

# CLIMATE AND ENVIRONMENTAL CHANGE, CERTIFICATE

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

## Program Requirements

Code	Title	Credits
<b>Required Courses</b>		
<i>Required Courses: Require a grade of C or better</i>		
GEOG 310	Introduction to Global Climatic Systems	3
or GEOG 310W	Introduction to Global Climatic Systems	
Select 9-10 credits from the following (may not choose more than 1 course from GEOG 362, GEOSC 482, or METEO 477)		
EARTH 402	Modeling the Earth System	
GEOG 362	Remote Sensing and Image Analysis	
GEOG 410		
GEOG 412W	Climatic Change and Variability	
GEOG 417	Satellite Climatology	
GEOG 438W	Human Dimensions of Global Warming	
GEOSC 320	Geology of Climate Change	
GEOSC 450	Risk Analysis in the Earth Sciences	
GEOSC 482	Satellite Remote-Sensing For Earth Observation	
METEO 436	Radiation and Climate	
METEO 469	From Meteorology to Mitigation: Understanding Global Warming	
METEO 470	Climate Dynamics	
METEO 477	Fundamentals of Remote Sensing Systems	

## Non-Course Requirements

Prerequisites not included in certificate:

- EARTH 402 Prerequisites: (EARTH 2 or EARTH 103) and (CHEM 110) and (MATH 83 or MATH 110 or MATH 140)
- GEOG 310/GEOG 310W Prerequisite: GEOG 10 or GEOG 210 or METEO 3 or METEO 101 or METEO 201
- GEOG 362 Prerequisite: GEOG 160 or GEOG 260
- GEOSC 450 Prerequisites: introductory Earth Science or Geosciences course and introductory statistics course and (MATH 110 or MATH 140)
- METEO 436 Prerequisite: METEO 300, concurrent: METEO 431
- METEO 469 Prerequisite: STAT 200 or MATH 110 or MATH 140
- METEO 470 Prerequisites: METEO 300, METEO 421, METEO 431
- METEO 477 Prerequisite: METEO 436 or EE 330

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 (including Global & Environmental Change), no more than one (1) course may double-count for each.