

# Chemistry Major at a Glance

## Required Chemistry Courses (37 credits)

### A. General Chemistry

CHEM 104 (5 credits; CHEM 103 is a prerequisite.)  
OR CHEM 109 Advanced General Chemistry (5 credits)  
OR CHEM 109H Advanced General Chemistry Honors (5 credits)  
OR CHEM 115 Chemical Principles I (5 credits) (Enrollment by invitation only.)

### B. Analytical Chemistry<sup>1</sup>

CHEM 329 Fundamentals of Analytical Science (4 credits)  
OR CHEM 116 Chemical Principles II (5 credits)  
(only open to students who took CHEM 115)

### C. Inorganic Chemistry

CHEM 311 Chemistry Across the Periodic Table (4 credits)

### D. Organic Chemistry<sup>2</sup>

CHEM 343 Introductory Organic Chemistry (3 credits)  
CHEM 344 Introductory Organic Chemistry Laboratory (2 credits)  
CHEM 345 Intermediate Organic Chemistry (3 credits)

### E. Physical Chemistry<sup>3</sup>

CHEM 561 Physical Chemistry I (3 credits) OR CHEM 565 Biophysical Chemistry (4 credits)<sup>4</sup>  
CHEM 562 Physical Chemistry II (3 credits)  
CHEM 563 Physical Chemistry Laboratory I (1 credit)  
CHEM 564 Physical Chemistry Laboratory II (1 credit)

### F. Additional advanced work (5 credits)

Choose from any 500-600 level courses in chemistry or biochemistry. Some options include CHEM 421 Polymeric Materials, CHEM 505 Industrial Chemistry, CHEM 511 Inorganic Chemistry, CHEM 524 Chemical Instrumentation (3 cr; 2 cr count for additional coursework), CHEM 547 Advanced Organic Chemistry, BIOCHEM 501 Introduction to Biochemistry, BIOCHEM 507 & 508 General Biochemistry I & II, CBE 440 Chemical Engineering Materials, and CBE 540 Polymer Science & Technology.

### G. Additional laboratory work (3 credits)

Choose from the following lab courses: CHEM 346 Intermediate Organic Laboratory, CHEM 524 Chemical Instrumentation (3 credits, 1 credit counts for additional lab work), CHEM 681/682 Senior Honors Thesis, CHEM 691/692 Senior Thesis, or CHEM 699 Directed Study. Biochemistry research courses (681/682, 691/692, and 699), BMOLCHEM 504 Human Biochemistry Lab, and CBE 599 are also accepted.

For a complete list of courses that can count towards the additional course work and the additional laboratory work requirements, see [The Guide](#).

### Math and Physics Requirements

MATH 221 Calculus I (5 credits) and MA 222 Calculus II (4 credits) are required. MATH 234 Calculus Functions of Several Variables (4 credits) and MATH 320 Linear Algebra and Differential Equations (3 credits) are highly recommended.

A year of calculus-based physics: Physics 207-208 General Physics I & II (5 credits each) is preferred. Physics 201-202 General Physics I & II (5 credits each, intended for engineering students) are also accepted. The physics courses include a three-hour laboratory.

Learn more about the chemistry major at <http://www.chem.wisc.edu/content/majoring-chemistry>.

<sup>1</sup> Students are strongly encouraged to take either CHEM 329 or CHEM 116 (if invited) to fulfill the Analytical Chemistry Requirement. However, CHEM 327 may be substituted for this requirement.

<sup>2</sup> CHEM 343 must be taken first, followed by CHEM 345. CHEM 344 may be taken concurrently with or after CHEM 345.

<sup>3</sup> It is recommended that CHEM 563 be taken concurrently with CHEM 562 and that CHEM 564 be taken after completion of CHEM 562. Especially strong students needing to complete physical chemistry in two semesters may take CHEM 563 concurrently with CHEM 561 (or 565) and CHEM 564 concurrently with CHEM 562.

<sup>4</sup> CBE 310 Chemical Process Thermodynamics or MS&E 330 Thermo of Materials may be substituted for this requirement. These options are only recommended for students who are also majoring in CBE or MS&E.