

CHEMISTRY

Program Information

The department offers the Master of Science (thesis or non-thesis) and Doctor of Philosophy degrees with a major in chemistry and specialization in biochemistry, analytical, organic, inorganic, or physical chemistry. The non-thesis degree Master of Science in Teaching is also offered with a major in chemistry. New graduate students should have adequate undergraduate training in inorganic, analytical, organic, and physical chemistry. Normally this will include as a minimum a year of general chemistry, one semester of quantitative analysis, one year of organic chemistry, one year of physical chemistry, and one semester of advanced inorganic chemistry. Additional courses in instrumental analysis, biochemistry, and advanced physical and organic chemistry are desirable. Deficiencies in any of these areas may be corrected during the first year of graduate study. Such deficiencies are determined by a series of placement tests given prior to registration, and the results of these tests are used in planning the student's program. Doctoral candidates are required to complete at least 9 semester credits of courses specified by the division of the Chemistry Department in which they choose to specialize, as well as at least 9 semester credits of out-of-major-division courses. There are some minor restrictions on courses that may be used to meet this requirement. Additional courses may be required by the student's supervisory committee or major professor.

Ph.D. candidates must serve not less than one year as teaching assistants. This requirement will be waived only when, in the opinion of the department, unusual circumstances justify such action. A chemical physics option is offered for students who will be doing research in areas of physical chemistry which require a strong background in physics.

For this option, a student meets the departmental requirements for concentration in physical chemistry, except that only one out-of-major division course is required. In addition, a minimum of 14 credits in 4000 level or higher physics courses or a minimum of 7 such credits in physics and 7 in 4000 level or higher mathematics courses is required. Candidates for the master's degree are required to complete any two core courses. The Master of Science degree in chemistry has both thesis and non-thesis options. The non-thesis degree Master of Science in Teaching is offered with a major in chemistry and requires a written paper of substantial length (30 to 50 pages) on an approved topic pertaining to some phase of chemistry, under the course CHM 6905 Individual Problems, Advanced (1-5 cr.).

Degrees Offered

Degrees Offered with a Major in Chemistry

- Doctor of Philosophy
 - without a concentration
 - concentration in Clinical and Translational Science
 - concentration in Imaging Science and Technology
- Master of Science
- Master of Science in Teaching

Requirements for these degrees are given in the Graduate Degrees (<http://gradcatalog.ufl.edu/graduate/degrees/>) section of this catalog.

Courses

Chemistry Courses

Code	Title	Credits
CHM 5224	Basic Principles for Organic Chemistry	3
CHM 5235	Organic Spectroscopy	3
CHM 5275	The Organic Chemistry of Polymers	2
CHM 5305	Chemistry of Biological Molecules	3
CHM 5416L	Advanced Physical Chemistry Laboratory	2
CHM 5511	Physical Chemistry of Polymers	2
CHM 6036	Chemical Biology	3
CHM 6037	Chemical Biology and Biochemistry Seminar	1
CHM 6153	Electrochemical Processes	3
CHM 6154	Chemical Separations	3
CHM 6155	Spectrochemical Methods	3
CHM 6158C	Electronics and Instrumentation	1-4
CHM 6159	Mass Spectrometric Methods	3
CHM 6165	Chemometrics	3
CHM 6180	Special Topics in Analytical Chemistry	1-3
CHM 6190	Analytical Chemistry Seminar	1
CHM 6225	Advanced Principles of Organic Chemistry	4
CHM 6226	Advanced Synthetic Organic Chemistry	3
CHM 6227	Topics in Synthetic Organic Chemistry	2
CHM 6251	Organometallic Compounds	3
CHM 6271	The Chemistry of High Polymers	2
CHM 6301	Enzyme Mechanisms	3
CHM 6302	Chemistry and Biology of Nucleic Acids	3
CHM 6303	Methods in Computational Biochemistry and Structural Biology	3
CHM 6306	Special Topics in Biological Chemistry Mechanisms	3
CHM 6381	Special Topics in Organic Chemistry	1-3
CHM 6390	Organic Chemistry Seminar Presentation	1
CHM 6391	Organic Chemistry Seminar Discussion	1
CHM 6430	Chemical Thermodynamics	3
CHM 6461	Statistical Thermodynamics	3
CHM 6470	Chemical Bonding and Spectra I	3
CHM 6471	Chemical Bonding and Spectra II	3
CHM 6480	Elements of Quantum Chemistry	3
CHM 6490	Theory of Molecular Spectroscopy	3
CHM 6580	Special Topics in Physical Chemistry	1-3
CHM 6586	Computational Chemistry	3
CHM 6590	Physical Chemistry Seminar	1
CHM 6620	Advanced Inorganic Chemistry I	3
CHM 6621	Advanced Inorganic Chemistry II	3
CHM 6626	Applications of Physical Methods in Inorganic Chemistry	3
CHM 6628	Chemistry of Solid Materials	3
CHM 6670	Inorganic Biochemistry	3
CHM 6680	Special Topics in Inorganic Chemistry	1-3
CHM 6690	Inorganic Chemistry Seminar	1
CHM 6720	Chemical Dynamics	3
CHM 6905	Individual Problems, Advanced	1-5
CHM 6910	Supervised Research	1-5
CHM 6934	Advanced Topics in Chemistry	1
CHM 6935	Chemistry Colloquium	1
CHM 6943	Internship in College Teaching	2-4
CHM 6971	Research for Master's Thesis	1-15
CHM 7485	Special Topics in Theory of Atomic and Molecular Structure	1-3
CHM 7979	Advanced Research	1-12

CHM 7980	Research for Doctoral Dissertation	1-15
PHA 6435	Biosynthetic Logic of Medicinal Natural Products	3

Chemistry Departmental Courses

Code	Title	Credits
CHM 5224	Basic Principles for Organic Chemistry	3
CHM 5235	Organic Spectroscopy	3
CHM 5275	The Organic Chemistry of Polymers	2
CHM 5305	Chemistry of Biological Molecules	3
CHM 5416L	Advanced Physical Chemistry Laboratory	2
CHM 5511	Physical Chemistry of Polymers	2
CHM 6036	Chemical Biology	3
CHM 6037	Chemical Biology and Biochemistry Seminar	1
CHM 6153	Electrochemical Processes	3
CHM 6154	Chemical Separations	3
CHM 6155	Spectrochemical Methods	3
CHM 6158C	Electronics and Instrumentation	1-4
CHM 6159	Mass Spectrometric Methods	3
CHM 6165	Chemometrics	3
CHM 6180	Special Topics in Analytical Chemistry	1-3
CHM 6190	Analytical Chemistry Seminar	1
CHM 6225	Advanced Principles of Organic Chemistry	4
CHM 6226	Advanced Synthetic Organic Chemistry	3
CHM 6227	Topics in Synthetic Organic Chemistry	2
CHM 6251	Organometallic Compounds	3
CHM 6271	The Chemistry of High Polymers	2
CHM 6301	Enzyme Mechanisms	3
CHM 6302	Chemistry and Biology of Nucleic Acids	3
CHM 6303	Methods in Computational Biochemistry and Structural Biology	3
CHM 6306	Special Topics in Biological Chemistry Mechanisms	3
CHM 6381	Special Topics in Organic Chemistry	1-3
CHM 6390	Organic Chemistry Seminar Presentation	1
CHM 6391	Organic Chemistry Seminar Discussion	1
CHM 6430	Chemical Thermodynamics	3
CHM 6461	Statistical Thermodynamics	3
CHM 6470	Chemical Bonding and Spectra I	3
CHM 6471	Chemical Bonding and Spectra II	3
CHM 6480	Elements of Quantum Chemistry	3
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CHM 6910	Supervised Research	1-5
CHM 6934	Advanced Topics in Chemistry	1
CHM 6935	Chemistry Colloquium	1
CHM 6943	Internship in College Teaching	2-4
CHM 6971	Research for Master's Thesis	1-15

CHM 7485	Special Topics in Theory of Atomic and Molecular Structure	1-3
CHM 7979	Advanced Research	1-12
CHM 7980	Research for Doctoral Dissertation	1-15
CHS 5110	Radiochemistry	2
PHA 6435	Biosynthetic Logic of Medicinal Natural Products	3

Student Learning Outcomes

Chemistry (PHD)

SLO 1 Knowledge

Students will define, identify, and describe the fundamental science of the declared sub-discipline within chemistry (physical, biochemistry, organic, inorganic and analytical chemistry)

SLO 2 Skills

Students will formulate new research ideas and carry them out in the laboratory

SLO 3 Professional Behavior

Practice ethical behaviors, cultural sensitivity, teamwork, professional conduct and high level oral and written communication skills

Chemistry (MS)

SLO 1 Knowledge Students will define, identify, and describe the fundamental science of the declared sub-discipline within chemistry (physical, biochemistry, organic, inorganic and analytical chemistry)

SLO 2 Skills Students will formulate new research ideas and carry them out in the laboratory

SLO 3 Professional Behavior Practice ethical behaviors, cultural sensitivity, teamwork, professional conduct and high level oral and written communication skills

Chemistry (MST)

SLO 1 Knowledge

Students will define, identify, and describe the fundamental science of chemistry with a focus on teaching

SLO 2 Skills

Students will formulate and evaluate new strategies and approaches to teaching chemistry and practice them in the classroom or the teaching laboratory

SLO 3 Professional Behavior

Practice ethical behaviors, cultural sensitivity, teamwork, professional conduct and high level oral and written communication skills