BS in Biophysics (285720) MAP Sheet

College of Life Sciences, Department of Cell Biology and Physiology

For students entering the degree program during the 2026-2027 curricular year.

Program Requirements

Requirement 1 — Complete 6 Courses

Life sciences core courses:

- BIO 250 - Evolutionary Medicine 2.0
- CELL 120 - Science of Biology 3.0
- CELL 360 - Cell Biology 3.0
- MMBIO 240 - Molecular Biology 3.0
- MMBIO 241 - Molecular & Cellular Bio Lab 1.0
- PWS 340 - Genetics 3.0

Requirement 2 — Complete 22 hours

Chemistry courses. Note: Enroll in 2 credit hours of CHEM 353.

- CHEM 105 - Gen College Chem 1+Lab Integr 4.0
- CHEM 106 - General College Chemistry 2 3.0
- CHEM 107 - Gen Coll Chem Lab 1.0
- CHEM 351 - Organic Chemistry 1 3.0
- CHEM 352 - Organic Chemistry 2 3.0
- CHEM 353 - Organic Chem Lab-Nonmajors - Enroll for two credits 2.0v
- CHEM 468 - Biophysical Chemistry 3.0
- CHEM 481 - Biochemistry 3.0

Requirement 3 — Complete 6 Courses

Math and physics courses:

- MATH 112 - Calculus 1 4.0
- MATH 113 - Calculus 2 4.0
- PHSCS 121 - Intro to Newtonian Mechanics 3.0
- PHSCS 123 - Intro to Waves, Optics, Thermo 3.0
- PHSCS 220 - Intro Electricity & Magnetism 3.0
- PHSCS 225 - Intro to Experimental Physics 2.0

Requirement 4 — Complete 4 Courses

Major core courses:

- CELL 362 - Advanced Physiology 3.0
- CELL 363 - Adv Physiology Lab 1.0
- CELL 455R - Cell Bio & Physiology Seminar 0.5
- CELL 568 - Biophysics 3.0

Requirement 5 — Complete 10 hours

At least 4 hours must come from the mentored experience (5.1) **and** at least 5 hours from electives (5.2).

Option 5.1

Mentored laboratory experience:

- CELL 295R - Introductory Undgrad Research 0.5-2.0
- CELL 495R - Adv Undergraduate Research 0.5-4.0
- CELL 498 - Advanced Senior Research 3.0

Option 5.2 — Complete up to 6 hours

Electives:

- CELL 365 - Pathophysiology 4.0
- CELL 450R - Readings in Cell Bio & Physiol 1.0-2.0
- CELL 498 - Advanced Senior Research 3.0
- CELL 561 - Physiology of Drug Mechanisms 3.0
- CELL 565 - Endocrinology 3.0
- CHEM 223 - Quant & Qual Analy 4.0
- CHEM 227 - Principles of Chem Analysis 4.0
- CHEM 482 - Mechanisms of Molecular Biol 3.0

Option 5.2 *(Cont.)*

- CHEM 489 - Structural Biochemistry 3.0
- CHEM 581 - Adv Biochemical Methodology 1 3.0
- CHEM 583 - Adv Biochemical Methodology 2 3.0
- CHEM 584 - Adv Biochemistry Methods 1 3.0
- CHEM 586 - Adv Biochemistry Methods 2 3.0
- EC EN 301 - Elements of Electrical Engr 3.0
- MATH 302 - Math for Engr 1 4.0
- MATH 303 - Math for Engineering 2 4.0
- MMBIO 441 - Adv Molecular Biology 3.0
- MMBIO 442 - Adv Molecular Biology Lab 2.0
- NEURO 480 - Cellular Neuroscience 3.0
- PHSCS 145 - Experimental Methods 1.0
- PHSCS 230 - Computational Physics Lab 1.0
- PHSCS 240 - Dsgn, Fabricatn, Sci Apparatus 2.0
- STAT 121 - Intro to Stat Data Analysis 3.0

Program Minimum Credit Hours - 72.5

Program Maximum Credit Hours - 73.5

Note: The classes in this "Program Requirements" box do not include the University Core classes or "GEs" required to graduate.

See University Core requirements here: https://catalog.byu.edu/generaleducation

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

- First-year Writing or A HTG 100 3.0
- CELL 120 (Biological Science) 3.0
- UNIV 101 2.0
- CHEM 105 4.0
- MATH 112 4.0

Total Hours - 16.0

2nd Semester

- First-year Writing or A HTG 100 3.0
- BIO 250 2.0
- CHEM 106 3.0
- CHEM 107 1.0
- MATH 113 4.0
- Religion Cornerstone course 2.0

Total Hours - 15.0

SOPHMORE YEAR

3rd Semester

- MMBIO 240 3.0
- MMBIO 241 1.0
- CHEM 351 3.0
- PHSCS 121 3.0
- GE Course 2.0
- Religion Cornerstone Course 2.0

Total Hours - 15.0

4th Semester

- PWS 340 3.0
- CHEM 352 3.0
- CHEM 353 1.0
- PHSCS 123 3.0
- GE Course 3.0
- Religion Cornerstone Course 2.0
- Mentored Lab Experience (CELL 295R) 1-2.0

Total Hours - 16-17.0

JUNIOR YEAR

5th Semester

- CELL 360 3.0
- CHEM 481 3.0
- PHSCS 220 3.0
- PHSCS 225 2.0
- Religion Cornerstone Course 2.0
- Mentored Lab Experience (CELL 495R) 1-2.0

Total Hours - 14-15.0

6th Semester

- CELL 362 3.0
- CELL 363 1.0
- CHEM 468 3.0
- Advanced Writing (WRTG 316 recommended) 3.0
- Global & Cultural Awareness Elective 3.0
- Religion Elective 2.0

Total Hours - 15.0

SENIOR YEAR

7th Semester

- CELL 455R 0.5
- CELL 568 3.0
- Mentored Lab Experience (CELL 495R or 498) 2.5-3.0
- GE Course 3.0
- GE Course 3.0
- Religion Elective 2.0

Total Hours 14-14.5

8th Semester

- Religion Elective 2.0
- Major Electives 6.0
- General Electives 6.0
- Complete Senior Survey/ Exit Interview 0.0
- Pass ETS Biology Field Exam 0.0

Total Hours 14.0

Note: The Senior Survey, Exit Interview, and ETS Biology Field Exam must be completed during the last semester. You will be contacted during the graduation clearance process.

Note: This degree program requires a minimum of 120.0 hours for graduation. Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.

Note: Enrollment in UNIV 101 can substitute for one of the following GE requirements: Civilization 1, Civilization 2, Arts, Letters, or Social Science.

THE DISCIPLINE
Biophysics is the use of physics, chemistry, mathematics, and biology to investigate the physical basis of life. Upper division courses require synthesis and integration of information from many areas of science to understand such processes as protein folding, ion channel functioning, and nerve cell signaling. The requirements of advanced chemistry, physics, and math courses set this major apart from other life science majors.

CAREER OPPORTUNITIES
A major in Biophysics prepares students to pursue advanced professional or graduate degrees or to enter directly into employment. This major provides outstanding preparation for students seeking admittance into professional programs in medicine, dentistry, optometry, podiatry, chiropractic, or pharmacy. Students who have aspirations of doing health-related research, postsecondary life science teaching, or biotech innovation will find excellent preparation for entrance into graduate programs and beyond. Graduates will also have the academic and laboratory skills necessary for employment in medical, biotech, and pharmaceutical industries. This degree offer students pursuing advanced degrees in business, public management, or law the knowledge and training necessary for admission to professional schools and work in governmental agencies, health care and biotechnical industries, and patent or health care law.

STUDENT INVOLVEMENT IN RESEARCH
Students majoring in Biophysics work closely with a faculty member doing research in biophysics (CELL 295R and CELL 495R). Faculty research interests are listed under the RESEARCH tab at cell.byu.edu. Current topics include biophysics of membrane structure and function, molecular and functional characterization of ligand- gated ion channels in the central nervous system, and molecular mechanisms of neurotransmitter release.

FINANCING
Various private, federal, and university sources of scholarships, fellowships, and grants are available. Please see the Life Sciences Advisement Center (2060 LSB) for information regarding college- level and department-level scholarships. Advanced undergraduates may be hired as teaching assistants for CELL courses or research assistants in CELL labs.

MAP DISCLAIMER
While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

DEPARTMENT INFORMATION
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