## University Core and Graduation Requirements

### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
</tr>
<tr>
<td>The Individual and Society</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td></td>
<td>1-2</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Skills</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>First Year Writing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
<td>3.0</td>
<td>ENGL 316 recommended</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td></td>
<td>0-1</td>
<td>from approved list</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1-4</td>
<td>3–20.0</td>
<td>MATH 112 or STAT 121 recommended</td>
</tr>
<tr>
<td>Arts, Letters, and Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
<td>3.0</td>
<td>PDBIO 120*</td>
</tr>
<tr>
<td>Physical Science</td>
<td>2</td>
<td>7.0</td>
<td>CHEM 105*, PHSCS 105*</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Core Enrichment: Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER — FOR PROGRAM QUESTIONS SEE YOUR MAJOR ADVISOR

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (12 hours overlap)

### Graduation Requirements:

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

### Suggested Sequence of Courses

#### FRESHMAN YEAR

**1st Semester**
- PDBIO 120 (Biological Science) 3.0
- CHEM 105 3.0
- Religion Cornerstone course 2.0

**2nd Semester**
- 1st Year Writing or A HTG 100 3.0
- PDBIO 220 3.0
- CHEM 106 3.0
- Religion Cornerstone course 2.0
- Languages of Learning elective 3–4.0

**Total Hours: 15-18.0**

#### SOPHOMORE YEAR

**3rd Semester**
- PDBIO 220 3.0
- PDBIO 120 (Biological Science) 3.0
- CHEM 106 3.0
- Religion Cornerstone course 2.0
- PDBIO Experiential Learning (i.e. PDBIO 295R) 1-2.0

**Total Hours: 15-16.0**

**4th Semester**
- MMBIO 246 3.0
- MMBIO 241 1.0
- CHEM 351 3.0
- Civilization 1 elective 3.0
- PHSCS 105 (Physical Science) 3.0
- Religion Cornerstone course 2.0

**Total Hours: 15-16.0**

#### JUNIOR YEAR

**5th Semester**
- PDBIO Experiential Learning (i.e. PDBIO 295R) 1-2.0
- Major electives 3.0

**Total Hours: 15-17.0**

**6th Semester**
- Major Elective or PDBIO Capstone 5-7.0
- Arts or Letters elective 3.0

**Total Hours: 15-17.0**

#### SENIOR YEAR

**7th Semester**
- Major Elective or PDBIO Capstone 2-5.0
- Arts or Letters elective 3.0

**Total Hours: 15-17.0**

**8th Semester**
- Major Elective or PDBIO Capstone 2-5.0
- Advance Writing (ENGL 316 recommended) 3.0
- General electives 3.0

**Total Hours: 15-17.0**

Note: The Senior Survey and Exit Interview 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 Physiology & Developmental Biology (285721)
2017-2018 Program Requirements (65.5 Credit Hours)

REQUIREMENT 1 Complete 6 courses
BIOLOGY CORE COURSES:
- BIO 420 - Evolutionary Biology 2.0
- MMBIO 240 - Molecular Biology 3.0
- MMBIO 241 - Molecular and Cellular Biology Laboratory 1.0
- *PDBIO 120 - Science of Biology 3.0
- PDBIO 360 - Cell Biology 3.0
- PWS 340 - Genetics 3.0

REQUIREMENT 2 Complete 8 courses
CHEMISTRY AND PHYSICS 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 481 - Biochemistry 3.0
- *PHSCS 105 - General Physics 1 3.0
- PHSCS 106 - General Physics 2 3.0

REQUIREMENT 3 Complete 6 courses
MAJOR CORE COURSES: (NOTE: PDBIO 210 CAN BE SUBSTITUTED FOR CHEMISTRY AND PHYSICS COURSES:
- PDBIO 494R - (Not currently offered)
- PDBIO 495R - Advanced Undergraduate Research in Physiology and Dev. 4.0

REQUIREMENT 5 Complete 1 course
CAPSTONE COURSES:
- NEURO 480 - Advanced Neuroscience 3.0
- PDBIO 498 - Advanced Senior Research Project 3.0
- PDBIO 561 - Physiology of Drug Mechanisms 3.0
- PDBIO 562 - Reproductive Physiology 3.0
- PDBIO 565 - Endocrinology 3.0
- PDBIO 566 - Cellular Electrophysiology and Biophysics 3.0
- PDBIO 582 - Developmental Genetics 3.0

REQUIREMENT 6 Complete 9.0 hours from the following course(s)
ELECTIVE COURSES (AT LEAST 3 HOURS MUST BE PDBIO):
- BIO 370 - Bioethics 2.0
- BIO 421 - Evolutionary Biology Laboratory 1.0
- BIO 463 - Genetics of Human Disease 3.0
- BIO 468 - (Bio-MMBio-PWS) Genomics 3.0
- CHEM 475 - Plant Developmental Biology 3.0
- CHEM 482 - Mechanisms of Molecular Biology 3.0
- EXSC 463 - Exercise Physiology 3.0
- EXSC 464 - Exercise Physiology Lab 0.5
- MMBIO 261 - Infection and Immunity 3.0
- MMBIO 441 - Advanced Molecular Biology 3.0
- MMBIO 442 - Advanced Molecular Biology Laboratory 2.0
- MMBIO 463 - Immunology 3.0
- NEURO 480 - Advanced Neuroscience 3.0
- PDBIO 320 - Dissection Techniques in Human Anatomy 1.0
- PDBIO 365 - Pathophysiology 4.0
- PDBIO 455R - Physiology and Developmental Biology Seminar 0.5
- PDBIO 484 - Human Embryology 3.0
- PDBIO 498 - Advanced Senior Research Project 3.0
- PDBIO 520R - Advanced Topics in Clinical Human Anatomy 2.0
You may take this course up to 1 time.

EXPERIENTIAL LEARNING OPTIONS - MUST BE FROM AT LEAST TWO DIFFERENT COURSES (EXPERIENCES SHOULD BE SOUGHT EARY IN YOUR ACADEMIC CAREER):
- LFSCL 199R - Nonresearch Academic Internship 3.0
You may take up to 1 credit hour.
- PDBIO 295R - Introductory Undergraduate Research in Physiology and Dev 4.0
You may take up to 1 credit hour.
- PDBIO 349R - Physiology and Developmental Biology Teaching Experier 3.0
PDBIO 399R - Academic Internship: Physiology and Developmental Biol 9.0
- PDBIO 444 - BIO-Innovation and -Entrepreneurship 1 2.0
- PDBIO 445 - BIO-Innovation and -Entrepreneurship 2 2.0
- PDBIO 455R - Readings and Discussion in Physiology and Developmental 2.0

CAREER OPPORTUNITIES:
A major in physiology and developmental biology prepares students to pursue advanced degrees in the biological sciences and non-biological fields or to directly enter into employment. This major provides outstanding preparation for students seeking admittance into professional programs in medicine, dentistry,
optometry, podiatry, chiropractics, and pharmacy. For students who have aspirations of doing health-related research, this major will provide a challenging, thorough preparation for entrance into graduate programs and beyond. Graduates of this program will also have the academic and laboratory skills necessary for employment in medical, biotechnological, and pharmaceutical industries. This degree provides students pursuing advanced degrees in business, public management, or law the knowledge and training necessary to be admitted into professional schools and work in governmental agencies, health care and biotechnical industries, and patent or health care law.

RESEARCH AREAS:
Students majoring in physiology and developmental biology have the opportunity to become involved in laboratory research with the faculty (PDBio 495R). Funding for this research comes from such sources as the National Institutes of Health, National Science Foundation, American Heart Association, and U.S. Department of Agriculture. Research topics such as the following are being investigated: • Molecular modeling and regulation of voltagegated ion channels. • Biophysics of membrane structure and function. • Role of cytokines in regulation of the adrenal gland. • Interaction between the nervous system and hormones in blood pressure regulation. • Hereditary connective tissue disorders. • Targeting of muscle AMP-activated protein kinase for prevention and treatment of type 2 diabetes. • Control of sexual differentiation of the brain. • Molecular mechanisms of control of embryonic development of the nervous system. • Effects of phytoestrogens on gene expression in the brain. • Molecular and functional characterization of ligandgated ion channels in the central nervous system. • Molecular mechanisms of neurotransmitter release.

MENTORED EXPERIENCE:
This involves working closely with a faculty member in teaching (PDBio 349R), laboratory research (PDBio 494R), or research in current literature (PDBio 550R).

FINANCING:
Various private, federal, and university sources of scholarships, fellowships, and grants are available. Most faculty attract grant funds to hire undergraduates to help with their research. Advanced undergraduates may be hired to teach labs or help sections for PDBio 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
Department of Physiology and Developmental Biology
Brigham Young University
4005 Life Sciences Building
Provo, UT 84602
Telephone: (801) 422-2006

ADVISEMENT CENTER INFORMATION
Life Science Student Services
Brigham Young University
2060 Life Sciences Building
Provo, UT 84602
Telephone: (801) 422-3042
lifesciences@byu.edu