

Biophysical Sciences Suggested Course Plan

This is a suggested course plan for required technical courses for the biophysical sciences major. In addition to the courses listed below, 6 credits of approved elective course are required. A list of approved electives is attached below.

Notes:

- a) This sheet does not replace meeting with your advisor. You should meet with your advisor each semester.
- b) No advanced Biology courses except Genetics and Cell Biology can be double counted towards this major and the Biology major or minor.
- c) If you major in Biophysical Sciences, you can not receive a minor or a second major in Chemistry.
- d) If you major in Biophysical Sciences, you can not receive a minor or a second major in Physics.

Year 1:	
Fall	Spring
MATH 1337 Calculus 1	MATH 1338 Calculus 2
BIOL 1401 Introductory Biology	BIOL 1402 Introductory Biology
CHEM 1303 General Chemistry	CHEM 1304 General Chemistry
CHEM 1113 Chemistry Lab	CHEM 1114 Chemistry Lab

Year 2:	
Fall	Spring
MATH 2339 Calculus 3	MATH 2343 Differential Equations
BIOL 3304 Genetics	BIOL 3350 Cell Biology
CHEM 3371 Organic Chemistry	CHEM 3372 Organic Chemistry
CHEM 3117 Organic Chemistry Lab	CHEM 3118 Organic Chemistry Lab
PHYS 1105 Mechanics Laboratory	PHYS 1106 Electricity and Magnetism Lab
PHYS 1303 or 1307 Introductory Mechanics	PHYS 1304 or 1308 Introductory E&M

Year 3:	
Fall	Spring
BIOL 5310 BioChem I	BIOL 5311 BioChem II
CHEM 5383 Physical Chem I	CHEM 5384 Physical Chem II
PHYS 3344 Advanced Mechanics	MATH 3353 Linear Algebra
PHYS 3305 Modern Physics	

Year 4:	
Fall	Spring
(CHEM 5344 Physical Chem of Proteins)	(CHEM 5344 Physical Chem of Proteins)
PHYS 3374 Thermo & Stat Mech	PHYS 4392 Electricity and Magnetism
PHYS 5382 Quantum Mechanics I	

Biophysical Sciences Approved Electives:

Students are required to will take 6 credits of approved electives.

APSM 3322 (3). BIOMECHANICS.

Introduces the scientific basis of support and motion in humans and other vertebrate animals, drawing equally on musculoskeletal biology and Newtonian mechanics. Prerequisite: APSM 2310 or 2340.

APSM 3422 (4). BIOMECHANICS WITH LABORATORY.

Introduces the scientific basis of support and motion in humans and other vertebrate animals, drawing equally on musculoskeletal biology and Newtonian mechanics. Lab fee: \$30. Recommended: PHYS 1303, MATH 1304. Prerequisite: APSM 2441.

CHEM 5306 COMPUTATIONAL CHEMISTRY.

Besides the normal lab experiments, modern chemists/biochemists perform experiments on the computer by calculating the outcome of chemical/biochemical reactions. The present course will provide an introduction into this new field in a hands-on fashion. Major quantum chemical packages will be used.

CHEM 5317 INTRODUCTION TO MOLECULAR MODELING AND COMPUTER ASSISTED DRUG DESIGN

The course presents a thorough and in-depth overview of methods and techniques in computer assisted drug design (CADD). It includes topics such as drug discovery and drug design, molecular recognition and docking, ligand-receptor interactions, pharmacophore searching, virtual screening, de novo design, molecular graphics, chemo- metrics, etc.

CHEM 5308 SPECIAL TOPICS IN CHEMISTRY

(Needs consent of Biophysics Program Director)

PHYS 4211 LABORATORY PHYSICS I

Introduction to experimental physics. Approximately one experiment per week. One three-hour laboratory period per week. Prerequisite: PHYS 1105, PHYS 1106 and PHYS 3305

PHYS 4112 ADVANCED LABORATORY PHYSICS

Intermediate level experimental physics. Approximately one experiment per week. One three-hour laboratory period per week. Can be taken concurrently with PHYS 4211

PHYS 4390 Special Projects in Physics

(Needs consent of Biophysics Program Director)

PHYS 5383 Advanced Quantum Mechanics

Brief review of modern physics; fine and hyperfine structure; multielectron atoms; molecular physics; lasers, optical resonance, and spectroscopy. Prerequisite: PHYS 5382