PLANETARY SCIENCE AND ASTRONOMY, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Degree Requirements

For the Bachelor of Science degree in Planetary Science and Astronomy, a minimum of 122 credits is required:

Requirement	Credits
General Education	45
Requirements for the Major	95-99

18 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GWS courses.

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (http://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required.)

- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Knowledge Domains

- **Arts (GA):** 6 credits
- **Health and Wellness (GHW):** 3 credits
- **Humanities (GH):** 6 credits
- **Social and Behavioral Sciences (GS):** 6 credits
- **Natural Sciences (GN):** 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)

- **Inter-Domain or Approved Linked Courses:** 6 credits

University Degree Requirements

First Year Engagement

All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement

6 credits are required and may satisfy other requirements

- United States Cultures: 3 credits
- International Cultures: 3 credits

Writing Across the Curriculum

3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits

A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work

Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition

The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

Requirements for the Major

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

Code	Title	Credits
Prescribed Courses		
CHEM 111	Experimental Chemistry I	1
CHEM 113	Experimental Chemistry II	1
ENGL 202C	Effective Writing: Technical Writing	3
MATH 141	Calculus with Analytic Geometry II	4
Prescribed Courses: Require a grade of C or better		
ASTRO 401	Fundamentals of Planetary Science and Astronomy	4
ASTRO 402W	Astronomical Telescopes, Techniques, and Data Analysis	3
BIOL 110	Biology: Basic Concepts and Biodiversity	4
BIOL/GEOSC 474	Astrobiology	3
CHEM 110	Chemical Principles I	3
CHEM 112	Chemical Principles II	3
MATH 140	Calculus With Analytic Geometry I	4

STAT 200	Elementary Statistics	4
Additional Courses		
PHYS 211	General Physics: Mechanics	4
or PHYS 250	Introductory Physics I	
PHYS 212	General Physics: Electricity and Magnetism	4
or PHYS 251	Introductory Physics II	
Select one of the following:		3
ASTRO 1	Astronomical Universe	
ASTRO 5	The Sky and Planets	
ASTRO 6	Stars, Galaxies, and the Universe	
ASTRO 291	Astronomical Methods and the Solar System	
Select one of the following:		3-4
CMPSC 101	Introduction to Programming	
CMPSC 121	Introduction to Programming Techniques	
CMPSC 201	Programming for Engineers with C++	
CMPSC 202		
CMPSC 203	Introduction to Spreadsheets and Databases	
Select three of the following:		9
ASTRO 120	The Big Bang Universe	
ASTRO 130	Black Holes in the Universe	
ASTRO 140	Life in the Universe	
ASTRO 292	Astronomy of the Distant Universe	
Select one of the following:		3
EARTH 2	The Earth System and Global Change	
GEOSC 1	Physical Geology	
GEOSC 20	Planet Earth	
Select 12 credits of the following:		12
EARTH 100	Environment Earth	
EARTH 103N	Earth in the Future: Predicting Climate Change and Its Impacts Over the Next Century	
EARTH 106	The African Continent: Earthquakes, Tectonics and Geology	
EARTH 150	Dinosaur Extinctions and Other Controversies	
EARTH 402	Modeling the Earth System	
GEOG 160	Mapping Our Changing World	
GEOSC 201	Earth Materials	
GEOSC 202	Chemical Processes in Geology	
GEOSC 203	Physical Processes in Geology	
GEOSC 204	Geobiology	
METEO 101	Understanding Weather Forecasting	
METEO 201	Introduction to Weather Analysis	
Supporting Courses and Related Areas [1]		
Select 11 credits in consultation with adviser from department list		11
Select 9-12 credits from program list of advanced electives		9-12

[1] At least 6 credits from the below categories must be at the 400 level.