GEOG-205 – Climate Change Science

University Arts and Science

Effective Term & Year: Fall 2025
Course Outline Review Date: 2030-04-01

Program Area: Math and Sciences

Description:

In this interdisciplinary science course, students examine climate change through the integration of scientific, socio-economic, and political perspectives. It addresses one of the most pressing challenges of our time by incorporating both Euro-Western and Indigenous sciences and knowledge systems. Students will examine the evidence and impacts of climate change, including observed and projected changes, as well as mitigation and adaptation strategies. An analysis of the Earth's climate system, radiative energy balance, forcing and feedbacks, and anthropogenic effects will introduce student to climate science. Through hands-on labs, case studies, and research, learners will critically analyze strategies employed by diverse communities, including urban, rural, and Indigenous populations. This holistic approach equips students to navigate the complexities of the global climate crisis and contribute to meaningful solutions.

Program Information:

This course can be used as either a required course or an elective in several University Arts and Sciences and Sustainable Business Programs. Refer to the College Program Guide for additional information.

Delivery Methods: Online, On-campus (Face-to-Face)

Credit Type: College of the Rockies Credits

Credits: 3

Course type/s: Sciences, Social Sciences

Instructional Activity and Hours:

Activity	Hours
Classroom, Directed Studies or Online Instruction	45
Seminar/Tutorials	
Laboratory/Studio	45
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	90

Course Requisites:

None

Prior Learning and Recognition: Yes

Students are able to request formal recognition of their prior learning or experience outside the classroom. Challenge examination, portfolio-assisted assessment, work-based assessment or a combination of assessments that is appropriate to identify, assess, and recognize prior skills, competencies, and knowledge to achieve course credit. Tuition fees apply, refer to Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR) or contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at either British Columbia or Alberta institutions, please see https://www.bctransferguide.ca/ or https://transferalberta.alberta.ca . For more transfer credit information, please visit https://www.cotr.bc.ca/Transfer

All requests for course transfer credit from institutions in British Columbia or elsewhere should go to the College of the Rockies Enrollment Service office.

Textbook Resources:

Please see suggested learning resources. Readings and videos will be assigned by the instructor.

Recommended Learning Resources:

Chapter excerpts from the latest edition of the Intergovernmental Panel on Climate Change (IPCC) Mitigation Assessment Reports

Schmittner, A. 2018. Introduction to Climate Science. Oregon State University. Available at: https://open.oregonstate.education/climatechange/

Javier, Vinos. 2022. Climate of the Past, Present and Future: a Scientific Debate. 2nd Ed. Available open source

Granshaw, F. 2020. Climate Toolkit: A Resource Manual for Science and Action-Version 2.0. Available at: https://openlibrary- repo.ecampusontario.ca/jspui/handle/123456789/803

Selkirk College. 2021. Columbia Basin Climate Source. Available at: https://basinclimatesource.ca

UNFCCC Adaptation Committee. 2019. Information Paper on Linkages Between Mitigation and Adaptation'. Available at: https://unfccc.int/documents/460926

Solaun, K., Eickhold, F., & Marquardt, M. 2019. A new narrative of resilient and climate smart societies aligning adaptation, mitigation, and the SDGs (GIZ Report / Paper). Available at: https://www.international-climate-initiative.com/en/iki-media/ publication/a-new-narrative-of-resilient-and-climate-smart-societies-aligning-adaptation-mitigation-and-the-sdgs-1546/

Arikan, Y., Carreño, C., & Van Staden, M. 2020. ICLEI's Climate Neutrality Framework – Accelerating integrated climate action for sustainable urban development. Available at: https://wuf.unhabitat.org/sites/default/files/2022-06/files/ ICLEIs_Climate_Neutrality_Framework.pdf

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Learning Outcomes:

By the end of this course, learners will be able to:

- examine natural and human drivers of climate change, including past and projected changes;
- assess the challenges of measuring climate over time and space;
- appraise the strengths and limitations of climate models;
- explain the effects of climate change on people, communities, and ecosystems;
- critically assess mitigation and adaptation approaches, including plans, policies, and community responses at various scales;
- research climate strategies employed by urban, rural, and Indigenous communities through data analysis, case studies, and policy reviews;

- critically assess the interplay between scientific research, NGO advocacy, and the IPCC's role in driving climate action, while examining the feasibility and implications of diverse energy solutions; and
- develop skills in critical evaluation, effective communication, and interdisciplinary problem-solving related to climate change.

Course Topics:

- Background and History of Climate Science
- Climate Science
- Impacts of Climate Change
- Modeling Climate
- Future Climates
- Mitigation and Adaptation Strategies
- Alternative Energy
- Climate Policy
- Climate in the Media
- Future Solutions

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face) and Online, or Hybrid

Assessment Type	% of Total Grade
Midterm Exam (s)	30%
Lab Assignments	30%
Summative Assignment	20%
Final	20%
Total	100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

Pass requirements:

A passing mark 50% or higher on lecture assessments and 50% or higher on lab assessments is required.

Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a “0” on the exam.

Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct
- Policy 2.4.8 Academic Performance
- Policy 2.4.9 Student Feedback and Concerns
- Policy 2.4.11 Storage of Academic Works
- Policy 2.5.3 Student Appeal
- Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)

Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.