



# 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 page 100 of the 2006-2007 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: ..... 18-30

### Graduation Writing Requirement

After attaining sophomore status, students must complete a Graduation Writing Requirement course. See "University Writing Requirement" on page 70 of the 2006-2007 UK Bulletin.

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 .... 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 ..... 3
- PHY 535(2) Experimental Physics: Advanced Physics Laboratory ..... 2
- MA 213 Calculus III ..... 4
- MA 214 Calculus IV ..... 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](http://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.

#### Freshman Year

First Semester	Hours
PHY 231 General University Physics	4
PHY 241 General University Physics Laboratory	1
MA 113 Calculus I	4
ENG 104 Writing: An Accelerated Foundational Course	4
University Studies	3

#### Second Semester

PHY 228 Optics, Relativity and Thermal Physics	3
MA 114 Calculus II	4
CHE 105 General College Chemistry I	3
University Studies	6

# Physics (B.S.) • 2

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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 .....	4
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 .....	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
<b>Second Semester</b>	
PHY 417G Electricity and Magnetism .....	3
PHY 520 Introduction to Quantum Mechanics .....	3
PHY 535(2) Experimental Physics: Advanced Physics Laboratory .....	2
Foreign Language .....	3
Elective .....	3

## Senior Year

First Semester	Hours
PHY 522 Thermodynamics and Statistical Physics .....	3
PHY 554 Fundamentals of Atomic Physics .....	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.*