

## Course Descriptions

### GEG 101 World Natural Environments

Nature of Geography; earth-sun relationships; map interpretation; and classification, distribution, and origins of the major elements of the natural environment (climates, soils, natural vegetation, watersheds, and landforms). Includes laboratory modules.

### GEG/GES 241 Meteorology

An introduction to weather, including the composition of the atmosphere, seasonality, heat and radiation balance, temperature, moisture and atmospheric stability, air pressure and wind, air masses and weather patterns, severe weather, instrumentation, local weather, as well as weather analysis and synoptic forecasting. Includes laboratory modules.

### GEG 303 Global Climatology

A study of the Earth's climate through an analysis of climatic controls, classification schemes and feedback cycles. Includes an examination of past global climates and global climate change scenarios.

### GEG 382 Weather Forecasting

A focus on synoptic and dynamic meteorology, as applied to weather forecasting. Students learn how to develop and present weather forecasts. Emphasis is on practice, and interpretation of daily weather and modeled data.

### GEG 383 Severe and Unusual Weather

Meteorological phenomena related to severe and unusual weather-related events, weather-analysis tools, climate-change outlooks, social implications, as well as planning and management strategies.

### GEG 384 Atmospheric Science

Study of the Earth's atmosphere. Emphasis is on atmospheric structure and composition, dynamics of motion, moisture and clouds, atmospheric chemistry, regional and local air pollution, aurora displays, and optical phenomena.

### GEG 386 Applied Climatology

Use of climatological information in various aspects of our lives to solve practical problems with environmental, social, and economic implications.

### GEG 415 Paleoclimatology

An overview of the methods used to reconstruct the Earth's climate history and environmental changes. Emphasis will be given to the climatic changes during the past 2 million years - time of the ice ages.

### GEG 478 Global Change

Interdisciplinary study of the principles needed to understand human impacts on the natural environment. Topics include climate variability and global warming, nutrient cycling, land use issues, the connections and feedbacks among climate, ecosystems, and biogeochemistry, as well as the impacts of global change on society, policy measures, and potential solutions.

### GEG 480 Air Pollution Modeling

Study of receptor, dispersion, and risk assessment modeling to determine the source, fate, and impact of air pollutants.



## Resources & Opportunities

The Department of Geography and Planning supports Meteorology, Paleoclimatology, and GIS labs. Weather stations are maintained at our city and water-front campuses. A strong working relationship exists with the Buffalo Office of the National Weather Service and local television stations. Students are provided with numerous opportunities to obtain internships, work as lab assistants, conduct research, and attend conferences.

## Meteorology & Climatology Faculty

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Certified Broadcast Meteorologist, AMS Seal of Approval and Broadcast Meteorologist for WKBW-TV

## Contact Information

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**“Whether students are interested in careers with a primary focus on meteorology, or careers that have another primary focus but require some knowledge of meteorology, Meteorology and Climatology at Buffalo State College provides an appealing approach.”**

**A BUFFALO-NIAGARA  
FRONTIER OPTION**

# Meteorology & Climatology



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**Department of  
Geography and Planning**

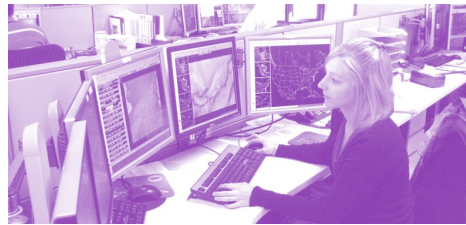
**Buffalo State**

## Why Buffalo State? Why Geography?

The Meteorology & Climatology Program at Buffalo State is housed within the Department of Geography and Planning. The Meteorology and Climatology Program is the only such program in the Buffalo-Niagara Frontier and is one of only a few Meteorology and Climatology programs that focuses on combining geographic skills of location and spatial analysis and human-environment interactions with basic meteorology and climatology skills. Students receive a B.A. degree in Geography with a Physical Geography Concentration focused on Meteorology and Climatology. A minor in Meteorology and Climatology is also offered. In either program, students may take a cluster of courses relating to forecast meteorology, consulting meteorology /climatology, the climatology of global change, or they may take a combination of courses from each cluster.

**"I have a fascination with weather but I'm looking for options other than a four-year degree meteorology program."**

The Meteorology focus is designed for students not intent on receiving a four-year degree in meteorology\* (with its emphasis on multivariable calculus, differential equations, and advanced physics, specific to weather forecasting) but who still wish to work and study in the discipline. While math and physics courses are always encouraged, our approach is to prepare students to interpret forecast products, rather than to create them. Emphasis is placed on a holistic understanding of geosciences and environmental issues that better prepare the student to work with consulting companies or, as in the case of broadcast meteorology, as a 'Station Scientist' (as promoted by the American Meteorological Society) where the broadcast meteorologist is called upon to make connections between weather and the environment.



NWS  
Internship

Students majoring in Communications at Buffalo State may consider taking the Meteorology & Climatology Minor to prepare for a career in broadcast meteorology. The Communication Department is accredited by the Accrediting Council on Education in Journalism and Mass Communication (ACEJMC). It is among only 15%, of all institutions, offering accredited instruction in the professional field, and the only school in the SUNY system to receive national accreditation.

\*A four-year meteorology degree is required for employment with the National Weather Service.

**"I'm interested in how weather and climate affect humans and the environment, including impacts of a changing climate."**

The Climatology focus (which includes meteorology courses) is one that is traditionally offered by Geography Departments. Climatologists work with the language of meteorology to understand atmospheric interactions with ecosystems, human health, construction, and agriculture, to name but a few. Climatology offers the student a field of study that goes beyond weather forecasting to include an exploration of issues ranging from global climate change to microclimates, and to relate these to human-environment interactions. Emphasis is placed on the application of the discipline's concepts and skills to solve real world problems. Climatologists today study past climates and are also at the forefront of understanding our changing present and future climates. A climatology focus best prepares a student for graduate study in a range of atmospheric and environmental related disciplines.

Climatology of  
vineyards.



**"I'm interested in meteorology but I don't plan to pursue a career focused on it."**

Students in other majors at Buffalo State may consider taking the Meteorology & Climatology Minor to add a useful dimension to an existing major (e.g. education, earth sciences, anthropology, forensic chemistry), or simply because a student has an interest in meteorology. Packaging courses into a recognized Minor may open up opportunities in the future not currently recognized by the student.

### Geography Major (focus on Meteorology & Climatology)

Students choose from a number of meteorology and climatology courses but they are also required to take courses such as: 'World Natural Environments', 'Human Geography', 'Computers in Social Science', 'Remote Sensing and Mapping', 'Quantitative Methods', 'Methods in Social Research', as well as a regional course. Students have the option to take a number of courses in computer mapping (GIS) and physical geography. Students in the Major are encouraged to add the Meteorology and Climatology Minor. Please visit our web site for more details.

### Meteorology & Climatology Minor (18 credits)

#### Required Courses:

GEG101 World Natural Environments  
GEG241 Meteorology (or GES241)

#### Choose three from the following:

GEG303 Global Climatology  
GEG382 Weather Forecasting  
GEG383 Severe and Unusual Weather  
GEG384 Atmospheric Science  
GEG386 Applied Climatology  
GEG415 Paleoclimatology

#### Choose one from the following :

Any course not selected from above  
GEG375 Principles of Hydrology  
GEG480 Air Pollution Modeling  
GEG478 Global Change  
GEG488 Internship  
GEG499 Independent Study