BS in Cell Biology and Physiology (285721) 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 8 Courses
Major core courses:
- CELL 120 - Science of Biology 3.0
- CELL 220 - Human Anatomy (with lab) 4.0
- CELL 325 - Tissue Biology (with lab) 3.0
- CELL 360 - Cell Biology 3.0
- CELL 362 - Advanced Physiology 3.0
- CELL 363 - Adv Physiology Lab 1.0
- CELL 382 - Developmental Biology 3.0
- CELL 455R - Cell Bio & Physiology Seminar 0.5

Requirement 2 — Complete 3 Courses
Additional biology courses:
- MMBIO 240 - Molecular Biology 3.0
- MMBIO 241 - Molecular & Cellular Bio Lab 1.0
- PWS 340 - Genetics 3.0

Requirement 3 — Complete 8 Courses
Chemistry and physics courses:
- 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 481 - Biochemistry 3.0
- PHSCS 105 - General Physics 1 3.0
- PHSCS 106 - General Physics 2 3.0

Requirement 4 — Complete 3 hours
*Experiential learning options***
- CELL 295R - Introductory Undgrad Research* - 0.5-2.0
- CELL 349R - Cell Bio & Physiology Teaching* - 1.0-3.0
- CELL 399R - Academic Internship* - 1.0-9.0
- CELL 444 - Bio-Innovation 1 2.0
- CELL 445 - Bio-Innovation 2 2.0
- CELL 450R - Readings in Cell Bio & Physiol* - 1.0-2.0
- CELL 495R - Adv Undergraduate Research* - 0.5-4.0
- LFSCI 199R - Nonresearch Academic Internship - 0.5-3.0†
- STDEV 132 - Peer Education Level 1 1.0
- STDEV 133 - Peer Education Level 2 1.0

Requirement 5 — Complete 1 of 8 Courses
Capstone courses:
- CELL 498 - Advanced Senior Research 3.0
- CELL 561 - Physiology of Drug Mechanisms 3.0
- CELL 562 - Reproductive Physiology 3.0
- CELL 565 - Endocrinology 3.0
- CELL 568 - Biophysics 3.0
- CELL 575 - Physiology of Aging 3.0
- CELL 582 - Developmental Genetics 3.0
- NEURO 480 - Cellular Neuroscience 3.0

Requirement 6 — Complete 6 hours
Elective courses:
- BIO 165 - Introduction to Bioinformatics 2.0
- BIO 166 - Bioinformatics Skills: Workflows 1.0
- BIO 250- Evolutionary Medicine 2.0
- BIO 463 - Genetics of Human Disease 3.0
- BIO 368 - Genomics 3.0
- BIO 375 - Plant Development and Morph 3.0
- CELL 320 - Dissection Tech Human Anatomy 1.0
- CELL 365 - Pathophysiology 4.0
- CELL 455R - Cell Bio & Physiology Seminar 0.5
- CELL 484 - Human Embryology 3.0
- CELL 498 - Advanced Senior Research 3.0
- CELL 520R - Adv Topics in Human Anatomy 1.0-2.0
- CELL 550R - Adv Topics-Cell Bio & Physiol 1.0-4.0
- CELL 561 - Physiology of Drug Mechanisms 3.0
- CELL 562 - Reproductive Physiology 3.0
- CELL 565 - Endocrinology 3.0
- CELL 568 - Biophysics 3.0
- CELL 575 - Physiology of Aging 3.0
- CELL 582 - Developmental Genetics 3.0
- C S 111- Introduction to Computer Science 3.0
- CHEM 482 - Mechanisms of Molecular Biol 3.0
- EXSC 463 - Exercise Physiology 3.0
- EXSC 464 - Exercise Physiology Lab 0.5
- MMBIO 221 - General Microbiology 3.0
- MMBIO 222 - Gen Micro Lab 1.0
- MMBIO 261 - Infection & Immunity 3.0
- MMBIO 441 - Adv Molecular Biology 3.0
- MMBIO 442 - Adv Molecular Biology Lab 2.0
- MMBIO 463 - Immunology 3.0
- NEURO 480 - Cellular Neuroscience 3.0
- PWS 272- Coding for Genetic Analysis 3.0
- PWS 274- Applied Biostatistics 3.0

Program Minimum Credit Hours - 62.5

Program Maximum Credit Hours - 62.5

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

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**Experimental learning (requirement 4) should be sought early in your BYU education.

*You may take up to 3.0 credit hours of CELL 295R, 349R, 399R, 450R, and 495R each for requirement 4.

†You may take up to 1.0 credit hour of LFSCI 199R for requirement 4.

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester
- CELL 120 (Biological Science) 3.0
- CHEM 105 4.0
- First-Year Writing or A HTG 100 3.0
- Religion Cornerstone Course 2.0
- Quantitative Reasoning (if needed) 0-3.0
- UNIV 101 2.0

Total Hours 14-17.0

2nd Semester
- CHEM 106 3.0
- CHEM 107 1.0
- PHSCS 105 3.0
- First-Year Writing or A HTG 100 3.0
- Religion Cornerstone Course 2.0
- Languages of Learning Elective 3-4.0

Total Hours 15-16.0

SOPHMORE YEAR

3rd Semester
- CELL 220 4.0
- MMBIO 240 3.0
- MMBIO 241 1.0
- CHEM 351 3.0
- GE Course 3.0
- Religion Cornerstone Course 2.0

Total Hours 16.0

4th Semester
- CELL 325 3.0
- CELL Experimental Learning (major requirement #4) 1-2.0
- CHEM 352 3.0
- PHSCS 106 3.0
- Global & Cultural Awareness Course 3.0
- Religion Cornerstone Course 2.0

Total Hours 15-16.0

JUNIOR YEAR

5th Semester
- CELL 360 3.0
- CELL Experimental Learning (major requirement #4) 1-2.0
- CHEM 481 3.0
- PWS 340 3.0
- GE Course 3.0
- Religion Elective 2.0

Total Hours 15-16.0

6th Semester
- CELL 362 3.0
- CELL 363 1.0
- CELL 382 3.0
- Advanced Writing (WRTG 316 Recommended) 3.0
- GE Course 3.0
- Religion Elective 2.0

Total Hours 15.0

SENIOR YEAR

7th Semester
- CELL 455R 0.5
- Major Elective or Capstone 3.0
- Major Elective 3.0
- General Elective 3.0
- Religion Elective 2.0

Total Hours 11.5

8th Semester
- Major Elective or Capstone 3.0
- GE Course 3.0
- General Electives 6.0
- Complete Senior Survey/ Exit Interview 0.0
- Pass ETS Biology Field Exam 0.0

Total Hours 12.0

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

Cell Biology and Physiology are exciting branches of biology that study the structure, function, and molecular mechanisms of cells, tissues, organs, and organ systems of living organisms. Knowledge and advancement in these fields underlies our modern understanding of human health and disease. Faculty and students work to understand such remarkable processes as how the heart develops and works to pump blood, how brain cells communicate with one another, how insulin regulates blood sugar, and how specific gene products determine the morphology and functional capacity of the nervous system. Building on a foundation of chemistry, physics, and biology, the integration of molecular, cellular, systems, and whole-body function is what distinguishes the Cell Biology and Physiology major from other life science majors.

CAREER OPPORTUNITIES

A major in Cell Biology and Physiology 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 Cell Biology and Physiology have the opportunity to become involved in mentored laboratory research with the faculty (CELL 295R and 495R) and to participate in off-campus research internships (CELL 399R). Both types of research experiences should be sought early in your BYU education to allow sufficient time for development of the knowledge and skills needed to be proficient in the lab. Students that become highly engaged in on-campus research and generate sufficient data to participate with faculty in writing a peer-reviewed primary research article reporting their results can fulfill their capstone requirement (CELL 498 in requirement 5 of the MAP). Explore faculty research interests under the RESEARCH tab at cell.byu.edu.

EXPERIENTIAL LEARNING

The Cell Biology and Physiology major provides many fantastic options for students to participate in experiential learning. Students may choose to participate in on-campus mentored research (CELL 295 and CELL 495), offcampus internships (LFSCI199R and CELL 399R), life science teaching (CELL 349, STDEV 132, and STDEV 133), biotech innovation and entrepreneurship (CELL 444 and CELL 445), or exploring current research by directed literature readings (CELL 450R). Students may choose any combination of experiential learning courses that best supports their goals and desires. Experiential learning options should be sought out early in your BYU education.

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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