



# Pittsburg State University College of Arts and Sciences Program Guide

Degree: Bachelor of Science  
Major: Physics  
Emphasis/Option: Astrophysics  
Minor (if required):

As of Fall 2014

## General Education Component (36-43 hours)

Basic Skills\*\* (9 hours)

General Education Electives (30-37 hours)

Sciences\*\* (4-5 hours)

Social Studies (3 hours)

Political Studies (3 hours)

Producing and Consuming\*\* (2-3 hours)

Fine Arts and Aesthetic Studies (2-3 hours)

Cultural Studies (3-5 hours)

Health and Well-Being (4-6 hours)

Human Heritage (6 hours)

\*\* MATH 150, CIS 230 or CIS 240, and PHYS 104/130 or PHYS 100/130 required in the major partially fulfill General Education requirements.

## Core Physics Courses (35 hours)

### (a) Physics

PHYS 110: Introductory Mathematical Physics ..... 1  
PHYS 500: Mathematical Physics ..... 3  
PHYS 510: Analytical Mechanics I ..... 3  
PHYS 512: Electricity and Magnetism I ..... 3  
PHYS 516: Modern Physics I ..... 3  
PHYS 530: Intermediate Physics Laboratory (\_\_\_\_) ..... 3  
PHYS 699: Senior Review and Assessment ..... 1

### (b) Other

CHEM 215: General Chemistry I ..... 3  
and CHEM 216: General Chemistry I Laboratory ..... 2  
CHEM 225: General Chemistry II ..... 3  
and CHEM 226: General Chemistry II Laboratory ..... 2  
MATH 150: Calculus I ..... 5  
CIS 230: Visual Basic Programming ..... 3  
or CIS 240: C ++ Programming ..... 3

## Astrophysics Emphasis (38 hours)

### (a) Physics

PHYS 104: Engineering Physics I ..... 4  
and PHYS 130: Elementary Physics Laboratory I ..... 1  
PHYS 105: Engineering Physics II ..... 4  
and PHYS 132: Engineering Physics Laboratory II ..... 1  
PHYS 502: Computational Physics ..... 3  
PHYS 518: Physical Optics ..... 3  
PHYS 575: Introductory Astrophysics ..... 3  
PHYS 691: Senior Research Project ..... 2  
PHYS 716: Introductory Quantum Mechanics ..... 3  
PHYS 775: High-Energy Astrophysics ..... 3

### (b) Mathematics

MATH 155: Calculus II ..... 5  
MATH 253: Calculus III ..... 3  
MATH 553: Differential Equations ..... 3

The Astrophysics emphasis area is for students seeking further study in graduate school. A minor in Mathematics is recommended.

# GENERAL EDUCATION REQUIREMENTS

(30-37 hrs.)

## Basic Skills 9 hours

COMM 207	Speech Communication.....	3
ENGL 101	English Composition.....	3
ENGL 190	Honors English Composition.....	3
OR ENGL 299	Introduction to Research Writing.....	3

## Sciences 8-9 hours

Natural Sciences (*Select one*)

BIOL 111/112	General Biology and Laboratory.....	5
BIOL 113	Environmental Life Science.....	4
BIOL 211	Principles of Biology I.....	4

## Social Studies 3 hours

SOC 100	Introduction to Sociology.....	3
WOMEN 200	Introduction to Women's Studies.....	3

## Political Studies 3 hours

POLS 101	U.S. Politics.....	3
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## Producing and Consuming 5-6 hours

(*Select one from two of the following three categories*)

Economy

ECON 191	Issues in Today's Economy.....	3
FCS 230	Consumer Ed. and Personal Finance.....	3

Technology

EET 247	Computer Programming for Electronic Sys.....	3
GT 190	Introduction to Technological Systems.....	2
GT 350	Technology and Civilization.....	3
EDTH 330	Technology for the Classroom.....	3
TE 551	Integrated Technology for Educators.....	3
TM 350	Societal Influence of Technology.....	3

## Fine Arts and Aesthetic Studies (*Select one*)..... 2-3 hours

ART 155	Printmaking and Paper Arts.....	3
ART 178	Introduction to the Visual Arts.....	3
ART 188	The Designed World.....	3
ART 217	Crafts I.....	3
ART 222	Jewelry Design I.....	3
ART 233	Drawing I.....	3
ART 244	Ceramics I.....	3
ART 266	Sculpture I.....	3
ART 277	Painting I.....	3
ART 288	Introduction to Art History I.....	3
ART 289	Introduction to Art History II.....	3
ART 311	Art Education.....	3
COMM 105	Performance Appreciation.....	3
COMM 205	Performance Studies.....	3
COMM 295	Theatre History.....	3
ENGL 250	Introduction to Creative Writing.....	3
HHP 151	Dance Appreciation.....	3
MUSIC 120	Music Appreciation.....	3
MUSIC 121	Introduction to Music Literature.....	2
MUSIC 321	History of Music.....	3

## Cultural Studies (*Select one*) 3-5 hours

MLL 114	Chinese Language and Culture I.....	5
MLL 124	French Language and Culture I.....	5
MLL 154	Spanish Language and Culture I.....	5
MLL 184	Russian Language and Culture I.....	5
MLL 194	Korean Language and Culture I.....	5
GEOG 106	World Regional Geography.....	3
GEOG 300	Elements of Geography.....	3
GEOG 304	Human Geography.....	3
WOMEN 399	Global Women's Issues.....	3

## Health and Well Being 4-6 hours

Psychological

PSYCH 155	General Psychology.....	3
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Physical (*Select one*)

FCS 203	Nutrition and Health.....	3
FCS 301	Nutrition.....	3
HHP 150	Lifetime Fitness Concepts.....	1
NURS 303	Introduction to Public Health.....	3

## Human Heritage 6 hours

(*Select one from two of the following three categories*)

History

HIST 101	World History to 1500.....	3
HIST 102	World History from 1500.....	3
HIST 201	American History to 1865.....	3
HIST 202	American History from 1865.....	3

Literature

ENGL 113	General Literature.....	3
ENGL 114	General Literature(Genre).....	3
ENGL 116	General Literature(Theme).....	3
ENGL 315	Mythology.....	3
ENGL 320	Literature and Film.....	3

Philosophy

PHIL 103	Introduction to Philosophy.....	3
PHIL 105	Ethics.....	3
PHIL 111	Ethics: Applied Emphasis(____).....	3
PHIL 112	Biomedical Ethics.....	3
PHIL 113	Business Ethics.....	3
PHIL 114	Environmental Ethics.....	3
PHIL 207	Critical Thinking.....	3
PHIL 208	Logic.....	3
PHIL 231	World Religions.....	3

Notes

NOTE: The information contained herein is intended to be used for the planning of a student's academic program and does not constitute a contract. While this guide was prepared with the latest information, courses, graduation requirements, and curricula are subject to change.

When a student attains 85 semester hours of credit (including current enrollment) the student must apply for a degree check in the Office of the Registrar (Degree Checking Section), Room 102 Russ Hall.

**MINIMUM GENERAL REQUIREMENTS:** The minimum requirements for graduation include 124 semester hours of which 60 hours must be from a four year university. In addition, 45 semester hours must be upper division and 30 hours in residence at PSU (including 24 of the last 30). Minimum GPA for non-education degree is 2.0 overall [2.0 in major], secondary education degree is 2.5 overall [2.75 in major], and early/late childhood/unified degree is 2.80 overall [3.0 in major]. A minimum GPA of 2.0 in any minor and in residence coursework is required. General Education and all degree requirements are provided in the online catalog. Refer to individual departments for specific requirements.