

CHEMISTRY MAJOR

Suggested Four-Year Program*

Name: _____

Graduation year: _____

YEAR		COURSE	CRED.	PREREQUISITE(S)
First-year	Fall	CHEM BC2001x (Gen. Chem.) MATH UN1101x (Calc. I), <i>Note 1</i>	5.0 3.0	Algebra
	Spring	CHEM BC3230y (Orgo I) CHEM BC3328y (Orgo I Lab) MATH UN1102 y (Calc. II), <i>Note 1</i>	3.0 2.5 3.0	CHEM BC2001x CHEM BC2001x; <u>Coreq.</u> : CHEM BC3230y MATH UN1101x,y
Soph.	Fall	CHEM BC3231x (Orgo II) CHEM BC3333x (Mod. Tech.) PHYS BC2001x (Physics w/ lab), <i>Note 2</i>	3.0 3.0 4.5	CHEM BC3230y CHEM BC3328y; <u>Coreq.</u> : CHEM BC3231x MATH UN1101x,y
	Spring	CHEM BC3242y (Quant. Lecture) CHEM BC3338y (Quant. Lab) PHYS BC2002y (Physics w/ lab), <i>Note 2</i>	3.0 3.0 4.5	CHEM BC3231x; MATH UN1101x,y; <u>Coreq.</u> : CHEM BC3338y CHEM BC3231x, 3333x; <u>Coreq.</u> : CHEM BC3242y MATH UN1101x,y
Junior	Fall	CHEM BC3253x (Quantum) <i>Elective Course (optional), Note 3</i>	3.0 3.0	CHEM BC3242y; MATH UN1102 or 1201; PHYS BC2001x, 2002y
	Spring	CHEM BC3252y (Thermo. & Kinetics) CHEM BC3348y (Adv. Spec. Lab) CHEM BC3271y (Inorganic)	3.0 3.0 3.0	CHEM BC3242y, MATH UN1102 or 1201; PHYS BC2001x, 2002y CHEM BC3253x; <u>Coreq.</u> : CHEM BC3271y, 3252y, CHEM BC3231x
Senior	Fall	CHEM BC3358x (Adv. Syn. Lab) Senior Requirement, <i>Note 4</i> CHEM BC3282x (Biol. Chem.), <i>Note 5</i>	5.0 4.0 3.0	CHEM BC3333x, 3338y, 3271y; <u>Coreq.</u> : CHEM BC3253x CHEM BC3231y; BIOL BC1502y
	Spring	Senior Requirement (Note 4) <i>Elective Course (Note 3)</i>	4.0 3.0	

*If you complete CHEM BC2001 (General Chemistry) in your sophomore year, it is still possible to complete the major in three years. Please consult the department website and contact a Chemistry faculty member for assistance with program planning.

Note 1. Two semesters of math after entering college, including *Calculus I* and *II* are required. Students having AP credit for 1 or 2 semesters of calculus will fulfill this requirement with additional mathematics, statistics, or computer science courses. For the Class of 2021 and beyond, students must complete through *Calculus II*, including two math courses while a student at Barnard. At least one of the courses taken at Barnard must be a calculus class. The remaining requirement can be fulfilled with a mathematics, statistics, or computer science course. A few suggested courses that fulfill this requirement after students have taken through *Calculus II* and after they have taken at least one calculus class in college are (1) Computer Science W1004 INTRO-COMPUT SCI/PROG IN JAVA; (2) Computer Science W1005 INTRO-COMPUT SCI/PROG-MATLAB; (3) Engineering E1006 INTRO TO COMP FOR ENG/APP SCI; (4) ORCA 2500 Foundations of Data Science; (5) BC3050 BIG DATA WITH PYTHON.

Note 2. The Barnard physics sequence (PHYS BC2001x-2002y) is strongly recommended. Any calculus-based Columbia sequence, with two semesters of laboratory work, is acceptable (1401-2, 1601-2, but not 1201-2). Consult with your advisor to ensure proper laboratory placement. For greater coverage of basic physics, PHYS BC3001x (*Waves and Optics*) is recommended.

Note 3. One elective course is required. A list of approved advanced lecture and/or lab courses at Barnard or Columbia is available.

Note 4. Senior Honors Thesis (CHEM BC3901/3902) or Guided Research (CHEM BC3599) at Barnard, Columbia, or elsewhere.

Note 5. Completion of CHEM BC3282 (*Biological Chemistry*) is required to receive an American Chemical Society certified degree. It is not required for the major.

ELECTIVE COURSE(S):

COURSE	CREDITS	SEMESTER
<input type="checkbox"/> CHEM BC3280 <i>Advanced Organic</i>	3.0	
<input type="checkbox"/> CHEM BC3272x <i>Advanced Inorganic</i>	3.0	
<input type="checkbox"/> CHEM BC3254 <i>Methods and Applications in Physical Chemistry</i>	3.0	
<input type="checkbox"/> CHEM BC3282 <i>Biological Chemistry I</i> (required for ACS certification)	3.0	
<input type="checkbox"/> CHEM BC3283 <i>Biological Chemistry II</i>	3.0	
<input type="checkbox"/> CHEM BC3355 <i>Biochemistry Laboratory Techniques</i>	5.0	
<input type="checkbox"/> Approved CU course: _____	_____	

SENIOR REQUIREMENT:

	MENTOR
<input type="checkbox"/> CHEM BC3901/3902 <i>Senior Honors Thesis</i>	
<input type="checkbox"/> CHEM BC3599 <i>Guided Research</i>	

GENERAL ADVISING NOTES:

- Students are encouraged to take *Quantum Chemistry* before *Thermodynamics and Kinetics*, but either order is acceptable. Note that *Quantum* is a co-requisite for the *Advanced Synthesis Lab*.
- Students are encouraged to consider taking an elective course during the Fall semester of their junior year.
- Students are strongly encouraged to take a math course after their first year.

OTHER NOTES/COMMENTS: