



Dive into adventure

UNIVERSITY OF ZAGREB
FACULTY OF CHEMICAL ENGINEERING
AND TECHNOLOGY

International Student Guide



FKITMCMXIX

University of Zagreb Faculty of Chemical Engineering and Technology

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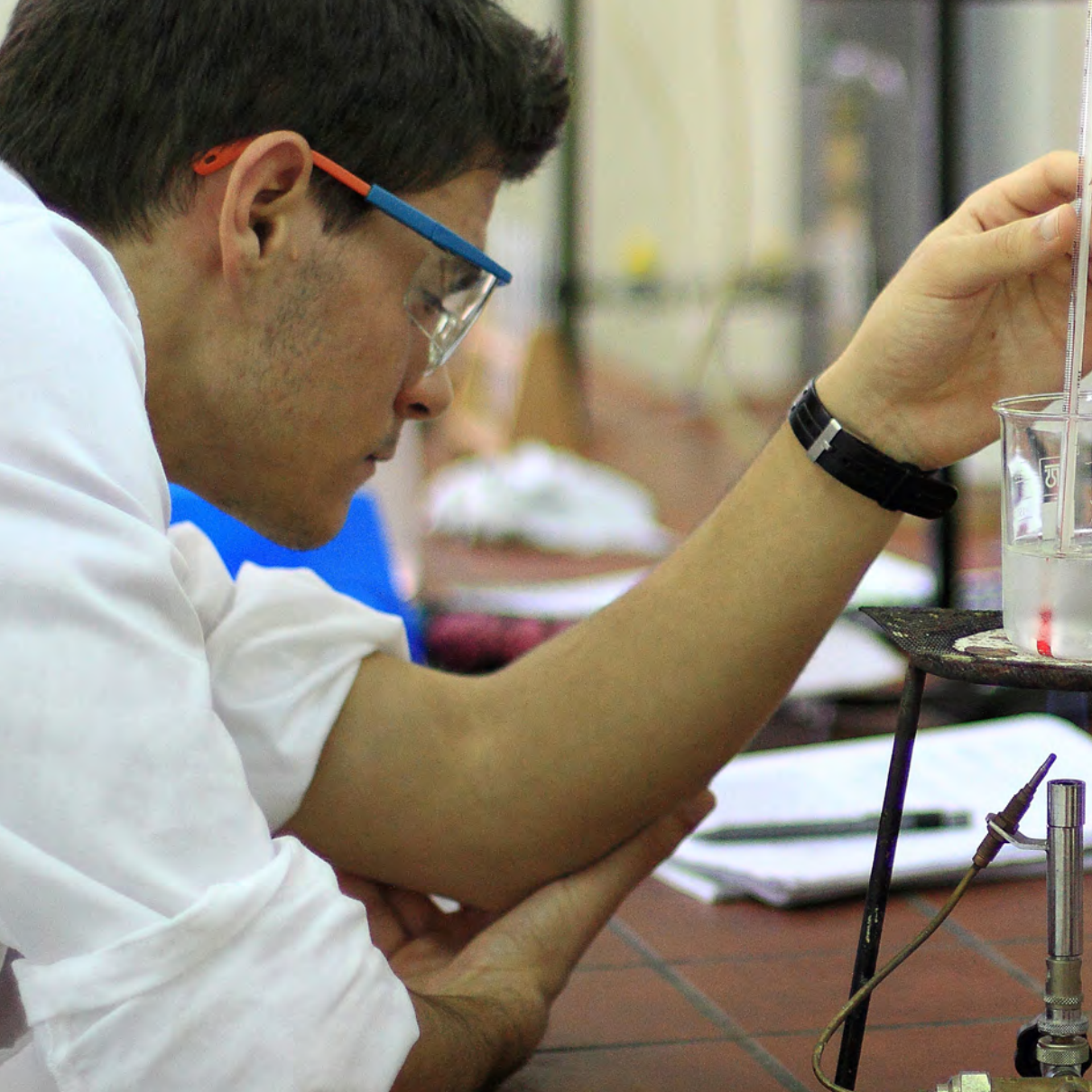
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International Student Guide

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Dear international

The Faculty of Chemical Engineering and Technology (FCET) was founded in 1919 with the aim of implementing scientific research and education of young scientists and engineers in the fields of chemistry and chemical engineering. The great tradition of excellence continued until today, placing Faculty of Chemical Engineering and Technology among the most research-oriented faculties at the University of Zagreb. Numerous papers in distinguished international journals and successful international and domestic scientific projects, as well as industry-related projects testify to that devotion to science. The Faculty of Chemical Engineering and Technology trains experts in the fields of chemical engineering, materials science and engineering, environmental engineering and applied chemistry. The Faculty provides university undergraduate, graduate and postgraduate study programmes, in which students acquire knowledge relevant to the development of sustainable chemical processes and their application in production, to the development of materials and processes for specific purposes and to the development of methods for quality control. It offers a variety of academic degree courses leading to Bachelor's, Master's and Doctoral degrees in the fields of technical and natural sciences. Since 1919 more than 5000 students have graduated at the Faculty of Chemical Engineering and Technology and about 600 candidates have been awarded their Doctoral degrees.

student,

This booklet contains general information that we hope it will be useful for international visiting and exchange students who participate in one of a number of exchange programmes (i.e. Erasmus+, Bilateral agreements, CEEPUS, Erasmus Mundus etc.). In this booklet you will also find a list of the study programmes and courses we offer. We hope you will find them attractive enough. On behalf of the Faculty of Chemical Engineering and Technology, we wish you a warm welcome and we hope your stay will be fruitful and enjoyable!

Dean of the Faculty
International Office





The image features a large, stylized orange arch at the top left, a solid orange square at the top right, and a green arch at the bottom right. The background on the left shows a brick wall with a window. The main text is set against a dark blue rounded rectangle.

University of Zagreb

Founded in the second half of the 17th century, the University of Zagreb is the oldest Croatian university and one of the oldest universities in Europe. In 1669 Leopold I, the Holy Roman Emperor and King of Hungary, Croatia and Bohemia, issued a decree granting the university status and privileges to the Jesuit Academy in Zagreb. Therefore, the year 1669 is regarded as the year of establishment of the University of Zagreb.

With its 31 Faculties and 3 Art Academies it is the flagship educational institution in the country. In 2001, at the Prague ministerial conference, Croatia signed the Bologna declaration and joined the process of harmonization of the European higher education area. Therefore, the Bologna scheme was adopted in the academic year 2005/2006.

Faculty of Chemical Engineering and Technology (FCET)

6

1919

The Faculty of Chemical Engineering and Technology was founded in 1919, as the first Department of Chemical Engineering in Croatia – a part of the Technical Institute Zagreb. A great number of distinguished scientists have worked there, the most noteworthy of whom is certainly Vladimir Prelog, who was professor of organic chemistry from 1934 to 1941, and who went on to receive the Nobel Prize in Chemistry in 1975 for his research on the stereochemistry of organic molecules and reactions.

Today the Faculty is organized in 16 departments that perform teaching, scientific research, professional and consulting activities in chemical engineering, chemistry, and related fields. Teaching and education are based on modern, problem-oriented methods and provide students with analytical methodology in solving problems, but always keeping in mind the synthetic approach. Students of the Faculty obtain contemporary knowledge of research, development and design of new, sustainable chemical industrial processes as well as on the improvement of existing ones. This is done to ensure high quality, reliable and safe production that takes into account criteria of the economy, efficiency and environmental protection. In addition, students of the Faculty may specialize in drug design and the development of new polymeric and inorganic materials, development of novel synthesis routes as a basis for new processes, as well as in the quality management.

Regarding the number of papers published in distinguished international journals the Faculty of Chemical Engineering and Technology is among the most research-oriented faculties at the University of Zagreb. The research at the Faculty of Chemical Engineering and Technology is focused on chemical and environmental engineering, applied chemistry and material science. Therefore, priority topics of research involve environmental protection and management, development of advanced materials and sustainable technologies, alternative and renewable energy sources, development of new pharmaceuticals, industrial bio-transformations and other related subjects.

The Faculty has developed valuable international cooperation with various scientific institutions in the world, either directly or through inter-university cooperation.

Study programmes are organized in three educational cycles: undergraduate





Study at FCET



study programmes (1st cycle), graduate study programmes (2nd cycle), and postgraduate study programmes (3rd cycle).

The first cycle normally takes three years in which students are required to earn 180 ECTS (European Credit Transfer System) credits while the second cycle takes two years in which students are required to earn 120 ECTS credits. University doctoral programmes that form the third cycle are regularly completed within three years with 180 ECTS credits earned.

The Faculty of Chemical Engineering and Technology offers four undergraduate and graduate study programmes, as well as one doctoral study programme. It is also involved in three postgraduate specialist programmes.

Undergraduate and Graduate

STUDY PROGRAMMES

Three of the study programmes are in the field of technical sciences (Chemical Engineering, Environmental Engineering and Materials Science and Engineering) and one is in the field of natural sciences (Applied Chemistry).

**Chemical
Engineering**

**Materials
Science and
Engineering**



Graduate Programmes

l
ng

**Applied
Chemistry**

**Environmental
Engineering**



Chemical Engineering

CHEMICAL ENGINEERING as a technical scientific discipline relies on the fundamental natural sciences (chemistry, mathematics, physics and biology), fundamental technical sciences (mechanical engineering, electrical engineering and computer science), materials science, economics, management and other related areas of human activities.

THE PROGRAMME DEALS WITH

- the application of physical and chemical processes of converting raw materials and different forms of energy into more useful or valuable forms in an efficient, safe, most economical and ecological manner
- the analyses and improvements of existing and new processes for chemical transformation of raw materials and energy into useful products
- designing of apparatuses and equipment for process implementation
- the development of methods and techniques for process measurement, control and optimization in chemical industry

Applied Chemistry

APPLIED CHEMISTRY is designed to address the needs of modern knowledge-based industries, where the need for applied scientific skills is being driven by the expansion of high-technology fields such as pharmaceuticals, biotechnology, energy, environment and advanced manufacturing.

THE PROGRAMME DEALS WITH

- the application of the theories and principles of chemistry to practical purposes
- the development of new advanced technologies (nanosciences, biosciences, technologies in environmental protection)
- the development of chemical technologies (pharmaceutical, food, petrochemical, plastic, rubber and agrochemical industries)

Materials Science and Engineering

MATERIALS SCIENCE AND ENGINEERING is a study of structure, properties, processing and performance of materials (metals and alloys, ceramics, polymers, and composites). It links the properties of materials with the structure on the atomic scale, and develops large scale manufacturing methods for materials with desired structure and properties.

THE PROGRAMME DEALS WITH

- the structure, properties, processing and performance of materials
- classical and advanced materials technologies
- the selection and modification of materials for particular application
- the development of advanced materials, such as composites, nanomaterials or biomaterials
- the impact of materials on society in a social, economic and environmental context

Environmental Engineering

ENVIRONMENTAL ENGINEERING is a new branch of engineering based on the protection of the local and global environment from the outcomes of potentially harmful human activities; it is concerned with the improvement of environmental quality for general welfare and human health, and with the development of comprehensive technologies which generate minimum waste and apply closed cycle production strategies.

THE PROGRAMME DEALS WITH

- the application of science and engineering principles to improve the environment (air, water, and land resources)
- clean technologies and applied techniques, studies on the environmental impact of proposed construction projects
- water and air pollution control, recycling, waste disposal, and public health issues
- the protection of environment from potentially harmful influence of human activities
- the improvement of environmental quality for human health

Admission

Admission to our study programmes and the number of positions is defined for all students, including foreign citizens. The enrollment quota available for foreign students at FCET is ten and five places for undergraduate and graduate studies, respectively.

Students holding a first cycle university degree can apply for admission to the university graduate programmes or they can enter the labour market while students holding a second cycle university degree can continue their studies in the university postgraduate programmes or they can enter the workforce.

Exchange students coming to the FCET must be nominated by their home university. The on-line application form and all the required documents can be found at the following link: <http://www.unizg.hr/homepage/international-exchange/exchange-students/>

Language of instructions

Lectures, seminars and exercises are given in Croatian language. International students must be sufficiently proficient in Croatian in order to be able to follow the courses of study. However, following courses could be held in the English language (the number is gradually increasing):

Analytical Chemistry

Chemometrics

Chemical Engineering Thermodynamics

Organic Chemistry

Introduction to Nanotechnology

Analysis and Modelling of Environmental Processes

Integrated Chemical Systems

Surface Engineering

Formulation Engineering

Adhesion and Adhesive Products

Polymer Science and Technology

Structure Determination of Organic Compounds

Corrosion and Environment

Petroleum Refining and Petrochemical Processes

Process Measurement and Control

Air Pollution Control Engineering

Biochemical Engineering

Fluid Mechanics

Thermal Separation Processes

Transport Phenomena

Engineering Thermodynamics

Our teachers will be more than happy to give instructions and explanations in English for courses which are not included in the above list.

University Doctoral Pro

The doctoral study programme Chemical Engineering and Applied Chemistry is fully in accordance with the recommendations of the Bologna Declaration and hence open to student and teaching staff mobility, both locally and internationally. According to the principles of lifetime education, the study is open for students of other studies in the country and abroad, including the specialist studies, and for those coming from state institutions, the public or private sector. The ECTS system allows students to choose optional modules in related graduate courses in Croatia or abroad.

The doctoral candidates must have a completed academic degree in technical sciences on a graduate level (total of 300 ECTS) such as Master in Chemical Engineering, Applied Chemistry, Material Science and Engineering or Environmental Engineering... Candidates coming from other study programmes in the fields of technical, natural, biotechnical and biomedical sciences may be requested to take differential exams.

**Chemical
Engineering
Applied**

International
phone: +385
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e-mail: medj@medj.hr

programme

3 years

Chemical
Engineering and
Chemistry

Doctoral candidates with foreign
higher education qualifications should
request a validation of their qualifications at
the Agency for Science and Higher Education

<https://www.azvo.hr/en/enic-naric-office>

European Network of National Information Centres on
academic recognition and mobility (ENIC)
National Academic Recognition Information Centres
(NARIC)

Office

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Chemical Engineering

The programme will contribute to the development of new materials, advanced processes and sustainable technologies that rely on the areas of nanoscience, bioscience, connection between chemical and physical sciences with material engineering, as well as on the development of environmentally friendly technologies, energy efficient industrial processes and other service oriented technologies in chemical industry, including development, transfer and application of new methods, products and projects in the area of chemical process industry and in the area of measuring, modelling, diagnostics and management of chemical processes. Nowadays a clear delineation between fundamental and applied research is disappearing, and in some areas there is no longer a borderline between fundamental research and final industrial application (biosensors in medicine, antiviral and antitumor medications, ceramic, polymer and composite materials for specific use, catalysts, etc.). The FCET has had a long tradition precisely in the foregoing areas of fundamental and applied research and thus it offers a recognisable programme that reflects the continuity of the postgraduate education since 1962.

The doctorate programme lasts 3 years with the total of 180

Two mandatory and **two optional** courses contribute with 6 ECTS. **Two compulsory activities**, such as **workshop discussion groups, journals, and participation in conferences** contribute with additional 6 ECTS. A dissertation brings 120 ECTS. **2 ECTS** may be gained by

The course structure allows students to choose subjects according to their particular interests and the topic of their research.

Engineering and Applied Chemistry

Doctoral study
for three years
10 ECTS credit point.

Three elective courses
10 ECTS points each. Other
such as **research seminar**,
paper, paper publication in CC
Journal with conference report
Additional 13 ECTS points.
10 ECTS points, and the remaining
for non-required activities.

allows great flexibility, and
selects from different fields
particular areas of interest
of their thesis.

Admission requirements

The admission to the doctoral study programme proceeds in line with the public tender published, as a rule, once a year. The admission requirements are determined by the Doctoral study council in accordance with Article 8 of the Regulations on the Doctoral Studies at the University of Zagreb.

The candidates may be admitted to the study programme if they have completed a:

- Graduate university study of Chemical Engineering, Material Chemistry and Engineering, Environmental Engineering and Applied Chemistry
- Undergraduate university study of Chemical Engineering and Technology
- Graduate or undergraduate university study in the area of technical, natural, biotechnical and biomedical sciences at a national or foreign university.

The recognition procedure of foreign education qualifications is implemented in line with the effective regulations of the Republic of Croatia.

University Specialist Postgraduate Programmes

Students can choose some of our
one-year long postgraduate specialist
study programmes.

1 year

**Corrosion
Protection**

**Environmental
Engineering**



**sion and
ection**

**nmental
eering**

**Petroleum and
Petrochemical
Engineering**

Environmental Engineering

The study programme Environmental Engineering is intended for graduates who are either working or considering a career in environmental engineering, and wish to be part of the global effort to incorporate environmental considerations in all human activities. Its curriculum is sufficiently flexible to accommodate students from different technical backgrounds. This programme is also suitable for graduates who wish to upgrade their prior educational background and professional experience in the field of environmental science and technology, and to acquire new skills for solving advanced environmental engineering problems. Upon enrolment the applicants choose at least three mandatory and three optional courses within the field of their interest. By finishing the study the applicants acquire the title of university specialist of environmental engineering.

Corrosion and Protection

The postgraduate specialist university study Corrosion and Protection is intended for engineers who encounter and wish to solve corrosion problems at their workplace. The study offers courses encompassing techniques of materials selection, the application of corrosion protection techniques and corrosion management. Upon enrolment the applicants choose at least two mandatory and three optional courses within the field of their interest. By finishing the study the applicants acquire the title of university specialist of corrosion and protection.

1 year programmes

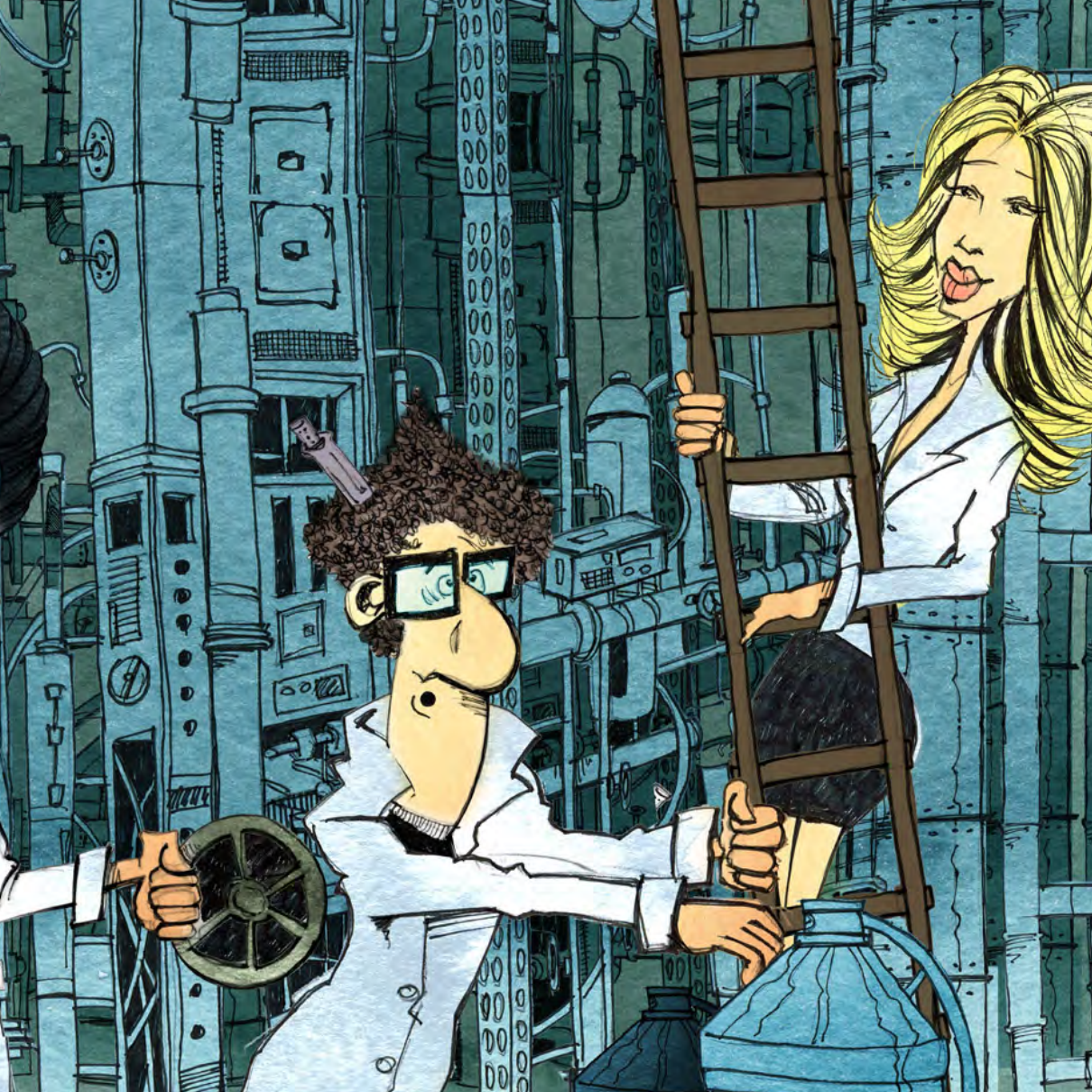
Petroleum and Petrochemical Engineering

The aim of the study programme is to attract young professionals and to educate specialists in the field of petroleum and petrochemical engineering. Its mission is to transfer knowledge about new technologies, energy efficiency, new methods, products and processes in the field, from academia to industry and vice versa, via joint projects. The study programme will strive to be the gathering place for top Croatian professionals from academia and industry, recognizable in the neighbouring countries as well as in the whole Europe.

The complexity of petroleum and petrochemical facilities as well as the peculiarities of particular processes with respect to raw materials, technologies, economy, product formulation, definition of standards, plant design, construction, process control, safety and process development requires upgrading of the fundamental knowledge acquired in the course of undergraduate and graduate chemical engineering study programmes and similar study programmes.

Practical Matters







Accommodation

International students will have to organize accommodation on their own, i.e. to look for private rental accommodation.

Rents vary greatly according to location, room size, facility etc. Overhead expenses are sometimes included in the price, and sometimes are paid by the consumer. Payment is usually expected at the beginning of the month, while some landlords request payment for several months in advance.

The best way to do this is to search for different offers on the following web-portals. Some of the portals are only in Croatian, but they usually have photos of apartments and contact email so you may send an inquiry:

Crozilla.com (<http://www.crozilla-nekretnine.com/>)

Centar nekretnina (<http://www.centarnekretnina.net/EN/lease.htm>)

Gohome (<http://www.gohome.hr/>)

Nekretnine.net (<http://nekretnine.net/>)

Oglas.hr (<http://www.oglas.hr/>)

Njuskalo.hr (<http://www.njuskalo.hr/iznajmljivanje-stanova/zagreb>)

More information on accommodation please find on the University of Zagreb website:

<http://www.unizg.hr/homepage/international-exchange/exchange-students/>

Croatian language courses

You can get a lot more out of your stay in Croatia if you know a little of the local language and the social codes.

Croaticum – Centre for Croatian as Foreign and Second Language.

The Centre offers semester and monthly courses throughout the academic year to students who wish to learn Croatian during their studies at the University of Zagreb. Semester courses include three levels of language proficiency: Beginners to B1, Intermediate to B2 and Advanced to C1. Each year in July Croaticum also organizes four-week-long Little Summer School of Croatian Language, Culture and Civilization.

**Croaticum – Centre for
Croatian as Foreign and
Second Language**

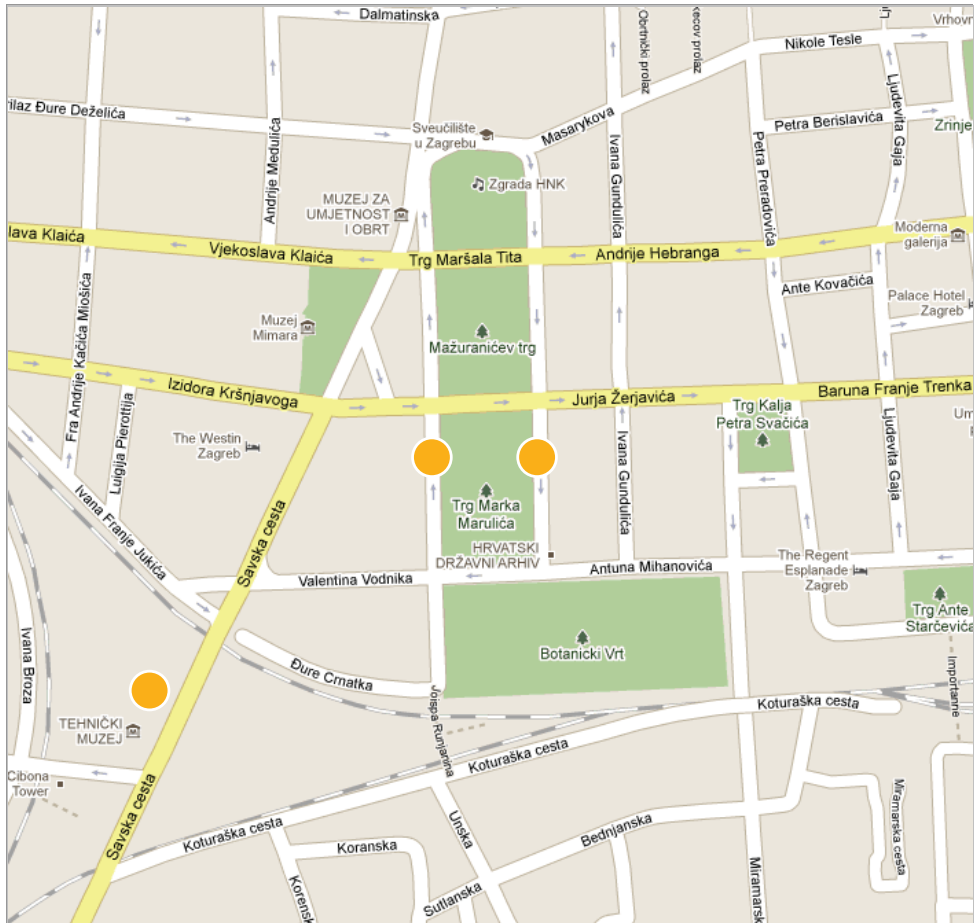
croaticum@ffzg.hr
<http://croaticum.ffzg.hr/>

Sports and social activities



FCET has a very active alumni association, AMACIZ. You are welcome to join Sports section at their games, go to trips all over Croatia with the Hiking section, practice your painting skill with the Art section or join the Academic choir “Vladimir Prelog”. There is also the yearly “Tehnologijada”, sports and scientific meeting of students from technical faculties in Croatia and neighboring countries.

Present location of FCET



International Office

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ECTS coordinator
Associate Professor Zvezdana Findrik Blažević, PhD
E-mail: zfindrik@fkit.hr



Visit www.fkit.unizg.hr/en



University of Zagreb
Faculty of Chemical Engineering and Technology

**UNIVERSITY
UNDERGRADUATE
AND GRADUATE
PROGRAMMES**

Chemical Engineering



1ST CYCLE

univ. bacc. ing. cheming.

1st YEAR

1st semester

Calculus I
General and inorganic chemistry
Physics I
Computer programming and application

2nd semester

Calculus II
Analytical chemistry
Basics of electrical engineering
Basics of mechanical engineering
Physics II

2nd YEAR

3rd semester

Numerical and statistical methods
Engineering thermodynamics
Physical chemistry I
Mass and energy balances
Transport phenomena

4th semester

Physical chemistry II
Process and instrumental analysis
Fluid mechanics
Chemical engineering thermodynamics
Environmental protection

3rd YEAR

5th semester

Catalysis and catalysts
Mechanical process engineering
Organic chemistry
Energetics
Optional course I

6th semester

Measurements and process control
Chemical reaction engineering
Thermal process engineering
Optional course II
Final thesis

List of optional courses at: http://www.fkit.unizg.hr/preddiplomski/kemijsko_inzenjerstvo

Study of Chemical Engineering is based on a modular principle with three modules in the 1st and 2nd year of graduate study:

Module *Chemical Process Engineering* (CPE)

Module *Environmental Chemical Engineering* (ECE)

Module *Chemical Technologies and Products* (CTP)

2ND CYCLE

mag. ing. cheming.

1st YEAR

1st semester

Chemical plant design I
Construction materials, corrosion and protection
Chemical engineering laboratory
Chemical reactors
Optional course I

CPE

Petroleum and petrochemical engineering

ECE

Biochemical engineering

CTP

Technological processes of organic industry

2nd semester

Chemical plant design II
Chemical engineering laboratory
Mathematical modeling, process dynamics
Optional course II
CPE
Process equipment
Catalytic reaction engineering
ECE
Air pollution control engineering
Environmental engineering
CTP
Petrochemical technologies
Inorganic technologies

2nd YEAR

3rd semester

Process economy
Management
Optional course III
Optional course IV

CPE

Formulation engineering

Polymer engineering

ECE

Industrial waste water treatment

Solid and hazardous waste treatment

CTP

Technology of dyes and coatings

Electrochemical engineering and products

4th semester

Master thesis

List of optional courses at:

http://www.fkit.unizg.hr/diplomski/kemijsko_inzenjerstvo/kpi

http://www.fkit.unizg.hr/diplomski/kemijsko_inzenjerstvo/kizo

http://www.fkit.unizg.hr/diplomski/kemijsko_inzenjerstvo/ctp

Applied Chemistry



1ST CYCLE

univ. bacc. appl. chem.

1st YEAR

1st semester

Calculus I
Physics I
General chemistry
Computer programming and application
Basics of mechanical engineering

2nd semester

Calculus II
Analytical chemistry I
Basics of electrical engineering
Inorganic chemistry
Physics II
Optional course I

2nd YEAR

3rd semester

Organic chemistry I
Physical chemistry I
Analytical chemistry II
Statistical and numerical methods
Optional course II
Optional course III

4th semester

Physical chemistry II
Organic chemistry II
Fundamentals of chemical and biochemical engineering
Transfer and separation processes
Thermodynamics of real systems
Optional course IV

3rd YEAR

5th semester

Electrochemistry
Chemistry of macromolecules
Instrumental analytical chemistry
Molecular spectroscopy
Biochemistry

6th semester

Chemical technology laboratory
Electrochemical and corrosion engineering
Optional course V
Optional course VI
Final thesis

List of optional courses at: http://www.fkit.unizg.hr/preddiplomski/primijenjena_kemija

Study of Applied Chemistry (AC) is conceived on modular principle with three modules in the 1th and 2nd year of graduate study.

Module A *Environmental Chemistry and Green Technologies*

Module B *Advanced Materials and Technologies*

Module C *Applied Organic Chemistry*

2ND CYCLE

mag. appl. chem.

1st YEAR

1st semester

Chemometrics
Quantum chemistry
Chemical and physical surface properties
and nanostructures
Molecular separations
Optional course I

2nd semester

Integrated chemical systems
Optional course II
Optional course III
Optional course IV
Optional course V

2nd YEAR

3rd semester

Quality management
Technology management and innovations
Optional course VI
Optional course VII
Optional course VIII
Optional course IX

4th semester

Master thesis

List of optional courses at:

http://www.fkit.unizg.hr/diplomski/primijenjena_kemija/ko

http://www.fkit.unizg.hr/diplomski/primijenjena_kemija/smnt

http://www.fkit.unizg.hr/diplomski/primijenjena_kemija/pok

Material Science and Engineering



1ST CYCLE

univ. bacc. ing. cheming.

1st YEAR

1st semester

General chemistry
Calculus I
Physics I
Computer programming and application
Mechanics of materials

2nd semester

Calculus II
Chemical analysis of materials
Physics II
Inorganic chemistry

2nd YEAR

3rd semester

Physical chemistry I
Transport phenomena
Mass and energy balances
Statistical and numerical methods
Organic chemistry I

4th semester

Physical chemistry II
Structure and properties of inorganic materials
Measurements and process control
Electrochemistry
Organic chemistry II

3rd YEAR

5th semester

Unit operations
Structure and properties of polymer materials
Thermodynamics and kinetics of materials
Chemical reaction engineering and catalysis
Polymers and polymerization processes

6th semester

Characterization of materials
Inorganic nonmetal materials
Metal materials, corrosion and protection
Optional course
Final thesis

List of optional courses at: http://www.fkit.unizg.hr/preddiplomski/kemija_i_inzenjerstvo_materijala

2ND CYCLE

mag. ing. cheming.

1st YEAR

1st semester

Surface engineering
Petroleum and petrochemical products
Physical chemistry of polymers
Inorganic binders engineering
Optional course I

2nd semester

Silicate chemistry
Ceramic engineering
Composite materials
Polymer processing
Optional course II

2nd YEAR

3rd semester

Material engineering laboratory
Quality management
Introduction to management
Optional course III
Optional course IV
Optional course V

4th semester

Master thesis

List of optional courses at: http://www.fkit.unizg.hr/diplomski/kemija_inzenjerstvo_materijala

Environmental Engineering



1ST CYCLE

univ. bacc. ing. oecoling.

1st YEAR

1st semester

Introduction to environmental engineering
Calculus I
Physics I
Applied computer sciences
General and inorganic chemistry

2nd semester

Calculus II
Physics II
Analytical chemistry
Microbiology
Optional course I

2nd YEAR

3rd semester

Basics of environmental statistics and numerical methods
Organic chemistry
Physical chemistry
Transport phenomena
Ecology

4th semester

Protection of environment
Chemistry of environment
Mass and energy balances
Fluid mechanics
Modern analytical methods in analysis of environment

3rd YEAR

5th semester

Unit operations in environmental engineering
Technical thermodynamics
Environmental management systems
Air, water and soil management
Reactors and bioreactors
Waste management

6th semester

Analysis and modelling of environmental processes
Process equipment in environmental engineering
Environmental impact assessment
Energy management
Optional course II
Final thesis

List of optional courses at: <http://www.fkit.unizg.hr/preddiplomski/ekoinzenjerstvo>

Study of Environmental Engineering (EE) is conceived on modular principle with three groups of optional courses in 1st and 2nd year of graduate study.

3 + 2

2ND CYCLE mag. ing. oecoinj.

1st YEAR

1

1st semester

Environmental engineering laboratory
Optional course 1
Optional course 2
Optional course 3
Optional course 4

2nd semester

Environmental engineering laboratory
Optional course 5
Optional course 6
Optional course 7
Optional course 8

2nd YEAR

2

3rd semester

Environmental engineering project
Optional course 9
Optional course 10
Optional course 11
Optional course 12

4th semester

Master thesis

List of optional courses at: <http://www.fkit.unizg.hr/diplomski/ekoingenjerstvo>

Chemical Engineering and Applied Chemistry



University of Zagreb
Faculty of Chemical Engineering and Technology

Mandatory courses

Chemical reactor analysis and modelling
Catalytic reaction engineering
Biochemical engineering
Chemical engineering thermodynamics
Separation processes
Transport phenomena
Elements of engineering mathematics
Chemical analysis in quality system
Water chemistry
Heterocycles: current trends and future perspective
Modern trends in organic synthesis
Electrochemistry and materials of electrochemical conversion and storage devices
Environmental management tools
Inorganic nonmetallic materials
Polymer chemistry and engineering
Physics and chemistry of nanostructured surfaces and materials

Elective courses

Engineering of particulate systems
Synthesis and process design
Energetics and the environment
Modern petroleum refining and petrochemical processes
Crystallisation
Process and plant automatisaton
Chemometrics
Medicinal chemistry
Principles and applications of organic photochemistry
Chromatographic methods in environmental analysis
Modern sample preparation techniques for chromatographic analysis
Principles and applications of NMR spectroscopy
Principles and applications of fluorescence spectroscopy
Spectroscopic methods in materials research
Chemical processes pollution and control
Processes of treatment of waste streams and bioremedy of environment
Physical chemical treatment of water
Advanced oxidation processes for water treatment
Managing air quality
Dyes and environment protection
Recycling of polymer and inorganic waste
Structure and processing of polymer materials
Adhesive processes and systems
Engineering of boundary surfaces and tribology
Polymer composite materials
New ceramic materials and ceramic processing
Silicates and silicate glasses
Chemical approach to nanotechnology: fundamentals and applications
Recent issues in the field of corrosion
Chemical sensors and biosensors
Sustainable solar hydrogen systems
Semiconductor materials
Biomedical implant materials
Positron emission tomography (PET) chemistry and PET radiopharmaceuticals
Functional polymer materials
Chemical analysis of surfactants

Workshops

Electron microscopy
Thermal analysis methods

Petroleum and Petrochemical Engineering



University of Zagreb
Faculty of Chemical Engineering and Technology



Compulsory courses

- Conversion processes in the petroleum and petrochemical industry
- Separation processes in the petroleum and petrochemical industry
- Advanced industrial process control
- Refinery process design and integration

Elective courses

- Optimisation of industrial processes
- Catalytic reactors in the petroleum and petrochemical industry
- Petroleum characterisation and motor fuel quality
- Additives for fuels and lubricants
- Properties of gases and liquids
- Heat exchangers
- Stress and elasticity analysis of the piping systems
- Industrial water systems: characterisation and treatment
- Terminals for transshipment of liquid and gas petroleum derivatives
- Protection of the Adriatic Sea against land-based pollution

