

Physics - B.S.

College of
Arts and Sciences

The Department of Physics and Astronomy helps many students acquire a general understanding and appreciation of physics and astronomy. In the liberal arts tradition, the undergraduate curriculum is complete and flexible enough to allow a graduate with a major in physics to pursue a variety of careers.

120 hours (minimum)

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. A complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, can be found on pages 113-114 of the *Arts and Sciences* section of the 2011-2012 *Undergraduate Bulletin* on the Web at: www.uky.edu/Registrar/bulletinCurrent/a_s.pdf.

UK Core Requirements

See the *UK Core* section of the 2011-2012 *Undergraduate Bulletin* at: www.uky.edu/Registrar/bulletinCurrent/ukc.pdf for the complete UK Core requirements. The courses listed below are (a) recommended by the college, or (b) required courses that also fulfill UK Core areas. Students should work closely with their advisor to complete the UK Core requirements.

I. Intellectual Inquiry in Arts and Creativity	
Choose one course from approved list	3
II. Intellectual Inquiry in the Humanities	
Choose one course from approved list	3
III. Intellectual Inquiry in the Social Sciences	
Choose one course from approved list	3
IV. Intellectual Inquiry in the Natural, Physical, and Mathematical Sciences	
Choose one course from approved list	3
V. Composition and Communication I	
CIS/WRD 110 Composition and Communication I	3
VI. Composition and Communication II	
CIS/WRD 111 Composition and Communication II	3
VII. Quantitative Foundations	
Choose one course from approved list	3
VIII. Statistical Inferential Reasoning	
Choose one course from approved list	3
IX. Community, Culture and Citizenship in the USA	
Choose one course from approved list	3
X. Global Dynamics	
Choose one course from approved list	3
UK Core Hours	30

Graduation Writing Requirement

After attaining sophomore status, students must complete a Graduation Writing Requirement course. Please see your academic advisor for courses that meet this requirement.

Graduation Writing Requirement Hours: 3

College Requirements

I. Foreign Language (<i>placement exam recommended</i>)	0-14
II. Disciplinary Requirements	
a. Natural Science (<i>completed by Premajor Requirements</i>)	
b. Social Science	3
c. Humanities	3
III. Laboratory or Field Work (<i>completed by Premajor Requirement</i>)	
IV. Electives	6

College Requirement hours: 12-26

Premajor Requirements

*PHY 231/232/241/242 General University Physics and Laboratory	10
or with permission of the Director of Undergraduate Studies:	
*PHY 211/213 General Physics	(10)
PHY 228 Optics, Relativity and Thermal Physics	3
CHE 105 General College Chemistry I	3
CHE 107 General College Chemistry II	3
*MA 113 Calculus I	4
MA 114 Calculus II	4
Premajor hours:	27

Major Requirements

Major Core Requirements	
PHY 306 Theoretical Methods of Physics	3
PHY 335 Data Analysis for Physicists	1
PHY 361 Principles of Modern Physics	3
PHY 404G Mechanics	3
PHY 416G/417G Electricity and Magnetism	6
PHY 520 Introduction to Quantum Mechanics I	3
PHY 521 Introduction to Quantum Mechanics II	3
PHY 535W Advanced Physics Laboratory	3
MA 213 Calculus III	4
MA 214 Calculus IV	3
plus two of the following courses:	
AST/PHY 395 Independent Work in Astronomy/Physics	3
PHY 402G Electronic Instrumentation and Measurements	3
PHY 422 Computational Physics Laboratory	3
PHY 435 Intermediate Physics Laboratory	3
Major Core hours:	38

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The University of Kentucky is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, masters, doctorate, and professional degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of the University of Kentucky.

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Other Course Work Required for the Major

From Outside the Major Department

Choose seven hours outside Physics at the 200+ level. Courses are generally chosen from biology, chemistry, computer science, education, engineering, mathematics, philosophy, or statistics. 200+ level courses used to satisfy College requirements can also be counted here 7

Other Major hours: 7

Total Minimum Hours

Required for Degree 120

**Course used towards completion of a UK Core Requirement.*

Suggested Curriculum for B.S. in Physics

(NOTE: Students who have completed calculus or chemistry should visit our Web site at: www.pa.uky.edu/undergrad/curricula.html for suggested curriculum.)

As you plan your physics studies, please note that upper division physics courses, PHY 3XX and all higher numbered courses, are offered once per year in the semester indicated on the suggested curricula. For example, PHY 306 and PHY 361 are offered in the spring semester only. This suggested curriculum minimally meets the requirements for the B.S. in Physics.

Freshman Year

First Semester	Hours
PHY 231 General University Physics	4
PHY 241 General University Physics Laboratory	1
MA 113 Calculus I	4
CIS/WRD 110 Composition and Communication I	3
UK Core	3

Second Semester

PHY 228 Optics, Relativity and Thermal Physics	3
MA 114 Calculus II	4
CHE 105 General College Chemistry I	3
UK Core	3

Sophomore Year

First Semester	Hours
PHY 232 General University Physics	4
PHY 242 General University Physics Laboratory	1
MA 213 Calculus III	4
PHY 335 Data Analysis for Physicists	1
CHE 107 General College Chemistry II	3
Foreign Language	4

Second Semester

PHY 306 Theoretical Methods of Physics	3
PHY 361 Principles of Modern Physics	3
MA 214 Calculus IV	3
Foreign Language	4
UK Core	3

Junior Year

First Semester	Hours
PHY 404G Mechanics	3
PHY 416G Electricity and Magnetism	3
PHY 402G Electronic Instrumentation and Measurements	3
*MA 322 Matrix Algebra and Its Applications	3
Foreign Language	3

Second Semester	Hours
PHY 417G Electricity and Magnetism	3
PHY 520 Introduction to Quantum Mechanics	3
PHY 435 Intermediate Physics Laboratory	3
Foreign Language	3
Elective	3

Senior Year

First Semester	Hours
PHY 554 Fundamentals of Atomic Physics	3
Elective	3
UK Core	9

Second Semester	Hours
PHY 535 Experimental Physics: Advanced Physics Laboratory	2
Humanities and Social Sciences	6
Elective	3
UK Core	6

**A total of 14 credit hours in math, computer science, chemistry, engineering or other areas related to physics but outside the department must be completed to satisfy the college requirement. One-hundred-level freshman courses may not be counted for the major requirements except for CS 115 which may be counted.*