CLIMATE SCIENCE OPTION

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

- Earth Sciences - College of Earth, Ocean, and Atmospheric Sciences

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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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>PH 221</td>
<td>Recitation for Physics 211 ¹</td>
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<td><strong>Chemistry</strong></td>
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<tr>
<td>CH 122</td>
<td>*General Chemistry</td>
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<td>CH 232</td>
<td>General Chemistry &amp; CH 262 and *Laboratory for Chemistry 232</td>
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<td><strong>Physics</strong></td>
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<td>PH 203</td>
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<td>PH 212</td>
<td>*General Physics with Calculus</td>
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<td>&amp; PH 222 and Recitation for Physics 212</td>
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<td>PH 213</td>
<td>*General Physics with Calculus &amp; PH 223 and Recitation for Physics 213</td>
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<td><strong>Calculus</strong></td>
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<td>MTH 252</td>
<td>Integral Calculus</td>
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<tr>
<td>MTH 254</td>
<td>Vector Calculus I</td>
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<td><strong>Core Requirements</strong></td>
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<td>ATS 295</td>
<td>Observing Climate</td>
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<td>ATS 301</td>
<td>Climate Data Analysis</td>
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<td>ATS 310</td>
<td>Meteorology</td>
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<tr>
<td>ATS 420</td>
<td>Climate Physics</td>
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</tbody>
</table>

ATS 421 | Climate Modeling                                   | 4       |
GEO 484 | Introduction to Biogeochemistry                    | 3       |
GEO 486 | Quaternary Paleoclimatology                        | 3       |
GEOG 323 | *Climateology                                      | 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 | International Water Resources Management           |         |
GEOG 440 | Water Resources Management in the United States    |         |
OC 333 | Oceans, Coasts, and People                         |         |
PH 313 | *Energy Alternatives                                |         |
WSE 473 | *Biobiodiversity and Environmental Impact          |         |

Select at least one course in Policy or Economics: 3-4

AEC 352 | *Environmental Economics and Policy                |         |
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**

¹ Students taking PH 211 in this option are required to take PH 221 concurrently

* Baccalaureate Core Course
^ Writing Intensive Course (WIC)