

CLIMATE SCIENCE OPTION

This option is offered within the following major(s):

- Earth Sciences - College of Earth, Ocean, and Atmospheric Sciences (<http://catalog.oregonstate.edu/college-departments/earth-ocean-atmospheric-sciences/earth-sciences-bs-hbs/>)

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The Climate Science Option centers around the physical science of climate and climate change, with a smaller number of courses studying the intersection of climate with biological, social, political, and economic systems. The program is interdisciplinary, with coursework spanning atmospheric science, oceanography, geology, and geography. Students gain hands-on experience through a field course to multiple sites in Oregon, as well as independent research or an internship. A focus of the program is on transferrable skills, such as programming, data analysis and visualization, and written and oral communication, which are integrated in courses throughout the curriculum. Electives allow students to pursue additional coursework to prepare them in their specific career interests. Graduates of the program will be prepared for positions in state and local governments, utilities, consulting firms, non-profits, and private industry, as well as further study in graduate school. The need for climate scientists is expected to increase as governments and businesses incorporate more specialized climate planning related to mitigation and adaptation solutions.

Option Code: 836

Code	Title	Credits
Option specific Math and Science Requirements		
PH 221	RECITATION FOR PHYSICS 211 ¹	1
<i>Chemistry</i>		
Select one of the following: 5		
CH 122	*GENERAL CHEMISTRY	
CH 232 & CH 262	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 232	
<i>Physics</i>		
Select one of the following options: 10		
Option A		
PH 202	*GENERAL PHYSICS	
PH 203	*GENERAL PHYSICS	
Option B		
PH 212 & PH 222	*GENERAL PHYSICS WITH CALCULUS and RECITATION FOR PHYSICS 212	
PH 213 & PH 223	*GENERAL PHYSICS WITH CALCULUS and RECITATION FOR PHYSICS 213	
<i>Calculus</i>		
MTH 252	INTEGRAL CALCULUS	4
MTH 254	VECTOR CALCULUS I	4
Core Requirements		
ATS 295	OBSERVING CLIMATE	3
ATS 301	CLIMATE DATA ANALYSIS	4
ATS 310	METEOROLOGY	4

ATS 420	CLIMATE PHYSICS	4
ATS 421	CLIMATE MODELING	4
GEO 484	INTRODUCTION TO BIOGEOCHEMISTRY	3
GEO 486	QUATERNARY PALEOCLIMATOLOGY	3
GEOG 323	*CLIMATOLOGY	4
Experiential Learning		
Select 6 credits of the following: 6		
ATS 401	RESEARCH	
ATS 403	THESIS	
ATS 410	INTERNSHIP	
Electives		
Select at least one course in Climate Impacts, Adaptation, or Mitigation: 3		
CH 374	*TECHNOLOGY, ENERGY, AND RISK	
ENGR 363	*ENERGY MATTERS	
FW 325	*GLOBAL CRISES IN RESOURCE ECOLOGY	
GEOG 240	*HUMAN DIMENSIONS OF CLIMATE CHANGE	
GEOG 441	THE WORLD'S WATER	
GEOG 440	CONFLICT, COOPERATION, AND CONTROL OF WATER IN THE US	
OC 333	OCEANS, COASTS, AND PEOPLE	
PH 313	*ENERGY ALTERNATIVES	
WSE 473	BIOENERGY AND ENVIRONMENTAL IMPACT	
Select at least one course in Policy or Economics: 3-4		
AEC 352 or ECON 352	*ENVIRONMENTAL ECONOMICS AND POLICY	
PS 455	*THE POLITICS OF CLIMATE CHANGE	
PS 473	US ENERGY POLICY	
PS 478	RENEWABLE ENERGY POLICY	
Select an additional 15 credits of electives listed above or below: 15		
ATS 411	THERMODYNAMICS AND CLOUD MICROPHYSICS	
ATS 412	ATMOSPHERIC RADIATION	
ATS 413	ATMOSPHERIC CHEMISTRY	
ATS 475	PLANETARY ATMOSPHERES	
GEO 433	COASTAL GEOMORPHOLOGY	
GEO 481	GLACIAL GEOLOGY	
GEO 488	QUATERNARY STRATIGRAPHY OF NORTH AMERICA	
GEOG 423	SNOW HYDROLOGY	
OC 334	*POLAR OCEANOGRAPHY	
OC 430	PRINCIPLES OF PHYSICAL OCEANOGRAPHY	
OC 440	BIOLOGICAL OCEANOGRAPHY	
OC 450	CHEMICAL OCEANOGRAPHY	
OC 460	GEOLOGICAL OCEANOGRAPHY	
No more than two of the following may be used toward the 15 additional elective credits:		
GEOG 480	REMOTE SENSING I: PRINCIPLES AND APPLICATIONS	
GEOG 481	SATELLITE IMAGE ANALYSIS	
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	
MTH 341	LINEAR ALGEBRA I	
ST 352	INTRODUCTION TO STATISTICAL METHODS	
WR 362	*SCIENCE WRITING	

Total Credits 80-81

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Students taking PH 211 in this option are required to take PH 221 concurrently

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Baccalaureate Core Course

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Writing Intensive Course (WIC)

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