# CHEMISTRY MAJOR

## Class of 2017 and beyond

*Suggested program for students who complete General Chemistry in sophomore year.*

Name: ___________________________________________  
Graduation year: ___________________

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SEMESTER</th>
<th>COURSE</th>
<th>CRED.</th>
<th>PREREQUISITE(S)</th>
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</table>
| Soph. | Fall     | CHEM BC2001x (Gen. Chem.)  
MATH V1101x (Calc. I), *Note 1* | 5.0  
3.0 | Algebra |
|       | Spring   | CHEM BC3230y (Orgo I)  
CHEM BC3328y (Orgo I Lab)  
MATH V1102y (Calc. II), *Note 1* | 3.0  
2.5  
3.0 | CHEM BC2001x  
CHEM BC2001x; Coreq.: CHEM BC3230y  
MATH V1101x,y |
| Junior | Fall    | 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 BC3231y  
MATH V1101x,y |
|       | Spring  | CHEM BC3242 (Quant. Lecture)  
CHEM BC3338y (Quant. Lab)  
PHYS BC2002y (Physics w/ lab), *Note 2*  
CHEM BC3271y (Inorganic) | 3.0  
3.0  
4.5 | CHEM BC3231x; MATH V1101x,y; Coreq.: CHEM BC3338y  
CHEM BC3231x, 3333x  
MATH V1101x,y |
| Senior | Fall    | CHEM BC3253x (Quantum)  
CHEM BC3358x (Adv. Syn. Lab)  
Senior Requirement, *Note 4*  
*Elective Course, Notes 3 and 5* | 3.0  
5.0  
4.0  
3.0 | CHEM BC3242y; MATH V1102 or 1201; PHYS BC2001x & 2002y  
CHEM BC3333x, 3338y, 3271y; Coreq.: CHEM BC3253x |
|       | Spring  | CHEM BC3252y (Thermo.)  
CHEM BC3348y (Adv. Spec. Lab)  
Senior Requirement, *Note 4*  
*Elective Course, Note 3* | 3.0  
3.0  
4.0  
3.0 | CHEM BC3242y; MATH V1102 or 1201; PHYS BC2002y  
CHEM BC3253x; Coreq.: CHEM BC3271y, 3252y |

*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 *II*. A third and fourth semester of calculus (MATH V1201- V1202) 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 at Barnard or Columbia (CHEM BC3599) or elsewhere (CHEM BC3598).

*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.

*Updated Sept. 2015*
**ELECTIVE COURSE(S):**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
<th>SEMESTER</th>
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<tbody>
<tr>
<td>☐ CHEM BC3280y Advanced Organic</td>
<td>3.0</td>
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<tr>
<td>☐ CHEM BC3272x Advanced Inorganic</td>
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<tr>
<td>☐ CHEM BC3254x Methods and Applications in Physical Chemistry</td>
<td>3.0</td>
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<tr>
<td>☐ CHEM BC3282x Biological Chemistry I (required for ACS certification)</td>
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<tr>
<td>☐ CHEM BC3283y Biological Chemistry II</td>
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<tr>
<td>☐ CHEM BC3355y Biochemistry Techniques Laboratory</td>
<td>5.0</td>
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<tr>
<td>☐ Approved CU course: __________________________________</td>
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**SENIOR REQUIREMENT:**

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<tr>
<th>COURSE</th>
<th>MENTOR</th>
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<tbody>
<tr>
<td>☐ CHEM BC3901x/3902y Senior Honors Thesis</td>
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<tr>
<td>☐ CHEM BC3599x,y Guided Research (Barnard or Columbia)</td>
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</tr>
<tr>
<td>☐ CHEM BC3598x,y Guided Research (elsewhere)</td>
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**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:**

Updated Aug. 2015