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:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>4-9</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>93-95</td>
</tr>
</tbody>
</table>

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.

General Education

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

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

Foundations (grade of C or better is required.)
- Quantification (GQ): 6 credits
- Writing and Speaking (GWS): 9 credits

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

Integrative Studies (may also complete a Knowledge Domain requirement)
- Inter-Domain or Approved Linked Courses: 6 credits

University Degree Requirements

First Year Engagement

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

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

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

Cultures Requirement
6 credits are required and may satisfy other requirements
- United States Cultures: 3 credits
- International Cultures: 3 credits

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

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

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

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

Requirements for the Major

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 (http://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)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
<tr>
<td>EMSC 100S</td>
<td>Earth and Mineral Sciences First-Year Seminar</td>
<td>3</td>
</tr>
<tr>
<td>MATH 251</td>
<td>Ordinary and Partial Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>General Physics: Electricity and Magnetism</td>
<td>4</td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>METEO 300</td>
<td>Fundamentals of Atmospheric Science</td>
<td>4</td>
</tr>
<tr>
<td>METEO 411</td>
<td>Synoptic Meteorology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>METEO 421</td>
<td>Atmospheric Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>METEO 431</td>
<td>Atmospheric Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>METEO 440W</td>
<td>Principles of Atmospheric Measurements</td>
<td>3</td>
</tr>
<tr>
<td>METEO 470</td>
<td>Climate Dynamics</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Courses
Meteorology and Atmospheric Science, B.S.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS 100</td>
<td>Effective Speech</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 15</td>
<td>Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CMPSC 101</td>
<td>Introduction to Programming</td>
<td></td>
</tr>
<tr>
<td>CMPSC 200</td>
<td>Programming for Engineers with MATLAB</td>
<td></td>
</tr>
<tr>
<td>CMPSC 201</td>
<td>Programming for Engineers with C++</td>
<td></td>
</tr>
<tr>
<td>CMPSC 202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>METEO 273</td>
<td>Introduction to Programming Techniques for Meteorology</td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EBF 472</td>
<td>Quantitative Analysis in Earth Sciences</td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Statistical Analysis I</td>
<td></td>
</tr>
<tr>
<td>STAT 401</td>
<td>Experimental Methods</td>
<td></td>
</tr>
</tbody>
</table>

Additional Courses: Require a grade of C or better

Select one of the following: 3

- METEO 101 Understanding Weather Forecasting
- METEO 200A
- or METEO 202
- 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.

Environmental Meteorology Option (27-29 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 370</td>
<td>Introduction to Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>METEO 455</td>
<td>Atmospheric Dispersion</td>
<td></td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

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 Conservation
- GEOG 311 Landscape Ecology
- 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

Additional Courses: Require a grade of C or better

Select 6-9 credits of the following: 6-9

- METEO 436 Radiation and Climate
- METEO 437 Atmospheric Chemistry and Cloud Physics
- METEO 454 Introduction to Micrometeorology

Supporting Courses and Related Areas

Select 3 credits of W courses or their equivalent in addition to the following: 3

- METEO 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.

Requirements for the Option

Atmospheric Science Option (27-28 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 422</td>
<td>Advanced Atmospheric Dynamics</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Courses

Select 6-13 credits of the following: 1 6-13

- METEO 414 Mesoscale Meteorology
- METEO 434 Radar Meteorology
- METEO 451 Introduction to Physical Oceanography
- METEO 452 Tropical Meteorology
- METEO 455 Atmospheric Dispersion
- METEO 465 Middle Atmosphere Meteorology
- METEO 466 Planetary Atmospheres
- METEO 471
- METEO 477 Fundamentals of Remote Sensing Systems
- METEO 480W Undergraduate Research

Additional Courses: Require a grade of C or better

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

1. May apply to General Education
### General Option (27 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 473</td>
<td>Application of Computers to Meteorology</td>
<td>3</td>
</tr>
<tr>
<td>or METEO 474</td>
<td>Computer Methods of Meteorological Analysis and Forecasting</td>
<td></td>
</tr>
</tbody>
</table>

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 courses and/or 300-, or 400-level courses from the Colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, and/ or Science.

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)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 414</td>
<td>Mesoscale Meteorology</td>
<td>4</td>
</tr>
<tr>
<td>METEO 415</td>
<td>Forecasting Practicum</td>
<td>3</td>
</tr>
<tr>
<td>METEO 481</td>
<td>Weather Communications I</td>
<td>3</td>
</tr>
<tr>
<td>METEO 482</td>
<td>Weather Communications II</td>
<td>3</td>
</tr>
</tbody>
</table>

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
- GEOSC 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 473 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

### Weather Risk Management Option (27 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 Applied Statistics in Science
- STAT 414 Introduction to Probability Theory
- STAT 415 Introduction to Mathematical Statistics
- STAT 460 Intermediate Applied Statistics
- STAT 462 Applied Regression Analysis

### Additional Courses: Require a grade of C or better

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)

### 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 (http://bulletins.psu.edu/).
Program Learning Objectives

1. Graduates can demonstrate skills for interpreting and applying atmospheric observations.
2. Graduates can demonstrate knowledge of the atmosphere and its evolution.
3. Graduates can demonstrate knowledge of the role of water in the atmosphere.
4. Graduates can demonstrate facility with computer applications to atmospheric problems.
5. 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 adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

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

University Park

Jon M. Nese
Associate Head for Undergraduate Programs
518 Walker Building
University Park, PA 16802
814-863-4076
j2n@psu.edu

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2020-21 academic year. To access previous years’ suggested academic plans, please visit the archive (http://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

General Option 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.
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.

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 University 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.

GWS, GQ, GH, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GH, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

**General Option 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

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 140*‡†</td>
<td>1</td>
<td>MATH 141*††</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 110 (GN)†</td>
<td>1</td>
<td>PHYS 211 (GN)‡</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 15, 30, or ESL 15††</td>
<td>1</td>
<td>METEO 101 (online)*</td>
<td>1</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>1</td>
<td>METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202</td>
<td>1</td>
</tr>
</tbody>
</table>

### Second Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 212 (GN)†</td>
<td>3</td>
<td>MATH 251</td>
<td>4</td>
</tr>
<tr>
<td>MATH 230*²</td>
<td>3</td>
<td>General Education Foundation Selection (GWS)††</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
</tbody>
</table>

### Third Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>METEO 431*</td>
<td>3</td>
<td>METEO 440W*</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301 or 401</td>
<td>3</td>
<td>METEO 411†</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>METEO 421†</td>
<td>4</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
</tbody>
</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>METEO 470*</td>
<td>3</td>
<td>Professional Elective*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 473 or 474*</td>
<td>3</td>
<td>Professional Elective*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 436, 437, or 454*</td>
<td>3</td>
<td>Professional Elective*</td>
<td>3</td>
</tr>
<tr>
<td>Professional Elective*</td>
<td>3</td>
<td>Professional Elective*</td>
<td>3</td>
</tr>
<tr>
<td>Professional Elective*</td>
<td>3</td>
<td>Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

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

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

### Atmospheric Sciences Option 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

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 140 or 140G (GQ)*†‡</td>
<td>4</td>
<td>MATH 141 or 141G (GQ)*†‡</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 110 (GN)†</td>
<td>3</td>
<td>ENGL 15, 30, or ESL 15 (GWS)†</td>
<td>3</td>
</tr>
<tr>
<td>EMSC 100S (GWS)††</td>
<td>3</td>
<td>PHYS 211 (GN)†</td>
<td>3</td>
</tr>
<tr>
<td>METEO 201*</td>
<td>3</td>
<td>METEO 273, CMPSC 101, CMPSC 200, CMPSC 201 or 202</td>
<td>3</td>
</tr>
<tr>
<td>General Education knowledge domain</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits 16**

#### Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 212 (GN)†</td>
<td>4</td>
<td>METEO 431*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 300*</td>
<td>4</td>
<td>MATH 251</td>
<td>4</td>
</tr>
<tr>
<td>MATH 230†‡</td>
<td>4</td>
<td>STAT 301 or 401</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General Education Health and Wellness (GHW)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits 15**

#### Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 421*</td>
<td>4</td>
<td>METEO 470*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 436, 437, or 454*</td>
<td>3</td>
<td>METEO 440W*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 411*</td>
<td>4</td>
<td>General Education Foundation Selection (GWS)††</td>
<td>3</td>
</tr>
<tr>
<td>METEO 473 or 474*</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits 14**

#### Fourth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 422</td>
<td>3</td>
<td>Professional Elective*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 436, 437, or 454*</td>
<td>3</td>
<td>Professional Elective*</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Professional Elective*</td>
<td>3</td>
<td>Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total Credits 15**

**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 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 University 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.
GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

### Atmospheric Sciences Option 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit 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 time. This plan should be used in conjunction with your degree audit in policies, procedures, educational offerings, and requirements at any time.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 140$^{3\dagger}$</td>
<td>4</td>
<td>MATH 141$^{1\dagger}$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 110 (GNS)</td>
<td>3</td>
<td>PHYS 211 (GNS)$^1$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL 15, 30, or ESL 15$^{1\dagger}$</td>
<td>3</td>
<td>METEO 101 (online)$^1$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits 14.5**

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 212 (GNS)$^1$</td>
<td>4</td>
<td>MATH 251</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH 230$^{2\dagger}$</td>
<td>4</td>
<td>CMPSC 300$^{3}$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Education Foundation Selection (GWS)$^{1\dagger}$</td>
<td>3</td>
<td>General Education Foundation Selection (GWS)$^{1\dagger}$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits 15.5**

<table>
<thead>
<tr>
<th>Third Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 431$^*$</td>
<td>3</td>
<td>METEO 440W$^*$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>STAT 301 or 401</td>
<td>3</td>
<td>METEO 411$^*$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>METEO 421$^*$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>Professional Elective$^4$</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits 17**

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 470$^*$</td>
<td>3</td>
<td>METEO 436, 437, or 454$^*$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>METEO 473 or 474</td>
<td>3</td>
<td>Professional Elective$^4$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>METEO 436, 437, or 454$^*$</td>
<td>3</td>
<td>Professional Elective$^4$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>METEO 422</td>
<td>3</td>
<td>Professional Elective$^4$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Professional Elective$^4$</td>
<td>3</td>
<td>Elective</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits 14**

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 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. 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 480(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 and may 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 University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate
an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

Environmental Meteorology Option 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

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 140 or 140G (GQ)††††</td>
<td>4</td>
<td>MATH 141 or 141G (GQ)††††</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 110 (GN)†</td>
<td>3</td>
<td>ENGL 15, 30, or ESL 15 (GWS)††</td>
<td>3</td>
</tr>
<tr>
<td>EMSC 100S (GWS)††††</td>
<td>3</td>
<td>PHYS 211 (GN)†</td>
<td>4</td>
</tr>
<tr>
<td>METEO 201*</td>
<td>3</td>
<td>METEO 273, CMPSC 101,</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMPSC 200, CMPSC 201,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>General Education</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knowledge Domain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 212 (GN)†</td>
<td>4</td>
<td>METEO 431*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 300*</td>
<td>4</td>
<td>MATH 251</td>
<td>4</td>
</tr>
<tr>
<td>MATH 230†*</td>
<td>4</td>
<td>STAT 301 or 401</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
<td>General Education</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge Domain</td>
<td></td>
<td>Knowledge Domain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>General Education Health</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wellness (GHW)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 421*</td>
<td>4</td>
<td>METEO 470*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 411*</td>
<td>4</td>
<td>METEO 440W*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 473 or 474†‡</td>
<td>3</td>
<td>General Education Foundation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selection (GWS)††</td>
<td></td>
</tr>
<tr>
<td>CE 370</td>
<td>3</td>
<td>General Education</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knowledge Domain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Professional Elective‡</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Fourth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 454*</td>
<td>3</td>
<td>METEO 455</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
<td>Professional Elective</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge Domain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
<td>Professional Elective</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge Domain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Elective‡</td>
<td>3</td>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

| Total Credits                  | 121     | 16                              |         |

University Requirements and General Education Notes:

- US and IL are abbreviations used to designate courses that satisfy University 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.
- GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.
- Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.
- All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

Environmental Meteorology Option 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**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MATH 140 ††</td>
<td>4 MATH 141 ††</td>
</tr>
<tr>
<td></td>
<td>CHEM 110 (GN) †</td>
<td>3 PHYS 211 (GN) †</td>
</tr>
<tr>
<td></td>
<td>ENGL 15, 30, or ESL 15 ††</td>
<td>3 METEO 101 (online) *</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202</td>
<td>3</td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 14.5 |

**Second Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PHYS 212 (GN) †</td>
<td>4 MATH 251</td>
</tr>
<tr>
<td></td>
<td>MATH 230 ‡</td>
<td>4 METEO 300 † †</td>
</tr>
<tr>
<td>General Education Foundation Selection (GWS) † †</td>
<td>3 General Education Foundation Selection (GWS) † †</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3 General Education Knowledge Domain</td>
<td>3</td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5 General Education Knowledge Domain</td>
<td>3</td>
</tr>
</tbody>
</table>

| Total Credits | 15.5 |

**Third Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>METEO 431 *</td>
<td>3 METEO 440W *</td>
</tr>
<tr>
<td></td>
<td>STAT 301 or 401</td>
<td>3 METEO 411 †</td>
</tr>
<tr>
<td></td>
<td>CE 370</td>
<td>3 METEO 421 †</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3 Professional Elective ‡</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 15 |

**Fourth Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>METEO 470 *</td>
<td>3 METEO 455</td>
</tr>
<tr>
<td></td>
<td>METEO 473 or 474 †</td>
<td>3 Professional Elective ‡</td>
</tr>
<tr>
<td></td>
<td>METEO 454 †</td>
<td>3 Professional Elective ‡</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3 Professional Elective ‡</td>
<td>3</td>
</tr>
<tr>
<td>Professional Elective ‡</td>
<td>3 Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

| Total Credits | 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 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 University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

**Weather Risk Management Option 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.
**Meteorology and Atmospheric Science, B.S.**

<table>
<thead>
<tr>
<th>General Education Knowledge Domain</th>
<th>3 General Education Knowledge Domain</th>
<th>3 General Education Health and Wellness (GHW)</th>
</tr>
</thead>
</table>

### Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 421*</td>
<td>4</td>
<td>METEO 470*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 436, 437, or 454*</td>
<td>3</td>
<td>METEO 440W*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 411*</td>
<td>4</td>
<td>METEO 415, 473, or 474*</td>
<td>3</td>
</tr>
</tbody>
</table>

| General Education Knowledge Domain | 3 EBF/EGEE Selection* | 3        |

| General Education Foundation Selection† (GWS)†† | 3 |

**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 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 advisor 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), EEGE 437(3); EEEG 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).

### Fourth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 415, 473, or 474*</td>
<td>3</td>
<td>METEO 460</td>
<td>3</td>
</tr>
<tr>
<td>EBF 473</td>
<td>3</td>
<td>EBF/EGEE Selection*</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3 STAT Selection*</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

| General Education Knowledge Domain | 3 Elective |

| Elective | 3 Elective | 4 |

**Total Credits 121**

### University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

### Weather Risk Management Option 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

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 140**#†</td>
<td>4</td>
<td>MATH 141**†</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 110 (GN)*</td>
<td>3</td>
<td>PHYS 211 (GN)*</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 15, 30, or ESL 15††</td>
<td>3</td>
<td>METEO 101 (online)*</td>
<td>3</td>
</tr>
<tr>
<td>ECON 102†</td>
<td>3 METEO 273, CMPSC 201, CMPSC 200, or CMPSC 201, or 202</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

General Education Health and Wellness (GHW) | 1.5 |

**Total Credits 14.5**

### Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 212 (GN)*</td>
<td>4</td>
<td>MATH 251</td>
<td>4</td>
</tr>
<tr>
<td>MATH 230*</td>
<td>4</td>
<td>METEO 300††</td>
<td>4</td>
</tr>
<tr>
<td>General Education Foundation selection (GWS)††</td>
<td>3 General Education</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

General Education Knowledge Domain | 3 General Education Knowledge Domain |

General Education Health and Wellness (GHW) | 1.5 General Education Knowledge Domain | 3 |

**Total Credits 15.5**

### Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 431*</td>
<td>3</td>
<td>METEO 440W*</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301 or 401</td>
<td>3</td>
<td>METEO 411†</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>3 METEO 421*</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits 11**
### Weather Forecasting and Communications Option 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

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 470*</td>
<td>3</td>
<td>METEO 460</td>
<td>3</td>
</tr>
<tr>
<td>METEO 436, 437, or 454*</td>
<td>3</td>
<td>METEO 415, 473, or 474 t5</td>
<td>3</td>
</tr>
<tr>
<td>METEO 415, 473, or 474 t5</td>
<td>3</td>
<td>EBF/EGEE Selection*4</td>
<td>3</td>
</tr>
<tr>
<td>EBF 473</td>
<td>3</td>
<td>Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

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 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); EGE 437 (3); EGE 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 University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

### Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 212 (GN)*1</td>
<td>3</td>
<td>METEO 431*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 300*</td>
<td>3</td>
<td>MATH 251</td>
<td>4</td>
</tr>
<tr>
<td>MATH 230**</td>
<td>3</td>
<td>STAT 301 or 401</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 16

### Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 421*</td>
<td>3</td>
<td>METEO 470*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 411*</td>
<td>3</td>
<td>METEO 440W*</td>
<td>3</td>
</tr>
<tr>
<td>METEO 481</td>
<td>3</td>
<td>METEO 482</td>
<td>3</td>
</tr>
<tr>
<td>METEO 473 or 474*3</td>
<td>3</td>
<td>General Education Foundation Selection (GWS)*4</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 14

### Fourth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METEO 436 or 437*</td>
<td>3</td>
<td>METEO 414</td>
<td>4</td>
</tr>
<tr>
<td>METEO 415</td>
<td>3</td>
<td>Professional Elective*4</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Professional Elective*4</td>
<td>3</td>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 15

Total Credits 121
Meteorology and Atmospheric Science, B.S.

* 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 prerequisites 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 467(3), GEOS 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 473(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 University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

Weather Forecasting and Communications Option 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.

<table>
<thead>
<tr>
<th></th>
<th>First Year</th>
<th>Credits</th>
<th>Second Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td></td>
<td></td>
<td><strong>Fall</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 140*[^]† †</td>
<td>4 MATH 141[^]† †</td>
<td>4</td>
<td>PHYS 211 (GNI)</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 15, 30, or ESL 15[^] †</td>
<td>3 METEO 101 (online)*</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3 METEO 273, CMPSC 101, CMPSC 200, CMPSC 201, or 202</td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
<td>3 14.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Fall</strong></td>
<td></td>
</tr>
<tr>
<td>General Education Foundation Selection (GWS)[^11]</td>
<td>3 General Education Foundation Selection (GWS)[^11]</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3 General Education Knowledge Domain</td>
</tr>
<tr>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5 General Education Knowledge Domain</td>
<td>1.5</td>
<td>General Education Health and Wellness (GHW)</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Fall</strong></td>
<td></td>
</tr>
<tr>
<td>METEO 431*</td>
<td>3 METEO 440W*</td>
<td>3</td>
<td>STAT 301 or 401</td>
<td>3 METEO 421*</td>
</tr>
<tr>
<td>METEO 481</td>
<td>3 METEO 411*</td>
<td>4</td>
<td>General Education Knowledge Domain</td>
<td>3 METEO 482</td>
</tr>
<tr>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td>General Education Knowledge Domain</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Fourth Year</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 414</td>
<td>3 METEO 414</td>
<td>4</td>
<td>METEO 473 or 474</td>
<td>3 Professional Elective[^]</td>
</tr>
<tr>
<td>METEO 436 or 437[^4]</td>
<td>3 Professional Elective[^]</td>
<td>3</td>
<td>METEO 415</td>
<td>3 Professional Elective[^]</td>
</tr>
<tr>
<td>METEO 415</td>
<td>3 Elective</td>
<td>3</td>
<td>Elective</td>
<td>3 Elective</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total Credits 121</td>
<td></td>
</tr>
</tbody>
</table>

[^*] 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.
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.

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

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).

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 University 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.

GWS, GQ, GH, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GH, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

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 12 percent from 2016 to 2026, 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.

Opportunities for Graduate Studies

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