CHEMISTRY (CHEM)

CHEM 1305  Introductory Chemistry
3 Semester Credit Hours (3 Lecture Hours)
A one-semester principles course for students in non-science related majors covering the major concepts of chemistry (atomic structure, bonding, stoichiometry, elementary thermodynamics) and the role of chemistry in contemporary society (polymers, energy, pollution, etc.). Will not substitute for CHEM 1411.

TCCNS: CHEM 1305

CHEM 1411  General Chemistry I
4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)
The foundation course in chemistry. Stoichiometry, chemical equilibria, atomic structure, chemical bonding, periodic properties, thermodynamics, chemical kinetics, and descriptive chemistry of the elements. Laboratory involves development of basic skills. This course counts toward the natural science component of the University Core Curriculum. Either CHEM 1305 - Introductory Chemistry or CHEM 1411, but not both, may be applied towards the core requirement. This course is offered in Fall, Spring and typically during both Summer sessions.
Co-requisite: SMTE 0093.
TCCNS: CHEM 1411

CHEM 1412  General Chemistry II
4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)
The continuation of CHEM 1411 - General Chemistry I, the foundation course in chemistry with emphasis on quantitative aspects. Laboratory involves development of basic skills. This course counts toward the natural science component of the University Core Curriculum.
Prerequisite: CHEM 1411 and MATH 1314.
Co-requisite: SMTE 0093.
TCCNS: CHEM 1412

CHEM 2490  Special Topics
4 Semester Credit Hours (1-4 Lecture Hours, 3 Lab Hours)
May be repeated for credit. Subject materials variable. Offered on sufficient demand.

CHEM 3411  Organic Chemistry I
4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)
The structure, nomenclature, reactions, and reaction mechanisms of the principal classes of organic compounds. Stereochemistry and spectroscopy of organic compounds. Laboratory involves separation and synthetic techniques and development of basic skills. This course is offered in Fall, Spring and typically during the Summer I session.
Prerequisite: CHEM 1411.
Co-requisite: SMTE 0093.

CHEM 3412  Organic Chemistry II
4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)
A continuation of CHEM 3411. The course concludes with a survey of the structures of biomolecules. Laboratory involves spectroscopy and qualitative analysis techniques. This course is offered in Fall, Spring and typically during the Summer II session.
Prerequisite: CHEM 3411.
Co-requisite: SMTE 0093.

CHEM 3417  Quantitative Analysis
4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)
A course in quantitative analysis, which includes chemical statistics and the use of acid-base, complexation, precipitation, and redox reactions to perform analyses and separations. Laboratory includes standard volumetric and gravimetric methods and development of basic quantitative techniques. This course is typically offered in Spring.
Prerequisite: CHEM 1412.
Co-requisite: SMTE 0093.

CHEM 3418  Instrumental Analysis
4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)
An introduction to instrumental methods of analysis: spectroscopy, chromatography, and electrochemical methods. Laboratory involves use of instrumentation in chemical analysis. This course is typically offered in Fall and Spring.
Prerequisite: CHEM 1412.
Co-requisite: SMTE 0093.

CHEM 4085  Major Field Test in Chemistry
0 Semester Credit Hours
The Major Field Test (MFT) in Chemistry is a national examination given in the Fall and Spring semesters only. It is a graduation requirement for all Chemistry students. Students enroll in this course during the semester that they plan to take the MFT. There is no cost to the student for either this course or for the MFT.

CHEM 4292  Senior Chemistry Seminar
2 Semester Credit Hours (2 Lecture Hours)
Presentation and discussion of selected topics in chemistry. Includes literature searches and reviews, paper presentations, survey of professional opportunities and requirements, career guidance and job searching skills.

CHEM 4309  Advanced Instrumental Analysis
3 Semester Credit Hours (3 Lecture Hours)
An advanced course in analytical chemistry covering the underlying theories of instrumental methods. This course is typically offered on an irregular basis.
Prerequisite: (CHEM 3411, 3412 and 3418).

CHEM 4320  Drugs, Toxins and Natural Products Chemistry
3 Semester Credit Hours (3 Lecture Hours)
The chemistry and biological activity of pharmaceuticals, toxins and selected natural products. Examines how chemical structure relates to biological activity. Also examines action of antibiotics, chemotherapy agents, analgesics, steroids, and compounds targeting the central and peripheral nervous system. This course is typically offered in Fall and Spring.
Prerequisite: CHEM 4401.

CHEM 4341  Advanced Organic Chemistry
3 Semester Credit Hours (3 Lecture Hours)
This three-credit hour course will entail detailed description of structure, synthesis, and reactions and mechanisms in organic chemistry including important named reactions. This course will also introduce them to the art of writing reaction mechanisms and retrosynthetic analysis. Moreover, they will be learning about separation, purification and characterization of organic compounds followed by scientific abstract writing. Designed only for science major. There is NO laboratory associated with the course.
Prerequisite: CHEM 3412.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Lecture Hours</th>
<th>Co-requisites</th>
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<tbody>
<tr>
<td>CHEM 4344</td>
<td>Chemical Oceanography</td>
<td>3</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 1412.</td>
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<tr>
<td>CHEM 4350</td>
<td>Polymer Chemistry</td>
<td>3</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 3412.</td>
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<tr>
<td>CHEM 4360</td>
<td>Molecular Spectroscopy</td>
<td>3</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 3412.</td>
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<tr>
<td>CHEM 4401</td>
<td>Biochemistry I</td>
<td>4</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 3412 and (BIOL 1406 and 1407). Co-requisite: SMTE 0093.</td>
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<tr>
<td>CHEM 4402</td>
<td>Biochemistry II</td>
<td>4</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 4401. Co-requisite: SMTE 0093.</td>
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<tr>
<td>CHEM 4407</td>
<td>Advanced Inorganic Chemistry</td>
<td>4</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 3412. Co-requisite: SMTE 0093.</td>
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<tr>
<td>CHEM 4420</td>
<td>Physical Biochemistry</td>
<td>4</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 1412 and (PHYS 1402 or 2426) and MATH 2414. Co-requisite: SMTE 0093.</td>
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<tr>
<td>CHEM 4423</td>
<td>Physical Chemistry I</td>
<td>4</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 1412 and (PHYS 1402 or 2426) and MATH 2414. Co-requisite: SMTE 0093.</td>
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<tr>
<td>CHEM 4443</td>
<td>Environmental Chemistry</td>
<td>4</td>
<td>Lecture Hours</td>
<td>Prerequisite: CHEM 1412 and 3411. Co-requisite: SMTE 0093.</td>
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<tr>
<td>CHEM 4490</td>
<td>Special Topics</td>
<td>4</td>
<td>Lecture Hours</td>
<td>May be repeated for credit. Subject materials variable.</td>
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<td>CHEM 4696</td>
<td>Directed Independent Study</td>
<td>1-6</td>
<td>Lecture Hours</td>
<td>Requires a formal proposal of study to be completed in advance of registration, to be approved by the supervising faculty, the chairperson and the dean of the College.</td>
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