Physical Geography, Certificate

Requirements for an undergraduate certificate may be completed at any campus location offering the specified courses for the certificate.

Program Description
Physical geographers study Earth's physical environment and its interactions with human activities across spatial and temporal scales. Through courses for the 12-credit certificate in Physical Geography, students will understand and be able to articulate the geographic patterns and physical processes attending Earth’s climate and landscape systems, including its hydrology, landforms, soils, and vegetation, along with the evidence for and impacts of past and contemporary environmental changes.

What is Physical Geography?
Physical geography is one of four key subdisciplines within geography (along with human geography, environment-society geography, and geographic information science). Physical geographers seek to understand Earth’s natural systems and processes and their interactions with human activities across spatial and temporal scales. Physical geographers conduct field and laboratory work and use geospatial technologies to explore and model environmental phenomena such as vegetation and wildlife, wetlands ecology and management, landscape dynamics, climate systems, and global environmental change. Some topics of study include the burning of fossil fuels and emissions of greenhouse gases and particulates into the atmosphere, natural gas fracking and earthquakes, river diversion and dam construction, groundwater withdrawal and land subsidence, urbanization and the “heat island” effect, land clearance and deforestation, irrigated agriculture, wildland fire, the introduction of invasive species, and coastal overdevelopment.

You Might Like This Program If...
• You are interested in the integrated ways in which Earth’s near-surface atmosphere, hydrosphere, lithosphere, and biosphere interact.
• You would like to address real-world issues of how human activities impact and are impacted by the physical landscape at many scales, from local to international.

Program Requirements
To earn an undergraduate certificate in Physical Geography, a minimum of 12 credits is required.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEOG 210</td>
<td>Geographic Perspectives on Environmental Systems Science</td>
<td>3</td>
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<tr>
<td>Select 9 credits from:</td>
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<tr>
<td>GEOG 310</td>
<td>Introduction to Global Climatic Systems</td>
<td>3</td>
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<tr>
<td>GEOG 310W</td>
<td>Introduction to Global Climatic Systems</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 314</td>
<td>Biogeography and Global Ecology</td>
<td>3</td>
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<tr>
<td>GEOG 315</td>
<td>Landforms and Geomorphic Systems in the Anthropocene</td>
<td>3</td>
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<tr>
<td>GEOG 410</td>
<td>Climatic Change and Variability</td>
<td>3</td>
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<td>GEOG 411</td>
<td>Forest Geography</td>
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<td>GEOG 411W</td>
<td>Forest Geography</td>
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<tr>
<td>GEOG 412</td>
<td>Principles and Applications in Landscape Ecology</td>
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<tr>
<td>GEOG 414</td>
<td>Principles and Applications in Landscape Ecology</td>
<td>3</td>
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<tr>
<td>GEOG 438W</td>
<td>Human Dimensions of Global Warming</td>
<td>3</td>
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Non-Course Requirements
Per University policy, all credit courses for a certificate require a grade of 'C-' or higher, and at least two-thirds (2/3) of the credits used to complete a certificate must be earned at Penn State. If student is completing multiple certificates in Geography, no more than one (1) course may double-count for each.

Learning Outcomes
Identify, describe, and analyze the processes that lead to spatial variation on Earth’s surface, and the current and historical, physical and biotic processes that shape specific landscapes.

Academic Advising
The objectives of the university’s academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers. Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

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

University Park
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Career Paths
Students earning the Physical Geography certificate learn a wide range of research and analytical skills that are highly valued by employers. Students trained in physical geography find jobs in all levels of government, nonprofit organizations, and in industry. This is one of several geography-related certificates that students can use to tailor their educational experience in preparation for the job market. In addition to Physical Geography, the Department of Geography offers certificates in Environment and Society Geography; Geospatial Big Data Analytics; Geographic Information Systems; Human Geography; Justice, Ethics and Diversity in Space; and Landscape Ecology.

Careers
Students earning the certificate in Physical Geography are well-positioned to find employment with diverse organizations spanning
business, government, and nonprofit sectors. Such organizations may include (but are not limited to): Conservation International; Federal Emergency Management Agency; NASA; National Oceanic and Atmospheric Administration; National Park Service; Natural Resources Defense Council; Resources for the Future; U.S. Army Corps of Engineers; U.S. Environmental Protection Agency; U.S. Forest Service; U.S. Geological Survey; local, regional, and state planning agencies, environmental and engineering consulting firms; policy research institutes; private corporations; and humanitarian organizations.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES WITH A CERTIFICATE IN PHYSICAL GEOGRAPHY (http://www.geog.psu.edu)

Opportunities for Graduate Studies
A certificate in Physical Geography is useful for students who are interested in pursuing graduate degrees in the environmental and social sciences. Alumni enter graduate and professional studies in a variety of programs, including (but not limited to) geography, environmental sciences, ecology, sustainability, public policy, emergency management, planning, and law. They sometimes begin graduate or professional programs directly after finishing undergraduate studies, but often get several years’ work experience before returning to school, either full or part-time.

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (http://www.geog.psu.edu)

Professional Resources
• American Association of Geographers (AAG) (http://www.aag.org)
• American Geophysical Union (AGU) (https://sites.agu.org)
• Ecological Society of America (ESA) (https://www.esa.org/esa)
• American Geosciences Institute (AGI) (https://www.americangeosciences.org)

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