

	Eligible educational disciplines are offered after formulation of the theme of scientific research. They are included in the Individual work plan and are approved by scientific section. Ph.D student choose 2 educational disciplines.								
FACULTY EDUCATIONAL DISCIPLINES									
	Ph.D student on scientific speciality 01.05.03. - Organic chemistry is allowed to learn faculty every educational discipline, included in Ph.D programs of SWU, independently of faculty which organise the education, in the framework of 10% of the hours from the work plan.								

SOME METHODS IN ORGANIC SYNTHESIS

Semester: 1st semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 2 lecture hours and 1 hour seminar /FS/

Lecturers: prof. Tzenka Milkova.

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Compulsory course.

Short Description:

A large part of the course is concerned with reactions leading to the carbon-carbon single and double bonds formation. Other discussed reactions provide methods for the functionalization 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 Aims:

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. 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 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.

QUANTITATIVE STRUCTURE ACTIVITY RELATIONSHIP

Semester: 1st semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 2 lecture hours and 1 hour seminar /FS/

Lecturers: assoc. prof. Zhivko Velkov.

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Compulsory course.

Short Description:

The course familiarize the students with the basic concepts and approaches of Quantitative Structure Activity Relationships as a branch of modern Medicinal Chemistry. They should find out what types of molecular descriptors exist and how they can be used to build regression models.

They learn to perform correlation analysis, develop regression equation and clustering compounds according to chosen structural descriptors.

As the name implies, the purpose of the QSAR investigation is the finding of a quantitative relationships between the biological activity in a series of compounds and their physico-chemical properties. The properties are represented by experimental or theoretical descriptors.

The drugs interact with biomolecules through different intermolecular bonds. The strength of these interactions depends on the physico-chemical properties of individual molecules. Therefore the physico-chemical properties determine the biological activity. In the course project the students calculate themselves descriptors of the studied compounds and look for correlation with biological activity.

Course Aims:

The students must be familiar to the terms and methods of QSAR.

Teaching Methods: lectures and seminars.

Requirements/Prerequisites: Basic knowledge in Organic chemistry, Biochemistry, Mathematic, Physical Chemistry.

Assessment: current tests and project defence.

Registration for the exam: Students and the lecturer agree on the convenient dates within the announced calendar schedule of examination session.

MEDICINAL CHEMISTRY

Semester: 1st semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 2 lecture hours and 1 hour seminar /FS/

Lecturers: assoc. prof. Ivanka Stankova.

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Compulsory course.

Short Description:

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. Objectives and expected results

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.

Course Aims:

The students must be familiar to the terms and methods of Medicinal Chemistry.

Teaching Methods: lectures and seminars.

Requirements/Prerequisites: Basic knowledge in Organic chemistry, Biochemistry, Mathematic, Physical Chemistry.

Assessment: current tests and project defence.

Registration for the exam: Students and the lecturer agree on the convenient dates within the announced calendar schedule of examination session.

BIOLOGICALLY ACTIVE SUBSTANCES AND FOOD SUPPLEMENTS

Semester: 2th semester.

Type of the course: lecture and laboratory exercises.

Hours per week /FS /SS: 2 hours lecture and 1 hour exercises and seminars /SS/.

Lecturers: assoc. Prof. Ivanka Stankova.

Department: Department of Chemistry, FNSM, SWU “Neophit Rilsky”, 073-831825

Course Status: Compulsory course.

Short Description:

Training course includes the study of:

- * Food additives authorized for use in the food industry;
- * Food as energy;
- * Vitamins and minerals;
- * Amino acids, antioxidants.

Course Aims:

The course aims to introduce students to the use of substances that are needed for balanced and healthy diet. Students will gain a modern and objective view on certain features of the biologically active substances:

- Needs vitamins and minerals to the body;
- Improve performance and facilitate adaptation to the environment;
- Ensure the growth and development of children.

Teaching Methods: lectures and exercises.

Requirements/Prerequisites: Basic knowledge in Organic chemistry and Instrumental methods of analysis.

Assessment: current tests and written exam.

Registration for the exam: Students and the lecturer agree on the convenient dates within the announced calendar schedule of examination session.

COMPUTER AIDED SIMULATIONS OF MOLECULAR STRUCTURE AND PROPERTIES

Semester: 2th semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 2 lecture hours and 1 hour seminar /FS/.

Lecturers: assoc. prof. Zhivko Velkov,

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Compulsory course.

Short Description:

The course is adapted for the PhD. The students will get acquainted with the most important methods of quantum-chemistry and molecular mechanic, hybrid methods as far as Molecular Dynamic, Newton, Laugevin, Car-Parrinella and Monte Carlo methods.

Besides the students will get acquainted with the conformational analysis, the influence of the solvent over the molecular structure.

The second part of the course is devoted on the transition state theory, QSAR and the third on the modelling of electronic, vibrational and NMR spectra.

Course Aims:

The students must be familiar to the terms and methods of computational chemistry.

Teaching Methods: lectures and seminars.

Requirements/Prerequisites: Basic knowledge in Organic chemistry, Structure of matter; Biochemistry, Mathematic, Physical Chemistry.

Assessment: current tests and project defence.

Registration for the exam: Students and the lecturer agree on the convenient dates within the announced calendar schedule of examination session.

ELECTED COURSE IN THE FIELD OF THE THESIS

Semester: 2th semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 2 lecture hours and 1 hour seminar /FS/.

Lecturers:

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Elective course.

ELECTED COURSE IN THE FIELD OF THE THESIS

Semester: 3th semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 2 lecture hours and 1 hour seminar /FS/.

Lecturers:

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Elective course.

OPTIONAL COURSE

Semester: 3th semester

Type of the course: Lectures and seminars.

Hours per week /FS /SS: 1 lecture hours and 1 hour seminar /FS/.

Lecturers:

Department: Department of Chemistry, FNSM, SWU "Neophit Rilsky", 073-831825

Course Status: Elective course.