BS in Biophysics (285720) MAP Sheet
Life Sciences, Cell Biology and Physiology
For students entering the degree program during the 2022-2023 curricular year.

University Core and Graduation Requirements
University Core Requirements:
Requirements#ClassesHoursClasses
Religion Cornerstones
Teachings and Doctrine of The Book of Mormon12.0REL A 275
Jesus Christ and the Everlasting Gospel12.0REL A 250
Foundations of the Restoration12.0REL C 225
The Eternal Family12.0REL C 200
The Individual and Society
American Heritage1-23-6.0from approved list
Global and Cultural Awareness13.0from approved list
Skills
First Year Writing13.0from approved list
Advanced Written and Oral Communications13.0WRTG 316 recommended
Quantitative Reasoning14.0MATH 112*
Languages of Learning (Math or Language)14.0MATH 112*
Arts, Letters, and Sciences
Civilization 1113.0from approved list
Civilization 2113.0from approved list
Arts13.0from approved list
Letters13.0from approved list
Biological Science13.0CELL 120*
Physical Science13.0CHEM 105*, PHSCS 121*
Social Science13.0from approved list
Core Enrichment: Electives
Religion Electives3-46.0from approved list
Open ElectivesVariableVariablepersonal choice
FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER.
FOR PROGRAM QUESTIONS SEE YOUR MAJOR ADVISOR.
*ASTERISKED CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS
Graduation Requirements:
Minimum residence hours required30.0
Minimum hours needed to graduate120.0
Suggested Sequence of Courses
Freshman Year
1st Semester
First-Year Writing or American Heritage3.0
CELL 120 (Biological Science)3.0
CHEM 105 4.0
MATH 112 (Languages of Learning & Quantitative Reasoning)4.0
Religion Cornerstone Course2.0
Total Hours16.0
2nd Semester
First-Year Writing or American Heritage3.0
BIO 2502.0
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8th Semester
Arts of Letters Elective 3.0
Major Electives 6.0
General Electives 6.0
Complete Senior Survey/Exit Interview (See Department) 0.0
Pass ETS Biology Field Exam (See College Advisement Center) 0.0
Total Hours 15.0

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.

BS in Biophysics (285720) 2022-2023 Program Requirements (72.5 - 73.5 Credit Hours)

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 and Cellular Biology Laboratory 1.0
PWS 340 - Genetics 3.0

requirement 2 Complete 22.0 hours from the following course(s)
Chemistry courses:
*CHEM 105 - General College Chemistry 1 with Lab (Integrated) 4.0
CHEM 106 - General College Chemistry 2 3.0
CHEM 107 - General College Chemistry Laboratory 1.0
CHEM 351 - Organic Chemistry 1 3.0
CHEM 352 - Organic Chemistry 2 3.0
CHEM 353 - Organic Chemistry Laboratory--Nonmajors 2.0
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 - Introduction to Newtonian Mechanics 3.0
PHSCS 123 - Introduction to Waves, Optics, and Thermodynamics 3.0
PHSCS 220 - Introduction to Electricity and Magnetism 3.0
PHSCS 225 - Introduction to Experimental Physics 2.0

requirement 4 Complete 4 courses
Major core courses:
CELL 362 - Advanced Physiology 3.0
CELL 363 - Advanced Physiology Laboratory 1.0
CELL 455R - Cell Biology and Physiology Seminar 0.5
CELL 568 - Cellular Electrophysiology and Biophysics 3.0

requirement 5 Complete 10.0 hours from the following option(s)
Complete 10 hours from the following. At least 4 hours must come from the mentored experience and at least 5 hours from electives.

option 5.1 Complete up to 5.0 hours from the following course(s)
A. Mentored laboratory experience (must be in an approved biophysics lab) (at least 4 hours required):
CELL 295R - Introductory Undergraduate Research in Cell Biology and Physiology 2.0v
You may take up to 5 credit hours.
CELL 495R - Advanced Undergraduate Research in Cell Biology and Physiology 4.0v
You may take up to 5 credit hours.
CELL 498 - Advanced Senior Research Project 3.0
option 5.2 Complete up to 6.0 hours from the following course(s)
B. Electives (at least 5 hours required):
CELL 365 - Pathophysiology 4.0
CELL 450R - Readings and Discussion in Cell Biology and Physiology 2.0v
CELL 498 - Advanced Senior Research Project 3.0
CELL 561 - Physiology of Drug Mechanisms 3.0
CELL 565 - Endocrinology 3.0
CHEM 223 - (Not currently offered)
CHEM 227 - Principles of Chemical Analysis 4.0
CHEM 482 - Mechanisms of Molecular Biology 3.0
CHEM 489 - Structural Biochemistry 3.0
CHEM 581 - Advanced Biochemical Methodology 1 3.0
CHEM 583 - Advanced Biochemical Methodology 2 3.0
CHEM 584 - Advanced Biochemistry Methods 1 3.0
CHEM 586 - Advanced Biochemistry Methods 2 3.0
EC EN 301 - Elements of Electrical Engineering 3.0
MATH 302 - Mathematics for Engineering 1 4.0
MATH 303 - Mathematics for Engineering 2 4.0
MMBIO 441 - Advanced Molecular Biology 3.0
MMBIO 442 - Advanced Molecular Biology Laboratory 2.0
NEURO 480 - Cellular Neuroscience 3.0
PHSCS 145 - Experimental Methods in Physics 1.0
PHSCS 230 - Computational Physics Lab 1 1.0
PHSCS 240 - Design, Fabrication, and Use of Scientific Apparatus 2.0
STAT 121 - Principles of Statistics 3.0

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 allow understanding of such processes as protein folding, function of ion channels, and how the nervous system works. 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 degrees in the biological sciences. This major also provides outstanding preparation for students seeking admittance into professional programs. Graduates of this program will also have the academic and laboratory skills necessary for direct employment in medical, biotechnological, and pharmaceutical industries. Biophysicists whose primary interest is research often work in government agencies, such as the National Institutes of Health, NASA, and the Departments of Agriculture or Defense. Many new positions have been created in industry as a result of recent developments in molecular biophysics and molecular biology. Regardless of the setting, biophysicists generally work in groups with people with different backgrounds, interests, and abilities who collaborate to solve common problems.

MENTORED RESEARCH OPPORTUNITIES:
Students majoring in biophysics work closely with a faculty member doing research in biophysics (CELL 295R/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.
• 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 to teach labs or help sections for CELL courses.

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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Provo, UT 84602
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Email: cell@byu.edu
Website: cell.byu.edu

ADVISEMENT CENTER INFORMATION
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