is also expected that the student will develop skills of communication with patients, colleagues and physicians.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Final Work			
Teachers:			
Course status: Mandatory			
Semester: tenth (X)	Year of studies: fifth (V)		
ECTS points: 15	Course code: BZR		
Requirements: finished all courses of the study programme, in the total of 285 ECTS			
Course aims: Student gains competencies to apply basic, theoretically methodological, scientific and professional and professionally applicative knowledge and methods for solution of specific problems relative to the selected topic of the final work, to write the final work and defend it in front of the competent commission.			
Course outcomes: Student is capable to, based on the knowledge and skills gained during the studies, as well as based on the literature survey, analyze specific problem, its structure and complexity, and find its solution through experimental or bibliographic work, depending on the selected topic of the final work; student knows how to process and interpret obtained results and can make adequate conclusions, and is capable to present the results both in written form and orally, and discuss them.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Application of Information Technology in Pharmacy			
Teachers: Ranković D. Dragana, Tadić B. Ivana			
Course status: Elective			
Semester: fourth (IV)	Year of studies: second (II)		
ECTS points: 3	Course code: F111		
Requirements: none			
Course aims: Gathering new skills and knowledge in the field of information technology for the future professional development. Application of the contemporary information technology methods in the processes of learning and teaching. Introduction to the information technology systems in the pharmaceutical profession and the healthcare system.			
Course outcomes: Knowledge and understanding of information technologies. Student will be able: to use MS Word and Excel for the purposes of learning and the future professional work, to search through the web pages in order to find studying materials, as well as to use the possibilities of on-line learning. Usage of the pharmaceutical and healthcare information systems.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Foreign Language in Professional Communication of Pharmacists			
Teachers: Leontina A. Kerničan, Milica M. Mirić			
Course status: Elective			
Semester: fourth (IV)		Year of studies: second (II)	
ECTS points: 3		Course code: F112	
Requirements: no			
Course aims: To • Introduce students to pharmaceutical technical terminology and their characteristics • develop abilities in oral and written communication on the main professional issues • develop students' abilities to understand the English/French technical literature			
Course outcomes: To • overmaster the English/French technical terminology in use in pharmacy • understand less comprehensive English/French technical literature, especially the study literature • apply the acquired knowledge of technical language in communication with patients and health care practitioners in his/her working environment			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Colloid chemistry			
Teachers: Aleksić M. Mara, Pejić D. Nataša			
Course status: Elective			
Semester: fourth (IV)	Year of studies: second (II)		
ECTS points: 3	Course code: F113		
Requirements: none			
Course aims: To expand knowledge of the properties and behavior of colloidal systems, as well as to familiarize with the physico-chemical characteristics of natural and synthetic macromolecules, surfactants, sols, and disperse systems. To allow a student to acquire the knowledge of the production technology of pharmaceutical, medical and cosmetic products easily, as well as to understand of different biochemical systems behavior.			
Course outcomes: A student is familiar with the types and characteristics of different colloidal systems, the structure of colloids, as well as with both behavior and properties of natural and synthetic macromolecules. The student understands methods of isolation, purification and characterization of colloids, as well as fundamental principles of rheology. The student is trained (theoretically and practically), to using instructions on basic instruments, perform the appropriate experiment on her/his own, related to micellar, optical and rheological properties of the colloids, as well as process the obtained experimental results.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Integration of metabolic pathways			
Teachers: Ninić R. Ana, Sopić D. Miron			
Course status: Elective			
Semester: Forth (IV)	Year of studies: Second (II)		
ECTS points: 3	Course code: F114		
Requirements: Organic chemistry 2			
Course aims: Acquiring knowledge of basic anabolic and catabolic processes interactions and alterations in organs that have important metabolic roles, as well as common metabolic pathways and their regulation in specific physiological and pathological conditions.			
Course outcomes: After successfully mastered course it is expected that student has knowledge to: 1) describe catabolic and anabolic pathways under specific physiological and pathological conditions in different organs; 2) analyze catabolic and anabolic pathways in different organs; 3) analyze catabolic and anabolic pathways in special physiological and pathological conditions; 4) describe how these pathways interact; 5) describe how these pathways are regulated in different organs and under different conditions.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Chemistry of Bioelements			
Teachers: Slađana B. Tanasković, Branka P. Dražić, Vesna R. Pešić, Marin M. Jukić, Aleksandra R. Zeljković			
Course status: Elective			
Semester: fourth (IV)	Year of studies: second (II)		
ECTS points: 3	Course code: F1I5		
Requirements: General and Inorganic Chemistry, Organic chemistry I, Biology			
Course aims: Student acquires basic knowledge of Bioinorganic chemistry necessary for mastering curriculum of biopharmaceutical sciences. Basic knowledge of this field include the understanding of the basic chemical principles of complex compounds, the knowledge about the possibility of forming metal complexes and biomolecules, a deeper understanding of the characteristics of metal ions to the formation of coordination compounds and their structural characteristics directly related to the biological activity.			
Course outcomes: After successfully mastering the course the student is expected to: <ul style="list-style-type: none"> • understand the role of metal ions in physiological processes and can be acquired knowledge to apply in predicting reactions in biological systems • understand the concepts of coordination chemistry in a biological environment and apply this knowledge to analyze the impact of environment on the reactivity of metal ions • predict the interaction of the preparation containing the metal ions with a biologically relevant target molecules - nucleic acids and proteins in order to better define descriptors in the design of organometallic drugs.. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Selected topics in Physiology			
Teachers: Vesna R. Pešić, Marin M. Jukić, Stanić D., Batinić B.			
Course status: Elective			
Semester: fourth (IV)	Year of studies: second (II)		
ECTS points: 3	Course code: F116		
Requirements: Physiology 1, Physiology 2			
Course aims: Provision of important knowledge from physiology of organ systems and human body as whole, that were not the part of the main course in Physiology: physiology of sports, ageing, memory and learning, and neuroendocrine physiology.			
Course outcomes: After finishing this course student will be trained to: <ul style="list-style-type: none"> • Biological and physiological basis of learning process and formation of memory, physiological basis of physical activity and ageing, role of HPA axis and behavior and • Understand interconnection of these processes and states with functioning of an organism as a whole entity 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Basics of Molecular Genetics			
Teachers: Biljana M. Potparević, Lada P. Živković			
Course status: Elective			
Semester: fourth (IV)	Year of studies: second (II)		
ECTS points: 3	Course code: F117		
Requirements: Biology and Human Genetics			
Course aims: Molecular genetics studies heredity and their rules at the molecular level and is concerned with the mechanisms of gene regulation. Aim: <ul style="list-style-type: none"> • studying and understanding of the central dogma of molecular biology • studying the mechanisms of genetic recombination, regulation of gene expression and DNA repair mechanisms • studying the methods in Molecular genetics 			
Course outcomes: After completing the course the students are expected to be able to: <ul style="list-style-type: none"> • Describe and understand the chemical composition of nucleic acids, and the structure and function of nucleic acids • Understand the basis of the genetic code • Describe the transfer of genetic information from DNA through RNA to the protein primary structure • Understand and perform some basic methods in molecular genetics 			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Analytical Reagents			
Teachers: Uskokovic-Markovic M. Snezana, Odovic V. Jadranka			
Course status: Elective			
Semester: fourth (IV)	Year of studies: second (II)		
ECTS points: 3	Course code: F118		
Requirements: none			
Course aims: The aim of the course is to introduce students with the requirements related to analytical reagents used in qualitative and quantitative chemical analysis of importance in pharmaceutical analyses, first of all the degree of purity, precautionary measures for the preparation of reagents and stability, as well as usage and conditions of storage of reagents.			
Course outcomes: After successfully finished course, the student is able to choose and use analytical reagents correctly and thus ensure the successful usage of the analytical procedure for identification and for the determination of analytes of interest in the real sample.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Selected Topics in Pathophysiology			
Teachers: Leosavić M. Gordana, Nacka-Aleksić M. Mirjana			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F2I1		
Requirements: Pathophysiology 1			
Course aims: To provide the student with: <ul style="list-style-type: none"> • comprehension of the significance of interaction between genetic and environmental factors in the pathogenesis of multifactorial diseases, • understanding of the role of stress in the pathogenesis of common disorders, • knowledge about the etiology, pathogenesis, clinical manifestations and putative complications of selected haematological, skin and locomotor diseases, as well as diseases of the reproductive and central nervous system. 			
Course outcomes: After completing the course, the student is expected to: <ul style="list-style-type: none"> • Identify the etiology and understand the pathogenesis of the selected disorders, • Understand the pathogenesis of their possible complications, • Identify target molecules and putative pharmacotherapeutical approaches in the selected disorders, • Understand the mechanisms of action of drugs with known indications within the selected disorders, • Improve the knowledge of medical terminology. 			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Selected Topics in Pharmaceutical Chemistry			
Teachers: Vujić B. Zorica, Erić M. Slavica, Brborić S. Jasmina, Čudina A. Olivera, Nikolić M. Katarina, Oljačić V. Slavica			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F212		
Requirements: none			
Course aims: Providing students with expanded knowledge in medicinal chemistry and discovery of drugs composed of novel chemical scaffold, designed as analogs of a lead compound, or agents interacting with new pharmacological targets. Providing students with basic knowledge in diagnostic agents and radiopharmaceutics.			
Course outcomes: Student is expected to learn principles in analysis of physicochemical properties, reactivity and stability of the studied drugs; to analyze the relationship between chemical structure and biological activity of molecules, to understand chemical interactions of drugs, drug-target interactions and chemical aspects of drug metabolism.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Selected Topics in Microbiology			
Teachers: Antić Stanković A. Jelena, Milenković T. Marina			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F2I3		
Requirements: No			
Course aims: To introduce the student to: 1) the basics of the epidemiological chain of transmission of the cause of infectious diseases of bacterial, viral, fungal and parasitic etiology, as well as measures of prevention of these diseases, 2) the possibility of application of microorganisms in pharmacy, biotechnology and food industry, and 3) basic principles of microbiological control in pharmaceutical industry.			
Course outcomes: After completing the course Selected topics in microbiology the student will be able to analyze and propose procedures related to the application of laboratory methods for the detection and monitoring of infectious diseases, to participate in the interpretation of the results of laboratory (microbiological) findings, to propose preventive measures to prevent the occurrence or spread of infectious diseases. used in the process of producing vaccines, antibiotics, human proteins, enzymes.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Medicinal plants and the environment			
Teachers: Lakušić S. Branislava, Slavkowska N. Violeta, Stojanović Lj. Danilo			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F2I4		
Requirements: Botany			
Course aims: Introduction to basic ecological concepts and processes in nature and the importance of biodiversity. Resolving the variability of secondary metabolites (essential oils, flavonoids, alkaloids) under the influence of different ecological factors. Introduction to aspects of plant diversity utilization. Understanding the importance of biodiversity conservation for human health. Introduction to wild growing medicinal flora of Serbia, threatening factors, conservation and principles of sustainable collection.			
Course outcomes: After the course student will be able to understand the importance of environment and biodiversity conservation for human health; name the aspects of plant diversity utilization; understand the connection between ecological factors and the content of active principles of medicinal and aromatic plants; the student should know the potential of the flora of Serbia; understand the degree of vulnerability and conservation measures, apply the principles of sustainable collection of wild medicinal plants.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Analysis of food and dietary products			
Teachers: Šobajić S. Slađana, Stanković M. Ivan, Đorđević I. Brižita, Đuričić D. Ivana, Vidović B. Bojana, Ivanović Đ. Nevena			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F215		
Requirements: Bromatology			
Course aims: Introduction to the requirements of the national regulations, control requirements and the methods used for the assessment of the quality and safety of foodstuffs and dietary products. Introduction to the specificity of working with food as an analytical matrix.			
Course outcomes: Upon completion of practical classes, the student is trained to apply the basic analytical methods for the assessment of quality and safety of certain categories of foodstuffs, including dietetic products, and to compare them with the requirements of the respective national and EU legal regulations.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Analysis of herbal drugs and preparations			
Teachers: Kovačević N. Nada, Petrović D. Silvana, Maksimović A. Zoran, Kundaković D. Tatjana, Drobac M. Milica, Marčetić D. Mirjana			
Course status: Elective			
Semester: Sixth (VI)		Year of studies: Third (III)	
ECTS points: 3		Course code: F2I6	
Requirements: Attended Pharmacognosy practices			
Course aims: Training of students for independent application of procedures for analysis and quality control of selected herbal medicinal raw materials (herbal drugs and herbal drug preparations) in specific assignments, interpretation and presentation of obtained results.			
Course outcomes: Student can independently perform the analysis and quality control of selected herbal medicinal raw materials (herbal drugs and herbal drug preparations), to interpret the obtained results, write the analysis report, as well as to present the results. Student will be able to prepare appropriate herbal extract. Student understands the principles of isolation of selected groups of herbal constituents, their purification and identification.			
Seminars			
Other activities			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Selected Chapters of Analytical Chemistry with Module of Green Chemistry			
Teachers: Ražić S. Slavica, Uskoković-Marković M. Snežana, Odović V. Jadranka, Đogo Mračević M. Svetlana			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F217		
Requirements: none			
Course aims: This course provides introduction to analysis of real samples. Analyses of complex samples require systematic approach to the problem, and student gain the first experiences in setting methodology how to solve particular analytical problem. In the module Green Chemistry students learn about the most contemporary field of chemistry, its importance in analytical practice and especially about the possibilities of application in pharmacy. Students learn how to use advanced analytical methods and techniques in accordance with principles of green chemistry and sustainable development.			
Course outcomes: <ul style="list-style-type: none"> • Student learnt how to approach analysis of real samples. • Student gained knowledge for appropriate selection of analytical method in inorganic ion analysis, processing and discussing of results. • Student is capable to identify, formulate, analyze and solve problems of chemical analysis, to select appropriate sampling technique, as well as a method of sample pretreatment for quantitative chemical analysis. • With basic knowledge of principles of green chemistry student is able to select appropriate methodology, with risk assessment on environment and express ethical and social responsibility. 			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Foreign Language in Academic and Professional Use			
Teachers: Kerničan A. Leontina, Mirić M. Milica			
Course status: Elective			
Semester: sixth (VI)	Year of studies: third (III)		
ECTS points: 3	Course code: F218		
Requirements: none			
Course aims: To • Overmaster the oral and written communication technics on academic and professional level • Develop the abilities of a text structural reconstruction and a scientific paper synthesis • Activate basic written and oral communication patterns in pharmacists' specific professional environment			
Course outcomes: To • Apply the acquired knowledge on academic writing to be smoothly involved in academic society • Organise appropriate written patterns according to his professional requirements • Arrange written and oral patterns suited to various professional requirements of pharmaceutical profession			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Public health in pharmaceutical practice			
Teachers: Krajnovic M. Dusanka			
Course status: Elective			
Semester: VIII	Year of studies: IV		
ECTS points: 3	Course code: F3I1		
Requirements: none			
Course aims: Student will be able to: 1. introduce students to the concepts / principles of "new" public health; 2. meet and identify key carriers of the public health programme and the role of pharmacists; 3. identify target groups, activities and different communication channels in public health programmes; 4. introduce students to the concept of patient safety and public health programme models in pharmaceutical practice.			
Course outcomes: Student will: 1. understand the principles of public health; 2. understand and recognize the key carriers of the public health programme and the role of pharmacists; 3. acquire the skills to distinguish the target groups and the content of the public health programme as well as the appropriate communication channels; 4. overmaster the methods for implementing the public health programme in pharmaceutical practice through health promotion and disease prevention, especially in the aspect of patient safety.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Marketing			
Teachers: Marinkovic D. Valentina, Tadic B. Ivana, Krajnovic M. Dusanka			
Course status: Elective			
Semester: eight (VIII)	Year of studies: fourth (IV)		
ECTS points: 3	Course code: F312		
Requirements: none			
Course aims: The aims of this course are: students will acquire knowledge in the field of pharmaceutical marketing; be familiar with modern methods of marketing strategies; be informed of the communication processes during the marketing activities; promote the integration of pharmaceutical science and management skills			
Course outcomes: After completing this course the student will understand the pharmaceutical market and the importance of elections of marketing methods directed to social values; will be able to use analytical methods for market assessment (SWOTs and portfolio analysis); they will understand the concept of added value in the pharmaceutical strategic management; will master the skills to organize promotional activities; will be familiar with the ethical codes			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Sport pharmacy			
Teachers: Malenović M. Anđelija, Dopsaj B. Violeta, Tomić A. Maja, Đorđević I. Brižita, Otašević M. Biljana, Protić D. Ana			
Course status: Elective			
Semester: eight (VIII)	Year of studies: fourth (IV)		
ECTS points: 3	Course code: F313		
Requirements: none			
Course aims: Introduction of students with the role and importance of pharmacists in monitoring drug abuse in sport: as part of the team, advisory, educational; doping prevention; training for work in control laboratories; correctly designing a diet; drug supply; monitoring and analysis of the effects of drugs on biochemical and haematological parameters.			
Course outcomes: Ability of pharmacists to apply acquired knowledge in monitoring the use of drugs in sports. Knowledge of legislation in the field of sports. Prevention and control of doping. Education of athletes and recreational sport players about the use and abuse of drugs in sports. Monitoring the Effects of Rational Application of Dietary Supplements - Nutrient Source. Knowledge and use of knowledge about the influence of drugs on biochemical and haematological parameters.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Medical devices			
Teachers: Malenović M. Anđelija; Vasiljević D. Dragana; Drobac M. Milica			
Course status: Elective			
Semester: VIII	Year of studies: IV		
ECTS points: 3	Course code: F3I4		
Requirements: Pharmaceutical technology 1			
Course aims: The basics of regulatory processes related to production, quality control, safety assessment, conformity assessment procedure, registration of medical devices and trade of medical devices. Acquiring knowledge about the types, composition, structure and basic functional characteristics of selected medical devices of different categories and classes.			
Course outcomes: The basic knowledge concerning national and European regulations on medical devices, registration of medical devices, documentary assessment of quality, trade monitoring, vigilance and post-marketing surveillance of medical devices. The competence to provide expert information on medical devices, as well as adequate recommendations and advice according to patient needs and diagnosis.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Communication in Pharmacy Practice			
Teachers: Krajnovic M. Dusanka			
Course status: Elective			
Semester: 8	Year of studies: 4		
ECTS points: 3	Course code: F315		
Requirements: none			
Course aims: To introduce students into: 1. the concepts of communication, the principles of communication in healthcare and the specific aspects of communication in pharmacy practice. 2. the types, styles and barriers of communication in pharmacy practice. 3. the basic concepts of integrated communication, basic and advanced instruments in pharmaceutical practice.			
Course outcomes: Student will be able to: 1. understand the principles of communication in professional practice. 2. understand the written and verbal and non/verbal communication. 3. communicate with different groups of patients and different stakeholders. 4. master interpersonal communication. 5. identify the importance of communication for the quality of care and the safety of patients.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Drug metabolism			
Teachers: Миљковић Р. Бранислава, Везмар Ковачевић Д. Сандра, Вучићевић М. Катарина, Јовановић Н. Марија			
Course status: Elective			
Semester: VIII	Year of studies: IV		
ECTS points: 3	Course code: F316		
Requirements: Pharmaceutical chemistry 1			
Course aims: To acquaint the student with metabolism processes, the role of transporters in elimination process, main enzyme complexes, hepatic/extrahepatic metabolism, the importance of metabolism testing, the influence of variability factors, the influence of inductors/inhibitors on drug metabolism, genetic polymorphism of importance for drug metabolism and transporters.			
Course outcomes: On completion of the course, the student should acquire: knowledge of importance of transporters in drug elimination, different enzyme complexes, hepatic/extrahepatic metabolism, presystemic metabolism, pharmacokinetic assessment of drug metabolism; understanding mechanisms of induction and inhibition of metabolism, importance of genetic polymorphism; understanding metabolism changes due to influence of variability factors and consequently changes in drug exposure.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Acute Drug Poisoning			
Teachers: Bulat L. Zorica, Antonijević M. Biljana, Đukić M. Mirjana, Vujanović L. Dragana, Đukić-Ćosić D. Danijela, Ćurčić M. Marijana, Buha Đorđević A. Aleksandra			
Course status: Elective			
Semester: Eight (VIII)	Year of studies: Fourth (IV)		
ECTS points: 3	Course code: F317		
Requirements: none			
Course aims: Acquisition, adoption, synthesis and implementation of knowledge on the toxicity of the most important groups of drugs, including their toxic effects, mechanisms of toxicity, as well as the analytics.			
Course outcomes: Qualification of Masters of Pharmacy-Medical Biochemistry to prove and determine the drug that caused poisoning, to follow the kinetics of the drugs during the therapy and to contribute to the prevention of drug poisoning.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Laboratory Diagnosis of Metabolic Disorders			
Teachers: Stefanovic Z. Aleksandra, Kotur-Stevuljevic M. Jelena, Bogavac-Stanojevic B. Natasa			
Course status: Elective			
Semester: eight (VIII)		Year of studies: fourth (IV)	
ECTS points: 3		Course code: F318	
Requirements: none			
Course aims: Broadening of students' knowledge and skills in the area of laboratory diagnostics, therapy and monitoring of the most frequent chronic diseases: diabetes and dyslipidemia.			
Course outcomes: Students will be able to perform analytical methods used in laboratory diagnosis of diabetes. Also, students will know how to analyse biochemical analysis results from the laboratory diagnostics of diabetes, so as monitoring of the pharmacological and non-pharmacological therapy of diabetes. Students will know how to analyse biochemical analysis results from the laboratory diagnostics of dyslipidemia. They will be able to monitoring the results of pharmacological and non-pharmacological therapy of dyslipidemia.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Novel Drug Delivery Systems			
Teachers: Ibrić R. Svetlana, Đekić M. Ljiljana, Čalija R. Bojan			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F4I1		
Requirements: Pharmaceutical Technology 2, Pharmaceutical Technology 3			
Course aims: Educating the students about the types, composition and properties of novel pharmaceutical dosage forms / therapeutic systems for oral, parenteral, transdermal, pulmonary, buccal, ophthalmic, intravaginal, intrauterine and nasal administration; introduction to the specific aspects of colloidal drug carriers; introduction to the concepts of the influence of physico-chemical, biological and pharmaceutical-technological factors on the process of absorption and release of drug substance from novel pharmaceutical dosage forms / therapeutic systems.			
Course outcomes: A student has knowledge on types, composition and properties of novel pharmaceutical dosage forms / therapeutic systems for oral, parenteral, transdermal, pulmonary, buccal, ophthalmic, intravaginal, intrauterine and nasal administration; a student has knowledge and understands concepts related to the influence of physico-chemical, biological and pharmaceutical-technological factors on the process of absorption and release of drug substance from novel pharmaceutical dosage forms / therapeutic systems.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Dosage forms for paediatric population			
Teachers: Ibrić R. Svetlana, Cvijić V Sandra, Pantelić N. Ivana			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F4I2		
Requirements: Pharmaceutical Technology 1, Pharmaceutical Technology 2, Pharmaceutical Technology 3			
Course aims: Introducing students to the specific aspects of drug formulation and usage in paediatric medicine (dose adjustment, acceptability, palatability etc); providing an overview of paediatric dosage forms, compounding of paediatric drugs, pharmaceutical technical procedures and methods to assess biopharmaceutical properties of paediatric drugs, regulatory requirements and guidelines related to the research and development, manufacturing, quality control and marketing authorization of paediatric drugs.			
Course outcomes: A student understands the specificities of drug formulation in paediatric medicine, and has knowledge on types, pharmaceutical technical characteristics and biopharmaceutical aspects of different paediatric dosage forms; a student knows about regulatory requirements and guidelines related to research and development, manufacturing, quality control and marketing authorization of paediatric drugs; a student is able to critically select the appropriate dosage form, depending on patient age and therapeutic aim. A student is skilled in compounding paediatric medicines, and extemporaneous preparation of age-appropriate dosage forms from the licensed medicines.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacoepidemiology and pharmacoconomics			
Teachers: Lakić M. Dragana, Odalović M. Marina, Tadić B. Ivana			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F4I3		
Requirements:			
Course aims: Developing knowledge in the field of pharmacoepidemiology and pharmacoconomics. Training for critical evaluation of information in the field of pharmacoepidemiology and pharmacoconomics. Application of the research methods in these areas. Facilitating understanding of pharmacoepidemiological and pharmaco-economic results of the analysis.			
Course outcomes: By the end of the course, the student will be able to: critically evaluate pharmacoepidemiological and pharmaco-economic problems, analyze databases related to the use of drugs, apply basic methods from pharmacoepidemiology and pharmaco-economy, evaluate and interpret the costs and outcomes of the use of drugs and medical devices.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical regulative in drug control			
Teachers: Zečević L. Mira, Malenović M. Anđelija, Otašević M. Biljana, Protić D. Ana			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F4I4		
Requirements: none			
Course aims: Acquiring knowledge in the field of current regulations in drug control. Training students to interpret regulatory requirements that affect the efficacy, quality and safety of the drug.			
Course outcomes: Upon completed course, the student is capable to apply acquired knowledge in the drug control laboratory. Demonstrates and implements the procedure for the examination of the pharmaceutical product in accordance with the relevant regulatory requirements in the research and development phase, during the manufacturing process and the release of the drug on market. Analyzes the structure of the Documentation of the drug and participates in the preparation of the documentation for the registration of drugs.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Substances of abuse			
Teachers: Đukić M. Mirjana, Antonijević M. Biljana, Vujanović L. Dragana, Bulat L. Zorica, Đukić-Ćosić D. Danijela, Ćurčić M. Marijana, Buha Đorđević A. Aleksandra			
Course status: Elective			
Semester: Ninth (IX)	Year of studies: Fifth (V)		
ECTS points: 3	Course code: F415		
Requirements: None			
Course aims: Gaining the knowledge of the mechanisms of action and toxicity of substances of abuse, the social aspect of their abuse, therapy and prevention, as well as the strategies to reduce the number of addicts.			
Course outcomes: Qualification of Master of Pharmacy-Medical Biochemistry to be a part of a multidisciplinary team dealing with the problem of substances of abuse, especially from the aspect of education and prevention of abuse, especially among young people.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Experimental design in drug analysis			
Teachers: Zečević L. Mira, Malenović M. Anđelija, Otašević M. Biljana, Protić D. Ana			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F416		
Requirements: none			
Course aims: Introduction to significance and application of experimental design in different stages of development, optimization and validation of methods intended for use in drug analysis.			
Course outcomes: Upon completed course, the student is capable to apply acquired knowledge to select appropriate experimental design in certain phases of development of methods for drug analysis, to perform experiments according to selected design as well as to analyse and to interpret obtained results.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Selected chapters of clinical pharmacokinetics			
Teachers: Miljković R. Branislava, Vezmar Kovačević D. Sandra, Vučićević M. Katarina, Jovanović N. Marija			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F417		
Requirements: Pharmacology 1			
Course aims: To understand the variability of the therapeutic response as a consequence of PK variability; to demonstrate the application of clinical pharmacokinetics principles in the interpretation and individualization of drug dosage regimen, based on the measured drug concentrations.			
Course outcomes: On completion of the course, the student should be able: to design appropriate drugs' dosing regimens based on population PK values and PKPD models, clinical PK principles, current medical literature, and patients' characteristics; to understand variability in the response/outcome as a consequence of PK variability; to identify specific patients for whom adjustments of drug dosing regimen based on PK principles is warranted; to interpret/analyze measured plasma drug concentrations in order to estimate individual patient's PK parameters; to design optimized dosing regimens for patient using TDM techniques and computer technology (with incorporated PK, PKPD models); to develop and apply monitoring plan for various drugs.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Chemical carcinogens			
Teachers: Bulat L. Zorica, Antonijević M. Biljana, Đukić M. Mirjana, Vujanović L. Dragana, Đukić-Ćosić D. Danijela, Ćurčić M. Marijana, Buha Đorđević A. Aleksandra			
Course status: Elective			
Semester: Ninth (IX)	Year of studies: Fifth (V)		
ECTS points: 3	Course code: F418		
Requirements: None			
Course aims: Gaining the knowledge on chemical carcinogens, their mechanisms of action, genotoxicity tests, risk assessment of genotoxic and epigenetic carcinogens.			
Course outcomes: The qualification of Master of Pharmacy to be a part of a team engaged in research into chemical carcinogens and assessing the risks of carcinogens for human health, as well as the cancer prevention.			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Ecotoxicology			
Teachers: Vujanović L. Dragana, Antonijević M. Biljana, Đukić M. Mirjana, Bulat L. Zorica, Đukić-Ćosić D. Danijela, Ćurčić M. Marijana, Buha Đorđević A. Aleksandra			
Course status: Elective			
Semester: Ninth (IX)	Year of studies: Fifth (V)		
ECTS points: 3	Course code: F4I9		
Requirements: None			
Course aims: Introduction, gathering of knowledge, understanding, application, analysis and evaluation of the knowledge and skills in the field of ecotoxicology with the special emphasis on the most important pollutants and their global effects on humans and environment.			
Course outcomes: Student will gain competencies to be a part of multidisciplinary team that deals with the problems and prevention of the environmental pollution, as well as with the human health.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY	
Study programme: Pharmacy		
Course title: Fundamentals of pharmaceutical biotechnology		
Teachers: Savić D. Snežana, Živković P. Lada, Savić M. Miroslav, Stojić-Vukanić M. Zorica, Antić Stanković A. Jelena		
Course status: Elective		
Semester: ninth (IX)	Year of studies: fifth (V)	
ECTS points: 3	Course code: F5I1	
Requirements: Biology with human genetics, Pharmaceutical microbiology, Immunology, Pharmaceutical chemistry, Pharmaceutical technology 1		
Course aims: Acquiring knowledge on the possibilities and application of recombinant DNA technology and hybridoma DNA technology in biomedicine, in the development of biological drugs (techniques for the production of recombinant peptides and proteins and different types of monoclonal antibodies); training students to consider the formulation aspects of biological drugs associated with the physico-chemical stability of peptides and proteins; acquiring knowledge on the production of biological drugs and procedures/techniques of extraction and purification; acquiring knowledge on mechanisms of action and therapeutic application of key groups of peptide and protein drugs and monoclonal antibodies; training for critical review of information on biological drugs, the use of professional literature, especially in the field of regulatory requirements and the preparation of written or oral reports; acquiring knowledge on characteristics and regulatory requirements related to biologically similar drugs (biosimilars).		
Course outcomes: Upon completion of this course, the student is familiar with the fundamentals of the development and techniques for obtaining a biological drug, the production of recombinant peptides, proteins and monoclonal antibodies for therapeutic use; the student knows and distinguishes physico-chemical (quality), biological, formulation, manufacturing and therapeutic (efficacy and safety, including immunogenicity) characteristics of the most important groups of biological drugs and biosimilars; the student can compare and differentiate regulatory requirements for the approval of biological and biologically similar drugs, is able to critically examine, use and convey information on biological and biologically similar drugs to another healthcare professional and/or patient.		

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Veterinary medicines			
Teachers: Parojčić V. Jelena, Vasiljević D. Dragana, Cvijić V. Sandra, Aleksić R. Ivana			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F5I2		
Requirements: Pharmaceutical Technology 1			
Course aims: Introduction to the specificity of the application of pharmaceutical products in the veterinary medicine, pharmaceutical dosage forms for veterinary application, legal and regulatory requirements and guidances related to the development, compounding/manufacturing, marketing authorization issuing, and assessment of the quality of veterinary dosage forms.			
Course outcomes: Student is able to recognize the specifics of the application of drugs in the veterinary medicine; is aware of the pharmaceutical-technological properties, as well as the biopharmaceutical aspects of the dosage forms being used for the various animal species; knows the legal regulations and guidances related to the development, compounding/manufacturing, marketing authorization issuing, and assessment of the quality of veterinary dosage forms; critically evaluates the selection of the appropriate dosage form according to the animal species and pharmacotherapeutic goal.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical care services			
Teachers: Miljković R. Branislava, Vezmar Kovačević D. Sandra, Vučićević M. Katarina, Jovanović N. Marija			
Course status: Elective			
Semester: IX	Year of studies: V		
ECTS points: 3	Course code: F5I3		
Requirements: Pharmacokinetics			
Course aims: To describe the different models of pharmaceutical care services at primary, secondary and tertiary healthcare level. To explain the development of pharmaceutical care services and present the ways of improving their quality. To explain and demonstrate the impact of pharmaceutical care services on improving patient outcome.			
Course outcomes: On completion of the course, the student will be able to design, develop and implement an economically viable service of pharmaceutical care in primary, secondary or tertiary healthcare level. The student will also be able to confirm and improve the quality of existing services.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmaceutical Supply Chain Management			
Teachers: Marinkovic Valentina, Lakic Dragana, Odalovic Marina			
Course status: Elective			
Semester: IX	Year of studies: V		
ECTS points: 3	Course code: F5I4		
Requirements:			
Course aims: <p>To introduce students into: legal regulations and processes related to selection, procurement (tender), distribution and drug use. To this end, the student is acquainted with: basics for the selection of medicines, public procurement methods and good drug procurement practice, good practice in storage, distribution and drug transport, procedures for ensuring the traceability of drugs and medical devices (MS), the principles of use / selection of drugs. All this should enable students to understand the concepts and acquire knowledge in the field of pharmaceutical supply chain, in order to be able to identify and solve certain problems in practice.</p>			
Course outcomes: <p>Student will understand the concepts and definitions of good drug supply. The acquired knowledge enables student to: • understand the tasks of selection, procurement, distribution and drug use as well as the work processes related to the sources of supply, procurement - special public procurement (tender), storage and drug distribution; • have the skills to analyze, organize and perform work in the field of drug and medical device supply</p>			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Interprofessional education			
Teachers: Parojčić V. Jelena, Vezmar Kovačević D. Sandra, Đukić-Ćosić D. Danijela, Tadić B. Ivana			
Course status: Elective			
Semester: Nine (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F5I5		
Requirements: none			
Course aims: Introduction, understanding and application of interprofessional education for all profiles of future health professionals in purpose of effective cooperation among members of the health team and achieve greater benefits for patients, improve health outcomes, quality of health care and reduce treatment costs.			
Course outcomes: After completing the course, students will be able to: - describe the key elements of interprofessional education and collaborative practice; - work efficiently and effectively in a team; - recognize the role of each member of the health team and present its contribution in the collaborative provision of effective health care; - exchange knowledge with other members of the healthcare team and achieve the best outcomes for the patients; - communicate effectively with patients and their families, as well as with other members of the healthcare team about outcomes and priorities for health care; - understand basic acute conditions (acute coronary syndrome, traumatic injuries etc.), and chronically conditions (diabetes, cardiovascular diseases etc.)- discuss effectively about evidence-based case studies			

University of Belgrade Faculty of Pharmacy	Integratedacademicstudies PHARMACY		
Studyprogramme: Pharmacy			
Course title: Human Health Risk Assessment			
Teachers: Antonijević M. Biljana, Đukić M. Mirjana, Vujanović L. Dragana, Bulat L. Zorica, Đukić-Ćosić D. Danijela, Ćurčić M. Marijana, Buha Đorđević A. Aleksandra			
Course status: Elective			
Semester: Ninth (IX)	Year of studies: Fifth (V)		
ECTS points: 3	Course code: F5I6		
Requirements: None			
Course aims: Gathering the knowledge and skills in the field of hazard identification, dose-response assessment, exposure assessment and risk characterization, risk evaluation methodology, risk interpretation and communication, and risk reduction measures.			
Course outcomes: Student is qualified to work individually or in a team on chemicals exposure issues, problem formulation activities, to perform human health risk assessment, critically analyse data, to communicate the risk, as well as to take proactive role in risk reduction measures.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Drug Design and Synthesis			
Teachers: Erić M. Slavica, Savić M. Vladimir, Marković D. Bojan, Simić R. Milena			
Course status: Elective			
Semester: eighth (VIII)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F517		
Requirements: Pharmaceutical Chemistry 1			
Course aims: For student to gain the knowledge in the field of drug design, chemical strategies in the development and biological evaluation of pharmaceutical substances			
Course outcomes: Student is expected to: understand the mechanisms of drug action on molecular level; gain the skills in analyzing quantitative and qualitative structure activity/property/selectivity relationships of pharmacologically active compounds, for the purpose of designing novel and optimizing current drugs; achieve the understanding of various strategies used in drug design and synthesis processes.			

University of Belgrade Faculty of Pharmacy	Integrated academic studies PHARMACY		
Study programme: Pharmacy			
Course title: Pharmacotherapy in pediatrics			
Teachers: Stepanović-Petrović M. Radica, Savić M. Miroslav, Novaković N. Aleksandra, Tomić A. Maja, Micov M. Ana, Milić M. Marija			
Course status: Elective			
Semester: ninth (IX)	Year of studies: fifth (V)		
ECTS points: 3	Course code: F5I8		
Requirements: Pharmacology 1, Pharmacology 2			
Course aims: <ul style="list-style-type: none"> • acquiring knowledge on the most significant characteristics of the pediatric population, affecting pharmacokinetics / pharmacodynamics of the drug, drug selection, dosing regimens, administration routes and pharmaceutical drug form, • acquiring / widening of knowledge on etiopathogenesis, pathophysiology, clinical presentation and diagnosis of the most significant / most common diseases in the pediatric population, • acquiring knowledge on current pharmacotherapy of the most important / most common diseases in pediatric population, • training for critical evaluation of drugs and advising patients, family members and healthcare professionals regarding the proper and safe drug use in the pediatric population. 			
Course outcomes: <p>Upon completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • understand and distinguish pathophysiology, clinical presentation, clinical course, prognosis and pharmacological and nonpharmacological treatment of various disorders in pediatric population, • compare different pharmacological options for certain diseases based on their therapeutic efficacy/adverse effects potential, • present patients, family members and healthcare professionals with evidence-based information or advice on drug use. 			