LIST OF COURSES

FACULTY OF CHEMISTRY

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
1	General Chemistry (Lectures)	Assoc. Prof. Petya Marinova, PhD	S	EN/B1	5	Bachelor	This course aims at acquainting students with the basic principles, theories and relationships in chemistry. The following subjects are included: atomic structure, periodicity, chemical bonding, intermolecular forces, coordination compounds, chemical kinetics, chemical equilibrium, solutions, and acids and bases.
2	Inorganic Chemistry (Lectures)	Assoc. Prof. Petya Marinova, PhD	S	EN/B1	5	Bachelor	The course aims at acquainting students with the properties of the chemical elements and their compounds. The elements are presented in the following order: hydrogen, alkali elements, alkaline-earth elements, group 13 elements, group 14 elements, group 15 elements, group 16 elements, group 17 elements, group 18 elements, d-block elements, and f-block elements.
3	Analytical Chemistry (Research practice)	Assoc. Prof. Kiril Simitchiev, PhD	W/S	EN/B1	10	Bachelor Master	The practice covers research activities in the field of elemental analysis – methods for separation and concentration in combination with atomic spectrometry techniques as detection tool as well as chromatographic techniques.
4	Software Programming in Chemistry (Lectures)	Assoc. Prof. Nikolay Kochev, PhD	W/S	EN/B1	5	Bachelor	The course is based on object oriented language Java and aims development of basic programing skills, logical reasoning and algorithmic strategies. The student will learn the good practices in software programing and technologies based on open source and open data. Major part of the exercises are in the field of Chemoinformatics and include solving practical problems concerning the manipulation of chemical structure information and its use in QSAR modeling and other Chemoinformatics fields.

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
5	Chemoinformatics (Lectures)	Assoc. Prof. Nikolay Kochev, PhD	W/S	EN/B1	5	Bachelor	Chemoinformatics is an interdisciplinary field where the informatics methods are applied to solve problems in chemistry. Chemoinformatics course includes methods for representation, processing, analysis and modeling of the information related to the chemical compounds and their properties as well as specific approaches for computer handling of topologically represented structures, substructure searching in chemical databases, visualization of 2D and 3D chemical structures, QSAR modelling applied in various stages of discovering, designing and synthesizing biologically active compounds and new materials.
6	Chemoinformatics (Research practice)	Assoc. Prof. Nikolay Kochev, PhD	W/S	EN/B1	10	Bachelor	Chemoinformatics practice includes activities and practical exercises on chemical compound representation, processing and analysis of the information related to molecules and their properties. Students will work with specialized software for computer handling of topologically represented structures, searching in chemical databases, molecular descriptor calculations, Molecular Mechanics modeling of 3D chemical structures, conformational analysis and QSAR modelling.

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
7	Quality Assurance in Analytical Laboratories (Lectures)	Assoc. Prof. Kiril Simitchiev, PhD	W/S	EN/B1	6	Bachelor Master	Quality Assurance in Analytical Laboratories is a discipline that gives knowledge about current metrological requirements to the measurement results in chemical analysis. Main topics which will be covered, are traceability and calculation of uncertainty of the measurement results as well as validation of method of analysis. Subtopics include evaluation of the quality of calibration procedure, compliance assessments, improving precision by signal smoothing, principles and application of ANOVA, use of certified reference materials, participation in proficiency testing and interlaboratory comparisons, setting and using target uncertainty in chemical measurements.
8	Biochemistry (Lectures)	Assoc. Prof. Stoyanka Atanasova, PhD	W/S	EN/B1	6	Bachelor	Biochemistry offers a focused program of study aimed the chemical, physical, and molecular underpinnings of life, as well as the molecular basis of human diseases. The flexible program of study is designed to provide excellent training and research opportunities individually tailored to students needs.
9	Fundamental Organic Chemistry I (Lectures and practicals)	Chief Assist. Prof. Yordan Stremski, PhD	W/S	EN/B1	6	Bachelor	The first part of the course covers the basic concept and development of the organic chemistry. The types of hydrocarbons, their structural diversity and chemical relationships. Including classic and modern methods for C-C bond formation and functional group manipulations with focus on the underlying reaction mechanisms and stereochemistry. The fundamental theory in the course is experientially supported by laboratory practice.

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
10	Fundamental Organic Chemistry II (Lectures and practicals)	Chief Assist. Prof. Yordan Stremski, PhD	W/S	EN/B1	6	Bachelor	The second part of the course covers the types of hydrocarbons, their functional groups diversity, structure specifications and basic relations. Including classic and modern chemical reactions for functional group manipulations. Structure of various natural products, syntheses of some known organic compounds are also included as examples and case studies in order to build better understanding of the teaching material.
11	Advanced Organic Chemistry (Lectures)	Assoc. Prof. Plamen Angelov, PhD	S	EN/B1	6	Bachelor, Master	The course covers classic and modern methods for C-C bond formation and functional group manipulations with focus on the underlying reaction mechanisms and stereochemistry. Syntheses of complex natural products are included as examples and case studies in order to build better understanding of the teaching material.
12	Chemistry of Steroids (Lectures)	Assoc. Prof. Stanimir Manolov, PhD	W/S	EN/B2	3	Bachelor, Master	The Chemistry of Steroids course includes an in-depth examination of the theoretical foundations of isoprenoid compounds and their classification. The main place is devoted to the consideration of the different classes of steroids, their structure, mechanism of action, the connection between structure and activity, as well as their synthetic production and biosynthesis. Particular attention is paid to steroids used in medical practice, as well as steroids with anabolic properties used in sports.

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
13	Physical Chemistry (Lectures)	Prof. Vassil Delchev, PhD, Dr. Sc.	W/S	EN/B1	5	Bachelor	The lecure course comprises an introduction to the basic concepts of physical chemistry at the bachelor level. It starts with an introduction to the fundamental theories describing the electron structure of atoms and molecules - Schroedinger equation of the hydrogen atom, valence bond and molecular orbitals theories. At the macroscopic level the physical chemistry course includes introduction to the basic concepts of chemical equilibrium, reaction kinetics and electochemisty.
14	Physical Chemistry (Research practice)	Assoc. Prof. Dimitar Petrov, PhD	W	EN/B1	10	Bachelor	The proposed laboratory exercises will help the students in their skills to solve examples and tasks from all major sections of physical chemistry that are necessary for its practical use.
15	Chemical Kinetics (Lectures)	Assoc. Prof. Nina Dimcheva, PhD	S	EN/B1	6	Bachelor	The basic course on Chemical Kinetics comprises both theoretical (lectures, discussions and problems solving) and practical (laboratory practice) knowledge that aim at developing students' skills in acquiring important kinetic information, viz. reaction order, rate constant, activation energy etc.. The course starts with the fundamentals of formal kinetics, where the basic concepts (velocity, rate constant, reaction order, Arrhenius' activation energy, rate-limiting step etc.) are briefly characterized. Attention is paid also on the different experimental techniques employed for kinetic characterization of chemical reactions. The theories of chemical kinetics (collision theory and the transition state theory), as well as catalytic processes – homogeneous and heterogeneous, followed by some specifics types of reactions – chain reactions, photochemical reactions, electrochemical reactions, are further considered in the course.

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
16	Food Chemistry (Research practice)	Assoc. Prof. Zhana Petkova, PhD	S	EN/B1	10	Bachelor, Master	The course is focused on chemistry of foodstuffs, food components (lipids, proteins, carbohydrates), individual composition of biologically active components (fatty acids, phospholipids, sterols, tocopherols) and their analysis.
17	Stability of Pharmaceutical Products (Lectures and practicals)	Assoc. Prof. Stanimir Manolov, PhD	W,S	EN/B1	6	Master	The course "Stability of Pharmaceutical Products" aims to familiarize students with the international standards (ICH guidelines) for stability testing of new drug substances and products, as well as for determining their shelf life. The course will define and examine the stability data package for new drug substances or medicinal products, which is a mandatory requirement for submitting a marketing authorization application in the European Union, Japan, and the United States. The course illustrates the core stability data package for new drug substances and products, but also addresses a variety of practical scenarios that may arise due to specific scientific considerations and characteristics of the substances and/or products under evaluation.
18	Heterocyclic chemistry (Lectures and practicals)	Chief Assist. Prof. Yordan Stremski, PhD	W,S	EN/B1	6	Master	Heterocyclic chemistry is a branch of organic chemistry that studies cyclic compounds containing heteroatoms such as nitrogen, oxygen, or sulfur. These heterocycles form the structural basis of many biologically active molecules, including pharmaceuticals, nucleic acids, vitamins, and natural products. The course focuses on their classification, properties, synthesis, reactivity, and bioactivity. Due to their wide application in medicine, agriculture, and materials science, heterocyclic compounds represent one of the most important and widely researched areas of modern chemistry.

N	COURSE	PROFESSOR	SEMESTER	LANGUAGE/LEVEL	ECTS CREDITS	STUDY LEVEL	COURSE DESCRIPTION
19	Organic synthesis (Research practice)	Assoc. Prof. Stanimir Manolov, PhD	W,S	EN, B1	6	Master	Organic Synthesis (Research Practice) is a research-oriented course designed for Erasmus MSc students who wish to gain hands-on experience in modern organic chemistry. Students work within an active research group, developing synthetic strategies, performing advanced laboratory techniques, and critically analyzing experimental data. The course focuses on independent research skills, scientific literature analysis, and clear communication of results in an international research environment.