

Chemistry

Code: CHEM3032

Extent: 20–25 cr

Language: English

Professor in charge: Kari Laasonen

Target group: Master's students

Application procedure: Open for all students of Aalto University.

Quotas and restrictions: Please note, that in some courses the number of participants can be limited. Then major students (Chemistry) have the priority.

Prerequisites: While making your study plan, you should verify that you have the prerequisites needed for the courses.

Objectives

The Chemistry minor will give a good basic knowledge in chemistry. We recommend the first courses of the Chemistry Major as the core of the minor. They will deepen the knowledge of most of the subfields of chemistry. The student can also choose more focused courses and thus it is possible to gain deeper understanding of some of the subfields. The minor provide focused courses of inorganic, organic, analytical, and physical chemistry. The organic and inorganic study paths provide knowledge on synthesizing and analyzing organic or inorganic materials. The first course of physical chemistry is related to quantum mechanics and spectroscopy. There are further courses on electrochemistry and computational chemistry. The emphasis is on strengthening the knowledge of chemistry of engineers with various background. Such engineers can better collaborate with chemistry experts in various branches of the industry and they are capable of solving chemistry related problems, such as planning reaction procedures and analyzing materials usually together with experts of the field.

Content and structure of the minor

For the minor (20–25 credits) all students have to take the same compulsory courses (20 cr). These courses will give a good basic knowledge of chemistry.

If the student is interested of some subtopic of chemistry he/she can take courses in those fields and to include them to the elective courses. In this case we strongly recommend the students to contact the Planning Officer or the professors.

Structure of the minor

Code	Name	Credits	Period
Mandatory courses		20	
CHEM-E4110	Quantum Mechanics and Spectroscopy	5	III
CHEM-E4120	Quantitative Instrumental Analysis	5	I
CHEM-E4130	Chemistry of the Elements	5	II
CHEM-E4150	Reactivity in Organic Chemistry	5	I
Elective course		0–5	
Select 0–1 courses below so that the Minor will be 20–25 cr.			
<i>Analytical Chemistry:</i>			
CHEM-E4135	Advanced Analytical Chemistry	5	III
CHEM-E4165	Chemical Instrumentation and Electroanalytical Methods	5	IV – V
<i>Organic Chemistry:</i>			

CHEM-E4195	Selectivity in Organic Synthesis	5	IV
CHEM-E4295	Asymmetric Synthesis of Natural Products	5	I
CHEM-E4305	Organometallic Chemistry	5	II
CHEM-E4315	Topics in Synthesis	5	III-IV
CHEM-E8100	Organic Structural Analysis	5	I
CHEM-E8105	Enzymatic and Biomimetic Catalysis	5	IV
CHEM-E8130	Medicinal Chemistry	5	II
<i>Inorganic Chemistry:</i>			
CHEM-E4105	Nanochemistry and Nanoengineering	5	IV
CHEM-E4155	Solid State Chemistry	5	IV-V
CHEM-E4205	Crystallography Basics and Structural Characterization	5	I
CHEM-E4215	Functional Inorganic Materials	5	II
<i>Physical and Computational Chemistry:</i>			
CHEM-E4115	Computational Chemistry I	5	III
CHEM-E4175	Fundamental Electrochemistry	4	III
CHEM-E4185	Electrochemical Kinetics	6	IV-V
CHEM-E4210	Molecular Thermodynamics	5	II
CHEM-E4225	Computational Chemistry II	5	IV-V
CHEM-E4235	Transport Processes at Electrodes and Membranes	5	I
CHEM-E4255	Electrochemical Energy Conversion	5	II