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:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>95-99</td>
</tr>
</tbody>
</table>

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.

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
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CHEM 11  Experimental Chemistry I                 1
CHEM 13  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
PHYS 212 General Physics: Electricity and Magnetism 4
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

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

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.

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 (https://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

Planetary Science and Astronomy, B.S.
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.