BIOPHYSICS, B.S.

Requirements

Requires at least 23.5 hours in physics and must include the following courses:

Code	Title	Hours
Required Major Courses		
PHY 123	General Physics I - Studio Format	4
or PHY 113	General Physics I	
or PHY 111	Mechanics Waves and Heat	
PHY 124	General Physics II - Studio Format	4
or PHY 114	General Physics II	
PHY 215	Elementary Modern Physics	3
PHY 230	Electronics	3-4
or EGR 311	Control Systems and Instrumentation	
PHY 262	Mechanics ****	3
PHY 265	Intermediate Laboratory I	1
PHY 266	Intermediate Laboratory II ****	1
PHY 381	Research (for a minimum of 1.5 hours) *,**	1.5-3
PHY 325	Biophysical Methods Laboratory	1-1.5
or CHM 370L	Biochemistry Lab	
or BIO 370L	Biochemistry Lab	
Select two of the following:		6
PHY 307	Biophysics	
PHY 320	Physics of Biological Macromolecules	
PHY 341	Thermodynamics and Statistical Mechanics *	
or CHM 341	Physical Chemistry I	
PHY 385	Bioinformatics	
CSC 387	Computational Systems Biology	
In addition, Graduate courses in BME or medical physics may also be substituted with permission of the instructor, office of academic advising, advisor and chair		
Co-Requirements		
MTH 113	Multivariable Calculus	4
MTH 205	Introduction to Linear Algebra and Differential Equations	4
or MTH 121 & MTH 251	Linear Algebra I and Ordinary Differential Equations	
CHM 111 & 111L	College Chemistry I and College Chemistry I Lab	4
CHM 122 & 122L	Organic Chemistry I and Organic Chemistry I Lab	4
CHM 280	College Chemistry II	3
BIO 150 & 150L	Biology I and Biology I Lab	4
BIO 160 & 160L	Biology II and Biology II Lab	4
BMB/BIO/CHM 370	Biochemistry I: Macromolecules and Metabolism	3

* *Substitutions for PHY 341, PHY 230, PHY 262, PHY 266 and PHY 381 will count toward the required hours in physics.*

** *Students may substitute CHM 391/ CHM 392 or BIO 391/ BIO 392/BIO 393/ BIO 394 for PHY 381 in consultation with their advisor. Substitutions for PHY 341 and PHY 381 will count toward the required hours in physics.*

*** *Students must earn a minimum C grade in MTH 113 as well as MTH 205 or MTH 121/MTH 251.*

**** *Students may substitute* EGR 211 *for the combination of* PHY 262 *and* PHY 266*. Students who make this substitution do not need to take PHY 262 or PHY 266 to fulfill requirements for the major.*

Students are advised to complete math requirements as early as possible. Students are strongly encouraged to take either CSC 102 or CSC 111; early in their curriculum if possible. CSC 111 would be appropriate for majors who are interested in further study in computer science, such as through a double major or minor in Computer Science. Otherwise, we encourage our majors to take CSC 102.

No student may be a candidate for a degree with a major in biophysics with a grade less than C in General Physics without special permission of the department. Students must achieve a minimum GPA of 2.0 in physics courses for graduation. In addition, all major students must complete a senior survey and participate in a senior focus group held during their senior year

Concentrations

Physics Concentrations

Students who wish to focus their coursework in a specific subarea of physics may pursue a Physics Concentration. Pursuit of a Physics Concentration does not change the degree, which may be a Bachelor of Arts in Physics, a Bachelor of Science in Physics, or a Bachelor of Science in Biophysics. A concentration requires 3 courses, although some of the courses selected may have additional prerequisite courses. These courses may also count towards the requirements for their BA or BS degree. A course, however, can only be counted toward one concentration. A minimum overall GPA of 2.0 must be earned on all Wake Forest courses taken to complete the concentration. The requirements for the concentration are those that are in effect at the time of the declaration of the concentration.

Quantum Information Sciences Concentration

Code	Title	Hours
PHY 343	Quantum Physics	3
Select two of the following options:		
PHY 345	Introduction to Quantum Computing	
PHY 352	Physical Optics and Optical Design	
PHY 354	Introduction to Solid State Physics	

Computational Physics

Code	Title	Hours
CSC 102	Problem Solving with Python *	3
Select two of the following options:		
PHY 320	Physics of Biological Macromolecules	
PHY 335	Computational Physics	
PHY 345	Introduction to Quantum Computing	

* CSC 111 or CSC 112 may substitute for CSC 102 with departmental permission.

Honors

Highly qualified majors are invited by the department to apply for admission to the honors program in physics through the major advisor. To be graduated with the designation “Honors in Physics,” students must:

- pass PHY 381
- write a paper on the results of the research in that course
- pass an oral exam on the research and related topics given by a committee of three physics faculty members
- obtain a GPA of at least 3.3 in physics and 3.0 overall