B.S. BIOCHEMISTRY DEGREE PROGRAM

Suggested Course Sequence

- The BS Biochemistry degree program provides excellent preparation for a career in the biotech industry or post-graduate work. It also offers flexibility in upper division elective options, which enables students to better customize their degree program for their intended career path. Students are urged to consult with an advisor regarding their educational and career plans.
- Courses used in the major program must be completed with a minimum grade point average of 2.0 and a grade of C- or better in CHEM 341 and CHEM 343. All courses used in the major program must be completed with letter grades (CR/NC not allowed).
- Students are required to meet with a Chem/Biochem advisor periodically to discuss their progress towards their degree and their tentative class schedule for the next year.
- Students are urged to meet with a General Education (GE) advisor (Advising Center, ADM 211, 415–338–2103; advising@sfsu.edu) to ensure that their course selections will satisfy General Education and other graduation requirements.
- This document has been reviewed to ensure its accuracy and is valid for students who declared the major between Fall 2013 and Spring 2016. Should there be any discrepancy between this document and the SFSU Bulletin, the latter supersedes it.

Freshman Year - Fall Semester Units Freshman Year - Spring Semester Units
CHEM 115 General Chemistry I 5 CHEM 233 Organic Chemistry I 3
PHYS 111 General Physics I 3 CHEM 234 Organic Chemistry I Lab 2
PHYS 112 General Physics I Lab 1 PHYS 121 General Physics II 3

Sophomore Year - Fall Semester Units Sophomore Year - Spring Semester Units
CHEM 335 Organic Chemistry II 3 CHEM 215 General Chemistry II 2
BIOL 230 Intro Biology I 5 CHEM 216 General Chemistry II Lab 2
MATH 226 Calculus I 4 MATH 227 Calculus II 4

Junior Year - Fall Semester Units Junior Year - Spring Semester Units
CHEM 340 Biochemistry I 3 CHEM 341 Biochemistry II 3
CHEM 321 Quantitative Analysis 3 CHEM 343 Biochemistry I Lab 3
CHEM 390GW Contemporary Chem/Biochem Research 3 Upper division chemistry or biology elective 3

Senior Year - Fall Semester Units Senior Year - Spring Semester Units
CHEM 300 General Physical Chemistry I 3 CHEM 301 General Physical Chemistry II 3
Upper division chemistry or biology electives 6 Upper division chemistry or biology elective 3

Upper Division Chemistry and Biology Electives
- Must complete at least 12 units of upper division chemistry and biology electives selected from the lists below, including at least one chemistry course and at least three lab courses (indicated below). Courses taken at community colleges cannot be used to meet electives in the major.
- Note that some elective courses are offered only once per year and others less frequently.
- Check course co- and pre-requisites before choosing/enrolling in these elective classes.
- May substitute graduate courses in chemistry or appropriate courses in biology, physics, geosciences, and computer science; prior approval of an advisor is required.

Chemistry Electives Units Biology Electives Units
CHEM 322 Quantitative Analysis Lab 2 (lab) BIOL 350 Cell Biology 3
CHEM 327 Practical GC and HPLC 4 (lab) BIOL 351 Expts in Cell Biology & Genetics 4 (lab)
CHEM 370 Computer Applications in Chem & Biochem3 (lab) BIOL 355 Genetics 3
CHEM 336 Organic Chemistry II Lab 2 (lab) BIOL 357 Molecular Genetics 3
CHEM 420 Environmental Analysis 3 (lab) BIOL 358 Expts in Molecular Biology 4 (lab)
CHEM 422 Instrumental Analysis 4 (lab) BIOL 361 Human Genetics 3
CHEM 325 Inorganic Chemistry 3 BIOL 401 General Microbiology 3
CHEM 426 Inorganic Chemistry Lab 2 (lab) BIOL 402 General Microbiology Lab 2 (lab)
CHEM 433 Advanced Organic Chemistry 3 BIOL 420 General Virology 3
CHEM 443 Biophysical Chemistry Lab 4 (lab) BIOL 435 Immunology 3
CHEM 451 Experimental Physical Chemistry 2 (lab) BIOL 436 Immunology Lab 2 (lab)
CHEM 470 Research 3 (lab) BIOL 612 Human Physiology 3
CHEM 640 Special Topics in Biochemistry 2-3 BIOL 613 Human Physiology Lab 2 (lab)
CHEM 645 Research Trends in Chem/Biochem 3 BIOL 638 Bioinformatics & Gene Annotation 4
CHEM 680 Chemical Oceanography 3 BIOL 640 Cellular Neurosciences 3
CHEM 699 Independent Study 3 (lab)

1 PHYS 220/222 and either 230/232 or 240/242 may be substituted for PHYS 111/112 and 121/122.
2 CHEM 351 and 353 may be substituted for CHEM 300 and 301 upon advisement.
3 CHEM 699 requires add permit from research advisor, must be 3 units, and requires a public poster presentation.
4 BIOL 230 and BIO 240 are prerequisites for the biology electives listed here. Biochemistry majors may take BIOL 350, 355, or 612 without BIOL 240 if they have completed BIOL 230 and CHEM 340 with grades of C or better.
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Flowchart for Degree Program

- Students should consult course descriptions in the current SFSU Bulletin to confirm prerequisite course(s) and minimum grade requirements prior to registering for the course.
- Solid arrows indicate prerequisite courses (courses that must be completed before enrolling).
- Dashed arrows indicate corequisite courses (courses that must be completed before enrolling or at same time).
- Use this sheet to track progress towards graduation.

1. PHYS 111 & 112 General Physics I & Lab
2. CHEM 115 General Chemistry I & Lab
3. MATH 226 Calculus I
4. MATH 227 Calculus II
5. CHEM 390GW Chem/Biochem Research
6. CHEM 300 General Physical Chem I
7. CHEM 301 General Physical Chem II
8. CHEM 115 requires C or better grade in CHEM 100 or satisfactory score on chemistry placement exam (see Department website for details: chemistry.sfsu.edu), and 50 or above on ELM or C or better in MATH/ESM 70.
9. MATH 226 requires acceptable score on calculus readiness test and either C or better in MATH 199 or B or better in pre-calculus class.
10. Although the corresponding lab class (CHEM 322) is not required for the B.S. Biochemistry degree, is a prerequisite for some upper division chemistry elective classes (i.e., CHEM 327, 420, 422, 426, 451).
11. CHEM 390 requires either CHEM 321 or CHEM 335 as a prerequisite.
12. CHEM/BIOI ELECTIVES
   - ≥ 12 units
   - ≥ 1 chem course
   - ≥ 3 lab courses

P.T. Palmer, Revision date 20-Apr-15