

## Chemistry Major- Model Plan<sup>1,2,10</sup>

Year	Fall Semester	Spring Semester
First	<b>CHEM 140 General Chemistry</b> <b><u>MATH 151</u> Calculus I<sup>3,4</sup> or <u>MATH 141</u> Pre-Calculus<sup>4</sup></b> or BIOL 150 <sup>5</sup> ILA English 110 or Comm 101	<b><u>CHEM 220</u> Intro to Analytical Chemistry</b> <b><u>MATH 152</u> Calculus II, <u>MATH 151</u> or <u>MATH 141</u></b> English 110 or Comm 101
Second	<b><u>CHEM 228</u> Organic Chemistry I</b> <b><u>PHYS 130</u> Physics I</b> <i>(<u>MATH 151</u> Calculus I, if not earlier)</i> GP	<b><u>CHEM 230</u> Organic Chemistry II</b> <b><u>PHYS 132</u> Physics II</b> <i>(<u>MATH 152</u> Calculus II, if not earlier)</i> <b><u>CHEM 270</u> Inorganic Chemistry with lab<sup>6</sup></b>
Third	<b>CHEM 312 Physical Chemistry I</b> <b>BIOC 330 Biochemistry</b> <b>CHEM 350 Science Seminar<sup>7</sup></b> Reflections or Art Requirement Language	<b>CHEM 322 Physical Chemistry II</b> <b>CHEM 350 Science Seminar<sup>7</sup></b> Reflections or Art Requirement Language <i>Chemistry Elective (Advanced Course)<sup>9,10</sup></i>
Fourth	<b>CHEM 430 Research<sup>8,10</sup> (0.25)</b> <b>CHEM 340 Instrumental Analysis</b> <b>CHEM 325 Integrated Lab (0.5)</b> <b>CHEM 350 Science Seminar<sup>7</sup></b>	<b>CHEM 430 Research<sup>8,10</sup> (0.25)</b> <i>Chemistry Elective (Advanced Course)<sup>9,10</sup></i> <b>CHEM 350 Science Seminar<sup>7</sup></b> Citizenship

### Legend

**Bold Courses** are required for the major

Underline indicates that the course must be taken in sequence.

*Italics* are courses that must be included from an ACS accredited major.

### Notes:

- Incoming students** interested in a Chemistry Major must begin their first semester in CHEM 140, General Chemistry, and are encouraged to discuss their schedule with a faculty member in the Chemistry Department before the end of the first week of the Fall Semester. Students who have AP Chemistry credit must talk to a Chemistry Department Chair to discuss placement in the correct course.
- Incoming students should start the MATH courses in their first year, unless they intend to complete requirements for a pre-health program. In these cases, students should take BIOL 150 in the fall of the first year. Chemistry majors requiring 2 semesters of language usually **do not** take their Modern Foreign Language (MFL) requirement until much later (their third or fourth year). Chemistry majors may also want to take Communications 101 later than the first year.
- Students are highly encouraged to complete the calculus requirement as soon as possible. Calculus I (MATH 151) is a pre/co-requisite for the required physics courses and are prerequisites for Physical Chemistry I and II (CHEM 312 and CHEM 322). Delaying Calculus will therefore delay Physical Chemistry and may require a heavy load in the senior year.
- Students who have a 26 or above on the Math ACT should start in Calculus I (MATH 151). Other students may be capable of beginning in Calculus I (MATH 151); please consult a member of the Mathematics Department to take the placement test.
- While BIOL150 is not a required class for the major, Chemistry majors are strongly encouraged to take BIOL150 in either their first or second year, as the material will aid their learning in Biochemistry (BIOC 330).
- Inorganic Chemistry (CHEM 270) should be taken in the sophomore or junior year, prior to Integrated Lab (CHEM 325).
- Students are required to participate in 4 semesters of Science Seminar that is non-credit bearing. Two semesters must overlap with their participation in research.
- Research is an option for all chemistry majors beginning in their second year. CHEM 430 must be taken for a minimum of 2 semesters at 0.25 credits each semester. One of these semesters must be during the senior year. Students have the option of taking 0.5 credits of research in a semester if they plan to spend more time in the research laboratory.

9. Students are encouraged to take advanced courses in chemistry. Advanced courses consist of CHEM 362, Advanced Physical Chemistry (0.5 course), CHEM 370 Advanced Inorganic Chemistry, CHEM 380 Advanced Organic Chemistry (0.5 course), and BIOC 390 Advanced Biochemistry. CHEM 362, CHEM 370, and CHEM380 are usually offered on an every other year basis; therefore some students may want to take an advanced course in their Third Year.
10. Students who complete an additional a full credit of an upper level Chemistry elective (CHEM362, CHEM370, CHEM 380, or BIOC 390), and a paper deemed sufficient for their research project will obtain an ACS certified degree. This certified degree option is recommended for students planning to attend graduate school or to obtain a job in the chemical industry.

Revised Sept 2014 by Laura Moore. ([lmoore@monmouthcollege.edu](mailto:lmoore@monmouthcollege.edu) )