



Physics - B.S.

College of Arts and Sciences

NOTE: Courses listed in parentheses after the course title are Kentucky Community and Technical College courses that have been approved to fulfill the equivalent UK requirement.

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 103-104 of the 2007-2008 UK Bulletin.

University Studies Program Requirements

- I. Math (completed by Premajor Requirement)
II. Foreign Language (placement exam recommended) 0-8
III. Inference-Logic (completed by Premajor Requirement)
IV. Written Communication 0-4
VI. Natural Sciences (completed by Premajor Requirement)
VII. Social Sciences 6
VIII. Humanities 6
IX. Cross-Cultural (choose a Social Science course) 3
X. Electives (choose a Humanities course) 3

USP hours: 18-20

Graduation Writing Requirement

Students may satisfy the Graduation Writing Requirement by completing PHY 435.

Graduation Writing Requirement Hours: 3

College Requirements

- I. Foreign Language (placement exam recommended) 0-8
II. Disciplinary Requirements
a. Natural Science (completed by Premajor Requirements)
b. Social Science (completed by USP Cross-Cultural Requirement)
c. Humanities (completed by USP Elective Requirement)
III. Laboratory or Field Work (completed by Premajor Requirement)
IV. Electives 6

College Requirement hours: 6-14

Premajor Requirements

*PHY 231/232/241/242 General University Physics and Laboratory (PHY 231/232/241/242) 10 or with permission of the Director of Undergraduate Studies:

PHY 211/213 General Physics (PHY 211/213) (10)

PHY 228 Optics, Relativity and Thermal Physics 3
CHE 105 General College Chemistry I (CHE 105) 3
CHE 107 General College Chemistry II (CHE 107) 3
*MA 113 Calculus I (MA 113 or MT 175) 4
MA 114 Calculus II (MA 114 or MT 185) 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 3
PHY 535(2) Experimental Physics: Advanced Physics Laboratory 2
MA 213 Calculus III (MA 213) 4
MA 214 Calculus IV (MA 214) 3

Major Core hours: 28

Other Course Work Required for the Major

From the Major Department:

Choose one of the following: PHY 522, 524, 554, 555, 556, 591, 592 3
Choose two lab courses from the following: AST/PHY 395, 402G, 422, 535(1) 3-6

From Outside the Major Department

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

Other Major hours: 13-16

Total Minimum Hours Required for Degree 120

*Course used towards completion of a USP 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 (PHY 231) 4
PHY 241 General University Physics Laboratory (PHY 241) 1
MA 113 Calculus I (MA 113 or MT 175) 4
ENG 104 Writing: An Accelerated Foundational Course 4
University Studies 3

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Second Semester

PHY 228 Optics, Relativity and Thermal Physics	3
MA 114 Calculus II (<i>MA 114 or MT 185</i>)	4
CHE 105 General College Chemistry I (<i>CHE 105</i>)	3
University Studies	6

Sophomore Year

First Semester

Hours

PHY 231 General University Physics (<i>PHY 231</i>)	4
PHY 241 General University Physics Laboratory (<i>PHY 241</i>)	1
MA 213 Calculus III (<i>MA 213</i>)	4
PHY 335 Data Analysis for Physicists	1
CHE 107 General College Chemistry II (<i>CHE 107</i>)	3
Foreign Language	4

Second Semester

PHY 306 Theoretical Methods of Physics	3
PHY 361 Principles of Modern Physics	3
MA 214 Calculus IV (<i>MA 214</i>)	3
Foreign Language	4

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

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
University Studies	3

Second Semester

PHY 535 Experimental Physics: Advanced Physics Laboratory	2
Humanities and Social Sciences	6
Elective	3
University Studies (if needed)	3

*These math courses are suggested courses.

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.