# CHEMISTRY MAJOR

## Suggested Four-Year Program*

**Name:** ____________________________________  
**Graduation year:** ____________________________

**Note 1.** Two semesters of math after entering college, including Calculus I and (II or III) 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. The mathematics department allows students to take Calculus I followed directly by III. A third and fourth semester of calculus (MATH UN1201- UN1202) is strongly recommended.

**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, by invitation of the department) 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.

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

*CHEM BC3282 (Biological Chemistry) is required to receive an American Chemical Society certified degree.*
ELECTIVE COURSE(S):

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
<th>SEMESTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ CHEM BC3280y Advanced Organic</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>☐ CHEM BC3272x Advanced Inorganic</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>☐ CHEM BC3254x Methods and Applications in Physical Chemistry</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>☐ CHEM BC3282x Biological Chemistry I (required for ACS certification)</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>☐ CHEM BC3283y Biological Chemistry II</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>☐ CHEM BC3355x Biochemistry Laboratory Techniques</td>
<td>5.0</td>
<td></td>
</tr>
</tbody>
</table>

Approved CU course: __________________________________________

SENIOR REQUIREMENT:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>MENTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ CHEM BC3901x/3902y Senior Honors Thesis</td>
<td></td>
</tr>
<tr>
<td>CHEM BC3599x,y Guided Research</td>
<td></td>
</tr>
</tbody>
</table>

GENERAL ADVISING NOTES:

- Students are encouraged to take Quantum Chemistry before Thermodynamics and Kinetics, but either order is acceptable. Note that Quantum is a corequisite 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: