CHAIRPERSON
Nikolaos E. Chronakis

VICE-CHAIRPERSON
Anastasios I. Tasiopoulos

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Epameinondas Leontidis
Ioannis Paschalidis
Costas S. Patrickios
Panayiotis A. Koutentis
Charis R. Theocharis

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Athanasiou Nicolaides
Constantina P. Kapnissi-Christodoulou
Nikolaos E. Chronakis
Sophia C. Hayes

ASSISTANT PROFESSORS
Eftychia Pinakoulaki

LECTURERS
Agapios Agapiou
Savvas Georgiades
CHEMISTRY AT THE UNIVERSITY OF CYPRUS

The University of Cyprus has offered Chemistry education since its inception in 1992, when a Chemistry Section was established within the (then) Department of Physical Sciences. The first undergraduate students of Chemistry were enrolled in September 1994 and graduated with a B.Sc. in Chemistry in June 1998. The M.Sc. and Ph.D. programmes in Chemistry were initiated in 1998 and proved quite dynamic, as they earned the University international research recognition for Chemistry. The Chemistry Section evolved into an independent Department in February 2000.

CHEMISTRY AS A SCIENCE

Chemistry is one of the fundamental natural sciences. Its main areas of interest are the study of transformations of matter through chemical reactions (synthetic chemistry), and the analysis of the chemical structure of matter (analytical chemistry). Chemistry plays a prominent role in many other sciences, such as medicine and the health sciences, the environmental sciences and most branches of engineering. Chemistry is closely interlinked with the other natural sciences, with which it often works cooperatively and is therefore, a key science for modern civilization.

DEPARTMENT’S OBJECTIVES

The Department aims at producing and promoting scientific knowledge and research in Chemistry, and providing society with highly trained and skilled graduates. Chemistry graduates can be employed by local industry (mainly the chemical industry, plastics, pharmaceuticals, food, beverages, construction materials, detergents, cosmetics, etc.), hi-tech private companies, the public sector and the education sector.

Chemistry is a very broad science with many different branches and a high degree of specialization, which is attained, to a large extent, through postgraduate studies. Most Chemistry graduates continue in postgraduate programmes, as the need for specialization becomes more pronounced every day.

UNDERGRADUATE PROGRAMMES OF STUDIES

From the academic year 2017-2018 the Chemistry Department offers a new unified Chemistry programme, while students admitted in previous years have been distributed in three parallel chemistry directions, with specialization in (a) Food and Environmental Chemistry, (b) Materials Chemistry and (c) Biological Chemistry. In addition to its standard basic programme(s) of study, the Department of Chemistry offers a Chemistry minor degree to students of other Departments of the University of Cyprus.

All programmes are based on ECTS and comprise: (a) Introductory Courses in Chemistry, Physics, Mathematics and Computer Programming (1st and 2nd semester); (b) Basic Courses for the Chemistry degree, such as analytical, inorganic, organic and physical chemistry, and biochemistry (3rd -6th semester); (c) Courses specific to each of the three directions programme (7th and 8th semester) for students admitted prior to the academic year 2017-2018, while for students admitted to the new unified Chemistry programme, courses that cover a wide range of modern Chemistry areas are offered in the seventh and eighth semester. To graduate with a B.Sc. in Chemistry, students must acquire a total of 240 ECTS.

At the theoretical level, Chemistry is taught through lectures that are complemented by seminars and problem-solving sessions. Chemistry is by nature an experimental science; therefore, the Department places strong emphasis on Laboratory Courses (eight laboratory courses of 6-7 ECTS each), which are regarded as independent courses, meaning that their grades are not compounded with those of the relevant theoretical courses. To complete a Chemistry degree, the student must also take four university-wide Elective Courses (20 ECTS total) from at least three different Faculties of the University, as stipulated by the University regulations. The student must also acquire 10 ECTS units in foreign language courses. All courses include a written final examination. However, the final grade of a course is calculated based on the student’s performance in the final exams, homework, intermediate examination, scientific literature projects, and laboratory reports. There are usually prerequisite courses in a series of related courses (e.g. Inorganic Chemistry I, II and III), where level I must precede level II, etc., and it is not possible to enroll in an advanced level course, without having first performed satisfactorily in the lower level course(s) in the series (see related Table).

All Chemistry programmes cover all the basic Chemistry courses in the first three years of studies. This ensures that all graduates with a B.Sc. in Chemistry will have equal credentials in the job market. The differentiation of the three directions occurs in the fourth year of studies, in which all courses of each programme are different, providing the students with a significant first level of specialization in three important areas of modern Chemistry. However, it must be emphasized that this level of specialization cannot match that offered by a postgraduate degree. In the 4th year of studies of the new unified Chemistry programme, courses that cover a wide range of modern Chemistry areas are offered.

The Diploma Thesis (9 ECTS) is an important feature of the undergraduate programme. During the fourth year of studies, each student works independently for two semesters under the supervision of a member of the academic staff, studying one of the special experimental projects proposed. During the course of their Diploma work, students learn how to work independently, solve laboratory problems, search, study and analyse scientific literature, give seminars to their fellow students in a clear and comprehensive way, and present the results and conclusions of their Thesis work. Although a Diploma Thesis need not contain original research work, students usually work on truly original research related to the research interests of their supervisors.

MINOR (SECONDARY) DEGREE IN CHEMISTRY

The Minor degree in Chemistry is offered to those students of other departments of the University of Cyprus, who are interested in pursuing academic studies in chemistry. For the
academic year 2010-2011, the Department offered its original minor degree, which was designed to operate in parallel with the original Chemistry programme.

The Minor in Chemistry contains both Mandatory and Elective Courses. Mandatory Courses ensure that the students enrolling in this programme will obtain a broad view of modern Chemistry, including all its major fields. Elective Courses enable students to focus on the topics that they prefer. The minor degree comprises four different groups of courses:

Group A: 3 Theoretical Courses at level 1. Students must elect 3 of the 5 theoretical Chemistry courses with codes 1xy (x,y are the numbers 0-9).

Group B: 2 Laboratory Courses. Students must elect 2 laboratory courses, one with code 1x0 and one with code 2x0 or 3x0. The lab codes must correspond to the elected theoretical courses of group A, to ensure compatibility between the laboratory courses and the theoretical courses.

Group C: 3 Theoretical Courses at level 2 or 3. The students elect 3 additional theoretical courses compatible to those of group A, with codes 2xy or 3xy. Courses are considered compatible, when they have the same middle number x.

Group D: 2 Electives. Students elect 2-3 additional Chemistry courses, which may be: (a) 4th year Elective Courses or Mandatory Courses with codes 4xy, after obtaining the permission of the teaching staff. (b) Additional courses from Group A (codes 1xy). (c) Additional Laboratory Courses from Group B (codes 2x0 or 3x0). (d) Additional courses from Group C, provided they are compatible with the rest (codes 2xy or 3xy).

COURSE DESCRIPTIONS

(K) Core Course – Mandatory Course, (E) Elective Course, BC (Biological Chemistry Programme), FEC (Food and Environmental Chemistry Programme), MC (Materials Chemistry Programme)

CHE 110 Classical Methods of Chemical Analysis Lab I (7 ECTS)

BC(K), FEC(K), MC(K)

Analytical Chemistry LAB I is a laboratory course focusing on classical methods of chemical analysis. The main goal of the experiments is to introduce students to analytical chemical work and way of thinking, and to provide skills in the qualitative and quantitative analysis of chemical species in laboratory and real samples. The experiments cover the following analytical methods: a) Wet Chemistry Techniques of Qualitative Analysis, b) Classical Chromatographic Techniques (separation of species by paper and thin layer chromatography, and column ion exchange chromatography), c) Gravimetry, d) Volumetry (acid-base, complexometric, argentometric and redox titrations) and e) the Determination of Nitrogen by Kjeldahl.

CHE 111 Chemical Equilibria and Classical Methods of Analysis I (6 ECTS)

BC(K), FEC(K), MC(K)


CHE 121 Introductory Chemistry (for Chemists) (6 ECTS)

BC(K), FEC(K), MC(K)

Atomic Structure: Hydrogen Atom (the Bohr model, the Schrödinger equation, the principal, azimuthal, magnetic and spin quantum numbers, the atomic orbitals), Polyeletronic Atoms (the Pauli exclusion principle, the Hund’s rule, the building – up principle, electronic configuration).


Chemical Bonds and Molecular Structure: Ionic Bonds, Covalent Bonds, Lewis structure, VSEPR theory, Molecules with multiple bonds, Metallic bond.

Nomeclature: Rules for Writing and Naming Inorganic and Metal-Organic Compounds According to IUPAC Conventions.


CHE 122 Inorganic Chemistry I (6 ECTS)

BC(K), FEC(K), MC(K)

CHE 140 Physical Chemistry Laboratory I (7 ECTS)
BC(K), FEC(K), MC(K)

CHE 141 Physical Chemistry I (6 ECTS)
BC(K), FEC(K), MC(K)

CHE 130 Organic Chemistry Laboratory I (7 ECTS)
BC(K), FEC(K), MC(K)

CHE 131 Organic Chemistry I (6 ECTS)
BC(K), FEC(K), MC(K)

CHE 142 Organic Chemistry Laboratory II (7 ECTS)
BC(K), FEC(K), MC(K)
CHE 241 Quantum Chemistry (6 ECTS)

BC(K), FEC(K), MC(K)


CHE 242 Physical Chemistry II (6 ECTS)

BC(K), FEC(K), MC(K)


CHE 311 Laboratory of Instrumental Chemical Analysis II (6 ECTS)

BC(K), FEC(K), MC(K)


CHE 320 Inorganic Chemistry Laboratory (7 ECTS)

BC(K), FEC(K), MC(K)

1. Main group chemistry. Synthesis and characterization of chlorotribenzyltin(IV) and tri(propyloxy)borate.

2. Vanadium Chemistry: Oxidation states, complexes, oxo and non oxo vanadium molecules. Synthesis of bis(acetylacetonate)vanadyl(IV) and tris(catecholato)vanadium(IV) dis(triethylammonium).


- Characterization of the compounds:
  a) 1H, 13C, 11B, 119Sn NMR spectroscopy 1, 3, 5
  b) UV-Vis spectroscopy 2, 3, 4, 5
  c) IR spectroscopy 2, 4, 5
  d) Magnetic Measurements 2, 4, 5
  e) Cyclic Voltammetry 2, 5
  f) Polarometry 3
  g) Conductivity 3
  h) Melting point 1

CHE 321 Inorganic Chemistry III. Bond Theory, Structure and Reactivity of Metal Complexes (6 ECTS)

BC(K), FEC(K), MC(K)

1. Coordination Chemistry, Bond, Spectroscopy, Magnetism (Bond theories of metal complexes, infra red and visible spectroscopy of metal complexes, magnetic properties of Metal complexes).

2. Structure (Structure and isomerism of metallorganic molecules with coordination number 1-12, enantiomeric complexes, experimental distinction of enantiomers, chelate effect, macrocyclic ligands, selective binding, template synthesis).

3. Reactions, Kinetics and mechanisms (Substitution reactions of square planar compounds and octahedral complexes, effect of crystal field stabilization to the kinetics of metal complexes, acid and base catalysis, fluctional complexes, redox reactions, inner-outier sphere mechanisms, electron transfer, mixed valence compounds, light induced catalytic reactions, applications).

4. Descriptive chemistry of transition metal, lanthanides and actinides (Periodic table, oxidation states-electrochemistry, chemistry of the various oxidation states of the metal ions, chemistry of the heavier transition metals, bonding and structure of lanthanides and
actinides, coordination chemistry, visible spectroscopy and magnetic properties of lanthanides and actinides, transuranium elements).

**CHE 331 Organic Chemistry III (6 ECTS)**

BC(K), FEC(K), MC(K)

Heterocycles: furan, thiophene, pyrrole, pyridine, quinoline, isoquinoline and indole. Organic Free Radical Chemistry: mechanisms; functional group manipulation; C-C bond formation; Alkylcyclic Chemistry: ring strain; cycloalkanes (3-7) and larger (8-14 membered) rings. Non-Aromatic Heterocycles and Natural Products: small (3 & 4) and medium (5 & 6-membered) rings, steroids, β-lactams, carbohydrates; alkaloids, stereoelectronic, kinetic & thermodynamic control, NGP; phenolic oxidative coupling. B, Si & Sn: hydroboration, silylenolethers, Shapiro reaction, electrophilic substitution with allylic rearrangement, Crotylindanes, Brook, Sila-Pummerer & Si-Baeyer-Villiger rearrangement, hydrostannylation, Crotylstannanes, Sn-Li exchange. Pd(0/II), Co & Fe: applications in synthesis; C-C bond formation via transmetallation, cyclisation, carbonyl/alkene insertions. Mixed Mechanism Workshop.

**CHE 332 Bioorganic Chemistry (6 ECTS)**

BC(K)


**CHE 340 Physical Chemistry Laboratory II (7 ECTS)**

BC(K), FEC(K), MC(K)


**CHE 341 Physical Chemistry III (6 ECTS)**

BC(K), FEC(K), MC(K)


**CHE 404 Undergraduate Diploma Thesis in Biological Chemistry I (3 ECTS)**

BC(C)

The Diploma Thesis work is mandatory for the Bachelor degree in Biological Chemistry. In the first part of the diploma thesis work, students begin working on a given subject under the supervision of a faculty member. Emphasis is placed on scientific literature search and on mastering methods and techniques in the laboratory. At the end of the semester, the student’s performance is assessed by the supervisor and is marked as “satisfactory” or “unsatisfactory”.

In the latter case, the student must register in CHE 404 for one additional semester. The final grade for the Diploma Thesis is given after completion of CHE 405.

**CHE 405 Undergraduate Diploma Thesis in Biological Chemistry II (6 ECTS)**

BC(C)

The course is a continuation of CHE 404. In this part, students continue to obtain their experimental data, and discuss and present the data in diagrams, figures and tables. At the end of CHE 405, students write a report on their Diploma Thesis work. In addition, students give an oral presentation of their work, before an examination committee, and must successfully answer questions about their work.

**CHE 406 Undergraduate Diploma Thesis in Food and Environmental Chemistry I (3 ECTS)**

FEC(C)

The Diploma Thesis work is mandatory for the Bachelor degree in Food and Environmental Chemistry. In the first part of the diploma thesis work, students begin working on a given subject under the supervision of a faculty member. Emphasis is placed on scientific literature
search and on mastering methods and techniques in the laboratory. At the end of semester, the student's performance is assessed by the supervisor and is marked as "satisfactory" or "unsatisfactory". In the latter case, the student must register in CHE 406 for one additional semester. The final grade for the Diploma Thesis is given after completion of CHE 407.

**CHE 407 Undergraduate Diploma Thesis in Food and Environmental Chemistry II (6 ECTS)**

**FEC(C)**

The course is a continuation of CHE 406. In this part, students continue to obtain their experimental data, and discuss and present the data in diagrams, figures and tables. At the end of Semester 4, students write a report on their Diploma Thesis work. In addition, students give an oral presentation of their work, before an examination committee, and must successfully answer questions about their work.

**CHE 408 Undergraduate Diploma Thesis in Materials Chemistry I (3 ECTS)**

**MC(C)**

The Diploma Thesis work is mandatory for the Bachelor degree in Materials Chemistry. In the first part of the diploma thesis work, students begin working on a given subject under the supervision of a faculty member. Emphasis is placed on scientific literature search and on mastering methods and techniques in the laboratory. At the end of Semester 5, the student's performance is assessed by the supervisor and is marked as "satisfactory" or "unsatisfactory".

In the latter case, the student must register in CHE 408 for one additional semester. The final grade for the Diploma Thesis is given after completion of CHE 409.

**CHE 409 Undergraduate Diploma Thesis in Materials Chemistry II (6 ECTS)**

**MC(C)**

The course is a continuation of CHE 408. In this part, students continue to obtain their experimental data, and discuss and present the data in diagrams, figures and tables. At the end of Semester 6, students write a report on their Diploma Thesis work. In addition, students give an oral presentation of their work, before an examination committee, and must successfully answer questions about their work.

**CHE 410 Food and Environmental Chemistry Laboratory (5 ECTS)**

**FEC(K)**

Laboratory experiments focusing on the analysis of food constituents (carbohydrates, lipids, proteins, enzymes, inorganic components, vitamins), on the qualitative and quantitative determination of chemical additives, toxic and dangerous substances in food, on the determination of pollutants in water. Methods: Gas Chromatography, Liquid Chromatography, Mass Spectroscopy, UV-vis spectroscopy, FTIR spectroscopy.

**CHE 411 Food Chemistry (6 ECTS)**

**FEC(K)**


**CHE 412 Environmental Chemistry (6 ECTS)**

**FEC(K)**

The course deals with the fate of chemical substances in the environment and the environmental impact of anthropogenic activities. Chapters included are: Geochemical and elemental cycles. Atmospheric phenomena and related chemical reactions. Aquatic systems and water/wastewater management. Soil chemistry and waste deposition in geological formations. Chemistry and toxicity of toxic metals and xenobiotics. Analysis of environmental samples.

**CHE 415 Bioanalytical Chemistry (6 ECTS)**

**BC(K), FEC(K)**

The main purpose of this course is to describe the basic principles and the applications of instrumental and molecular methods in the study of biomolecules. Emphasis will be placed on the following topics: a) Biomolecules: amino acids, peptides, proteins, nucleic acids, b) Application of liquid chromatography for bioanalysis: ion exchange, affinity and size exclusion chromatography, c) Methods and applications of gel and capillary electrophoresis in biomolecules, d) Enzyme kinetics, e) Mass spectrometry of biomolecules: MALDI-TOF/MS, ESI/MS, f) Techniques and applications of UV/Vis, IR and Raman spectroscopy in biomolecules, g) Molecular Recognition: bioassays (antibodies, antigens, immunosays), biosensors, DNA-arrays, h) Nucleic Acids: amplification (polymerase chain reaction) and sequencing and. i) Protein sequencing.

**CHE 418 Methods of Analysis and Quality Control of Food (6 ECTS)**

**FEC(K)**

Detection and quantification of food components (proteins, lipids, carbohydrates, vitamins, additives, minerals, enzymes, moisture, etc.). with analytical methods. Chromatography.

**CHE 421 Organometallic Chemistry (6 ECTS)**  
*MC(K)*


Classification and Reactivity of Organometallic Metal Complexes: Metal Carbonyl Complexes, Carbonyl Hydrate Complexes, Nitrosyl Complexes, Dinitrogen Complexes, Metal -Alkyls, - Carbenes, - Carbynes and - Carbides Complexes, Nonaromatic Alkene and Alkyne Complexes, Allyl and Pentadienyl Complexes, Metallocenes, Arene Complexes, Substitution Reactions, Oxidative Addition, Reductive Elimination, Insertion and Elimination.


**CHE 422 Surface and Solid State Chemistry (6 ECTS)**  
*MC(K)*


**CHE 423 Bioinorganic Chemistry (6 ECTS)**  
*BC(K)*

General Information on Bioinorganic Chemistry: Definition, Historical Background, Basic Principles, Biological Ligands for Metal Ions.

The most Important Biological Functions of Metal Ions: Metalloporphyrins and Respiration, Dioxygen Binding, Transport and Utilization, Binding of Dioxygen to Myoglobin, Physiology of Myoglobin and Hemoglobin, Structure and Function of Hemoglobin, Other Biological Dioxygen Carriers, Photosynthesis, Chlorophyll and the Photosynthetic Reaction Center, Water Oxidizing Center, Enzymes, Vitamin B12 and the B12 Coenzymes, Nitrogen Fixation.


More Functions of Metal Ions in Biological Systems: Trace elements in Biological Systems, Biochemistry of the Nonmetals, Environmental Chemistry of Metal Ions, Toxicity, Medicinal Chemistry, Chelate Therapy, Antibiotics and Related Compounds.

**CHE 430 Biochemistry Laboratory (5 ECTS)**  
*BC(K)*

Protein purification (methods: centrifugation, liquid chromatography, electrophoresis), protein quantification, study of enzyme kinetics (activity and kinetic measurements, inhibitors).

**CHE 431 Biochemistry (6 ECTS)**  
*BC(K), FEC(K), MC(K)*


**CHE 432 Surface and Solid State Chemistry (6 ECTS)**  
*BC(K)*

Introduction to Medicinal Chemistry (6 ECTS)  
*BC(K)*


**CHE 433 Introduction to Computational Chemistry (6 ECTS)**  
*BC(K), FEC(K)*

A general overview of computational methods and their applications in the prediction of physicochemical properties of molecules. The lectures are supplemented by laboratory work, where students are trained to use a quantum chemical software. The course covers force fields, semi-empirical, DFT and ab initio methods, the most common basis sets and qualitative molecular orbital theory. Problems include the use of quantum chemical software for structural optimization, IR spectrum prediction and visualization of eigenvectors, computation of thermo-
chemical properties, 3-D modelling of molecules and visualization of molecular orbitals. An introduction to qualitative theoretical models for relating experimental data, with computed quantities, is also provided.

**CHE 438 Supramolecular Chemistry (6 ECTS)**

**MC(K)**


**CHE 440 Chemical Technology Laboratory (5 ECTS)**

**MC(K)**


**CHE 441 Chemical Technology (6 ECTS)**

**MC(K)**


**CHE 443 Polymer Chemistry (6 ECTS)**

**MC(K)**


**CHE 445 Catalysis (6 ECTS)**

**MC(K)**


**CHE 446 Special Topics in Molecular Spectroscopy (6 ECTS)**

**BC(K), MC(K)**

Raman Spectroscopy: basic theory: origin of Raman spectra, selection rules, depolarisation ratios, symmetry and selection rules, Resonance Raman spectra, calculation of force constants via normal coordinate analysis, band assignments, Experimental setups and considerations. Special techniques of Raman spectroscopy: high pressure Raman spectroscopy, Raman microscopy, surface-enhanced Raman spectroscopy, time-resolved Raman spectroscopy, matrix isolation Raman spectroscopy, 2D correlation Raman spectroscopy. Applications of Raman: spectroscopy in various chemical fields, materials, analytical chemistry, biochemistry and medicine, industry, environment.

**Courses offered to other Departments**

**CHE 021 Introductory Chemistry (for Biologists and Physicists) (6 ECTS)**

energy. Relation between free energy and equilibrium constant of a reaction.

8. Chemical kinetics, reaction rate, order and mechanism. Kinetic equation, Arrhenius equation, activation energy, catalysis and catalysts.

CHE 022 Introductory Chemistry for Medicine (6 ECTS)

Scientific context of Chemistry, its relation to the biological sciences and medicine. Physical, chemical and biological phenomena. Atomic and molecular structure of matter. Basic chemical nomenclature. Stoichiometry, the concept of the mole, simple chemical calculations in chemical reactions. Chemistry in solution, ionic and covalent compounds, water as a solvent, water in biological systems, types of chemical reactions in solution. Concentration scales in solutions, dilution, titration.


Energy in molecular systems, thermodynamic laws, thermochemistry, enthalpy, entropy and free energy of reactions. Phases of matter, liquids and vapor pressure, osmotic pressure of solutions, osmosis in biology and medicine, chemical equilibrium concepts. Acids and bases, pH scale.

Organic chemistry, the chemistry of carbon. Simple nomenclature, active groups on biological molecules, isomerism and chirality and their applications to drugs. Simple organic chemical reactions of major groups, applications to health sciences. Biological macromolecules, their structural, physicochemical and reactivity properties. Elements of analytical chemistry for the detection and quantification of drugs and molecules of biological significance.

CHE 030 Organic Chemistry Lab for Students of Biology (6 ECTS)


CHE 031 Organic Chemistry for Students of Biology (6 ECTS)

<table>
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<th>ECTS</th>
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<th>2nd Semester</th>
<th>3rd YEAR</th>
<th>4th Semester</th>
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<td>1st Semester</td>
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### 4th YEAR

#### 7th Semester

**BIOLOGICAL CHEMISTRY**
- CHE 404 Diploma Thesis in Biological Chemistry I 3
- CHE 423 Bioinorganic Chemistry 6
- CHE 436 Introduction to Medicinal Chemistry 6
- CHE 437 Introduction to Computational Chemistry 6
- Elective Course III 5
- Elective Course IV 5
- **TOTAL** 31

**FOOD AND ENVIRONMENTAL CHEMISTRY**
- CHE 406 Diploma Thesis in Food Chemistry and Environmental Chemistry I 3
- CHE 412 Environmental Chemistry 6
- CHE 423 Bioinorganic Chemistry 6
- CHE 437 Introduction to Computational Chemistry 6
- Elective Course III 5
- Elective Course IV 5
- **TOTAL** 31

**MATERIALS CHEMISTRY**
- CHE 408 Diploma Thesis in Materials Chemistry I 3
- CHE 422 Surface Chemistry 6
- CHE 438 Supramolecular Chemistry 6
- CHE 440 Chemical Technology Laboratory 5
- Elective Course III 5
- Elective Course IV 5
- **TOTAL** 30

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### 8th Semester

#### BIOLOGICAL CHEMISTRY
- CHE 405 Diploma Thesis in Biological Chemistry II 6
- CHE 415 Bioanalytical Chemistry 6
- CHE 430 Biochemistry Laboratory 5
- BIO 371 Microbiology 6
- CHE 446 Special Topics in Molecular Spectroscopy 6
- **TOTAL** 29

#### FOOD AND ENVIRONMENTAL CHEMISTRY
- CHE 407 Diploma Thesis in Food Chemistry and Environmental Chemistry II 6
- CHE 410 Food and Environmental Chemistry Laboratory 5
- CHE 415 Bioanalytical Chemistry 6
- CHE 418 Methods of Analysis and Quality Control of Food 6
- CHE 446 Special Topics in Molecular Spectroscopy 6
- **TOTAL** 29

#### MATERIALS CHEMISTRY
- CHE 409 Diploma Thesis in Materials Chemistry II 6
- CHE 421 Organometallic Chemistry 6
- CHE 443 Polymer Chemistry 6
- CHE 445 Catalysis 6
- CHE 446 Special Topics in Molecular Spectroscopy 6
- **TOTAL** 30

**GRAND TOTAL** 240
# CHEMISTRY PROGRAMME WITH EMPHASIS IN BIOLOGICAL CHEMISTRY

<table>
<thead>
<tr>
<th>Course Code</th>
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## CHEMISTRY PROGRAMME WITH EMPHASIS IN BIOLOGICAL CHEMISTRY

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**GRAND TOTAL** 240