BS in Biophysics (285720) MAP Sheet
Life Sciences, Physiology and Developmental Biology
For students entering the degree program during the 2018-2019 curricular year.
### BS in Biophysics (285720)
#### 2018-2019 Program Requirements (70.5 Credit Hours)

#### REQUIREMENT 1 Complete 6 courses
**LIFE SCIENCES CORE COURSES:**
- BIO 250 - Evolutionary Medicine 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 6 courses
**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 2.0v
- 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 - Introduction to Newtonian Mechanics 3.0
- PHSCS 123 - Introduction to Waves, Optics, and Thermodynamics 3.0
- PHSCS 140 - Electronics Lab 1.0
- PHSCS 220 - Introduction to Electricity and Magnetism 3.0

#### REQUIREMENT 4 Complete 4 courses
**MAJOR CORE COURSES:**
- "PDBIO 295R - Introductory Undergraduate Research in Physiology ar 2.0v"
- PDBIO 294R - (Not currently offered)
- PDBIO 495R - Advanced Undergraduate Research in Physiology and I 4.0v
- PDBIO 498 - Advanced Senior Research Project 3.0

#### OPTION 5.1 Complete up to 6.0 hours from the following course(s)
**REQUIREMENTS:**
- CHEM 223 - Quantitative and Qualitative Analysis 4.0
- 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 - Advanced Neuroscience 3.0
- PDBIO 365 - Pathophysiology 4.0
- PDBIO 450R - Readings and Discussion in Physiology and Development 2.0v
- PDBIO 455R - Physiology and Developmental Biology Seminar 6.0
- PDBIO 457R - Physiology and Developmental Biology Seminar 6.0
- PDBIO 561 - Physiology of Drug Mechanisms 3.0
- PDBIO 565 - Endocrinology 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.

#### 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.

#### RESEARCH OPPORTUNITIES:
Students majoring in biophysics have the opportunity to become involved in laboratory research with the faculty. Funding for this research comes from such sources as the National Institutes of Health, and National Science Foundation. Research topics such as the following are being investigated:
- Molecular modeling and regulation of voltage-gated ion channels.
- 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.

#### MENTORED EXPERIENCE:
A mentored experience involves working closely with a faculty member doing research in biophysics (PDBio 494R and 495R).

#### FINANCING:
Various private, federal, and university sources of scholarships, fellowships, and grants are available. Advanced undergraduates may be hired to teach labs or help sections for PDBio courses. Please see the Life Sciences Advisement Center (2060 LSB) for information regarding College and Department Scholarship Requests.
HONORARY SOCIETIES AND CLUBS:
Membership in the Premedical or Predental Clubs, as well as service on the Student Council of the College of Life Sciences, promotes fellowship among students and develops professionalism.

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.

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