

**CHEMISTRY MAJOR**  
**Concentration II: American Chemical Society Accredited**  
**Biochemistry Program**  
**Typical Schedule (*TENTATIVE - Expect changes, consult with your advisor*)**

<p><b>First Year Fall [14-17 cr]</b></p> <p>CHEM 131<sup>ap, pph</sup> (General Chemistry I) [3]            Chem 135L<sup>pph</sup> (Special Gen Chem Lab I) [1]            MATH 235<sup>pph</sup> (Calculus I) [4]            GenEd Cluster 1 [3]            GenEd WRTC 103 &amp;/or other GenEd [3-6]</p> <p><sup>ap</sup>If AP Chem = 3-5, CHEM 131/132 [6]</p>	<p><b>First Year Spring [16 cr]</b></p> <p>CHEM 132<sup>ap, pph</sup> (General Chemistry II) [3]            CHEM 136L<sup>pph</sup> (Special Gen Chem Lab II) [2]            MATH 236 (Calculus II) [4]            BIO 140<sup>pph</sup> (Foundations of Biology I) [4]            GenEd Cluster 1 [3]</p> <p><sup>ap</sup>If CHEM 131/132 is complete, consider CHEM 270 [3]</p>
<p><b>Second Year Fall [15-17 cr]</b></p> <p>CHEM 241<sup>pph</sup> (Organic Chemistry I) [3]            CHEM 287L (Inorganic/Organic Lab I)            PHYS 240<sup>pph</sup> (University Physics I) [3]            PHYS 240L<sup>pph</sup> (University Physics Lab I) [1]            GenEd &amp;/or electives<sup>e, pph</sup> [6-8]</p> <p><sup>e</sup><i>Suggestions:</i> Research [1-2]            BIO 150<sup>pph</sup> (Foundations II) [4]</p>	<p><b>Second Year Spring [16 cr]</b></p> <p>CHEM 242<sup>pph</sup> (Organic Chemistry II) [3]            CHEM 270 (Inorganic Chemistry I) [3]            CHEM 288L (Inorganic/Organic Lab II) [2]            PHYS 250 (University Physics II) [3]            PHYS 250L<sup>pph</sup> (University Physics Lab II) [1]            BIO 240 (Genetics) [4]</p> <p><i>Non-PPH students contact <a href="mailto:biodept@jmu.edu">biodept@jmu.edu</a> for permission to enroll in BIO240 without the BIO150 pre-req.</i></p>
<p><b>Third Year Fall [15-17 cr]</b></p> <p>CHEM 351 (Analytical Chemistry) [4]            CHEM 361<sup>pph</sup> (Biochemistry I) [3]            CHEM 481 (Literature &amp; Seminar I) [1]            GenEd &amp;/or electives<sup>e</sup> [7-9]</p> <p><sup>e</sup><i>Suggestions:</i> Research [1-2], MATH 220<sup>pph</sup> [3]  <b>All ACS programs require 400 lab hours; 435 met by Core and ACS Biochemistry courses.</b></p>	<p><b>Third Year Spring [15-17 cr]</b></p> <p>CHEM 331 (Physical Chemistry I) [3]            CHEM 352 (Instrumental Analysis) [3]            CHEM 352L (Instrumental Analysis Lab) [2]            CHEM 362 (Biochemistry II) [3]            CHEM 366L (Biochemistry Lab) [2]            CHEM 482 (Literature &amp; Seminar II) [1]            GenEd &amp;/or electives<sup>e</sup> [1-3]</p> <p><sup>e</sup><i>Suggestions:</i> Research [1-2]</p>
<p><b>Fourth Year Fall [15-17 cr]</b></p> <p>CHEM 432 (Physical Chemistry II) [3]            CHEM 438L (Physical Chemistry II Lab) [2]            BIO 245 (General Microbiology) [4]            GenEd &amp;/or electives<sup>e</sup> [6-8]</p> <p><sup>e</sup><i>Suggestions:</i> Research, more BIO<sup>pph</sup></p>	<p><b>Fourth Year Spring [15-17 cr]</b></p> <p>BIO 480 (Advanced Molecular Biology) [4]            GenEd &amp;/or electives<sup>e</sup> [11-13]</p> <p><sup>e</sup><i>Suggestions:</i> Research, more BIO<sup>pph</sup></p>

<sup>e</sup> **Chemistry elective courses include:** Research (CHEM 390, 497, 499), Instructional Experiences (CHEM 315), Chem Hazards (CHEM 325-F,odd), Environmental Chem (353-Sp,odd), Environmental Field Camp (CHEM 354-Su), Geochem (CHEM 355 -F), Materials (CHEM 375 -F), Intermediate Organic (CHEM 440-F,even), Polymers (CHEM 445,445L-F,odd), Nuclear (CHEM 450,450L-Sp,even), Lasers (CHEM 455-F even), Inorganic II (CHEM 470-F), etc. [See Undergrad Catalog]

<sup>pph</sup>**Most pre-Professional health programs (pre-med, pre-pharm, etc) require:** BIO 140,150, CHEM 131,132,135L (or 131L),136L (or 132L), 241, 242, 242L or 287L, MATH 220, 235, PHYS 240, 240L, 250, 250L.

**PPH Recommendations:** CHEM 361 and additional Bio courses.

**Pre-med GenEd recommendations:** PHIL 120 (C1CT), SOCI 110 (C4GE), PSYC 101 (C5SD).

**Pre-Pharm GenEd recommendations:** PHIL 150 (C1CT), SCOM 122 (C1HC), ECON (C4GE), PSYC 101 or 160 (C5SD). [See Undergrad Catalog]