RIGA TECHNICAL UNIVERSITY

Faculty of Materials Science and Applied Chemistry

Study programme "Chemical Technology"

Note! This is a preliminary list of courses. Changes may occur!

SPRING SEMESTER

BACHELOR COURSES

Code	Course name	CP	ECTS
KTM107	**Inorganic Chemistry**	**9.0 CP**	**13.5 ECTS**
The study course provides students with in-depth knowledge of the properties of inorganic compounds, acquisition methods and applications in various industries. The study course examines the relationships between the structure and properties of elements and connections. Students are given an insight into the most important compounds specific to each chemical element.			
KVK746	**Chemistry for Material Scientists**	**3.0 CP**	**4.5 ECTS**
Students acquire basic knowledge about the nature of chemical bonds and the composition of materials, as well as its research methods. The study course deals with the methods of determining the elemental composition both with and without destruction of the material, and control of the manufacturing process using NIR and Raman spectroscopy. Knowledge of the study of material composition, structure and properties is acquired using FTIR, UV-Vis, luminescence, XPS, Auger, Mossbauer and NMR spectroscopy. The student acquires knowledge about the process of chemical analysis and methods of material analysis. The study work is focused on testing knowledge in solving practical and theoretical tasks in laboratory work.			
KOK222	**Organic Chemistry** *(available only to students who study chemical technology)*	**6.00 CP**	**9.0 ECTS**
Chemistry of elementorganic compounds, diazocompounds. Dicarbonyl compond chemistry and tautomerism. Carbohydrates: mono, oligo and polysaccharides. Hydroxycarboxylic acids and aminocarboxylic acids, their stereoisomerism and enantioselective synthesis. Peptides and proteins.Oxocarboxylic acids. Three and four membered heterocycles.			
KVT724	**Unit Operation of Chemical Engineering** *(available only to students who study chemical technology)*	**6.00 CP**	**9.0 ECTS**
In this course attention is paid to the following topics: main processes of chemical technology. Evaporating processes, Calculation of evaporating devices. Distillation: elementary distillation, rectification of liquid compositions, calculation of rectification column. Drying processes in chemical technology, convective and contact dryers, and specific kinds of drying. Sorption processes in chemical technology, construction and calculation of sorption devices. Extraction of liquids and solids, construction of extractors. Distribution of non-homogenous systems – sedimentation, filtrations, centrifuging.			
KVK360	**Chromatography**	**2.00 CP**	**3.00 ECTS**
Solvent extraction, chromatography, types of chromatography, planar chromatography, gas chromatography, sample preparation, calculation of the results.			
KOS733	**History of Chemistry**	**2.00 CP**	**3.00 ECTS**
The history of chemistry from alchemy to a modern science mainly in Europe but with special regard of the development of chemistry in the Baltic states. Main focus will be the 19th century. Historical landmarks in Europe. Important historical scholars in the field of chemistry.			

Note! Full course description available by clicking on the course code!

SPRING SEMESTER

MASTER COURSES

Code	Course name	CP	ECTS
KTM102	**Chemical Industry and Sustainability (Part 2)**	**4.0 CP**	**6.0 ECTS**
The study course is designed to develop an in-depth understanding of production stages and development processes from idea to finished product, sustainability and social responsibility of chemical companies. It also discusses the quality management system and its monitoring, as well as related risk management, industry-specific international and Latvian specific standards, their use in chemical industry. The student acquires knowledge of the main production processes, human resources and project planning, work organization, procurement of raw materials, process management, continuous improvement and the basic principles of an integrated management system. The study process is focused on the development and practical application of integrated theoretical knowledge, as well as the improvement professional competence of students.			
KOS737	**Bioorganic Chemistry** *(available only to students who study chemical technology)*	**2.0 CP**	**3.0 ECTS**
The study course creates an in-depth understanding of the main classes of biomolecules in the body - peptides, nucleic acids, oligosaccharides, lipids, their structural elements, their functions and their synthesis. The student acquires knowledge about the chemical synthesis of biomolecule classes, their structure and composition methods, about the applications of biomolecules in biology and medicine. The study work is focused on such knowledge that will allow students to orientate in modern methods of synthesis of natural substances and their analogues, to develop and, if necessary, to practically implement synthesis schemes.			
KOS725	**Chemistry of Cosmetics**	**4.0 CP**	**6.0 ECTS**
The study course rises understanding about elaboration of cosmeceutical formulations and the difficulties which may rise. The student gets familiar with various ingredients used in cosmetics and their role in the products. The study work is targeted to gain knowledge for successful involving in manufacturing of cosmeceutical products as well as elaborating new cosmeceutical formulations and choosing appropriate ingredients for achieving defined goals.			

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