

QUALIFICATION CHARACTERISTIC

SPECIALITY: CHEMISTRY

**MASTER PROGRAMME: BIOLOGICAL ACTIVE COMPOUNDS
AND DRUGS**

EDUCATIONALAL-QUALIFICATION DEGREE: MASTER

PROFESSIONAL QUALIFICATION: MASTER IN CHEMISTRY

PERIOD OF STUDY: 1 YEAR (2 SEMESTERS)

The current qualification characteristic of "Biological active compounds and drugs" defines the professional designation and realization of master specialists (Master in chemistry). The educational qualification degree "Master" is at level 7 of National- and European qualifications frameworks. The Master's degree syllabus builds upon the knowledge acquired in the Bachelor's degree programme in the same professional field 4.2. "Chemical Sciences" and the duration of training is 1 year.

SPECIALIST PROFILE

The training in Master's degree programme "Biological active compounds and drugs" aims to prepare specialists in the field of pharmaceutical industry, scientific research laboratories for drugs discovery, laboratories for analysis and control, clinical laboratories, and others, in accordance with their acquired qualification. The wide coverage of the programme allow the participation in various administrative and management departments, international firms.

REQUIREMENTS FOR PREPARATION OF SPECIALIST

Masters of "Biological active compounds and drugs" to possess knowledge and skills for successful solution of chemistry tasks. They should be professionals with a profound general knowledge and with a solid fundamental training. In addition, they should be with linguistic competence and significant professional training, which should allow themselves to deepen their qualification and professional skills or to continue their study in a doctoral degree.

Acquired the qualification "master" degree of specialty must possess creativity, theoretically based approach and organizational techniques in application of experimental methods of the disciplines. Degree holders must acquire the ability to improve their qualification, learning the modern achievements in chemistry and to work successfully in the field of market economy.

The subject of the current Master's program is to study chemistry of biological active compounds, their mechanisms of action, as well as the synthesis, properties and principles of drug discovery.

Graduates in "Biological active compounds and drugs" will gain the depth of knowledge and skills in: modern methods of organic synthesis, pharmacology and drug toxicology, structural analysis of organic compounds, drugs chemistry and their mechanisms of action, biotechnology and etc. Additional knowledge they will have acquired through the elective courses: chemistry of heterocyclic compounds, biophysical-chemistry, basic microbiology and virology, biochemistry of nutrition and health, etc.

POSSIBILITIES FOR PROFESSIONAL REALIZATION

Graduates of a master's degree should realize in the field of:

- ✓ Pharmaceutical industry;
- ✓ Scientific research laboratories for drugs discovery;
- ✓ Laboratories for analysis and control;
- ✓ Clinical laboratories;
- ✓ Commercial companies supplying drugs and biological active compounds.

CURRICULUM

BIOLOGICALLY ACTIVE COMPOUNDS AND DRUGS

Period of Study: 1year (2 semesters)

CURRICULUM			
BIOLOGICALLY ACTIVE COMPOUNDS AND DRUGS			
Period of Study: 1year (2 semesters)			
First semester	ECTS credits	Second semester	ECTS credits
Compulsory courses		Compulsory courses	
Some current methods in organic synthesis	8	Medicinal chemistry	8
Rational drug design	8	General Pharmacology and Toxicology	3
Structural analysis of organic compounds	6	Elective course (Group II)	4
Clinical practice	4	Defense of BA Thesis in Chemistry	15
Elective course (Group I)	4	or	
		State Exam in Chemistry	
Elective courses group I <i>(Students choose one subject from each group)</i>		Elective courses group II <i>(Students choose one subject from each group)</i>	
Group I		Group II	
☞ Natural products chemistry		☞ Biologically active compounds- nutrition and health	
☞ Mathematical models in chemistry and biology		☞ Interface surfaces and biomembranes	
☞ Mathematical models of drug- receptor interactions		☞ Basics of Biotechnology	
☞ Chemotherapy and modern chemotherapeutic agents		☞ Neural networks	
☞ Clinical chemistry		☞ Application of IR- spectroscopy for organic and biological-active compounds analysis	
Technology of medicines		☞ Sampling and sample preparation in the analysis of biological active compounds	
	Total 30		Total 30

TOTAL FOR BOTH SEMESTERS: 60 credits

SOME CURRENT METHODS IN ORGANIC SYNTHESIS

ECTS credits: 8

Hours per week: 3l+0se+1le+pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Chief Assist. Prof. Maya Chochkova, PhD: mayachochkova@swu.bg

Annotation:

A large part of the course is concerned with reactions, which lead to the formation of carbon-carbon single and double bonds. Other reactions discussed provide methods for the fictionalization of inactivated methyl and methylene groups through intramolecular attack by free radicals at inactivated carbon-hydrogen bonds. The students will be introduced through scientific publications to the concrete examples of application of the considered synthetic methods for preparation of some organic compounds. The planning of organic synthesis is also included in the course.

Course topics:

The aim of the course is to give the students thorough knowledge about some basic reactions, used in the current organic synthesis. The course is based on the knowledge, acquired in the course of organic chemistry.

Clearly, the whole field of synthesis could not be covered in the course, even in a cursory manner, and a selection has had to be made. The course seeks to extend the knowledge in the considered field, to development of self-dependence, creative and non-standard thinking of the students. The practical exercises seek to help the student by understanding and giving a meaning of the lectures, to acquire a habit of constructive application of knowledge, to build up skills in the field of organic synthesis.

The final grade constitutes 40% of the periodical control grade and 60% of the grade from the semestrial examination according to developed and approved in Chemistry Department system of control and grading.

RATIONAL DRUG DESIGN

ECTS credits: 8

Hours per week: 3l+se+le+1pe+p

Form of knowledge evaluation: Examination

Examination type: project defence

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Assoc. Prof. Zhivko Velkov, PhD: jivko_av@swu.bg

Annotation:

On the base of ligand-receptor interaction mechanisms and the ability of the drug to disseminate in different organs and environments of the human body, the structural reasons of the drug action will be studied.

This course is based on the knowledge of the biochemical and physiological effects of drugs on organisms (pharmacodynamics) and the influence of the organism on the drug (pharmacokinetics), the dose-effect relationship, the benefits to the body, and the toxic effects.

The main tasks of the Rational Drug Design Program are:

- acquainting students with the qualitative and quantitative relationships between the structure of the drug and its action;
- acquiring skills to work with specialized software for calculating of specific structural descriptors.
- develop skills for skills for individual work.

Course topics:

The aim of this course is to raise general chemistry culture of students in assessing the role of the structure on the drug action. To gain experience in calculating different descriptors of drug molecule that are relevant to their effects on organisms.

STRUCTURAL ANALYSIS OF ORGANIC COMPOUNDS

ECTS credits: 6

Hours per week: 2l+1se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Assoc. Prof. Atanas Chapkanov, PhD: chapkanov@swu.bg

Annotation:

The course "Structural analysis of organic compounds" is designed for students who have completed university disciplines such as organic chemistry and spectral methods, and have basic theoretical knowledge in these areas. The course is a prominent application oriented, aiming to increase the competence of the students to determine the structure of complex organic molecules.

Training begins with a brief overview on the modern concepts and techniques applied daily in the laboratory practice, and continue with progressive handling of spectral methods (UV, IR, NMR and MS) for structural analysis.

CLINICAL PRACTICE

ECTS credits: 3

Hours per week: 0l+0se+0le+3pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Lidia Aneva, MD: lidia_aneva@yahoo.com

Annotation:

Course of Clinical practice enables students to understand the main methods used in the clinical investigations and familiarize with all necessary equipment for this purpose. The main accent is for methods used in Haemathology, Immunology, Serology and other clinical investigations.

All questions related to quality control of laboratory investigations are discussed and clarified.

Majority of the clinical exercises will be held in certified clinical laboratories located at MBAL- Blagoevgrad and all results will be explained from clinical point of view.

All the students are expected to have basic (minimal) knowledge in following subjects: Organic and Inorganic chemistry; Biochemistry; Physicochemistry

Discipline content.

- ☞ Laboratory methods and equipment
- ☞ Maintenance and cleaning of laboratory equipment
- ☞ Measuring and dosing
- ☞ Centrifugation
- ☞ Laboratory data analysis
- ☞ Laboratory results discussion

MEDICINAL CHEMISTRY

ECTS credits: 8

Hours per week: 3l+0se+0le+1pe+p

Form of knowledge evaluation: Examination

Examination type: project defence

Semester: II

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Assoc. Prof. Ivanka Stankova, PhD: ivastankova@swu.bg

Annotation:

Subject of the course "Medicinal Chemistry" are the main groups drugs used in modern medical practice, with particular emphasis on their mechanism of action, chemical structure, relationship structure - activity and the principles of drug design.

Discussed are basic knowledge in biochemistry, properties of the enzymes and metabolic processes. Information is given about receptors, mediators, antimetabolites, passage through cell membranes of biologically active compounds

The course is designed for chemists, whose future work will be linked to the creation of new biologically active compounds.

Practical exercises are related to synthesis of various drugs.

Course topics:

The course is aimed at understanding the content of the discipline as a science for create drugs based on traditional knowledge of pharmacology. It aims to examine stages in the development of new drugs.

Examining of the drugs on the basis on pharmacological effect makes possible to trace the logic of development of the drugs, and the relationship that exists between chemical structure and pharmacological effect.

Students must gain knowledge for the fundamental group drugs, principles for development of new drugs and achieve their realization in the pharmaceutical companies.

GENERAL PHARMACOLOGY AND TOXICOLOGY

ECTS credits: 4**Hours per week:** 2l+0se+0le+0pe+p**Form of knowledge evaluation:** Examination**Examination type:** written**Semester:** II**Methodological guidance:**

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturer:Assoc. Professor Lyubka Tancheva MD: lyubkatancheva@gmail.com**Annotation:**

In the course of *General Pharmacology and Toxicology* includes the study of general principles, related to fundamental processes of pharmacokinetics and pharmacodynamics of the drugs, drug biotransformation and factors, affecting drug action, as well as the drug interaction in the body. Will be study some basic principles of toxicology as drug side effects, toxic and carcinogenic effect of the drugs, drug objectionable (drug toxicomania), ect.

Course topics:

The course aim is to study the general principles of pharmacology and toxicology and basic processes of pharmacokinetics and pharmacodynamics of the drugs, drugs biotransformation and factors, affecting drug action, as well as the drug interaction in the body.

The students get an idea about regulating, monitoring and integrating of the pharmacological processes in the organism. Receiving a general knowledge of pharmacology and toxicology students reflect on the material studied chemistry, biochemistry, ect.

The seminars seek to help the students by understanding and giving a meaning of the lectures, to acquire a habit of constructive application of knowledge.

Teaching Methods: Lectures with demonstration of schemes and figures and seminars.

Requirements: Knowledge in Chemistry and Biochemistry

NATURAL PRODUCTS CHEMISTRY

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Chief Assist. Prof. Maya Chochkova, PhD: mayachochkova@swu.bg

Annotation:

The course of *Natural products chemistry* covers a wide range of different aspects concerning the importance of chemistry of polyfunctional organic derivatives in living systems. In the current course some of the most important classes natural compounds such as: carbohydrates, nucleic acids, proteins, steroids and phenolic compounds will be discussed. Additional attention will be paid to their classification; structures, chemical properties, the role that they play in the living systems; the structure-activity relationship and unusually broad application areas will be shown.

Course topics:

The aim of the course is to prepare specialists, possessing the basic understanding of natural products chemistry, necessary for successful dissolving of the chemical tasks.

The course „Natural products chemistry” is the vast part of Organic chemistry. The current discipline lies on the border of biological disciplines and is connected with other courses in the curriculum, such as Bioorganic, Biochemistry and Pharmaceutical Chemistry.

Expected results:

Students to become conversant with the following main aspects of discipline:

- ☞ to classify the natural compounds;
- ☞ to have good knowledge of the structural peculiarities of natural compounds and their basic chemical transformation *in vivo* and *in vitro*;
- ☞ to be familiar with the methods of isolation, purification and also with their synthetic methods;
- ☞ To have an idea of the effects of natural compounds in living organisms and their participation metabolism.

MATHEMATICAL MODELS IN CHEMISTRY AND BIOLOGY

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Prof. Peter Milanov, PhD: milanov@swu.bg

Annotation:

The enclosed curriculum discusses the tasks related to the theory of mathematical models in biology and chemistry. The course will examine basic concepts and principles in this area. The basic concepts and techniques of mathematical modelling and its application in the concerned areas will be explained. The practical application of mathematical models in areas such as: molecular biology, crystallography, pharmacology and drug design will be illustrated using examples.

Course topics:

This course aims to help the students to understand the concept and some basic theoretical results in the theory of mathematical modeling, its application in biology and chemistry. Every student must acquire practical skills for preparing mathematical models.

Organization of training

1. Lectures - audiovisual technologies are intended to be used:

- a. overhead
- b. computer projector
- c. lecture will be uploaded on the website of the University

2. Exercises – during the lectures, the tasks will be given and the students must do their homework and further will be estimated.

MATHEMATICAL MODELS OF DRUG - RECEPTOR INTERACTIONS

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Prof. Peter Milanov, PhD: milanov@swu.bg

Annotation:

The enclosed curriculum discusses the tasks related to the theory of mathematical models in quantitative pharmacology. The course will examine the basic concepts and principles in this area. The mathematical modeling of drug-receptor interactions and its application in pharmacology will be described. Different approaches as graph theory, operations research and *etc.* will be used in model design. The application of mathematical models will be illustrated and discussed by examples in the drug design.

Course topics:

The aim of this course is to introduce the student to concept and some basic theoretical results in the theory of mathematical modeling of drug - receptor interactions and its application in drug design. Every student must acquire practical skills for preparing mathematical models in area in quantitative pharmacology.

Organization of training

1. Lectures - audiovisual technologies are intended to be used:

- a. overhead
- b. computer projector
- c. lecture will be uploaded on the website of the University

2. Exercises – during the lectures, the assignments will be given and students must do their homework and further to be estimated.

CHEMOTHERAPY AND MODERN CHEMOTHERAPEUTIC AGENTS

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: III

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Assoc. Professor Ivanka Stankova, PhD: ivastankova@swu.bg

Annotation:

In the curriculum, "Chemotherapy and modern chemotherapeutic agents" is presented modern approaches of new chemotherapeutic agents design.

Particular attention is paid to the drugs used in chemotherapy of cancer, viral, bacterial and fungal infections.

The chosen examples have to clarify general principles of farmaco-biochemistry.

Course content:

Teaching material covers theoretical tasks:

- Introduction into the basis for the development of antimetabolites for antibacterial, antifungal, antiviral and anticancer chemotherapy;

- Clarifying the biochemical mechanisms of drugs actions.

Teaching and assessment:

Lectures are provided for the students in the course of the education. The lectures are held following the classical manner and are visualized by Power Point presentations.

The final grade constitutes 30% of the periodical control grade and 70% of the grade from the semestrial examination according to developed and approved in Chemistry Department system of control and grading students' competence.

CLINICAL CHEMISTRY

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

PhD Irena Ivanova, MD: irena.dimitrova@gmail.com

Annotation:

The course in Clinical Chemistry comprises 30 hours. Clinical chemistry and molecular diagnostics are key components of modern clinical laboratory. The course aims to introduce students to the fundamentals of clinical chemistry and molecular diagnostics, applied according to the standards of good medical practice. The course outlines the main trends in modern clinical laboratory tests and reveals the nature of work in modern clinical, biochemical, microbiological, etc. laboratories.

The course provides basic knowledge on experimental work in research laboratories engaged in the search of biologically active compounds and the development of new drugs. The course will contribute to the understanding of the diagnostic set-ups, the application of certain principles and the subsequent interpretation of the results of diagnostic tests.

TECHNOLOGY OF DRUGS SUBSTANCES

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: I

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Prof. Ivanka Stoyneva, Dsc: istoineva@yahoo.com

Annotation:

The main objective of the course "Technology of Drugs Substances " is to teach students of the basic theoretical questions of the pharmaceutical manufacture of drug substances. The main pharmaceutical terms and concepts of drug technology, historical review and technological objectives, classification and nomenclature of pharmaceutical forms will be discussed in detail. Understand the dosing methods, the requirements for packaging materials used to pack medicines, reflect the main biopharmaceutical factors affecting the bioavailability of drugs in specific dosage forms. The lecture material is divided into 3 modules.

Expected result

Students acquiring a Masters's degree course will acquire basic knowledge about the processes and devices used in the preparation of various dosage forms such as capsules, granules, ointments, injectable forms, etc. It is expected that their training in this discipline will be useful to them as professionals in various pharmaceutical companies.

BIOLOGICALLY ACTIVE COMPOUNDS - NUTRITION AND HEALTH

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: II

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Assoc. Prof. Ivanka Stankova, PhD: ivastankova@swu.bg

Annotation:

The course on "Biologically active compounds - Nutrition and Health" aims to introduce students with the use of substances that are necessary for a balanced and healthy meal. Before our ancestors are received everything need for their body from the food which they are used.

In the last decade worldwide are observed that eating habits are increasingly moving away from the principles of balanced nutrition, leading to a shortage of biologically active substances, vitamins and minerals.

It is believed that the solution to this problem is the use of additional biological active compounds / BAC /. Today BAC rightly called the food of the 21st century.

In opinion of many leading scientists in the world, natural BAC that increasingly entering in market in developed countries that ensure a population all necessary substances such as vitamins, minerals and bioactive substances. The adoption of a BAC has optimal, preventive and quick healing effect.

The course will help to build an objective and contemporary glance of students

on the following functions of biologically active additives:

- Provide a body of necessary vitamins and minerals and all other biologically active substances, without adding unnecessary calories;

- There a preventive effect and will help to increase the duration of life;

- Improve performance and facilitate adaptation to the environment;

- Ensure the growth and development of children

Assessment: written examination / coursework

INTERFACE SURFACES AND BIO-MEMBRANES

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: II

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Prof. Boryan Radoev, DSc: radoev@chem.uni-sofia.bg

Annotation:

Aim of the course is to introduce basic models applied in the study of real bio-membranes. It includes monomolecular (Langmuir) layers of soluble/insoluble surfactants; thin (soap) liquid films; ultra thin (Newtonian) films and bi-layers. Attention will be paid to their chemical composition, to their physic-chemical (including their mechanical) properties, as well as some important biological properties taking place at the bio-membranes in the real systems. More precisely it concerns trans-membrane mass transfer caused by osmosis and electro-osmosis. The course is supported by real and laboratory illustrations.

BASICS OF BIOTECHNOLOGY

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: II

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Prof. Ivanka Stoyneva, Dsc: istoineva@yahoo.com

Annotation:

The aim of the course "Basics of Biotechnology" is to provide students with a Master's program "Biologically Active Substances and Drugs" to gain new knowledge in the field of modern and fast-growing pharmaceutical biotechnology. This technology is based on the use of the catalytic potential of various biological agents and systems such as microorganisms, viruses, plant and animal cells and tissues as well as extracellular substances and cellular components.

Within the course the students will acquire the theoretical knowledge about the basic principles of protein and genetic engineering as well as the design of new drugs for prevention and therapy of the main diseases of our century. They will familiarize themselves with the chemical structure and the production of valuable bioproducts used in medicine, such as some new enzymes, hormones, antibodies, inhibitors, vaccines and genetically engineered preparations.

Students who have obtained a Master's degree on the basis of new crafts and skills in this course can develop creative thinking and critical analysis of phenomena and processes in their realization as specialists in different pharmaceutical companies.

The course is based on the knowledge gained by students from the main disciplines such as organic chemistry, biochemistry, physicochemistry and prepares students for the modern methods of production in pharmacy, chemistry and food technology.

NEURAL NETWORKS

ECTS credits: 4**Hours per week:** 2l+0se+0le+0pe+p**Form of knowledge evaluation:** Examination**Examination type:** written**Semester:** II**Methodological guidance:**

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Prof. Peter Milanov, PhD: milanov@swu.bg

Annotation:

Neural networks are composed of simple elements operating in parallel. These elements are inspired by biological nervous systems. As in nature, the network function is determined largely by the connections between elements. Neural networks can be trained to solve problems that are difficult for conventional computers or human beings.

Course topics:

Students should obtain knowledge and skills for designing of the neural network.

Teaching Methods: lectures, demonstrations and work on project

Requirements/Prerequisites:

Assessment: course project

Registration for the Course: by request at the end of the current semester

Registration for the Exam: coordinated with the lecturer and Student Service Department

APPLICATION OF IR- SPECTROSCOPY FOR ORGANIC AND BIOLOGICALLY ACTIVE COMPOUNDS ANALYSIS

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: II

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Assoc. Prof. Atanas Chapkanov, PhD : chapkanov@swu.bg

Annotation:

The study aid of Application of IR- spectroscopy for analysis of organic and biological-active compounds course is to include elements of the theory, basic and specific technique of IR-spectral analysis and its application for structure characterization of organic compounds and drugs. The course covered characteristics bands of the typical functional groups of the organic compounds which are basic structural units in the drug compounds. Comparative IR-spectral analysis with other biological-active compounds is included. The principals and application of IR-LD- spectral analysis are introduced. The possibilities and application of the method are showed by discussion of different samples IR-LD spectra.

The lecture course is illustrated and visualization by different examples solving the problems in connection with analysis of organic compounds and drugs. For presentation it is used multimedia and PC system.

Course topics:

The study aims of the Application of IR- spectroscopy for analysis of organic and biological-active compounds course are:

1. Introduction of the students in the principals and specific technique of the IR-and IR-LD-polarized spectroscopy for analysis of the organic compounds and drugs.
2. Acquisition of the systematic knowledge and skills for identification and characterization of the organic compounds investigation and correct interpretation of the results obtained.
3. Developed of the thought creative and ability for self-dependent choice of approaches and methods for the problems solved.

The students will be evaluated based on their cumulated score from tests and quizzes. There will be two exams including one final exam. The several quizzes will be given during the class.

Two current exams: K1, K2 ; Exam: (combined form – written and oral) E

Final rating: $0.3 (K1 + K2)/2 + 0.7 E$

SAMPLING AND SAMPLE PREPARATION IN THE ANALYSIS OF BIOLOGICAL ACTIVE COMPOUNDS

ECTS credits: 4

Hours per week: 2l+0se+0le+0pe+p

Form of knowledge evaluation: Examination

Examination type: written

Semester: II

Methodological guidance:

Department: "Chemistry"

Faculty: Mathematics and Natural Sciences

Lecturers:

Chief Assist. Prof. Petranka Petrova, PhD: ppd@swu.bg

Annotation:

The course presents the basic concepts of the sampling and sample preparation in the analysis which are the weakest links in the chain in any analytical procedure. The main principle to be observed when selecting a sample for analysis is that the sample must be representative to the overall composition of the analysed object. If the sample does not accurately represent the population from which it is drawn, then an analysis, that is otherwise carefully conducted, will yield inaccurate results. Sample preparation is also of great importance for the accuracy and precision of analytical results.

Course topics:

The aim of the course is to introduce students to the design of sampling and sample preparation, as well as to the evaluation of random and systematic errors during the analysis. In this course we consider how the collection of the sample and the sample preparation for analysis can affect the accuracy and precision of our results.