

## ELECTIVES FOR CHEMISTRY MAJORS

Courses that count towards the 5 credits of 500-600 level advanced work					
COURSE	TITLE	CREDITS	TERMS	REQUISITES	NOTES
From Chemistry Department					
CHEM 421	<i>Polymeric Materials</i>	3	Fall	CHEM 343	Cross-listed with MS&E 421
CHEM 505	<i>Industrial Chemistry</i>	3	occasionally	CHEM 345 and junior standing	Cross-listed with CBE 505
CHEM 511	<i>Advanced Inorganic Chemistry</i>	3	Spring	Junior standing; CHEM 345 or concurrent enrollment; chemistry majors should complete CHEM 311 before taking CHEM 511.	
CHEM 524	<i>Chemical Instrumentation</i>	3	Spring	CHEM 116, 327, or 329; CHEM 343; MATH 222; and PHYS 202, 208, or 248	2 credits count toward advanced work. 1 credit counts toward laboratory requirements.
CHEM 547	<i>Advanced Organic Chemistry</i>	3	Fall	CHEM 345	
CHEM 629	<i>Atmospheric Chemical Mechanisms</i>	3	Every other fall	CBE 310 or concurrent enrollment in CHEM 561 or graduate/professional standing	
From Other Departments					
BIOCHEM 501 <sup>1</sup>	<i>Introduction to Biochemistry</i>	3	all terms	CHEM 341 or 343 or concurrent enrollment	
BIOCHEM 507 <sup>1</sup>	<i>General Biochemistry I</i>	3	Fall, Spring	CHEM 345	Honors optional
BIOCHEM 508	<i>General Biochemistry II</i>	3	Fall, Spring	BIOCHEM 507 with a grade of BC or higher	Honors optional
BIOCHEM/ NUTR SCI 510	<i>Nutritional Biochemistry &amp; Metabolism</i>	3	Spring	BMOLCHEM 314 or 503 or BIOCHEM 501 or 507 or graduate/professional standing	
BIOCHEM 625	<i>Mechanisms of Action of Vitamins &amp; Minerals</i>	2	Spring	CHEM 345 and previous or concurrent enrollment in BIOCHEM 501 or 507; or graduate standing	
CBE 440	<i>Chemical Engineering Materials</i>	3	Fall, Spring	CHEM 345	
CBE 540	<i>Polymer Science &amp; Technology</i>	3	Fall, Spring	CHEM 345; CBE 326 & 430, or concurrent enrollment; Stat 324	
CBE 547	<i>Introduction to Colloid and Interface Science</i>	3	occasionally	CHEM 562	May be taught every other year, previously during fall semester.
Courses that count towards the 3 credits of additional laboratory					
COURSE	TITLE	CREDITS	TERMS	PREREQUISITES	NOTES
From Chemistry Department					
CHEM 346	<i>Intermediate Organic Chemistry Lab</i>	1-2	Fall	CHEM 344 & 345	The 2 credit option counts towards Comm B.
CHEM 524	<i>Chemical Instrumentation</i>	3	Spring	CHEM 116, 327, or 329; CHEM 343; MATH 222; and PHYS 202, 208, or 248	Just 1 credit counts toward lab requirement. The other 2 credits count as advanced work.
CHEM 699	<i>Directed study</i>	1-6	all terms	Instructor consent	Students must find a research mentor.
CHEM 681/682	<i>Senior Honors Thesis</i>	2-4 each	all terms	Instructor consent	A total of 6 credits combined is required.
CHEM 691/692	<i>Senior Thesis</i>	2-6 each	all terms	Instructor consent	
From Other Departments					
BIOCHEM 699	<i>Special Problems</i>	1-4	all terms	Instructor consent	
CBE 599	<i>Special Problems</i>	1-4	all terms	Instructor consent	

<sup>1</sup> Due to the amount of overlapping content, BIOCHEM 501 and BIOCHEM 507 cannot both count towards the 5 credits of advanced non-lab.

## ELECTIVES FOR CHEMISTRY MAJORS

**Chemistry Graduate Level Courses that count towards 5 credits of 500-600 level advanced work.** *These courses are primarily intended for graduate students, but advanced undergraduates may be eligible. Instructor consent is required. Students are encouraged to consult the instructor and the chemistry advisor for guidance and course access.*

COURSE	TITLE	CREDITS	TERMS	OFFICIAL REQUISITES	RECOMMENDED REQUISITES FOR UNDERGRADS (most require instructor consent)
CHEM 605	<i>Spectrochemical Measurements</i>	3	Spring	Graduate/professional standing	CHEM 345 with a B or better and CHEM 344
CHEM 606	<i>Physical Methods for Structure Determination</i>	1-3	Every other Spring	Graduate/professional standing	CHEM 511 & 562
CHEM 608	<i>Symmetry, Bonding, and Molecular Shapes</i>	1-3	Fall	Graduate/professional standing	CHEM 511 & 562
CHEM 613	<i>Chemical Crystallography</i>	3	Spring	Graduate/professional standing	CHEM 511 or concurrent enrollment
CHEM 622	<i>Organic Analysis</i>	2	Every other Fall	Graduate/professional standing	CHEM 345 & 524
CHEM 623	<i>Experimental Spectroscopy</i>	2-3	Every other Spring	Graduate/professional standing	CHEM 562 or a similar class on quantum mechanics.
CHEM 624	<i>Electrochemistry</i>	2-3	Fall	Graduate/professional standing	Not recommended for undergraduates.
CHEM 626	<i>Genomic Science</i>	2	Spring	Graduate/professional standing	Must have research experience; request permission from instructor for enrollment.
CHEM 635	<i>Topics in Computational Chemistry</i>	1	Spring	Graduate/professional standing	CHEM 311 and CHEM 561
CHEM 636	<i>Introduction to NMR</i>	2	Fall, Spring	Graduate/professional standing	CHEM 344 and/or undergraduate research experience that requires the use of the NMR facility.
CHEM 641	<i>Advanced Organic Chemistry (physical organic)</i>	3	Fall	Graduate/professional standing	CHEM 345 and CHEM 562
CHEM 652	<i>Chemistry of Inorganic Materials</i>	3	occasionally	Graduate/professional standing	CHEM 562
CHEM 653	<i>Chemistry of Nanoscale Materials</i>	3	occasionally	(CHEM 311 and CHEM 561) or graduate/professional standing	
CHEM 654	<i>Polymer Chemistry</i>	3	Spring	CHEM 345 and (CHEM 561, 565 or CBE 310); or graduate/professional standing	CHEM 343 and CHEM 345.
CHEM 661	<i>Chemical and Statistical Thermodynamics</i>	3	Fall	Graduate/professional standing	CHEM 562
CHEM 664	<i>Physical Chemistry of Macromolecules</i>	2-3	occasionally	Graduate/professional standing	CHEM 562
CHEM 675	<i>Introductory Quantum Chemistry</i>	3	Fall	Graduate/professional standing	CHEM 562
CHEM 704	<i>Chemical Biology</i>	3	Fall	Declared in Biochemistry or Chemistry graduate program (Cross-listed with BIOCHEM 704)	Not recommended for undergraduates.
CHEM 713	<i>Chemistry of the Elements</i>	1-3	occasionally	Graduate/professional standing	CHEM 511
CHEM 714	<i>Organometallic Chemistry of the Transition Elements</i>	2-3	Fall	Graduate/professional standing	CHEM 511
CHEM 721	<i>Instrumental Analysis</i>	3-4	Fall	Graduate/professional standing	CHEM 524 is a better choice for undergraduates.
CHEM 725	<i>Separations in Chemical Analysis</i>	2-3	Every other Fall	Graduate/professional standing	CHEM 561 or 565.
CHEM 728	<i>Electronics for Chemical Instrumentation</i>	3	Every other Spring	Graduate/professional standing	CHEM 524
CHEM 738	<i>Introduction to Mass Spectrometry</i>	1	Spring	Graduate/professional standing	Not recommended for undergraduates.