



BS: PHYSICS

How many credit hours do I need for a BS degree with a physics major?

All Bachelor of Science degrees require a grand total of 124 credit hours of which 30 must be upper division credit hours. Of the total number of hours, 40 must be in physics; 29, in cognate areas; 44, in general education areas (39 in SAGES); and 11, in elective, minor, or other major courses.

How many physics credit hours are required for a physics major and how many classes does that represent?

It takes 40 credit hours to complete a physics major. That represents something like 16 to 18 courses ranging from 1 to 4 credits each. You may be interested in a realistic sample of scheduled courses leading to a BS in Physics in the accompanying curriculum guide.

How many hours will I need to take each semester?

A full-time course load for a semester is considered to be 12-16 credit hours. Overloads of more than 17 credit hours may be petitioned but not particularly recommended.

What will it take to get a math major along with my physics major?

There are 2 types of math majors: 1) BS in math and 2) a second major in mathematical studies. The mathematical studies major may only be taken as a second major and requires 30 credits of mathematics. The physics major requirements already satisfy 21 of the required 30 credits for the mathematical studies second major. For the BS in math, the physics requirements already satisfy 21 of the 42 credits required. It is highly recommended that physics majors take as much math as possible. Therefore the department strongly supports its students taking on the mathematical studies program.

What does it take to get a math minor along with my physics major?

Students receiving a physics major already satisfy 18 credits of a math minor. They will only need 2 additional credits or 1 course to complete a math minor.

What if my interests go beyond physics? Can I include other areas?

While chemistry, math, and computing majors naturally complement the physics major, second majors have also been taken in other areas such as anthropology, religion, music, and German. We strongly support breadth in our majors and thus 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.



CURRICULUM GUIDE

BS: PHYSICS

Freshman Year		Total Credits	32CR
PHYS277	PHYSICS COLLOQUIUM		0CR
MATH141, 142	CALCULUS I, II		8CR
CHEM131, 132	GENERAL CHEMISTRY		8CR
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
PHYS277	PHYSICS COLLOQUIUM		0CR
PHYS241, 242	PHYSICS FOR SCIENTISTS I, II		8CR
PHYS271, 272	PHYSICS FOR SCIENTISTS LAB I, II		2CR
MATH215	INTRODUCTION TO LINEAR ALGEBRA		3CR
MATH240	CALCULUS III		4CR
MATH286	DIFFERENTIAL EQUATIONS		3CR
CPTR125	COMPUTER SCIENCE		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
PHYS277	PHYSICS COLLOQUIUM		0CR
PHYS377	ADVANCED LABORATORY I		1CR
PHYS411	THEORETICAL MECHANICS I		2.5CR
PHYS430	THERMODYNAMICS		2.5CR
PHYS431, 432	ELECTRICITY & MAGNETISM I, II		6CR



CURRICULUM GUIDE

Junior Year (cont'd)

Select 2 of the following:

PHYS350	OPTICS	2.5CR
PHYS412	THEORETICAL MECHANICS II	2.5CR
PHYS416	BIOPHYSICS	2.5CR
PHYS460	SOLID STATE	2.5CR
RELIGION	RELIGION COURSE*	3CR
SOCIAL SC.	SOCIAL SCIENCE FOUNDATION COURSE***	3CR
SOCIAL SC.	SOCIAL SCIENCE COURSE***	3CR
HUMANITIES	HUMANITIES COURSE*** (2)	6CR

Senior Year		Total Credits	28CR
PHYS277	PHYSICS COLLOQUIUM		0CR
PHYS477	ADVANCED LABORATORY II		1CR
PHYS481, 482	QUANTUM MECHANICS I, II		6CR
PHYS495	RESEARCH		1CR

Select 2 of the following:

PHYS420	TOPICS IN RELATIVITY	2.5CR
PHYS445	PARTICLE PHYSICS	2.5CR
PHYS475	SENIOR REVIEW	2.5CR
ELEC	ELECTIVES	11CR
RELIGION	RELIGION COURSE* (RELG360 Physics and Faith recommended)	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.
- *** **Social Science Foundation Course:** choose from ANTH200, ECON225, GEOG110, PLSC104, PSYC101, or SOCI119
Social Science Course: choose from BHSC220, BHSC235, PLSC237, PSYC180, or FMST201
Humanities: choose two from ARTH220, ENGL225, INLS215, MUHL214, PHIL224, PHTO210, PHTO115 or 3 credits of Studio Art/Ensemble Music



CURRICULUM GUIDE

BS: PHYSICS (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 CHEMISRTY	8CR
PHYS277	PHYSICS COLLOQUIUM	0CR
HONS105, 106	WESTERN HERITAGE I, II	10CR
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	PHYSICIS FOR SCIENTISTS LAB I, II	2CR
PHYS277	PHYSICS COLLOQUIUM	0CR
MATH240	CALCULUS III	4CR
MATH286	DIFFERENTIAL EQUATIONS	3CR
MATH215	INTRODUCTION TO LINEAR ALGEBRA	3CR
CPTR125	COMPUTER SCIENCE	3CR
HONS215	SCRIPTURE	3CR
HONS265	LITERATURE AND THE ARTS	3CR

Select one of the following:

HONS225	MATERIALISM AND IDEALISM	3CR
HONS 245	MEANING OF AMERICA	3CR

Junior Year	Total Credits	32CR
--------------------	----------------------	-------------

JUNIOR YEAR: Including SAGES replacements for RELIGION, SOCIAL SCIENCE, and HUMANITIES

PHYS277	PHYSICS COLLOQUIUM	0CR
PHYS377	ADVANCED LABORATORY I	1CR



CURRICULUM GUIDE

Junior Year (cont'd)

PHYS411	THEORETICAL MECHANICS I	2.5CR
PHYS430	THERMODYNAMICS	2.5CR
PHYS431, 432	ELECTRICITY & MAGNETISM I, II	6CR

Select one of the following:

PHYS350	OPTICS	2.5CR
PHYS412	THEORETICAL MECHANICS II	2.5CR
PHYS416	BIOPHYSICS	2.5CR
PHYS460	SOLID STATE PHYSICS	2.5CR
HONS345	THE NON-WESTERN WORLD	3CR
HONS365	COSMOS	3CR
HONS398	RESEARCH PRO SEMINAR	1CR

Select one of the following:

HONS225	MATERIALISM AND IDEALISM	3CR
HONS245	MEANING OF AMERICA	3CR
HONS325	JUSTICE	3CR
HONS380	TOPICS IN HONORS (PHYSICS AND FAITH)	3CR
ELEC	ELECTIVES	5CR

Senior Year

Total Credits

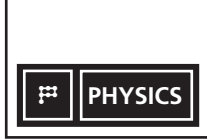
30CR

SENIOR YEAR: Including SAGES replacements for RELIGION

PHYS277	PHYSICS COLLOQUIUM	0CR
PHYS477	ADVANCED LABORATORY II	1CR
PHYS481, 482	QUANTUM MECHANICS	
PHYS495	RESEARCH	1CR

Select 2 of the following:

PHYS420	TOPICS IN RELATIVITY	2.5CR
PHYS475	SENIOR REVIEW	2.5CR
PHYS445	PARTICLE PHYSICS	2.5CR
ELEC	ELECTIVES	11CR
HONS415	THINKING THEOLOGICALLY	3CR
HONS497	SENIOR HONORS THESIS	2CR
PEAC	PHYSICAL EDUCATION ACTIVITY COURSE	1CR



MARGARITA MATTINGLY
Department Chair
Professor of Physics
BA, Andrews University
MA, University of Arkansas
PhD, University of Notre Dame

ROBERT KINGMAN
Coordinator, MS Math and Science
Professor of Physics, Emeritus
BS, Walla Walla College
MS, PhD, University of Arizona

GARY BURDICK
Professor of Physics
BS, Southern Adventist University
PhD, University of Texas at Austin

MICKEY KUTZNER
Professor of Physics
BS, Loma Linda University
MS, University of California
at Los Angeles
PhD, University of Virginia

RONALD JOHNSON
Director, Physics Enterprises
Associate Professor of Engineering
& Computer Science, Emeritus
BS Walla Walla College
MSEE Oregon State University

S. CLARK ROWLAND
Professor of Physics, Emeritus
BA, Pacific Union College
PhD, University of Utah

TIFFANY SUMMERSCALES
Assistant Professor of Physics
BS, Andrews University
PhD, Penn State University

STEPHEN THORMAN
Professor of Physics
BS, Pacific Union College
MS, California State University
MSECE, PhD, University of
Massachusetts

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.

DEPARTMENT OF PHYSICS

PHONE: 866.471.3430 or 269.471.3430
EMAIL: PHYSICS@ANDREWS.EDU
WEB: PHYSICS.ANDREWS.EDU

ENROLLMENT MANAGEMENT

PHONE: 800.253.2874 or 269.471.7771
EMAIL: ENROLL@ANDREWS.EDU
WEB: CONNECT.ANDREWS.EDU