BIOPHYSICS

BS: BIOPHYSICS

How is a Biophysics Major different from a Physics Major?
A Biophysics Major includes 40 credit hours in Biology and Physics courses (16 in Biology and 24 in Physics) rather than 40 credit hours in Physics alone for the Physics Major. As for all Bachelor of Science degrees, a grand total of 124 credit hours is required, 30 of which must be upper division credit hours.

Will it take me longer to get a Biophysics degree than for the straight Physics degree? No. If you take the normal full-time course load each semester (ie. 12-16 hours), you will be able to finish in 4 years. On the following pages you will find a sample 4-year course schedule which completes all the requirements.

What are the required courses in Biology?
Foundations of Biology (BIOL165, BIOL166)
Genetics, Cellular & Molecular Biology (BIOL371, BIOL372)

Is there a Biochemistry option for some of the Biology? Yes, you may take Biochemistry 1 (BCHM421) instead of Genetics, Cellular and Mol. 2 (BIOL372). In this option, you fulfill your Biology requirements with a total of 17 hours (13 of Biology + 4 of Biochemistry). This earns you a minor in Chemistry.

Is there a Physical Chemistry option for some of the Physics? Yes, you may take Physical Chemistry I (CHEM431) and its associated lab (CHEM441) instead of Thermodynamics (PHYS430). In this option, you fulfill your Physics requirements with a total of 24.5 hours (20.5 hours Physics + 4 hours Chemistry). This earns you a minor in Chemistry.

What if my interests go beyond Biophysics? Can I include other areas?
While Biology, Chemistry, Mathematics, and Computing Science majors naturally flow with the Biophysics Major, since it is essentially an interdisciplinary degree, other majors have also been taken in areas such as Anthropology, Religion, Music and German. We strongly support and encourage development in other areas of personal interest. The strengths you take into these less traditional areas add to your success potential in the marketplace.

BS: BIOPHYSICS

Freshman Year		**Total Credits**	**32CR**
MATH141, 142	CALCULUS I, II		8CR
CHEM131, 132	GENERAL CHEMISTRY		8CR
PHYS277	PHYSICS COLLOQUIUM		0CR
RELT100	GOD & HUMAN LIFE		3CR
ENGL115	ENGLISH COMPOSITION I		3CR
COMM104	COMMUNICATION SKILLS		3CR
HIST117, 118	CIVILIZATION & IDEAS		6CR
HLED120	FIT FOR LIFE		1CR

Sophomore Year		**Total Credits**	**32CR**
PHYS241, 242	PHYSICS FOR SCIENTISTS I, II		8CR
PHYS271, 272	PHYSICS FOR SCIENTISTS LABORATORY I, II		2CR
PHYS277	PHYSICS COLLOQUIUM		0CR
BIOL165, 166	FOUNDATIONS OF BIOLOGY		10CR
MATH286	DIFFERENTIAL EQUATIONS		3CR
RELIGION	RELIGION COURSE*		3CR
ENGL215	ENGLISH COMPOSITION II		3CR
BHSC100	PHILOSOPHY OF SERVICE**		2CR
PEAC	PHYSICAL ACTIVITY COURSE		1CR

Junior Year		**Total Credits**	**32CR**
PHYS411	THEORETICAL MECHANICS I		2.5CR
PHYS430	THERMODYNAMICS		2.5CR
PHYS431	ELECTRICITY & MAGNETISM I		3CR
PHYS377	ADVANCED LABORATORY I		1CR
PHYS277	PHYSICS COLLOQUIUM		0CR
CHEM231, 232	ORGANIC CHEMISTRY		6CR
CHEM241, 242	ORGANIC CHEMISTRY LABORATORY		2CR

Junior Year (cont'd)

HUMANITIES	2 ARTS/HUMANITIES COURSES***	6CR
RELIGION	RELIGION COURSE*	3CR
SOCIAL SC.	SOCIAL SCIENCE FOUNDATION COURSE***	3CR
SOCIAL SC.	SOCIAL SCIENCE COURSE***	3CR

Senior Year	**Total Credits**	**28CR**
PHYS416	BIOPHYSICS	2.5CR
BIOL371, 372	GENETICS, CELLULAR & MOLECULAR BIOLOGY	6CR
PHYS495	RESEARCH	1CR
PHYS277	PHYSICS COLLOQUIUM	0CR
ELEC	PHYSICS/BIOLOGY ELECTIVE	1.5CR
ELEC	ELECTIVES****	13CR
RELIGION	RELIGION COURSE*	3CR
PEAC	PHYSICAL ACTIVITY COURSE	1CR

Total Credits Needed for Graduation: 124

Suggested course outline: It may not be necessary to take these courses in the order shown. An academic advisor will consult with you in this regard.

* Choose from RELB210, RELB225, RELT250, RELT340, or RELG360.

** Additional requirements (not listed here) include 2 credits of fieldwork. This is usually earned by completing approved community service of the student's choice.

*** **Humanities**: choose two from ARTH220, IDSC211, MUHL214, PHIL224, PHTO210, PHTO115 or 3 credits of Studio Art/Ensemble Music
Social Science Foundation Course: choose from ANTH200, ECON225, GEOG110, PLSC104, PSYC101, or SOCI119
Social Science Course: choose from BHSC220, BHSC235, PLSC237, PSYC180, or FMST201

**** **Recommended Electives:**
Biochemistry II with laboratory (BCHM422, BCHM430)
Physical Chemistry II with laboratory (CHEM432, 442)
Electronics I, II (ELCT141, 142)
Linear Algebra (MATH215)
Calculus III (MATH240)

BS: BIOPHYSICS (WITH SAGES HONORS)

Freshman Year		**Total Credits**	**30CR**

FRESHMAN YEAR: Including SAGES replacements for RELT100, ENGL115, COMM104, HIST 117/118, and HLED120

MATH141, 142	CALCULUS I, II	8CR
CHEM131, 132	GENERAL CHEMISTRY	8CR
PHYS277	PHYSICS COLLOQUIUM	0CR
HONS105	WESTERN HERITAGE I	5CR
HONS106	WESTERN HERITAGE II	5CR
HONS115	TRANSCRIBING THE SELF	3CR
PEAC	PHYSICAL EDUCATION ACTIVITY COURSE	1CR

Sophomore Year		**Total Credits**	**32CR**

SOPHOMORE YEAR: Including SAGES replacements for RELIGION, ENGL215, and BHSC100

PHYS241, 242	PHYSICS FOR SCIENTISTS I, II	8CR
PHYS271, 272	PHYSICS FOR SCIENTISTS LABORATORY I, II	2CR
PHYS277	PHYSICS COLLOQUIUM	0CR
BIOL165, 166	FOUNDATIONS OF BIOLOGY	10CR
MATH286	DIFFERENTIAL EQUATIONS	3CR
HONS215	SCRIPTURE	3CR
HONS265	LITERATURE AND THE ARTS	3CR

Select one of the following:

HONS225	MATERIALISM AND IDEALISM	3CR
HONS245	MEANINGS OF AMERICA	3CR

Junior Year		Total Credits	31CR
JUNIOR YEAR: Including SAGES replacements for RELIGION, SOCIAL SCIENCE., and HUMANITIES			
PHYS277	PHYSICS COLLOQUIUM		0CR
PHYS377	ADVANCED LABRATORY		1CR
PHYS411	THEORETICAL MECHANICS I		2.5CR
PHYS430	THERMODYNAMICS		2.5CR
PHYS431	ELECTRICITY & MAGNETISM I		3CR
CHEM231, 232	ORGANIC CHEMISTRY		6CR
CHEM241, 242	ORGANIC CHEMISTRY LABORATORY		2CR
HONS345	THE NON-WESTERN WORLD		3CR
HONS365	COSMOS		3CR
HONS398	RESEARCH PRO SEMINAR		1CR
PEAC	PHYSICAL EDUCATION ACTIVITY COURSE		1CR
ELEC	ELECTIVE****		3CR
Select one of the following:			
HONS325	JUSTICE		3CR
HONS225	MATERIALISM AND IDEALISM		3CR
HONS245	MEANING OF AMERICA		3CR
HONS380	TOPICS IN HONORS (PHYSICS AND FAITH)		3CR

Senior Year		Total Credits	31CR
SENIOR YEAR: Including SAGES replacements for RELIGION			
PHYS416	BIOPHYSICS		2.5CR
BIOL371, 372	GENETICS, CELLULAR & MOLECULAR BIOLOGY		6CR
PHYS495	RESEARCH		1CR
PHYS277	PHYSICS COLLOQUIUM		0CR
ELEC	PHYSICS/BIOLOGY ELECTIVE		1.5CR
ELEC	ELECTIVES****		15CR
HONS415	THINKING THEOLOGICALLY		3CR
HONS497	SENIOR HONORS PROJECT		2CR

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CONNECT

Details on the courses for each major as well as the general education requirements for the degrees are available on our website, **www.andrews.edu/cas/physics** or in the Andrews University Bulletin. Apply online or download an application at connect.andrews.edu.

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