



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.

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.

University Studies Program Requirements

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

USP hours: 24-35

College Requirements

- I. Foreign Language (placement exam recommended)
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

College Requirement hours: 6-14

Premajor Requirements

- \*PHY 231/232/241/242 General University Physics and Laboratory
or with permission of the Director of Undergraduate Studies:
PHY 211/213 General Physics
PHY 228 Optics, Relativity and Thermal Physics
CHE 105 General College Chemistry I
CHE 107 General College Chemistry II
\*MA 113 Calculus I
MA 114 Calculus II

Major Requirements

Major Core Requirements

- PHY 306 Theoretical Methods of Physics
PHY 335 Data Analysis for Physicists

- PHY 361 Principles of Modern Physics
PHY 404G Mechanics
PHY 416G/417G Electricity and Magnetism
PHY 520 Introduction to Quantum Mechanics
PHY 535 Experimental Physics: Atomic and Nuclear
MA 213 Calculus III
MA 214 Calculus IV
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,
AST 591, 592
Choose two lab courses from the following: AST/PHY 395,
402G, 422, 530

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.

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.

Freshman Year

Table with 2 columns: Course Name and Hours. Rows include PHY 231, PHY 241, MA 113, MA 114, ENG 101, University Studies, PHY 228, MA 114, MA 213, CHE 105, ENG 102, University Studies.

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## Sophomore Year

First Semester	Hours
PHY 232 General University Physics .....	4
PHY 242 General University Physics Laboratory .....	1
MA 213 Calculus III <b>or</b> *MA 214 Calculus IV .....	3
PHY 335 Data Analysis for Physicists .....	1
CHE 107 General College Chemistry II .....	3
Foreign Language .....	4
<b>Second Semester</b>	
PHY 306 Theoretical Methods of Physics .....	3
PHY 361 Principles of Modern Physics .....	3
MA 214 Calculus IV <b>or</b> AST 310 Topics in Astronomy and Astrophysics (Subtitle required) <b>or</b> *CS 115 Introduction to Computer Programming .....	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 535 Experimental Physics: Atomic and Nuclear .....	2
Foreign Language .....	3
COM 181 Basic Public Speaking .....	3

## Senior Year

First Semester	Hours
PHY 522 Thermodynamics and Statistical Physics .....	3
PHY 530 Experimental Physics: Optics and Spectroscopy .....	2
PHY 554 Fundamentals of Atomic Physics <b>or</b> PHY 591 Astrophysics I – Stars <b>or</b> PHY 592 Astrophysics II – Galaxies and Interstellar Material .....	3
Elective .....	3
University Studies .....	3
<b>Second Semester</b>	
PHY 524 Solid State Physics <b>or</b> PHY 555 Fundamental Nuclear Physics <b>or</b> PHY 556 Fundamental Particle Physics .....	3
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.*