

EARTH SCIENCE AND POLICY, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

Global climate change and environmental change on a more local scale present major challenges for our future. The solution to these problems requires people with a solid scientific understanding of natural earth/environmental systems, and also an understanding of the social, economic, and political dimensions of these problems. This major is intended to bridge the gap between the physical, natural sciences (the Earth sciences) and the social sciences, with the understanding that intelligent, effective solutions to environmental problems will require people who grasp the scientific and social dimensions of environmental problems. This major is intended to produce graduates who not only grasp these problems, but who can also apply a wide array of quantitative tools and fundamental principles to generate practical solutions.

Students develop a sense of community through a set of common upper level courses and they gain practical experience through a mandatory internship course. A variety of options are offered to enable greater depth of study in aspects of science and policy related to water and land use, climate change, and energy; a general option is also available.

This major will provide an excellent preparation for careers in environmental law, environmental consulting, and nonprofit organizations engaged in the science and policy of environmental issues. This major will also serve as a strong basis for postgraduate studies in environmental science and policy.

Water and Land Use Option

This option is intended to develop a focus on the role of water and land in environmental issues, encompassing scientific, economic, and policy dimensions of groundwater and surface water resources and of land use. The Water and Land Use option is appropriate both for students who intend to pursue postgraduate degrees and for students who want to enter the workforce.

Climate Change Option

This option is intended for students who want to focus on the science and policy related to climate change, including the scientific basis for identifying, understanding, and potentially mitigating climate change. The option also develops a basis for understanding the economic costs and risks related to climate change, as well as the political dimensions. This option is appropriate both for students who intend to pursue postgraduate degrees and for students who want to enter the work force.

Energy Option

This option is designed to provide a focus on aspects of Earth science and policy related to energy, including the origins of energy and mineral resources, the future of these resources, and the alternatives for meeting future needs. This option also provides a focus on the economics of energy systems and the political dimensions of the challenges related to our energy future. The Energy option is appropriate both for students who intend to pursue postgraduate degrees and for students who want to enter the work force.

General Option

This option is intended for students who desire a broad sampling of Earth science as it relates to policy or those who desire to design their own focus within Earth science in consultation with an academic adviser. The General option is appropriate both for students who intend to pursue postgraduate degrees and for students who want to enter the work force.

What is Earth Science and Policy?

The Earth Science and Policy program is designed to help train students to address big picture questions like how to prepare for climate change and how to solve issues affecting communities, such as maintaining sources of clean water and reliable energy. The program is designed to help students develop a more detailed understanding of how scientists from a range of Earth science disciplines—including meteorology, geosciences, and geography—collaborate with government and industry representatives on legislation that can have an impact on local communities, the nation, and the world. The program is ideal for students who want to apply their knowledge of the sciences to help create solutions for pressing problems facing society.

You Might Like This Program If...

- You like to work as part of a team to create solutions.
- You want to address important Earth science-related challenges such as climate change, clean energy, and water resources.
- You are interested in how humans interact with the natural world.
- You like to study about the Earth and its physical and chemical processes.
- You would like to build a solid scientific background to engage in informed discussions about some of the world's most pressing concerns.

Entrance to Major

In order to be eligible for entrance to this major, a student must:

1. attain at least a C (2.00) cumulative grade-point average for all courses taken at the University; and
2. have at least third-semester classification (<https://www.registrar.psu.edu/enrollment/semester-classification.cfm>).

READ SENATE POLICY 37-30: ENTRANCE TO AND CHANGES IN MAJOR PROGRAMS OF STUDY (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/37-00-entrance-to-a-college-or-major/>)

Degree Requirements

For the Bachelor of Science degree in Earth Science and Policy, a minimum of 120 credits is required:

Requirement	Credits
General Education	45
Electives	0-2
Requirements for the Major	106-108

33 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; 9 credits of GWS courses; 3 credits of GH courses; 6 credits of GS 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 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44>).

Common Requirements for the Major (All Options)

Code	Title	Credits
Prescribed Courses		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
CHEM 110	Chemical Principles I	3
CHEM 111	Experimental Chemistry I	1
CHEM 112	Chemical Principles II	3
CHEM 113	Experimental Chemistry II	1
EARTH 400	Earth Sciences Seminar	3
EARTH 495	Internship	3
ECON 102	Introductory Microeconomic Analysis and Policy	3
EMSC 100S	Earth and Mineral Sciences First-Year Seminar ¹	3
GEOG 126	Economic Geography	3
GEOG 364	Spatial Analysis	3
PHIL 118	Environmental Philosophy	3
PLSC 1	American Politics: Principles, Processes and Powers	3
STAT 200	Elementary Statistics	4
<i>Prescribed Courses: Require a grade of C or better</i>		
EARTH 402	Modeling the Earth System	3
EBF 472	Quantitative Analysis in Earth Sciences	3
GEOC 450	Risk Analysis in the Earth Sciences	3
Additional Courses		
CAS 100	Effective Speech	3
	or ENGL 202C Effective Writing: Technical Writing	
CED 201	Introductory Environmental and Resource Economics	3
	or EBF 200 Introduction to Energy and Earth Sciences Economics	
ENGL 15	Rhetoric and Composition	3
	or ENGL 30H Honors Rhetoric and Composition	
GEOC 1	Physical Geology	3
	or GEOC 20 Planet Earth	
MATH 111	Techniques of Calculus II	2-4
	or MATH 141 Calculus with Analytic Geometry II	
PHYS 211	General Physics: Mechanics	4
	or PHYS 250 Introductory Physics I	
<i>Additional Courses: Require a grade of C or better</i>		
Select one of the following:		4
MATH 83	Technical Calculus	
MATH 110	Techniques of Calculus I	
MATH 140	Calculus With Analytic Geometry I	
Select 8 credits of the following:		8
GEOC 201	Earth Materials	
GEOC 202	Chemical Processes in Geology	
GEOC 203	Physical Processes in Geology	

Requirements for the Option

Select an option 27

¹ The following substitutions are allowed for students attending campuses where the indicated course is not offered: CAS 100 or ENGL 202C can be substituted for EMSC 100S.

Requirements for the Option

All options must include one W course.

Water and Land Use Option (27 credits)

Code	Title	Credits
Additional Courses		
Select 3 credits of the following:		3
EARTH 111N	Water: Science and Society	
GEOG 160	Mapping Our Changing World	
SOILS 101	Introductory Soil Science	
Select 12 credits of the following:		12
ERM 300	Basic Principles and Calculations in Environmental Analysis	
FOR 455	Remote Sensing and Spatial Data Handling	
FOR 470	Watershed Management	
GEOG 363	Geographic Information Systems	
GEOC 340	Geomorphology	
GEOC 402Y	Natural Disasters	
GEOC 409W	Geomicrobiology	
GEOC 413W	Techniques in Environmental Geochemistry	
GEOC 452	Hydrogeology	
GEOC 483	Environmental Geophysics	
SOILS 422	Natural Resources Conservation and Community Sustainability	
SOILS 450	Environmental Geographic Information Systems	
Select a total of 12 credits of the following:		12
Select 3-6 credits of the following:		
CED 429	Natural Resource Economics	
CED 431		
ECON 302	Intermediate Microeconomic Analysis	
Select 6-9 credits of the following:		
CED 309	Land Economics and Policy	
CED 409	Land Use Planning and Procedure	
CED 410	The Global Seminar	
GEOG 430	Human Use of Environment	
GEOG 431	Geography of Water Resources	
GEOG 434	Politics of the Environment	
GEOG 439	Property and the Global Environment	
PLSC/STS 460	Science, Technology, and Public Policy	
PUBPL 481	Seminar in Environmental Policy	

Climate Change Option (27 credits)

Code	Title	Credits
Additional Courses		
Select 3 credits of the following:		3
EARTH 2	The Earth System and Global Change	
GEOG 110	Climates of the World	
METEO 3	Weather Revealed: Introductory Meteorology	

METEO 4	Weather and Risk	
Select 12 credits of the following:		12
GEOG 310	Introduction to Global Climatic Systems	
GEOG 412		
GEOSC 320	Geology of Climate Change	
METEO 201	Introduction to Weather Analysis	
METEO 466	Planetary Atmospheres	
Select a total of 12 credits of the following:		12
Select 3-6 credits of the following:		
CED 429	Natural Resource Economics	
CED 431		
ECON 302	Intermediate Microeconomic Analysis	
Select 6-9 credits of the following:		
CED 230	Development Issues in the Global Context	
CED 410	The Global Seminar	
EMSC/STS/ SOC 420	Energy and Modern Society	
GEOG 430	Human Use of Environment	
GEOG 434	Politics of the Environment	
GEOG 438W	Human Dimensions of Global Warming	
PLSC/STS 460	Science, Technology, and Public Policy	
STS 201	Climate Change, Energy, and Biodiversity	

Energy Option (27 credits)

Code	Title	Credits
Additional Courses		
EBF 484	Energy Economics	3
or GEOG 424	Geography of the Global Economy	
Select 3 credits of the following:		3
EARTH 100	Environment Earth	
EGEE 101	Energy and the Environment	
EGEE 102	Energy Conservation for Environmental Protection	
Select 9 credits of the following:		9
EGEE 302	Principles of Energy Engineering	
EGEE 401	Energy in a Changing World	
EGEE 412	Green Engineering & Environmental Compliance	
GEOSC 451	Natural Resources: Origins, Economics and Environmental Impact	
GEOSC 454	Geology of Oil and Gas	
GEOSC 483	Environmental Geophysics	
Select 12 credits of the following:		12
CED 230	Development Issues in the Global Context	
CED 410	The Global Seminar	
EMSC/STS/ SOC 420	Energy and Modern Society	
GEOG 430	Human Use of Environment	
GEOG 434	Politics of the Environment	
GEOG 439	Property and the Global Environment	
GEOG 438W	Human Dimensions of Global Warming	
PLSC/STS 460	Science, Technology, and Public Policy	
STS 201	Climate Change, Energy, and Biodiversity	

General Option (27 credits)

Code	Title	Credits
Additional Courses		
Select 3 credits of the following:		3
EARTH 2	The Earth System and Global Change	
EARTH 100	Environment Earth	
EARTH 111N	Water: Science and Society	
EGEE 101	Energy and the Environment	
GEOG 10	Physical Geography: An Introduction	
GEOG 30N	Environment and Society in a Changing World	
GEOG 160	Mapping Our Changing World	
METEO 3	Weather Revealed: Introductory Meteorology	
METEO 4	Weather and Risk	
SOILS 101	Introductory Soil Science	
Select 12 credits of the following:		12
EGEE 302	Principles of Energy Engineering	
EGEE 412	Green Engineering & Environmental Compliance	
ERM 300	Basic Principles and Calculations in Environmental Analysis	
FOR 455	Remote Sensing and Spatial Data Handling	
FOR 470	Watershed Management	
GEOG 310	Introduction to Global Climatic Systems	
GEOG 363	Geographic Information Systems	
GEOG 412		
GEOSC 320	Geology of Climate Change	
GEOSC 340	Geomorphology	
GEOSC 402Y	Natural Disasters	
GEOSC 409W	Geomicrobiology	
GEOSC 413W	Techniques in Environmental Geochemistry	
GEOSC 451	Natural Resources: Origins, Economics and Environmental Impact	
GEOSC 452	Hydrogeology	
GEOSC 454	Geology of Oil and Gas	
GEOSC 483	Environmental Geophysics	
METEO 466	Planetary Atmospheres	
SOILS 422	Natural Resources Conservation and Community Sustainability	
SOILS 450	Environmental Geographic Information Systems	
Select a total of 12 credits of the following:		12
Select 3-6 credits of the following:		
CED 429	Natural Resource Economics	
CED 431		
EBF 484	Energy Economics	
ECON 302	Intermediate Microeconomic Analysis	
GEOG 424	Geography of the Global Economy	
Select 6-9 credits of the following:		
CED 230	Development Issues in the Global Context	
CED 309	Land Economics and Policy	
CED 409	Land Use Planning and Procedure	
CED 410	The Global Seminar	
EMSC/STS/ SOC 420	Energy and Modern Society	
ERM 411	Legal Aspects of Resource Management	

GEOG 430	Human Use of Environment
GEOG 431	Geography of Water Resources
GEOG 434	Politics of the Environment
GEOG 438W	Human Dimensions of Global Warming
GEOG 439	Property and the Global Environment
PLSC 403	The Legislative Process
PLSC 412	International Political Economy
PLSC 426	Political Parties and Interest Groups
PLSC/STS 460	Science, Technology, and Public Policy
PLSC 471	American Constitutional Law
PLSC 490	Policy Making and Evaluation
STS 201	Climate Change, Energy, and Biodiversity

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 and Inter-Domain courses do not meet this requirement.)

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

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)

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

Integrative Studies

- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration

- **GN**, may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher: 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 (<https://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.

Program Learning Objectives

- To produce graduates who can analyze, understand, and utilize data and model results relevant to the Earth and environmental sciences.
- To produce graduates who can make decisions regarding environmental problems based on fundamental knowledge of the mathematics, science, geography, economics, and political science.
- To produce graduates who possess a broad understanding of the impact of Earth system processes and resources on humans and the impact of human activities on Earth systems.
- To produce graduates who can communicate the results of scientific inquiry through writing and speaking to an audience with diverse backgrounds and perspectives.

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The

advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

University Park

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Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 academic year. To access previous years' suggested academic plans, please visit the archive (<https://bulletins.psu.edu/undergraduate/archive/>) to view the appropriate Undergraduate Bulletin edition (*Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin*).

General Option: Earth Science and Policy, B.S. at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits Spring	Credits
GEOSC 1 or 20	3 MATH 111, 141, or 141G	4
CHEM 110 (GN) [†]	3 Elective (2 cr needed if schedule MATH 111)	0
MATH 83, 110, 140, or 140G (GQ) ^{*†}	4 CHEM 112	3
CHEM 111 (GN) [†]	1 CHEM 113	1
EMSC 100S (GWS) ^{*††}	3 PLSC 1 (GS) [†]	3
	ENGL 15, 30H, or ESL 15 (GWS) [†]	3
	14	14

Second Year

Fall	Credits Spring	Credits
PHYS 211 or 250 (GN) [†]	4 STAT 200 (GQ) ^{*†}	4
ECON 102 (GS) [†]	3 GEOSC 201, 202, 203, or 204 [*]	4
BIOL 110 (GN) [†]	4 PHIL 118, 133N, or METEO 133N (GH) [†]	3
GEOG 126 or 326 (GS) [†]	3 CED 201 or EBF 200	3
General Education- Health and Wellness (GHW)	1.5 General Education- Health and Wellness (GHW)	1.5
	15.5	15.5

Third Year

Fall	Credits Spring	Credits
GEOSC 201, 202, 203, or 204 [*]	4 EARTH 400	3
GEOG 364	3 Option elective	3
Option elective	3 Option elective	3
CAS 100 or ENGL 202C ^{*††}	3 Option elective	3
EARTH 402 [*]	3 General education- Knowledge domain	3
	16	15

Fourth Year

Fall	Credits Spring	Credits
EARTH 495	3 Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3 Option elective	3
GEOSC 450 [*]	3 Option elective	3
Option elective	3 Option elective	3
General education- Knowledge domain	3 General Education- Knowledge domain	3
	15	15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

General Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 2 GN(3), EARTH 100 GN(3), EARTH 111 GN;US(3), EGEE 101 GN(3), GEOG 10 GN (3), GEOG 30N GN/GS(3), GEOG 160 GS(3), METEO 3 GN(3), METEO 4 GN(3), SOILS 101 GN(3)

Select 12 credits from: ERM 300(3), EGEE 302(3), EGEE 412(3), FOR 455(3), FOR 470(3), GEOG 310(3), GEOG 363(3), GEOG 412(3), GEOSC 320(3), GEOSC 340(3), GEOSC 402Y IL(3), GEOSC 409W(3), GEOSC 413W(3), GEOSC 451(3), GEOSC 452(3), GEOSC 454(3), GEOSC 483(3), METEO 466(3), SOILS 415(3), SOILS 422(3), SOILS 450(3)

Select a total of 12 credits from the following:

3 to 6 credits from: CED 429(3), CED 431(3), EBF 484(3), ECON 302 GS(3), GEOG 424 US;IL(3)

6 to 9 credits from: CED 230(3), CED 309(3), CED 409(3), CED 410(3), ERM 411(3), GEOG 430(3), GEOG 431(3), GEOG 434(3), GEOG 438W(3), GEOG 439(3), EMSC/STS/SOC 420(3), PLSC 403(3), PLSC 412(3), PLSC 426(3), PLSC/STS 460(3), PLSC 471(3), PLSC 490(3), STS 201(3).

Water and Land Use Option: Earth Science and Policy, B.S. at University Park Campus

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First Year

Fall	Credits	Spring	Credits
GEOSC 1 or 20	3	MATH 111, 141, or 141G	4
CHEM 110 (GN) [†]	3	Elective (2 cr needed if schedule MATH 111)	0
MATH 83, 110, 140, or 140G (GQ) ^{*†}	4	CHEM 112	3
CHEM 111 (GN) [†]	1	CHEM 113	1
EMSC 100S (GWS) ^{††1}	3	PLSC 1 (GS) [†]	3
		ENGL 15, 30H, or ESL 15 (GWS) [†]	3
	14		14

Second Year

Fall	Credits	Spring	Credits
PHYS 211 or 250 (GN) [†]	4	STAT 200 (GQ) ^{††}	4
ECON 102 (GS) [†]	3	GEOSC 201, 202, 203, or 204 [*]	4
BIOL 110 (GN) [†]	4	PHIL 118, 133N, or METEO 133N (GH) [†]	3
GEOG 126 or 326 (GS) [†]	3	CED 201 or EBF 200	3
General Education- Health and Wellness (GHW)	1.5	General Education- Health and Wellness (GHW)	1.5
	15.5		15.5

Third Year

Fall	Credits	Spring	Credits
GEOSC 201, 202, 203, or 204 [*]	4	EARTH 400	3
GEOG 364	3	Option elective	3
Option elective	3	Option elective	3
CAS 100 or ENGL 202C ^{††}	3	Option elective	3
EARTH 402 [*]	3	General education- Knowledge domain	3
	16		15

Fourth Year

Fall	Credits	Spring	Credits
EARTH 495	3	Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3	Option elective	3
GEOSC 450 [*]	3	Option elective	3
Option elective	3	Option elective	3
General education- Knowledge domain	3	General Education- Knowledge domain	3
	15		15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

Water and Land Use Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 111 GN;US(3), GEOG 160 GS(3), SOILS 101 GN(3)

Select 12 credits from: ERM 300(3), FOR 455(3), FOR 470(3), GEOG 363(3), GEOSC 340(3), GEOSC 402Y IL(3), GEOSC 409W(3), GEOSC 413W(3), GEOSC 452(3), GEOSC 483(3), SOILS 415(3), SOILS 422(3), SOILS 450(3)

Select a total of 12 credits from the following:

3 to 6 credits from: CED 429(3), CED 431(3), ECON 302 GS(3)

6 to 9 credits from: CED 309(3), CED 409(3), CED 410(3), GEOG 430(3), GEOG 431(3), GEOG 434(3), GEOG 439(3), PLSC/STS 460(3), PUBPL 481(3)

Climate Change Option: Earth Science and Policy, B.S. at University Park Campus

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First Year

Fall	Credits	Spring	Credits
GEOSC 1 or 20	3	MATH 111, 141, or 141G	4
CHEM 110 (GN) [†]	3	Elective (2 cr needed if schedule MATH 111)	0
MATH 83, 110, 140, or 140G (GQ) ^{*†}	4	CHEM 112	3
CHEM 111 (GN) [†]	1	CHEM 113	1
EMSC 100S (GWS) ^{††1}	3	PLSC 1 (GS) [†]	3
		ENGL 15, 30H, or ESL 15 (GWS) [†]	3
	14		14

Second Year

Fall	Credits	Spring	Credits
PHYS 211 or 250 (GN) [†]	4	STAT 200 (GQ) ^{††}	4
ECON 102 (GS) [†]	3	GEOSC 201, 202, 203, or 204 [*]	4
BIOL 110 (GN) [†]	4	PHIL 118, 133N, or METEO 133N (GH) [†]	3
GEOG 126 or 326 (GS) [†]	3	CED 201 or EBF 200	3
General Education- Health and Wellness (GHW)	1.5	General Education- Health and Wellness (GHW)	1.5
	15.5		15.5

Third Year

Fall	Credits	Spring	Credits
GEOSC 201, 202, 203, or 204 [*]	4	EARTH 400	3
GEOG 364	3	Option elective	3
Option elective	3	Option elective	3
CAS 100 or ENGL 202C ^{††}	3	Option elective	3
EARTH 402 [*]	3	General education- Knowledge domain	3
	16		15

Fourth Year

Fall	Credits	Spring	Credits
EARTH 495	3	Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3	Option elective	3
GEOSC 450 [*]	3	Option elective	3
Option elective	3	Option elective	3
General education- Knowledge domain	3	General Education- Knowledge domain	3
	15		15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

Climate Change Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 2 GN(3), GEOG 110 GN(3), METEO 3 GN(3), METEO 4 GN(3)

Select 12 credits from: GEOG 310(3), GEOG 412(3), GEOSC 320(3), GEOSC/METEO 475(3), METEO 201(3), METEO 466(3)

Select a total of 12 credits from the following:

3 to 6 credits from: CED 429(3), CED 431(3), ECON 302(3)

6 to 9 credits from: CED 230(3), CED 410(3), EMSC/STS/SOC 420(3), GEOG 430(3), GEOG 434(3), GEOG 438W(3), PLSC/STS 460(3), STS 201(3)

Energy Option: Earth Science and Policy, B.S. at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
GEOSC 1 or 20	3	MATH 111, 141, or 141G	4
CHEM 110 (GN) [†]	3	Elective (2 cr needed if schedule MATH 111)	0
MATH 83, 110, 140, or 140G (GQ) ^{*†}	4	CHEM 112	3
CHEM 111 (GN) [†]	1	CHEM 113	1
EMSC 100S (GWS) ^{††1}	3	PLSC 1 (GS) [†]	3
		ENGL 15, 30H, or ESL 15 (GWS) [†]	3
	14		14

Second Year

Fall	Credits	Spring	Credits
PHYS 211 or 250 (GN) [†]	4	STAT 200 (GQ) ^{††}	4
ECON 102 (GS) [†]	3	GEOSC 201, 202, 203, or 204 [*]	4
BIOL 110 (GN) [†]	4	PHIL 118, 133N, or METEO 133N (GH) [†]	3
GEOG 126 or 326 (GS) [†]	3	CED 201 or EBF 200	3
General Education- Health and Wellness (GHW)	1.5	General Education- Health and Wellness (GHW)	1.5
	15.5		15.5

Third Year

Fall	Credits	Spring	Credits
GEOSC 201, 202, 203, or 204 [*]	4	EARTH 400	3
GEOG 364	3	Option elective	3
Option elective	3	Option elective	3
CAS 100 or ENGL 202C ^{††}	3	Option elective	3
EARTH 402 [*]	3	General education- Knowledge domain	3
	16		15

Fourth Year

Fall	Credits	Spring	Credits
EARTH 495	3	Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3	Option elective	3
GEOSC 450 [*]	3	Option elective	3
Option elective	3	Option elective	3
General education- Knowledge domain	3	General Education- Knowledge domain	3
	15		15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

Energy Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 100 GN(3), EGEE 101 GN(3), EGEE 102 GN(3)

Select 9 credits from: EGEE 302(3), EGEE 401(3), EGEE 412(3), GEOSC 451(3), GEOSC 454(3), GEOSC 483(3)

Select 3 credits from: EBF 484(3), GEOG 424 US;IL(3)

Select 12 credits from: CED 230(3), CED 410(3), EMSC/STS/SOC 420(3), GEOG 430(3), GEOG 434(3), GEOG 438W(3), GEOG 439(3), PLSC/ STS 460(3), STS 201 GN(3)

General Option: Earth Science and Policy, B.S. at Commonwealth Campuses

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits Spring	Credits
ENGL 15, 30H, or ESL 15 (GWS) [‡]	3 MATH 111 or 141	4
ECON 102 [†]	3 Elective (2 cr needed if schedule MATH 111)	0
MATH 110, 83, or 140 (GQ) ^{*††}	4 CHEM 112	3
CHEM 110 (GN) [†]	3 CHEM 113	1
CHEM 111 [†]	1 PLSC 1 (GS) [†]	3
	General Education- Knowledge Domain	3
	14	14

Second Year

Fall	Credits Spring	Credits
PHYS 211 or 250 (GN) [†]	4 GEOSC 1 or 20	3
BIOL 110 (GN) [†]	4 STAT 200 (GQ) ^{††}	4
GEOG 126 (GS) [†]	3 PHIL 118, 133N, or METEO 133N (GH) [†]	3
CAS 100, CAS 100A, CAS 100B, or CAS 100C ^{†1}	3 ENGL 202C ^{†1}	3
General Education- Health and Wellness (GHW)	1.5 General Education- Health and Wellness (GHW)	1.5
	15.5	14.5

Third Year

Fall	Credits Spring	Credits
EARTH 402 [*]	3 EARTH 400	3
GEOSC 201, 202, 203, or 204 [*]	4 GEOSC 201, 202, 203, or 204 [*]	4
GEOG 364	3 Option elective	3
Option elective	3 Option elective	3
CED 201 or EBF 200	3 Option elective	3
	16	16

Fourth Year

Fall	Credits Spring	Credits
EARTH 495	3 Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3 Option elective	3
GEOSC 450 [*]	3 Option elective	3
Option elective	3 Option elective	3
General education- Knowledge domain	3 General Education- Knowledge domain	3
	15	15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), or CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

General Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 2 GN(3), EARTH 100 GN(3), EARTH 111 GN;US(3), EGEE 101 GN(3), GEOG 10 GN (3), GEOG 30N GN/GS(3), GEOG 160 GS(3), METEO 3 GN(3), METEO 4 GN(3), SOILS 101 GN(3)

Select 12 credits from: ERM 300(3), EGEE 302(3), EGEE 412(3), FOR 455(3), FOR 470(3), GEOG 310(3), GEOG 363(3), GEOG 412(3), GEOSC 320(3), GEOSC 340(3), GEOSC 402Y IL(3), GEOSC 409W(3), GEOSC 413W(3), GEOSC 451(3), GEOSC 452(3), GEOSC 454(3), GEOSC 483(3), METEO 466(3), SOILS 415(3), SOILS 422(3), SOILS 450(3)

Select a total of 12 credits from the following:

3 to 6 credits from: CED 429(3), CED 431(3), EBF 484(3), ECON 302 GS(3), GEOG 424 US;IL(3)

6 to 9 credits from: CED 230(3), CED 309(3), CED 409(3), CED 410(3), ERM 411(3), GEOG 430(3), GEOG 431(3), GEOG 434(3), GEOG 438(3), GEOG 439(3), EMSC/STS/SOC 420(3), PLSC 403(3), PLSC 412(3), PLSC 426(3), PLSC/STS 460(3), PLSC 471(3), PLSC 490(3), STS 201(3)

Water and Land Use Option: Earth Science and Policy, B.S. at Commonwealth Campuses

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits Spring	Credits
ENGL 15, 30H, or ESL 15 (GWS) [‡]	3 MATH 111 or 141	4
ECON 102 [†]	3 Elective (2 cr needed if schedule MATH 111)	0
MATH 110, 83, or 140 (GQ) ^{*††}	4 CHEM 112	3
CHEM 110 (GN) [†]	3 CHEM 113	1
CHEM 111 [†]	1 PLSC 1 (GS) [†]	3
	General Education- Knowledge Domain	3
	14	14

Second Year

Fall	Credits Spring	Credits
PHYS 211 or 250 (GN) [†]	4 GEOSC 1 or 20	3
BIOL 110 (GN) [†]	4 STAT 200 (GQ) ^{††}	4
GEOG 126 (GS) [†]	3 PHIL 118, 133N, or METEO 133N (GH) [†]	3
CAS 100, CAS 100A, CAS 100B, or CAS 100C ^{†1}	3 ENGL 202C ^{††1}	3
General Education- Health and Wellness (GHW)	1.5 General Education- Health and Wellness (GHW)	1.5
	15.5	14.5

Third Year

Fall	Credits Spring	Credits
EARTH 402 [*]	3 EARTH 400	3
GEOSC 201, 202, 203, or 204 [*]	4 GEOSC 201, 202, 203, or 204 [*]	4
GEOG 364	3 Option elective	3
Option elective	3 Option elective	3
CED 201 or EBF 200	3 Option elective	3
	16	16

Fourth Year

Fall	Credits Spring	Credits
EARTH 495	3 Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3 Option elective	3
GEOSC 450 [*]	3 Option elective	3
Option elective	3 Option elective	3
General education- Knowledge domain	3 General Education- Knowledge domain	3
	15	15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), or CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

Water and Land Use Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 111 GN;US(3), GEOG 160 GS(3), SOILS 101 GN(3)

Select 12 credits from: ERM 300(3), FOR 455(3), FOR 470(3), GEOG 363(3), GEOSC 340(3), GEOSC 402Y IL(3), GEOSC 409W(3), GEOSC 413W(3), GEOSC 452(3), GEOSC 483(3), SOILS 415(3), SOILS 422(3), SOILS 450(3)

Select a total of 12 credits from the following:

3 to 6 credits from: CED 429(3), CED 431(3), ECON 302 GS(3)

6 to 9 credits from: CED 309(3), CED 409(3), CED 410(3), GEOG 430(3), GEOG 431(3), GEOG 434(3), GEOG 439(3), PLSC/STS 460(3), PUBPL 481(3)

Climate Change Option: Earth Science and Policy, B.S. at Commonwealth Campuses

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits Spring	Credits
ENGL 15, 30H, or ESL 15 (GWS) [‡]	3 MATH 111 or 141	4
ECON 102 [†]	3 Elective (2 cr needed if schedule MATH 111)	0
MATH 110, 83, or 140 (GQ) ^{*††}	4 CHEM 112	3
CHEM 110 (GN) [†]	3 CHEM 113	1
CHEM 111 [†]	1 PLSC 1 (GS) [†]	3
	General Education- Knowledge Domain	3
	14	14

Second Year

Fall	Credits Spring	Credits
PHYS 211 or 250 (GN) [†]	4 GEOSC 1 or 20	3
BIOL 110 (GN) [†]	4 STAT 200 (GQ) ^{††}	4
GEOG 126 (GS) [†]	3 PHIL 118, 133N, or METEO 133N (GH) [†]	3
CAS 100, CAS 100A, CAS 100B, or CAS 100C ^{†1}	3 ENGL 202C ^{††1}	3
General Education- Health and Wellness (GHW)	1.5 General Education- Health and Wellness (GHW)	1.5
	15.5	14.5

Third Year

Fall	Credits Spring	Credits
EARTH 402 [*]	3 EARTH 400	3
GEOSC 201, 202, 203, or 204 [*]	4 GEOSC 201, 202, 203, or 204 [*]	4
GEOG 364	3 Option elective [*]	3
Option elective	3 Option elective	3
CED 201 or EBF 200	3 Option elective	3
	16	16

Fourth Year

Fall	Credits Spring	Credits
EARTH 495	3 Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3 Option elective	3
GEOSC 450 [*]	3 Option elective	3
Option elective	3 Option elective	3
General education- Knowledge domain	3 General Education- Knowledge domain	3
	15	15

Total Credits 120

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

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General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

Climate Change Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 2 GN(3), GEOG 110 GN(3), METEO 3 GN(3), METEO 4 GN(3)

Select 12 credits from: GEOG 310(3), GEOG 412(3), GEOSC 320(3), GEOSC/METEO 475(3), METEO 201(3), METEO 466(3)

Select a total of 12 credits from the following:

3 to 6 credits from: CED 429(3), CED 431(3), ECON 302(3)

6 to 9 credits from: CED 230(3), CED 410(3), EMSC/STS/SOC 420(3), GEOG 430(3), GEOG 434(3), GEOG 438W(3), PLSC/STS 460(3), STS 201(3)

Energy Option: Earth Science and Policy, B.S. at Commonwealth Campuses

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits Spring	Credits
ENGL 15, 30H, or ESL 15 (GWS) [‡]	3 MATH 111 or 141	4
ECON 102 [†]	3 Elective (2 cr needed if schedule MATH 111)	0
MATH 110, 83, or 140 (GQ) ^{*††}	4 CHEM 112	3
CHEM 110 (GN) [†]	3 CHEM 113	1
CHEM 111 [†]	1 PLSC 1 (GS) [†]	3
	General Education- Knowledge Domain	3
	14	14

Second Year

Fall	Credits Spring	Credits
PHYS 211 or 250 (GN) [†]	4 GEOSC 1 or 20	3
BIOL 110 (GN) [†]	4 STAT 200 (GQ) ^{††}	4
GEOG 126 (GS) [†]	3 PHIL 118, 133N, or METEO 133N (GH) [†]	3
CAS 100, CAS 100A, CAS 100B, or CAS 100C ^{†1}	3 ENGL 202C ^{†1}	3
General Education- Health and Wellness (GHW)	1.5 General Education- Health and Wellness (GHW)	1.5
	15.5	14.5

Third Year

Fall	Credits Spring	Credits
EARTH 402 [*]	3 EARTH 400	3
GEOSC 201, 202, 203, or 204 [*]	4 GEOSC 201, 202, 203, or 204 [*]	4
GEOG 364	3 Option elective	3
Option elective	3 Option elective	3
CED 201 or EBF 200	3 Option elective	3
	16	16

Fourth Year

Fall	Credits Spring	Credits
EARTH 495	3 Option elective	3
EBF 472, STAT 401, or GEOSC 210 [*]	3 Option elective	3
GEOSC 450 [*]	3 Option elective	3
Option elective	3 Option elective	3
Option elective	3 General Education- Knowledge domain	3

General education- Knowledge domain	3	
	18	15

Total Credits 123

- * Course requires a grade of C or better for the major
- ‡ Course requires a grade of C or better for General Education
- # Course is an Entrance to Major requirement
- † Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

¹ Students who begin their studies at non-UP locations and/or join the college after their first year should substitute CAS 100 (GWS), CAS 100A (GWS), CAS 100B (GWS), CAS 100C (GWS) or ENGL 202C (GWS) for EMSC 100S (GWS). EMSC 100S Earth and Mineral Sciences First year Seminar (3) is a required course only for students who begin their studies at UP in the College of Earth and Mineral Sciences.

Advising notes:

Energy Option electives (27 credits): Must include one writing across the curriculum course

Select 3 credits from: EARTH 100 GN(3), EGEE 101 GN(3), EGEE 102 GN(3)
 Select 9 credits from: EGEE 302(3), EGEE 401(3), EGEE 412(3), GEOSC 451(3), GEOSC 454(3), GEOSC 483(3)
 Select 3 credits from: EBF 484(3), GEOG 424 US;IL(3)
 Select 12 credits from: CED 230(3), CED 410(3), EMSC/STS/SOC 420(3), GEOG 430(3), GEOG 434(3), GEOG 438W(3), GEOG 439(3), PLSC/ STS 460(3), STS 201 GN(3)

Career Paths

An Earth Science and Policy degree can prepare you to work within a diverse set of industries or for further graduate study in many Earth science or policy-related fields.

Careers

Earth Science and Policy graduates may find careers in local, state, or federal government; investigating the impact of new scientific findings on industry practices; conducting science advocacy for a variety of institutions; consulting on land and water use policies; investigating the application of environmental law; or educating the public on the science behind issues involving the Earth, the environment, and sustainability.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE EARTH SCIENCE AND POLICY PROGRAM (<https://www.geosc.psu.edu/undergraduate/why-geosciences/career-outlook/>)

Opportunities for Graduate Studies

The Earth Science and Policy program can prepare graduates for many fields of graduate school, such as environmental science, the Earth sciences, or policy. Some may be inclined to pursue Master of Business Administration, Master of Education, or Environmental Law degrees.

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (<https://www.geosc.psu.edu/graduate/>)

Professional Resources

- Geosciences Club (<https://www.facebook.com/groups/46384419817/>)
- Association for Women Geoscientists (<https://sites.psu.edu/awgpennstate/>)

Contact

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DEPARTMENT OF GEOSCIENCES

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