

CHEMISTRY

Chair: Martin R. Hulce

Department Office: Hixson-Lied Science Building, Room 268

Professors: M. Hulce, B. Mattson, J. Soukup;

Associate Professors: D. Dobberpuhl, J. Fletcher, M. Freitag, E. Gross, S. Gross, H. Harris, F. Klein, G. Michels; Associate Professors Emeriti: R. Snipp, D. Zebolsky;

Assistant Professors: M. Anderson, E. Haas, M. Miller, B. Parsons.

Department Description: The Chemistry Department at Creighton University is certified by the American Chemical Society (ACS) and offers four degree choices: an ACS-certified major with tracks in Chemistry or Biochemistry, a comprehensive (but not certified) major, and a major designed for students who are interested in teaching high school chemistry.

Web Contact/Information: Additional information about this department may be found at <http://chemistry.creighton.edu>. However, for definitive details, students are strongly encouraged to check the University's website for Bulletin changes at <http://www.creighton.edu/Registrar>.

PROGRAMS IN CHEMISTRY

Specific Requirements for Admission to the Chemistry Major: Satisfactory completion of two lecture courses within the Creighton chemistry department and completion of MTH 246. Computer literacy is expected of students majoring in Chemistry. MTH 245 and MTH 246 and PHY 211 and PHY 212 are prerequisites for all courses beyond organic chemistry.

B.S., Major in Chemistry: 23-33 Credits

Generalist Track

(All of the following):

CHM 315	Quantitative Analysis	4 credits
-(waived for students who have completed CHM 285/6)		
CHM 321	Organic Chemistry I	3 credits
CHM 322	Organic Chemistry Laboratory I	1 credit
CHM 323	Organic Chemistry Lecture II	3 credits
CHM 324	Organic Chemistry Laboratory II	1 credit
CHM 341	Physical Chemistry I	3 credits
CHM 342	Physical Chemistry I Laboratory	2 credits
CHM 456	Instrumental Analysis	3 credits
CHM 466	Instrumental Analysis Laboratory	2 credits

(One of the following):

CHM 532	Mathematical Concepts in Chemistry	3 credits
MTH 545	Differential Equations	3 credits

And

MTH 529	Linear Algebra	3 credits
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(Five additional credit hours, three of which must be chosen from the following list:)

CHM 381	Fundamentals of Biochemistry	3 credits
CHM 421	Selected Topics in Organic Chemistry	3 credits
CHM 445	Chemical Thermodynamics	2 credits
CHM 446	Statistical Mechanics	2 credits
CHM 447	Physical Chemistry of Macromolecules	2 credits
CHM 448	Group Theory	2 credits
CHM 451	Inorganic Chemistry I	3 credits
CHM 470	Chemical Literature	1 credit
CHM 502	Inorganic Chemistry II	3 credits
CHM 506	Environmental Chemistry and Natural Resources	3 credits
CHM 521	Advanced Organic Chemistry: Synthetic Org. Methods	3 credits
CHM 523	Bioorganic Chemistry	3 credits
CHM 525	Organic Spectroscopic Analysis	3 credits
CHM 527	Polymer Chemistry	3 credits
CHM 543	Selected Topics in Physical Chemistry	3 credits
CHM 544	Quantum Chemistry	2 credits
CHM 545	Advanced Kinetics	2 credits

CHM 556	Electrochemical Methods	3 credits
CHM 575	Nucleic Acid Biochemistry	3 credits
CHM 576	Protein Biochemistry	3 credits

(The remaining two credit hours must be chosen from the following list:)

CHM 351	Descriptive Inorganic Chemistry	2 credits
CHM 382	Biochemistry Laboratory	2 credits
CHM 528	Polymer Chemistry Laboratory	1 credit
CHM 548	Chemical Applications of Spectroscopy	2 credits
CHM 549	Computational Chemistry	2 credits

Chemistry Education Track

(All of the following:)

CHM 315	Quantitative Analysis	
	-(waived for students who have completed CHM 285/6)	4 credits
CHM 321	Organic Chemistry I	3 credits
CHM 322	Organic Chemistry Laboratory I	1 credit
CHM 323	Organic Chemistry Lecture II	3 credits
CHM 324	Organic Chemistry Laboratory II	1 credit
CHM 341	Physical Chemistry I	3 credits
CHM 342	Physical Chemistry I Laboratory	2 credits
CHM 381	Fundamentals of Biochemistry	3 credits

(One of the following:)

CHM 532	Mathematical Concepts in Chemistry	3 credits
MTH 545	Differential Equations	3 credits

And

MTH 529	Linear Algebra	3 credits
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Requisite courses: MTH 245 and MTH 246 are prerequisites for all chemistry courses beyond CHM 324. PHY 211 is a prerequisite and PHY 212 is a pre- or co-requisite for CHM 341. For students pursuing the Chemistry Education Track, BIO 211, ATS/EVS 113 and 114 or ATS/EVS 443 are required and students must complete the requirements for a secondary teaching endorsement. Please consult the Education Department for the most recent list of required courses.

B.S. Chm., Major in Chemistry (Professional Degree): 38-42 Credits**Chemistry Track***Course Requirements***(All of the following:)**

CHM 315	Quantitative Analysis	4 credits
-(waived for students who have completed CHM 285/6)		
CHM 321	Organic Chemistry I	3 credits
CHM 322	Organic Chemistry Laboratory I	1 credit
CHM 323	Organic Chemistry Lecture II	3 credits
CHM 324	Organic Chemistry Laboratory II	1 credit
CHM 341	Physical Chemistry I	3 credits
CHM 342	Physical Chemistry I Laboratory	2 credits
CHM 381	Fundamentals of Biochemistry	3 credits
CHM 451	Inorganic Chemistry I	3 credits
CHM 456	Instrumental Analysis	3 credits
CHM 466	Instrumental Analysis Laboratory	2 credits
CHM 497	Directed Independent Research II	1 credit

(One of the following:)

CHM 496	Directed Independent Research I	2 credits
CHM 498	Directed Independent Research-Special	1-2 credits

(One of the following:)

CHM 532	Mathematical Concepts in Chemistry	3 credits
MTH 545	Differential Equations	3 credits

And

MTH 529	Linear Algebra	3 credits
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Two additional courses, one of which must be a laboratory-based course as follows:

(One of the courses must be taken from the following:)

CHM 445	Chemical Thermodynamics	2 credits
CHM 446	Statistical Mechanics	2 credits
CHM 447	Physical Chemistry of Macromolecules	2 credits
CHM 448	Group Theory	2 credits
CHM 543	Selected Topics in Physical Chemistry	3 credits
CHM 544	Quantum Chemistry	2 credits
CHM 545	Advanced Kinetics	2 credits
CHM 548	Chemical Applications of Spectroscopy	2 credits
CHM 549	Computational Chemistry	2 credits

(The second course may be chosen from the list above or from the following:)

CHM 351	Descriptive Inorganic Chemistry	2 credits
CHM 382	Biochemistry Laboratory	2 credits
CHM 421	Selected Topics in Organic Chemistry	3 credits
CHM 502	Inorganic Chemistry II	3 credits
CHM 521	Advanced Organic Chem: Synthetic Organic Methods	3 credits
CHM 523	Bioorganic Chemistry	3 credits
CHM 525	Organic Spectroscopic Analysis	3 credits
CHM 527	Polymer Chemistry	3 credits
CHM 528	Polymer Chemistry Laboratory	1 credit
CHM 556	Electrochemical Methods	3 credits
CHM 575	Nucleic Acid Biochemistry	3 credits
CHM 576	Protein Biochemistry	3 credits

Biochemistry Track

Course Requirements

(All of the following:)

CHM 315	Quantitative Analysis	4 credits
-(waived for students who have completed CHM 285/6)		
CHM 321	Organic Chemistry I	3 credits
CHM 322	Organic Chemistry Laboratory I	1 credit
CHM 323	Organic Chemistry Lecture II	3 credits
CHM 324	Organic Chemistry Laboratory II	1 credit
CHM 341	Physical Chemistry I	3 credits
CHM 342	Physical Chemistry I Laboratory	2 credits
CHM 381	Fundamentals of Biochemistry	3 credits
CHM 382	Biochemistry Laboratory	2 credits
CHM 451	Inorganic Chemistry I	3 credits
CHM 456	Instrumental Analysis	3 credits
CHM 466	Instrumental Analysis Laboratory	2 credits
CHM 497	Directed Independent Research II	1 credit

(One of the following:)

CHM 496	Directed Independent Research I	2 credits
CHM 498	Directed Independent Research-Special	1-2 credits

(One of the following:)

CHM 532	Mathematical Concepts in Chemistry	3 credits
MTH 545	Differential Equations	3 credits

And

MTH 529	Linear Algebra	3 credits
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(One of the following:)

CHM 521	Advanced Organic Chemistry: Synthetic Org. Methods	3 credits
CHM 523	Bioorganic Chemistry	3 credits
CHM 525	Organic Spectroscopic Analysis	3 credits
CHM 575	Nucleic Acid Biochemistry	3 credits
CHM 576	Protein Biochemistry	3 credits

(One of the following:)

BIO 317	Genetics	3 credits
BIO 362	Cell Structure and Function	3 credits
BIO 417	Molecular Biology	3 credits
BIO 532	Cell Biology: Regulatory Mechanisms	3 credits

Requisite courses: MTH 245 and MTH 246 are prerequisites for all chemistry courses beyond CHM 324. PHY 211 is a prerequisite and PHY 212 is a pre- or co-requisite for CHM 341. BIO 211 and BIO 212 are prerequisites for the advanced biology courses.

Teacher Certification

Students who think they may teach Chemistry in secondary schools must consult with the Education Department, with the Chemistry Department and with the appropriate agency in the state in which they intend to teach.

Certificate Programs in University College

This department does not offer a certificate program to students in University College.

For all CHM courses, please refer to page 342.