The atmosphere is one of our most important natural resources and improved understanding of weather and climate is of ever-increasing importance to regional, national and international interests. Yet changes in climate are also a national security concern as it can destabilize nation states. Thus, one primary objective in the program is to make the student more fully aware of the implications of climate change.

### Degree Benefits

The concentration provides a foundation for understanding the climate system and its components, as well as interactions of the climate system components with, and impacts on, the environment and society focusing on the spatial perspective by utilizing geo-spatial technologies and techniques. In order to address applied climate science issues both nationally and internationally, the degree helps develop interdisciplinary training in the physical and related sciences (physics, climatology, meteorology, geography, geology, mathematics, statistics and computer science) as well as an appreciation for human behavior. The applied climatology concentration will provide that necessary training and experience.

### Job Options

Climate-related vulnerability is increasing. Issues such as natural hazard/disaster management, climate change, changing frequency and severity of extreme climate events, environmental degradation, deforestation, desertification and increased demand for water resources are the basis of increased demand for trained professionals. As an example, the National Weather Service (NWS) has for many years hired meteorologists certified in weather forecasting. The NWS is more recently placing a greater emphasis on climate and looks to establish a focal point on climate and climate services at each of the 123 Weather Service Offices across the United States. Similar opportunities are being expanded through the National Climatic Data Center. In addition, The Weather Channel, which has traditionally focused almost exclusively on weather services, has now hired a climatologist to lead its climate media content. These changes signal a paradigm shift of a much greater interest in, and a much-increased demand for, trained professionals in applied climate sciences. These changes are likely to move through federal and state agencies, consulting firms and other organizations across the country and increase demand for climate scientists.

Students may attain careers in the following specialties: climatologist, spatial-climate modeler, climate data analyst, climate program manager, environmental protection specialist, research technician and outreach specialist.

Agencies hiring applied climate scientists: National Drought Mitigation Center, Climate Diagnostics Center, Climate Services Division of the National Weather Service, State and Regional Climate Centers, Climate Modeling and Diagnostics Center, Environmental Protection Agency, utility companies and corporate entities in the transportation sector.

### Program Objectives

The atmosphere is one of our most important natural resources and improved understanding of weather and climate is of ever-increasing importance to regional, national and international interests. Yet changes in climate are also a national security concern as it can destabilize nation states. Thus, one primary objective in the program is to make the student more fully aware of the implications of climate change.

### Students who earn a degree in geography – applied climatology will be able to:

- Demonstrate knowledge of the Earth’s integrated systems.
- Analyze and interrogate climate data and draw conclusions that either support or refute hypotheses.
- Develop reliable information and products to equip decision-makers (e.g., government officials, policy-makers, business leaders) to plan for a changing climate.
- Demonstrate a working knowledge of the impacts of climate variability and change on human and natural systems.

Also, graduates will be proficient in the following skills:

- Use and analysis of geologic and topographic maps, including computational geospatial (GIS) data.
- Quantitative analysis of data.
- Scientific writing of research methods, results and dissemination.

### University Resources

The program provides students with opportunities to acquire lab and professional experience, learn geospatial techniques, and become familiar with atmospheric data and research, obtaining data-analysis skills necessary to work independently on research. Literature on weather, climate and society is readily available and the student will become proficient in such work. The program offers unique experiential opportunities such as internships or Research Experiences for Undergraduates (REU) both locally and nationally. Faculty members emphasize collaboration both in the Department of Earth Sciences and other related departments on campus that facilitate an interdisciplinary approach. Our climate-trained faculty members have been hired by the American Meteorological Society (AMS) to author climate textbooks and contribute to related climate projects. Students will have access to the diverse laboratory facilities in the Eberly Center for Science & Technology. Specifically, students will have access to and utilize the Operational Meteorology Lab, the Geospatial-Analysis Lab, Watershed Laboratory and the Meteorology-Media studio. Applied climatology majors may also select a minor from such fields as meteorology, chemistry, computer science and mathematics.

### BACHELOR OF ARTS IN GEOGRAPHY

#### APPLIED CLIMATOLOGY—120 CREDITS

The following eight-semester schedule of courses provides a recommended framework for completing this program of study in four years. To ensure that they are making satisfactory academic progress, students should consult with their faculty adviser, ensure that they complete necessary prerequisites and required courses in sequence, and complete a minimum of 15 credits each semester.
Freshman Year
First Semester ............................................................ 17 credits
GEO 100 Introduction to Geology ........................................ 3 crs.
ENG 101 English Composition I ........................................ 3 crs.
UNI 100 First Year Seminar ............................................ 1 cr.
EAS 242 Introduction to Meteorology ................................ 4 crs.
MAT 281 Calculus I .......................................................... 3 crs.
General Education Courses ................................................ 3 crs.

Second Semester ............................................................ 16 credits
ENG 217 Scientific & Technical Writing .............................. 3 crs.
EAS 242 Climatology ........................................................ 3 crs.
EAS 150 Introduction to Geology ........................................ 4 crs.
GEO 220 Geography of North America & Pennsylvania .... 3 crs.
General Education Courses ................................................ 3 crs.

Sophomore Year
Third Semester .............................................................. 16 credits
GEO 217 Demographic Analysis ........................................ 3 crs.
GIS 311 Geographic Information Systems ......................... 3 crs.
CSC 120 Problem Solving & Program Construction ............ 3 crs.
EAS 340 Climatology ......................................................... 3 crs.
PHY 121 General Physics I .................................................. 4 crs.

Fourth Semester ............................................................ 15 credits
EAS 163 Introduction to Oceanography .............................. 3 crs.
EAS 200 Historical Geology ............................................ 3 crs.
Option-related Course ...................................................... 3 crs.
General Education Courses ................................................ 6 crs.

Junior Year
Fifth Semester .................................................................. 15 credits
GEO 360 Emergency Management .................................... 3 crs.
Climatology Recommended Elective ................................ 3 crs.
General Education Courses ................................................ 6 crs.
Option-related Course ...................................................... 3 crs.

Sixth Semester .................................................................. 15 credits
GEO 426 Impacts & Sustainability of Tourism ..................... 3 crs.
GEO 420 Disaster Vulnerability Assessment ......................... 3 crs.
EAS 414 Climatology ........................................................ 3 crs.
General Education Courses ................................................ 3 crs.
Climatology Recommended Electives ................................. 3 crs.

Senior Year
Seventh Semester ........................................................... 12-15 credits
EAS 542 Climatology ........................................................ 3 crs.
GEO 474 Developing the Master Plan .................................. 3 crs.
Electives .............................................................................. 6-9 crs.

Eighth Semester .............................................................. 12 credits
Electives .............................................................................. 12 crs.

Program Contact Information
Contact the Department of Earth Sciences by phone at 724-938-4180.

Department Website
www.calu.edu/academics/colleges/eberly/earth-science/

Questions About Admissions?
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California University of Pennsylvania is a proud member of the Pennsylvania State System of Higher Education. Located in the borough of California, just 35 miles from Pittsburgh, Cal U serves about 8,200 undergraduate and graduate students.

- Cal U’s main campus houses academic buildings, dining and recreation facilities, and six suite-style residence halls.
- Cal U’s upper campus includes the Vulcan Village apartments, athletic facilities at Roadman Park, and space for student meetings and outdoor recreation at SAI Farm.
- Cal U Global Online is the University’s virtual campus, offering degree and certificate programs 100% online.

Financial Aid
For information on student loans and undergraduate scholarships, visit www.calu.edu or call 1-888-412-0479.

Finances and Procedures: Note that the policies and procedures described above may be reviewed and revised at any time. This fact sheet should be used as an informational guide. For details on current policies and procedures, contact the Provost/Vice President of Academic Affairs at 724-938-4407.

www.calu.edu A proud member of the Pennsylvania State System of Higher Education.