

# METEOROLOGY (BS)

## Exploration and Discovery

The nationally recognized Plymouth State Meteorology program is one of very few in New England and the only one in New Hampshire. It offers students not only a high-quality curriculum in traditional and applied areas of meteorology and atmospheric science, but also a variety of experiential courses that include broadcast TV, weather seminar, research, internship opportunities, and others. The depth and versatility of the education received by graduates of this program allow them to either pursue advanced graduate study, or seek employment in the variety of operational and applied employment opportunities in meteorology and related fields, including in the rapidly growing private sector.

## Degree Requirements

Course	Title	Credits
<b>Major Requirements</b>		
MT 1000	Introduction to Weather Community	1
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
MT 2250	Introduction to Weather Analysis and Forecasting	4
MT 3230	Atmospheric Thermodynamics	3
MT 3725	Instruments and Observations in Meteorology	3
MT 4280	Synoptic Meteorology (TECO)	4
MT 4310	Dynamic Meteorology I	3
MT 4320	Dynamic Meteorology II	3
MT 4410	Atmospheric Physics	3
MT 4460	Climate Dynamics	3
MT 4480	Mesoscale Meteorology	3
MT 4725	Meteorological Remote Sensing (WRCO)	3
<b>Capstone Experience</b>		
Complete 6 credits from the following list:		6
MT 4155	Air Quality	
MT 4405	Numerical Weather Prediction (TECO)	
MT 4425	Tropical Weather and Climate	
ESP 4441	Climate Change	
MT 4560	Topics in Meteorology	
MA 3600	Differential Equations with Linear Algebra	
<b>Complete 2 credits from the following list of courses</b>		<b>2</b>
MT 4000	Meteorology Seminar	
MT 4264	Broadcast Meteorology	
MT 4360	Forecasting/Broadcast Practicum	
MT 4500	Undergraduate Research	
MT 4600	Internship	
MT 4910	Independent Study	
<b>Prerequisite Topics in Mathematics and Physical Sciences</b>		
CH 2335	General Chemistry I (QRCO)	4
Programming (Complete one CS course or both GE courses)		3-8
CS 2400		
or CS 2370	Introduction to Programming	
GE 2050	GIS I: Introduction to Geographic Information Systems (QRCO,TECO)	
GE 4060	GIS Programming	

MA 2550	Calculus I (QRCO)	4
MA 2560	Calculus II (QRCO)	4
MA 3500	Probability and Statistics for Scientists	3
or MA 2300	Statistics I (QRCO)	
MA 3540	Calculus III	4
PH 2510	University Physics I	4
PH 2520	University Physics II	4
General Education ( <a href="https://coursecatalog.plymouth.edu/general-education/">https://coursecatalog.plymouth.edu/general-education/</a> )		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#CTDI">https://coursecatalog.plymouth.edu/general-education/#CTDI</a> )	Creative Thought Direction	3-4
PPDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#PPDI">https://coursecatalog.plymouth.edu/general-education/#PPDI</a> )	Past and Present Direction	3-4
SSDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#SSDI">https://coursecatalog.plymouth.edu/general-education/#SSDI</a> )	Self and Society Direction	3-4
Directions (choose from CTDI, PPDI, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https://coursecatalog.plymouth.edu/general-education/</a> ) <sup>1</sup>		7-4
DICO ( <a href="https://coursecatalog.plymouth.edu/general-education/#DICO">https://coursecatalog.plymouth.edu/general-education/#DICO</a> )	Diversity Connection	3-4
INCP ( <a href="https://coursecatalog.plymouth.edu/general-education/#INCP">https://coursecatalog.plymouth.edu/general-education/#INCP</a> )	Integrated Capstone	4
WECO ( <a href="https://coursecatalog.plymouth.edu/general-education/#WECO">https://coursecatalog.plymouth.edu/general-education/#WECO</a> )	Wellness Connection	3-4
Electives		5-12
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Directions should total 16 credits because the Scientific Inquiry Direction (SIDI) is waived for BS Meteorology students.

### Path to a 4+1 BS and MS

Undergraduate students that reach senior status with a cumulative GPA of at least 3.0 may be able to complete the BS degree and earn their MS Applied Meteorology degree with one additional year of study. Students interested in completing both degrees in five years will consult with their academic advisor and choose to enroll in six credits of graduate courses (e.g., MT 5200 Transportation Meteorology) and will be advised to enroll in MT 4500 Undergraduate Research to fulfill their Capstone Experience.

Students will apply to the graduate program during their last year of undergraduate study. If admitted and after earning their BS degree,

students will complete 24 credits of graduate work during the following year. For example, students may enroll in four credits of graduate courses during the summer term after earning their BS and 20 credits of graduate courses during the following academic year.

## Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

Course	Title	Credits
<b>Year One</b>		
MT 1000	Introduction to Weather Community	1
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
MT 2250	Introduction to Weather Analysis and Forecasting	4
CH 2335	General Chemistry I (QRCO)	4
MA 2550	Calculus I (QRCO)	4
IS 1115	Tackling a Wicked Problem	4
MA 2560	Calculus II (QRCO)	4
MT 2250	Introduction to Weather Analysis and Forecasting	4
EN 1400	Composition	4
CTDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#CTDI">https://coursecatalog.plymouth.edu/general-education/#CTDI</a> )	Creative Thought Direction	3-4
<b>Credits</b>		<b>35-36</b>
<b>Year Two</b>		
MT 3230	Atmospheric Thermodynamics	3
MT 3725	Instruments and Observations in Meteorology	3
MA 3500 or MA 2300	Probability and Statistics for Scientists or Statistics I (QRCO)	3
MA 3540	Calculus III	4
PH 2510	University Physics I	4
PH 2520	University Physics II	4
PPDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#PPDI">https://coursecatalog.plymouth.edu/general-education/#PPDI</a> )	Past and Present Direction	3-4
SSDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#SSDI">https://coursecatalog.plymouth.edu/general-education/#SSDI</a> )	Self and Society Direction	3-4
WECO ( <a href="https://coursecatalog.plymouth.edu/general-education/#WECO">https://coursecatalog.plymouth.edu/general-education/#WECO</a> )	Wellness Connection	3-4
<b>Credits</b>		<b>30-33</b>

### Years Three and Four

MT 4725	Meteorological Remote Sensing (WRCO)	3
MT 4280	Synoptic Meteorology (TECO)	4
MT 4310	Dynamic Meteorology I	3
MT 4320	Dynamic Meteorology II	3
MT 4410	Atmospheric Physics	3
MT 4460	Climate Dynamics	3
MT 4480	Mesoscale Meteorology	3
MT	Complete 8 credits from a Capstone Experience	8
Programming		3-8
Directions (choose from CTDI, PPDI, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https://coursecatalog.plymouth.edu/general-education/</a> ) <sup>1</sup>		7-4
DICO ( <a href="https://coursecatalog.plymouth.edu/general-education/#DICO">https://coursecatalog.plymouth.edu/general-education/#DICO</a> )	Diversity Connection	3-4
INCP ( <a href="https://coursecatalog.plymouth.edu/general-education/#INCP">https://coursecatalog.plymouth.edu/general-education/#INCP</a> )	Integrated Capstone	3-4
Electives		5-12
<b>Credits</b>		<b>51-62</b>
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Directions should total 16-17 credits because SIDI is waived for BS Meteorology.

## Learning Outcomes

- Explain meteorological phenomena at various scales in terms of basic physical and dynamic process including radiative forcing, thermodynamics, microphysics, electricity, and optics.
- Plot, analyze and interpret weather maps, charts, and meteorological diagrams.
- Explain the design, strengths, weaknesses, and use of observational systems.
- Produce and explain short- and medium-term weather forecasts based on sound meteorological principles.
- Derive and interpret equations that describe atmospheric motions and dynamic processes for various spatial and temporal scales.
- Explain climate phenomena including global circulations, past and current climate, and basic physical mechanisms, responsible for climate change.
- Apply mathematical and statistical techniques to Earth systems data through scientific programming and meteorological software packages.
- Explain scientific ideas, results, and weather information through written and oral communication to technical and general audiences.
- Integrate and use meteorological knowledge and techniques in real-world applications.

## Career Pathways

A meteorology degree from Plymouth State prepares students for a wide variety of career options in each profession. Plymouth State University focuses on several concentrations within the program:

Meteorology: Meteorology touches upon virtually all aspects of human activity. Consequently, a variety of career opportunities are available for graduates. Meteorologists are employed in all the economic sectors—private, government and military.

For more information, visit Career Services in the Global Education Office.

**Sample Job Titles:**

- Air Quality Engineer
- College Professor
- Environmental Consultant
- Flight Director
- Forensic Meteorologist
- Instrumentation Specialist
- Meteorologist
- Physicist
- Risk Manager
- Technical Writer
- Broadcast Meteorologist

See the U.S. Department of Labor Outlook for a complete list.

**Useful Skills for Jobs in the Atmospheric Science Fields:**

- Ability to analyze cause and effects
- Proficiency in analytical reasoning
- Strong mathematical background
- Ability to organize and memorize detailed information
- Strong organization skills