

METEOROLOGY AND ATMOSPHERIC SCIENCE, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

Meteorology and atmospheric science is a rigorous scientific discipline devoted to the attainment of an increased understanding of the atmosphere and the development of methods for applying that knowledge to practical problems. Although this field is usually associated with weather prediction, it also has significance in environmental, energy, agricultural, oceanic, and hydrological sciences. For students wishing to pursue many of these areas, the department offers several options within the major.

The major requires a solid foundation in mathematics and the physical sciences, and it provides a comprehensive survey of the fundamentals of atmospheric science. It has sufficient flexibility to permit intensive advanced study in such related areas as mathematics, Earth sciences, or engineering. The department has particular strengths in weather analysis and prediction, including forecast uncertainty and severe weather; physical meteorology, including radar meteorology, instrumentation and atmospheric measurements; and applied areas, including atmospheric diffusion, air pollution chemistry, dynamic meteorology, tropical meteorology, climate, weather risk, and remote sensing.

Graduating meteorologists are prepared for professional employment with industry, private consulting firms, government, and the armed forces or for further study toward graduate degrees normally required for research, university, or management positions.

The first and second years are largely devoted to preparatory work in science, mathematics, and the liberal arts. The junior and senior years involve a core of basic courses in applied and theoretical topics and a choice of courses offering specialized training. The courses unique to each option are normally taken in the junior and senior years.

Atmospheric Science Option

This option challenges students to strengthen and broaden their understanding of the physics and chemistry of both the atmosphere and oceans. It helps prepare them for employment in the diverse field of the atmospheric sciences and for graduate study in the atmospheric or related disciplines. Students are encouraged to participate in undergraduate research projects under the supervision of atmospheric and oceanic scientists in the department college.

Environmental Meteorology Option

Environmental Meteorology prepares the student for understanding the impact of the weather and climate on the environment, which is to say the impacts of air and water on natural and human-altered ecosystems. In order to do this, the option establishes links between atmospheric physics and a variety of environmental disciplines pertaining to land, water, soils, and plants. Depending on his/her interests, the student will select courses in Air Quality and Dispersion, Ecology, Environmental Chemistry, Geographic Information Systems, or Hydrology.

General Option

This option has sufficient flexibility to serve the needs of students who wish to pursue topics chosen broadly from subdisciplines of meteorology or from related areas in consultation with the academic adviser. The General option is appropriate both for students who intend to pursue postgraduate degrees and for students who want to emphasize a topic for which no option exists.

Weather Forecasting and Communications Option

This option prepares students for careers in which their skills as weather forecasters are effectively used in a variety of ways, from science reporting and television broadcasting to web design and computer-based weather graphics production, and developing innovative applications of weather and climate data to industry.

Weather Risk Management Option

The option combines study of meteorology and atmospheric sciences with training in risk, finance, and quantitative decision-making. Weather affects a wide range of industries, including energy, agriculture, insurance, construction, retail, and transport, among others. Weather and climate variation play central roles in the availability of water resources, the spread of disease, and an array of other processes vital for human welfare. There are, consequently, many organizations that confront risks related to weather, and that have a demand for experts who can help them manage these risks. The option in Weather Risk Management is designed for students who wish to work professionally at this intersection of meteorology and risk management.

What is Meteorology and Atmospheric Science?

Meteorology is one of the oldest of modern sciences. The word itself was coined by Aristotle more than 2,000 years ago for the first book on the science of "things lifted up." Meteorology and atmospheric science is an interdisciplinary field that uses scientific principles to explain, understand, observe, and forecast the behavior of the Earth's atmosphere. Meteorologists and atmospheric scientists explore the significance of weather and climate as it relates to the environmental, energy, agricultural, oceanic, and hydrological sciences. From severe weather, numerical weather prediction, and climate change to weather risk and air pollution—there's no shortage of practical applications in meteorology and atmospheric science.

You Might Like This Program If...

- You are interested in applying mathematics, physics, and computer programming to real-world problems.
- You are fascinated with weather, climate, or the environment.
- You are a self-described "weather geek."
- You would like to be a "weather communicator" such as a television meteorologist or science writer.
- You want to study global warming and the Earth's changing climate.
- You would like to work with data from satellites, radar, and other environmental sensors.

Entrance to Major

In addition to the minimum grade point average (GPA) requirements described in the University Policies, the Meteorology entrance-to-major requirement must also be completed with a minimum grade of C: MATH 140.

Degree Requirements

For the Bachelor of Science degree in Meteorology, a minimum of 121 credits is required:

Requirement	Credits
General Education	45
Electives	4-9
Requirements for the Major	93-95

23-26 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 8 credits of GN courses; 6 credits of GQ courses; 0-3 credits of GS courses; 9 credits of GWS courses.

Requirements for the Major

For a Meteorology course to serve as a prerequisite for any subsequent prescribed or supporting Meteorology course in the major, a grade of C or better must be earned in the prerequisite course.

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		
CHEM 110	Chemical Principles I	3
EMSC 100S	Earth and Mineral Sciences First-Year Seminar ¹	3
MATH 251	Ordinary and Partial Differential Equations	4
PHYS 211	General Physics: Mechanics	4
PHYS 212	General Physics: Electricity and Magnetism	4
<i>Prescribed Courses: Require a grade of C or better</i>		
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
METEО 300	Fundamentals of Atmospheric Science	4
METEО 411	Synoptic Meteorology Laboratory	4
METEО 421	Atmospheric Dynamics	4
METEО 431	Atmospheric Thermodynamics	3
METEО 440W	Principles of Atmospheric Measurements	3
METEО 470	Climate Dynamics	3
Additional Courses		
CAS 100	Effective Speech	3
or ENGL 202C	Effective Writing: Technical Writing	
ENGL 15	Rhetoric and Composition	3
or ENGL 30H	Honors Rhetoric and Composition	
Select one of the following:		3
CMPSC 101	Introduction to Programming	
CMPSC 200	Programming for Engineers with MATLAB	
CMPSC 201	Programming for Engineers with C++	
CMPSC 202		
METEО 273	Introduction to Programming Techniques for Meteorology	
Select one of the following:		3
EBF 472	Quantitative Analysis in Earth Sciences	

STAT 301

STAT 401 Experimental Methods

Additional Courses: Require a grade of C or better

Select one of the following: 3

METEO 101 Understanding Weather Forecasting

METEО 200A
or METEO 201

METEO 201 Introduction to Weather Analysis

Select one of the following: 4

MATH 230 Calculus and Vector Analysis

MATH 231 Calculus of Several Variables
& MATH 232 and Integral Vector Calculus

Requirements for the Option

Select an option 27-29

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

Requirements for the Option Atmospheric Science Option (27-28 credits)

Code	Title	Credits
Prescribed Courses		
METEО 422	Advanced Atmospheric Dynamics	3
Additional Courses		
Select 6-13 credits of the following: ¹		6-13
METEО 414	Mesoscale Meteorology	
METEО 434	Radar Meteorology	
METEО 451	Introduction to Physical Oceanography	
METEО 452	Tropical Meteorology	
METEО 455	Atmospheric Dispersion	
METEО 465	Middle Atmosphere Meteorology	
METEО 466	Planetary Atmospheres	
METEО 471		
METEО 477	Fundamentals of Remote Sensing Systems	
METEО 480W	Undergraduate Research	
<i>Additional Courses: Require a grade of C or better</i>		
Select 3-6 credits of the following:		3-6
METEО 473	Application of Computers to Meteorology	
METEО 474	Computer Methods of Meteorological Analysis and Forecasting	
Select 6-9 credits of the following:		6-9
METEО 436	Radiation and Climate	
METEО 437	Atmospheric Chemistry and Cloud Physics	
METEО 454	Introduction to Micrometeorology	
Supporting Courses and Related Areas		
Select 3 credits of W courses or their equivalent in addition to the following:		3
METEО 440W	Principles of Atmospheric Measurements	

¹ Up to 9 of these credits in relevant courses in Acoustics, Chemistry, Engineering, Mathematics, and Physics may be substituted with the approval of the student's adviser.

Environmental Meteorology Option (27-29 credits)

Code	Title	Credits
Prescribed Courses		
CE 370	Introduction to Environmental Engineering	3
METEO 455	Atmospheric Dispersion	3
<i>Prescribed Courses: Require a grade of C or better</i>		
METEO 454	Introduction to Micrometeorology	3
Additional Courses ¹		
Select 15-17 credits of the following:		15-17
BIOL 110	Biology: Basic Concepts and Biodiversity	
CE 360	Fluid Mechanics	
CE 461	Water-resource Engineering	
CE 475	Water Quality Chemistry	
CE 479	Environmental Microbiology for Engineers	
CHEM 112	Chemical Principles II	
CHEM 113	Experimental Chemistry II	
CHEM 450	Physical Chemistry - Thermodynamics	
CHEM 457	Experimental Physical Chemistry	
CHEM 464	Chemical Kinetics and Dynamics	
ERM 430	Air Pollution Impacts to Terrestrial Ecosystems	
ERM 435	Limnology	
ERM 447	Stream Restoration	
ERM 450	Wetland Science and Sustainability	
GEOG 311		
GEOG 313	Introduction to Field Geography	
GEOG 314	Biogeography and Global Ecology	
GEOG 361	Cartography–Maps and Map Construction	
GEOG 362	Image Analysis	
GEOG 363	Geographic Information Systems	
GEOG 417	Satellite Climatology	
GEOG 463	Geospatial Information Management	
ME 405	Indoor Air Quality Engineering	
ME 433	Fundamentals of Air Pollution	
METEO 419	Air Quality Forecasting	
METEO 437	Atmospheric Chemistry and Cloud Physics	
<i>Additional Courses: Require a grade of C or better</i>		
METEO 473	Application of Computers to Meteorology	3
	or METEO 474 Computer Methods of Meteorological Analysis and Forecasting	

¹ May apply to General Education

General Option (27 credits)

Code	Title	Credits
Additional Courses		
<i>Additional Courses: Require a grade of C or better</i>		
METEO 473	Application of Computers to Meteorology	3
	or METEO 474 Computer Methods of Meteorological Analysis and Forecasting	
Select one of the following:		3
METEO 436	Radiation and Climate	
METEO 437	Atmospheric Chemistry and Cloud Physics	
METEO 454	Introduction to Micrometeorology	

Supporting Courses and Related Areas

Select 21 credits in consultation with adviser from 400-level METEO 21 courses and/or 300-, or 400-level courses from the Colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, and/or Science¹

¹ With the approval of a meteorology adviser, some 200-level courses from those Colleges may also be used.

Weather Forecasting and Communications Option (28 credits)

Code	Title	Credits
Prescribed Courses		
METEO 414	Mesoscale Meteorology	4
METEO 415	Forecasting Practicum	3
METEO 481	Weather Communications I	3
METEO 482	Weather Communications II	3
Additional Courses		
Select 6-9 credits of the following:		6-9
EE/METEO 477	Fundamentals of Remote Sensing Systems	
ENGL 416	Science Writing	
GEOG 333	Human Dimensions of Natural Hazards	
GEOG 361	Cartography–Maps and Map Construction	
GEOG 362	Image Analysis	
GEOG 363	Geographic Information Systems	
GEOG 417	Satellite Climatology	
GEOG 467	Applied Cartographic Design	
GEOG 402Y	Natural Disasters	
METEO 413	Map Analysis	
METEO 416	Advanced Forecasting	
METEO 418		
METEO 419	Air Quality Forecasting	
METEO 422	Advanced Atmospheric Dynamics	
METEO 434	Radar Meteorology	
METEO 451	Introduction to Physical Oceanography	
METEO 452	Tropical Meteorology	
METEO 454	Introduction to Micrometeorology	
METEO 471		
METEO 483	Weather Communications III	
METEO 486	Pennsylvania Climate Studies (1-2, max 3)	
Any two from:		
METEO 495A	Meteorology Communications Internship	
METEO 495B	Meteorology Private Sector Internship	
METEO 495C	Meteorological Operations Internship	
METEO 495D	Meteorological International Internship	
METEO 495E	Meteorological Off-Campus Research Internship	
<i>Additional Courses: Require a grade of C or better</i>		
METEO 436	Radiation and Climate	3
	or METEO 437 Atmospheric Chemistry and Cloud Physics	
Select 3-6 credits of the following:		3-6
METEO 473	Application of Computers to Meteorology	
METEO 474	Computer Methods of Meteorological Analysis and Forecasting	

Weather Risk Management Option (27 credits)

Code	Title	Credits
Prescribed Courses		
EBF 473	Risk Management in Energy Industries	3
ECON 102	Introductory Microeconomic Analysis and Policy	3
METEO 460	Weather Risk and Financial Markets	3
Additional Courses		
Select 6 credits of the following:		6
EBF 301	Global Finance for the Earth, Energy, and Materials Industries	
EBF 483	Introduction to Electricity Markets	
EBF 484	Energy Economics	
EGEE 437	Design of Solar Energy Conversion Systems	
EGEE 438	Wind and Hydropower Energy Conversion	
EME 460	Geo-resource Evaluation and Investment Analysis	
Select one of the following:		3
ECON 490		
STAT 318	Elementary Probability	
STAT 319	Elementary Mathematical Statistics	
STAT 414	Introduction to Probability Theory	
STAT 415	Introduction to Mathematical Statistics	
STAT 460	Intermediate Applied Statistics	
STAT 462	Applied Regression Analysis	
<i>Additional Courses: Require a grade of C or better</i>		
Select 6 credits of the following:		6
METEO 415	Forecasting Practicum (does not require a grade of C or better)	
METEO 473	Application of Computers to Meteorology	
METEO 474	Computer Methods of Meteorological Analysis and Forecasting	
Select one of the following:		3
METEO 436	Radiation and Climate	
METEO 437	Atmospheric Chemistry and Cloud Physics	
METEO 454	Introduction to Micrometeorology (preferred choice)	

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.

Integrated B.S. in Meteorology and Atmospheric Science and M.S. in Meteorology and Atmospheric Science

Requirements for the Integrated B.S. in Meteorology and Atmospheric Science and M.S. in Meteorology and Atmospheric Science can be found in the Graduate Bulletin (<https://bulletins.psu.edu/graduate/programs/majors/meteorology-atmospheric-science/#integratedundergradprogramstext>).

Program Learning Objectives

- Graduates can demonstrate skills for interpreting and applying atmospheric observations.
- Graduates can demonstrate knowledge of the atmosphere and its evolution.
- Graduates can demonstrate knowledge of the role of water in the atmosphere.
- Graduates can demonstrate facility with computer applications to atmospheric problems.
- Graduates can demonstrate skills for communicating their technical knowledge.

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: Meteorology and Atmospheric Science, 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
MATH 140 or 140G (GQ) ^{†‡†}	4 MATH 141 or 141G (GQ) ^{††}	4
CHEM 110 (GN) [†]	3 ENGL 15, 30H, or ESL 15 (GWS) ^{††}	3
EMSC 100S (GWS) ^{††1}	3 PHYS 211 (GN) [†]	4
METEO 201 [*]	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Knowledge Domain	3	
	16	14
Second Year		
Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 METEO 431 [*]	3
METEO 300 [*]	4 MATH 251	4
MATH 230 ^{*2}	4 STAT 301 or STAT 401	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
	General Education Health and Wellness (GHW)	3
	15	16
Third Year		
Fall	Credits Spring	Credits
METEO 421 [*]	4 METEO 470 [*]	3
METEO 436, 437, or 454 [*]	3 METEO 440W [*]	3
METEO 411 [*]	4 General Education Foundation Selection (GWS) ^{††1}	3
METEO 473 or 474 [*]	3 General Education Knowledge Domain	3
	Professional Elective ³	3
	14	15
Fourth Year		
Fall	Credits Spring	Credits
General Education Knowledge Domain	3 Professional Elective ³	3
General Education Knowledge Domain	3 Professional Elective ³	3
Professional Elective ³	3 Professional Elective ³	3
Professional Elective ³	3 Elective	3

Professional Elective ³	3 Elective	4
	15	16

Total Credits 121

- * 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

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ Professional elective: Select 21 credits, in consultation with adviser, from 400-level METEO courses and/or 300-, or 400-level courses from the Colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, and/or Science. With the approval of a meteorology adviser, some 200-level courses from those Colleges may also be used.

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.

General Option: Meteorology and Atmospheric Science, 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
MATH 140 ^{†##}	4 MATH 141 ^{##}	4
CHEM 110 (GN) [†]	3 PHYS 211 (GN) [†]	4
ENGL 15, 30H, or ESL 15 ^{††1}	3 METEO 101 (online) [*]	3
General Education Knowledge Domain	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Health and Wellness (GHW)	1.5	
	14.5	14
Second Year		
Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 MATH 251	4
MATH 230 ^{*2}	4 METEO 300 ^{*3}	4
General Education Foundation Selection (GWS) ^{††1}	3 General Education Foundation Selection (GWS) ^{††1}	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
General Education Health and Wellness (GHW)	1.5 General Education Knowledge Domain	3
	15.5	17
Third Year		
Fall	Credits Spring	Credits
METEO 431 [*]	3 METEO 440W [*]	3
STAT 301 or STAT 401	3 METEO 411 [*]	4
Elective	3 METEO 421 [*]	4
General Education Knowledge Domain	3 Professional Elective ⁴	3
General Education Knowledge Domain	3	
	15	14
Fourth Year		
Fall	Credits Spring	Credits
METEO 470 [*]	3 Professional Elective ⁴	3
METEO 473 or 474 [*]	3 Professional Elective ⁴	3
METEO 436, 437, or 454 [*]	3 Professional Elective ⁴	3
Professional Elective ⁴	3 Professional Elective ⁴	3
Professional Elective ⁴	3 Elective	4
	15	16
Total Credits		121

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ METEO 300 can be taken 2nd year spring, if offered online.

⁴ Professional elective: Select 21 credits, in consultation with adviser, from 400-level METEO courses and/or 300-, or 400-level courses from the Colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, and/or Science. With the approval of a meteorology adviser, some 200-level courses from those Colleges may also be used.

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.

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

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

Atmospheric Sciences Option: Meteorology and Atmospheric Science, 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
MATH 140 or 140G (GQ) ^{†‡##}	4 MATH 141 or 141G (GQ) ^{†‡}	4
CHEM 110 (GN) [†]	3 ENGL 15, 30H, or ESL 15 (GWS) ^{††}	3
EMSC 100S (GWS) ^{††1}	3 PHYS 211 (GN) [†]	4
METEO 201 [*]	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education knowledge domain	3	
	16	14

Second Year

Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 METEO 431 [*]	3
METEO 300 [*]	4 MATH 251	4
MATH 230 ^{*2}	4 STAT 301 or STAT 401	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
	General Education Health and Wellness (GHW)	3
	15	16

Third Year

Fall	Credits Spring	Credits
METEO 421 [*]	4 METEO 470 [*]	3
METEO 436, 437, or 454 ^{*3}	3 METEO 440W [*]	3
METEO 411 [*]	4 General Education Foundation Selection (GWS) ^{††1}	3
METEO 473 or 474 ^{*3}	3 General Education Knowledge Domain	3
	Professional Elective ³	3
	14	15

Fourth Year

Fall	Credits Spring	Credits
METEO 422	3 Professional Elective ³	3
METEO 436, 437, or 454 ^{*3}	3 Professional Elective ³	3
General Education Knowledge Domain	3 Professional Elective ³	3
General Education Knowledge Domain	3 Elective	3
Professional Elective ³	3 Elective	4
	15	16

Total Credits 121

* 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

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ Students should select 3-6 credits from METEO 473(3) and METEO 474(3); 6-9 credits from METEO 436(3), METEO 437(3), and METEO 454(3); and 6-13 credits from METEO 414(4), METEO 434(3), METEO 451(3), METEO 452(3), METEO 455(3), METEO 465(3), METEO 466(3), METEO 471(3), METEO 477(3), METEO 480W(3). Up to 9 of these credits in relevant courses in Acoustics, Chemistry, Engineering, Mathematics, and Physics may be substituted with the approval of the student's faculty adviser. Students must also select 3 credits of Writing across the curriculum courses, or their equivalent, in addition to METEO 440W.

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.

Atmospheric Sciences Option: Meteorology and Atmospheric Science, 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
MATH 140 ^{†#†}	4 MATH 141 ^{††}	4
CHEM 110 (GN) [†]	3 PHYS 211 (GN) [†]	4
ENGL 15, 30H, or ESL 15 ^{††1}	3 METEO 101 (online) [*]	3
General Education Knowledge Domain	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Health and Wellness (GHW)	1.5	
	14.5	14
Second Year		
Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 MATH 251	4
MATH 230 ^{*2}	4 METEO 300 ^{*3}	4
General Education Foundation Selection (GWS) ^{††1}	3 General Education Foundation Selection (GWS) ^{††1}	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
General Education Health and Wellness (GHW)	1.5 General Education Knowledge Domain	3
	15.5	17
Third Year		
Fall	Credits Spring	Credits
METEO 431 [*]	3 METEO 440W [*]	3
STAT 301 or STAT 401	3 METEO 411 [*]	4
Elective	3 METEO 421 [*]	4
General Education Knowledge Domain	3 Professional Elective ⁴	3
General Education Knowledge Domain	3	
	15	14
Fourth Year		
Fall	Credits Spring	Credits
METEO 470 [*]	3 METEO 436, 437, or 454 [*]	3
METEO 473 or 474 [*]	3 Professional Elective ⁴	3
METEO 436, 437, or 454 [*]	3 Professional Elective ⁴	3
METEO 422	3 Professional Elective ⁴	3
Professional Elective ⁴	3 Elective	4
	15	16
Total Credits		121

* 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

- 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, CAS 100B, or CAS 100C; 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.
- Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.
- METEO 300 can be taken 2nd year spring, if offered online.
- Students should select 3-6 credits from METEO 473(3) and METEO 474(3); 6-9 credits from METEO 436(3), METEO 437(3), and METEO 454(3); and 6-13 credits from METEO 414(4), METEO 434(3), METEO 451(3), METEO 452(3), METEO 455(3), METEO 465(3), METEO 466(3), METEO 471(3), METEO 477(3), METEO 480W(3). Up to 9 of these credits in relevant courses in Acoustics, Chemistry, Engineering, Mathematics, and Physics may be substituted with the approval of the student's faculty adviser. Students must also select 3 credits of Writing across the curriculum courses, or their equivalent, in addition to METEO 440W.

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.

Environmental Meteorology Option: Meteorology and Atmospheric Science, 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
MATH 140 or 140G (GQ) ^{†‡#†}	4 MATH 141 or 141G (GQ) ^{††}	4
CHEM 110 (GN) [†]	3 ENGL 15, 30H, or ESL 15 (GWS) ^{††}	3
EMSC 100S (GWS) ^{††1}	3 PHYS 211 (GN) [†]	4
METEO 201 [*]	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Knowledge Domain	3	
	16	14

Second Year

Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 METEO 431 [*]	3
METEO 300 [*]	4 MATH 251	4
MATH 230 ^{*2}	4 STAT 301 or STAT 401	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
	General Education Health and Wellness (GHW)	3
	15	16

Third Year

Fall	Credits Spring	Credits
METEO 421 [*]	4 METEO 470 [*]	3
METEO 411 [*]	4 METEO 440W [*]	3
METEO 473 or 474 [*]	3 General Education Foundation Selection (GWS) ^{††1}	3
CE 370	3 General Education Knowledge Domain	3
	Professional Elective ³	3
	14	15

Fourth Year

Fall	Credits Spring	Credits
METEO 454 [*]	3 METEO 455	3
General Education Knowledge Domain	3 Professional Elective ³	3
General Education Knowledge Domain	3 Professional Elective ³	3
Professional Elective ³	3 Elective	3
Professional Elective ³	3 Elective	4
	15	16

Total Credits 121

* 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

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ Professional elective: Select 15-17 credits from BIOL 110 GN(4), CE 360(3), CE 461(3), CE 475(4), CE 479(3), CHEM 112 GN(3), CHEM 113 GN(1), CHEM 450(3), CHEM 457(2), CHEM 464(3), ERM 430(3), ERM 435(3), ERM 447(3), ERM 450(3), GEOG 313(3), GEOG 314 GN(3), GEOG 361(3), GEOG 362(3), GEOG 363(3), GEOG 414(3), GEOG 417(3), GEOG 463(3), ME 405(3), ME 433(3), METEO 419(3), METEO 437(3).

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.

Environmental Meteorology Option: Meteorology and Atmospheric Science, 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
MATH 140 ^{†#†}	4 MATH 141 ^{††}	4
CHEM 110 (GN) [†]	3 PHYS 211 (GN) [†]	4
ENGL 15, 30H, or ESL 15 ^{††1}	3 METEO 101 (online) [*]	3
General Education Knowledge Domain	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Health and Wellness (GHW)	1.5	
	14.5	14
Second Year		
Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 MATH 251	4
MATH 230 ^{*2}	4 METEO 300 ^{*3}	4
General Education Foundation Selection (GWS) ^{††1}	3 General Education Foundation Selection (GWS) ^{††1}	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
General Education Health and Wellness (GHW)	1.5 General Education Knowledge Domain	3
	15.5	17
Third Year		
Fall	Credits Spring	Credits
METEO 431 [*]	3 METEO 440W [*]	3
STAT 301 or STAT 401	3 METEO 411 [*]	4
CE 370	3 METEO 421 [*]	4
General Education Knowledge Domain	3 Professional Elective ⁴	3
Elective	3	
	15	14
Fourth Year		
Fall	Credits Spring	Credits
METEO 470 [*]	3 METEO 455	3
METEO 473 or 474 [*]	3 Professional Elective ⁴	3
METEO 454 [*]	3 Professional Elective ⁴	3
General Education Knowledge Domain	3 Professional Elective ⁴	3
Professional Elective ⁴	3 Elective	4
	15	16
Total Credits		121

* 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

- 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, CAS 100B, or CAS 100C; 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.
- Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.
- METEO 300 can be taken 2nd year spring, if offered online.
- Professional elective: Select 15-17 credits from BIOL 110 GN(4), CE 360(3), CE 461(3), CE 475(4), CE 479(3), CHEM 112 GN(3), CHEM 113 GN(1), CHEM 450(3), CHEM 457(2), CHEM 464(3), ERM 430(3), ERM 435(3), ERM 447(3), ERM 450(3), GEOG 313(3), GEOG 314 GN(3), GEOG 361(3), GEOG 362(3), GEOG 363(3), GEOG 414(3), GEOG 417(3), GEOG 463(3), ME 405(3), ME 433(3), METEO 419(3), METEO 437(3).

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.

Weather Risk Management Option: Meteorology and Atmospheric Science, 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
MATH 140 or 140G (GQ) ^{†‡#†}	4 MATH 141 or 141G (GQ) ^{†‡}	4
CHEM 110 (GN) [†]	3 ENGL 15, 30H, or ESL 15 (GWS) ^{†‡}	3
EMSC 100S (GWS) ^{††1}	3 PHYS 211 (GN) [†]	4
METEO 201 [*]	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
ECON 102 [†]	3	
	16	14

Second Year

Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 METEO 431 [*]	3
METEO 300 [*]	4 MATH 251	4
MATH 230 ^{*2}	4 STAT 301 or STAT 401	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
	General Education Health and Wellness (GHW)	3
	15	16

Third Year

Fall	Credits Spring	Credits
METEO 421 [*]	4 METEO 470 [*]	3
METEO 436, 437, or 454 [*]	3 METEO 440W [*]	3
METEO 411 [*]	4 METEO 415, 473, or 474 ^{*3}	3
General Education Knowledge Domain	3 EBF/EGEE Selection ⁴	3
	General Education Foundation Selection (GWS) ^{††1}	3
	14	15

Fourth Year

Fall	Credits Spring	Credits
METEO 415, 473, or 474 [*]	3 METEO 460	3
EBF 473	3 EBF/EGEE Selection ⁴	3
General Education Knowledge Domain	3 STAT Selection ⁵	3
General Education Knowledge Domain	3 Elective	3
Elective	3 Elective	4
	15	16

Total Credits 121

* 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

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ Select 6 credits from METEO 415(3), METEO 473(3) or METEO 474(3).

⁴ Select 6 credits from EBF 301(3); EBF 483(3), EBF 484(3); EGEE 437(3); EGEE 438(3); or EME 460(3).

⁵ Select 3 credits from ECON 490(3), STAT 318(3), STAT 319(3), STAT 414(3), STAT 415(3), STAT 460(3) or STAT 462(3).

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.

Weather Risk Management Option: Meteorology and Atmospheric Science, 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
MATH 140 ^{†#†}	4 MATH 141 ^{††}	4
CHEM 110 (GN) [†]	3 PHYS 211 (GN) [†]	4
ENGL 15, 30H, or ESL 15 ^{††1}	3 METEO 101 (online) [*]	3
ECON 102 [†]	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Health and Wellness (GHW)	1.5	
	14.5	14
Second Year		
Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 MATH 251	4
MATH 230 ^{*2}	4 METEO 300 ^{*3}	4
General Education Foundation selection (GWS) ^{††1}	3 General Education Foundation Selection (GWS) ^{††1}	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
General Education Health and Wellness (GHW)	1.5 General Education Knowledge Domain	3
	15.5	17
Third Year		
Fall	Credits Spring	Credits
METEO 431 [*]	3 METEO 440W [*]	3
STAT 301 or STAT 401	3 METEO 411 [*]	4
Elective	3 METEO 421 [*]	4
General Education Knowledge Domain	3 EBF/EGEE Selection ⁴	3
General Education Knowledge Domain	3	
	15	14
Fourth Year		
Fall	Credits Spring	Credits
METEO 470 [*]	3 METEO 460	3
METEO 436, 437, or 454 [*]	3 METEO 415, 473, or 474 ^{*5}	3
METEO 415, 473, or 474 ^{*5}	3 EBF/EGEE Selection ⁴	3
EBF 473	3 STAT Selection ⁶	3
Elective	3 Elective	4
	15	16
Total Credits 121		

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ METEO 300 can be taken 2nd year spring, if offered online.

⁴ Select 6 credits from EBF 301(3); EBF 483(3), EBF 484(3); EGEE 437(3); EGEE 438(3); or EME 460(3).

⁵ Select 6 credits from METEO 415(3), METEO 473(3) or METEO 474(3).

⁶ Select 3 credits from ECON 490(3), STAT 318(3), STAT 319(3), STAT 414(3), STAT 415(3), STAT 460(3) or STAT 462(3).

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.

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

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

Weather Forecasting and Communications Option: Meteorology and Atmospheric Science, 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
MATH 140 or 140G (GQ) ^{**#†}	4 MATH 141 or 141G (GQ) ^{**†}	4
CHEM 110 (GN) [†]	3 ENGL 15, 30H, or ESL 15 (GWS) ^{††}	3
EMSC 100S (GWS) ^{††1}	3 PHYS 211 (GN) [†]	4
METEO 201 [*]	3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Knowledge Domain	3	
	16	14

Second Year

Fall	Credits Spring	Credits
PHYS 212 (GN) [†]	4 METEO 431 [*]	3
METEO 300 [*]	4 MATH 251	4
MATH 230 ^{*2}	4 STAT 301 or STAT 401	3
General Education Knowledge Domain	3 General Education Knowledge Domain	3
	General Education Health and Wellness (GHW)	3
	15	16

Third Year

Fall	Credits Spring	Credits
METEO 421 [*]	4 METEO 470 [*]	3
METEO 411 [*]	4 METEO 440W [*]	3
METEO 481	3 METEO 482	3
METEO 473 or 474 ^{*3}	3 General Education Foundation Selection (GWS) ^{††1}	3
	General Education Knowledge Domain	3
	14	15

Fourth Year

Fall	Credits Spring	Credits
METEO 436 or 437 [*]	3 METEO 414	4
METEO 415	3 Professional Elective ⁴	3
General Education Knowledge Domain	3 Professional Elective ⁴	3
General Education Knowledge Domain	3 Elective	3

Professional Elective ⁴	3 Elective	3
	15	16

Total Credits 121

* 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

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

³ Select 3-6 credits from METEO 473(3) and METEO 474(3).

⁴ Professional elective: Select 6-9 credits from CAS 211(3), EE 477(3) or METEO 477(3); ENGL 416(3), GEOG 333(3), GEOG 361(3), GEOG 362(3), GEOG 363(3), GEOG 417(3), GEOG 467(3), GEOSC 402 IL(3), METEO 413(3), METEO 416(3), METEO 418(3), METEO 419(3), METEO 422(3), METEO 434(3), METEO 451(3), METEO 452(3), METEO 454(3), METEO 471(3), METEO 483(3), METEO 486(1-2, max 3), any two from METEO 495A(3), METEO 495B(3), METEO 495C(3), METEO 495D(3) or METEO 495E(3).

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.

Weather Forecasting and Communications Option: Meteorology and Atmospheric Science, 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
MATH 140 ^{†#†}	4	MATH 141 ^{††}	4
CHEM 110 (GN) [†]	3	PHYS 211 (GN) [†]	4
ENGL 15, 30H, or ESL 15 ^{††1}	3	METEO 101 (online) [*]	3
General Education Knowledge Domain	3	METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202	3
General Education Health and Wellness (GHW)	1.5		
	14.5		14

Second Year

Fall	Credits	Spring	Credits
PHYS 212 (GN) [†]	4	MATH 251	4
MATH 230 ^{*2}	4	METEO 300 ^{*3}	4
General Education Foundation Selection (GWS) ^{††1}	3	General Education Foundation Selection (GWS) ^{††1}	3
General Education Knowledge Domain	3	General Education Knowledge Domain	3
General Education Health and Wellness (GHW)	1.5	General Education Knowledge Domain	3
	15.5		17

Third Year

Fall	Credits	Spring	Credits
METEO 431 [*]	3	METEO 440W [*]	3
METEO 481	3	METEO 411 [*]	4
STAT 301 or STAT 401	3	METEO 421 [*]	4
General Education Knowledge Domain	3	METEO 482	3
General Education Knowledge Domain	3		
	15		14

Fourth Year

Fall	Credits	Spring	Credits
METEO 470 [*]	3	METEO 414	4
METEO 473 or 474 [*]	3	Professional Elective ⁵	3
METEO 436 or 437 ^{*4}	3	Professional Elective ⁵	3
METEO 415	3	Professional Elective ⁵	3
Elective	3	Elective	3
	15		16

Total Credits 121

* 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

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, CAS 100B, or CAS 100C; 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.

² Students may also complete this requirement by taking MATH 231 and MATH 232. MATH 231 is a prerequisite for MATH 232, so students should plan to take MATH 231 before MATH 232. Students taking MATH 231 and 232 should work with their adviser on other appropriate schedule adjustments.

⁴ Select 3-6 credits from METEO 473(3) and METEO 474(3).

⁵ Professional elective: Select 6-9 credits from CAS 211(3), EE 477(3) or METEO 477(3); ENGL 416(3), GEOG 333(3), GEOG 361(3), GEOG 362(3), GEOG 363(3), GEOG 417(3), GEOG 467(3), GEOSC 402 IL(3), METEO 413(3), METEO 416(3), METEO 418(3), METEO 419(3), METEO 422(3), METEO 434(3), METEO 451(3), METEO 452(3), METEO 454(3), METEO 471(3), METEO 483(3), METEO 486(1-2, max 3), any two from METEO 495A(3), METEO 495B(3), METEO 495C(3), METEO 495D(3) or METEO 495E(3).

³ METEO 300 can be taken 2nd year spring, if offered online.

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.

Career Paths

Graduating meteorologists and atmospheric scientists are prepared for professional employment with industry, private consulting firms, government, and the armed forces. Students who graduate with a B.S. in Meteorology and Atmospheric Science from Penn State and who have some research or internship experience are positioned well for graduate study. Typically, about one-third of our B.S. graduates pursue an M.S. or Ph.D.

Careers

According to the Occupational Outlook Handbook, employment of atmospheric scientists, including meteorologists, is projected to grow 4 percent from 2021 to 2031, faster than the average for all occupations. The best job prospects for atmospheric scientists will be in private industry as businesses demand specialized weather forecasts and weather information.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE METEOROLOGY AND ATMOSPHERIC SCIENCE PROGRAM (<http://www.met.psu.edu/prospective-students/undergraduate-students-bs-degree/who-employs-our-b.s.-graduates/>)

Opportunities for Graduate Studies

Further study toward an M.S. or Ph.D. can lead to research, university, or management positions.

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (<http://www.met.psu.edu/prospective-students/graduate-students-ms-and-phd-degrees/>)

Professional Resources

- Campus Weather Service (<https://campusweatherservice.com/>)
- Weather Outreach and Education (<https://sites.psu.edu/weatheroe/>)
- Penn State Branch of the American Meteorological Society and National Weather Association (PSUBAMS) (<https://sites.psu.edu/psubams/>)

Contact

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