

## Climate, Environment, and Sustainability Courses – Winter 2020-2021

**Looking for courses related to climate solutions?** The University of Victoria is a global leader in climate research, which means students have the opportunity to take classes from researchers at the forefront of the field. The [Pacific Institute for Climate Solutions \(PICS\)](#) has compiled a list of UVic courses being offered from this fall onwards that focus on climate change, climate solutions, and other environmental issues. Whether you're looking for an elective so you can learn more about the basics of climate science or hoping to focus the last years of your degree on environmental policy, we can point you in the right direction.

Even though classes are going to look a little different this year, we're still working to make sure you can engage with topics that matter, like climate solutions. This course list is just one part of a Climate Solutions Toolkit that we are working on (sneak peek!) to help you make the most of your time at UVic. Look for the completed tool kit in the coming months.

[Feedback?](#) Are we missing a class that should be on the list? Send us an email at [picsstudenteng@uvic.ca](mailto:picsstudenteng@uvic.ca)!

Course	Title	Department	Description	Instructor
<a href="#">ANTH302</a>	Globalization, Health, and the Environment	Anthropology (ANTH)	A comparative framework for understanding the relationship between global processes, the environment and health. Topics may include the origin and evolution of infectious diseases with human societies, social and economic inequalities, violence, gender, diet, health policies, technologies, pandemics, climate change, and healthcare industries. Emphasis on how local experiences of health are linked to global processes via the environment.	Fall: Dr. Leslie Butt
<a href="#">BIOL215</a>	Principles of Ecology	Biology (BIOL)	An introduction to factors controlling the distribution and abundance of plants and animals. Physical environments of organisms; biotic environments and interactions among species; factors influencing population growth; behavioural ecology; community ecology; succession; trophic levels and energy flow, island biogeography; biodiversity; human impact on global ecology; conservation ecology.	Fall: Dr. Thomas Reimchen
<a href="#">BIOL370</a>	Conservation Biology	Biology (BIOL)	Diversity of organisms, functioning of ecosystems, and the impact of human activities on these. Topics include the nature of biological diversity; extinction and its cause; habitat alteration and fragmentation; effects of exotic species; economic and ethical considerations; practical applications and analytical tools; and legal frameworks for conserving species and habitats.	Spring: TBA
<a href="#">CIVE340</a>	Sustainable Water Resources	Civil Engineering (CIVE)	Design and environmental integration of a water resource system using simulation and geomatics software. Introduction to hydrology; hydraulic engineering, and water resources planning; environment and management of watersheds and ecosystems; risk and uncertainty; urban water systems and water quality; economic demand and supply principles, externalities.	Fall: Dr. Tom Gleeson

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CIVE310	Environmental Engineering	Civil Engineering (CIVE)	Environmental systems analysis techniques for natural and engineered systems. Sources, characteristics, transport, and effects of air and water contaminants; biological, chemical, and physical processes in water; unit operations for air and water quality control; water and wastewater treatment processes; solid waste management; environmental quality standards. Design, planning, and management of engineered environmental systems.	Spring: Dr. Caetano Dorea
CIVE315	Environmental Policy	Civil Engineering (CIVE)	Introduction to environmental policy, law and governance and cultural and sociological implications of sustainable engineering. How policy is formed and changed. Civil engineering development in First Nations.	Spring: Dr. Madeleine McPherson
<a href="#">CS201</a>	Issues and Ideas in Canadian Environmentalism	Canadian Studies (CS)	An exploration of the connections between Canadian culture and environment including an examination of our cultural worldview both past and present. Investigates how our sense of nation, national destiny and religious, cultural and ethnic inheritance has shaped and continues to shape our ideas of the wilderness, the Canadian environment and environmental issues.	Fall: Dr. Norman Fennema
<a href="#">ECON381/ES312</a>	Environmental Economics I	Economics (ECON)	An introduction to the economic analysis of environmental problems. In particular, an examination of policy interventions in cases where market activities result in socially undesirable impacts on the environment. Topics typically include: externalities; pollution control policy; climate change; public goods; time, uncertainty and the environment; and trade and the environment.	Fall: Dr. Richard Martin; Spring: Dr. Richard Martin, TBA
<a href="#">ECON382</a>	Natural Resource Economics I	Economics (ECON)	Introduces students to economic issues and public policies specific to the use and management of natural resources. Explores economic principles for the efficient allocation of renewable and non-renewable natural resources over time. Topics typically include a review of current natural resource issues affecting Canada, with particular focus on British Columbia, and policies for the management of forests, water, mineral, petroleum and marine resources, and the conservation of biological diversity.	Fall: TBA; Spring: Dr. Linda Hoi Fei Wong
<a href="#">ECON481</a>	Environmental Economics II	Economics (ECON)	A detailed treatment of advanced topics in environmental economics. Topics covered vary from year to year, but typically include a selection from the following: property rights and the Coase theorem, risk and uncertainty, sustainability, policy design under asymmetric information, monitoring and enforcement, green consumerism and corporate environmentalism, trade and the environment, climate change and transboundary pollution, mobile source pollution, non-point source pollution, solid waste management, technological change and non-market valuation.	Fall: Dr. Peter Kennedy

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<a href="#">EOS110</a>	Oceans and Atmosphere	Earth and Ocean Sciences (EOS)	Origin and structure of the oceans and atmosphere. Dynamic processes that drive ocean and atmosphere circulation, weather patterns and global climate change. The coastal ocean, marine ecosystems, nutrient and carbon cycles, human influences on ocean environments, marine resources and sustainability.	Fall & Spring: Dr. Roberta Hamme, Dr. Benjamin Michael Grupe
<a href="#">EOS120</a>	The Dynamic Earth	Earth and Ocean Sciences (EOS)	Internal and external processes that shape the Earth and its landscapes. Nature of tectonic forces, earthquakes, volcanoes, rocks and minerals, and mountain building. Processes of erosion, sediment transport and deposition and glaciation. Global water cycle and hydrological processes. Geologic record of past environmental change and its impact on life. Natural resources, natural hazards and sustainability.	Fall: Dr. Lucinda Jane Leonard; Spring: Dr. Dante Canil
<a href="#">EOS260</a>	Earth System Evolution	Earth and Ocean Sciences (EOS)	Introduces the inherently interdisciplinary field of "Earth System Science" by studying how Earth has evolved throughout its history. Focus is on processes which link components of the Earth system and feedbacks which may alternately keep conditions on Earth stable or cause major change. The course includes study of some major events in Earth history (examples may include snowball Earth, mass extinctions, superplume events).	Fall: Dr. Colin Goldblatt
<a href="#">EOS340</a>	Atmospheric Sciences	Earth and Ocean Sciences (EOS)	Introduction to the dynamic and thermodynamic processes governing the Earth's weather and climate. Emphasis on energy and temperature; cloud and precipitation processes; winds and weather systems; ocean-atmosphere interaction; El Niño; and past, present and future climates.	Spring: Dr. Adam H Monahan
<a href="#">EOS350</a>	Understanding the Oceans	Earth and Ocean Sciences (EOS)	Focuses on a small set of ocean topics involving human impacts on the ocean that are of particular relevance to society. Topics considered may include pollution, overfishing, ocean acidification, marine conservation, and coastal modification.	Fall: Dr. David Riddell, Dr. Richard Dewey
<a href="#">EOS365/ES365</a>	Climate and Society	Earth and Ocean Sciences (EOS) <b>OR</b> Environmental Studies (ES)	A survey of the climate system and its interaction with past, present and future societies. Topics include: climate change and the onset of agriculture/domestication, climate change and the rise and fall of early civilizations, the anthropocene and global warming. The interplay between science, media, public relations and public policy is also addressed.	Fall: Dr. Hansi Alice Kalpana Singh; Spring: Dr. Andrew John Weaver

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<a href="#">EOS433</a>	The Climate System	Earth and Ocean Sciences (EOS)	Studies of the Earth's climate require an understanding of the intimate links between the hydrosphere, atmosphere, cryosphere and biosphere. Basic theories of the dynamics of ocean and atmosphere. The physics and biogeochemistry of coupled models are examined with emphasis on simple intuition-building mathematical models as well as discussion of large computer models.	Spring: TBA
<a href="#">EOS460</a>	Earth System Science	Earth and Ocean Sciences (EOS)	An examination of the interrelationships between the complex systems operating in the solid Earth, hydrosphere, atmosphere and biosphere; methods of systems analysis for the planet; modelling of global processes.	Spring: Dr. Dante Canil
<a href="#">ER311</a>	Principles and Concepts of Ecological Restoration	Environmental Restoration (ER)	An examination of how effective restoration depends on both ecological and cultural awareness, including the physical, chemical and biological characteristics of ecosystems from local to global scales; the impacts of human-induced change; the philosophical and ethical context for good restoration; the need for and significance of community involvement; the legal and policy frameworks that direct and influence restoration activities; and the importance of understanding essential ecosystem characteristics in restoration.	Fall & Spring: Dr. Richard Hebda
<a href="#">ER313/ES348</a>	Biodiversity and Conservation Biology	Environmental Restoration (ER) <b>OR</b> Environmental Studies (ES)	Study of biological organisms and ecosystems with particular reference to mechanisms of change and human impacts on the environment. Focuses on: biodiversity (definition, assessment methods, loss, and evaluation); population biology (concepts and research methods); habitat loss; species extinction; exotic species and their impacts; and possibilities for human intervention in alleviating trends in species loss and ecosystem degradation.	Fall: Dr. Emily Gonzales
<a href="#">ER326</a>	Traditional Systems of Land and Resource Management	Environmental Restoration (ER)	Physical, chemical and biological characteristics of soils and their relationship to restoration. Soil fertility; importance of soil flora and fauna, especially mycorrhizae. Comparison of characteristics of undisturbed soils. Types of soil disturbance in agriculture, forestry, mining and urban environments; soil restoration strategies; planning pre- and post-disturbance.	Spring (one week intensive): Dr. Leigh Jenny Joseph
<a href="#">ER334</a>	Soil Conservation and Restoration	Environmental Restoration (ER)	Introduction to the symptoms and sources of environmental problems and approaches to resolving them. Global and local food systems are used as a focal lens through which to view and understand human impacts on ecosystems (e.g. climate change, biodiversity loss, deforestation) and how those impacts can be best addressed.	Spring (one week intensive): Dr. Steeve Deschenes

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<a href="#">ES200</a>	Introduction to Environmental Studies	Environmental Studies (ES)	Introduction to the symptoms and sources of environmental problems and approaches to resolving them. Global and local food systems are used as a focal lens through which to view and understand human impacts on ecosystems (e.g. climate change, biodiversity loss, deforestation) and how those impacts can be best addressed.	Fall & Spring: Dr. James Rowe
<a href="#">ES240</a>	Ecological Processes	Environmental Studies (ES)	An introduction to the discipline of ecology with a focus on understanding biotic processes as they relate to contemporary environmental challenges.	Fall: Dr. John Volpe
<a href="#">ES301</a>	Political Ecology	Environmental Studies (ES)	An introduction to the various socio-political and philosophical issues associated with the concept of a sustainable society. Emphasis is placed on the analysis of the complex relationships between social and biophysical systems. Examines how communities and environments are being impacted by the globalization of economies and cultures, technologies and ideologies, as well as responses from a variety of local, non-governmental and international agencies.	Fall: Dr. Karena Shaw; Spring: Dr. Karena Shaw, Dr. Sebastian Bonet
<a href="#">ES302</a>	Capitalism, Justice and Sustainability	Environmental Studies (ES)	Examines how the global capitalist economy is transforming ecosystems, and how social and environmental challenges are in turn beginning to transform capitalism. Economic alternatives are examined in local and global contexts (e.g. the social economy, steady state economies and Indigenous economic practices).	Fall: Dr. Ana Maria Peredo
<a href="#">ES321</a>	Ethnoecology	Environmental Studies (ES)	Environmental knowledge systems of indigenous and other local peoples are increasingly recognized as having relevance in understanding and documenting biological diversity and conservation and in undertaking ecological restoration. The different aspects of local and traditional ecological knowledge and their relationships to western academic knowledge are reviewed and the issues and requirements for applying local knowledge in environmental sustainability are explored.	Fall: Dr. Natalie Ban, Dr. Hannah Roessler; Spring: Dr. Darcy Mathews
<a href="#">ES341</a>	Past, Present, and Future Ecologies	Environmental Studies (ES)	Explores how ideas and practices about ecosystems and nature more generally have come to be in the early 21st century, how they are manifest in the present, and what trends will shape the future. Rapid environmental, ecological and cultural changes are forcing a reconsideration of how we understand nature and natural processes, and how to intervene responsibly in ecosystems. Themes are drawn from landscape and community ecology, systems ecology, ethnoecology, restoration ecology, and political ecology.	Fall: Dr. Brian Starzomski

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<a href="#">ES404</a>	Deep Roots, Trajectories of Environmental Thought	Environmental Studies (ES)	Examines classic works and persistent themes in North American environmental thought. A study of primary source material and texts by writers such as Thoreau, Austin, Muir, Pinchot, Leopold, Carson, Ellul, Schumacher, Berry and Shiva.	Spring: Dr. Duncan Taylor
<a href="#">ES405</a>	Climate, Energy and Politics	Environmental Studies (ES)	Focuses on developing the knowledge and skills necessary to evaluate how we might reshape energy systems to address the dual challenges of climate change and sustainability.	Fall & Spring: Dr. Karena Shaw
<a href="#">GEOG101A</a>	Environment, Society and Sustainability	Geography (GEOG)	Introduction to the functioning of the biosphere, the ways in which humans alter natural processes, environmental consequences of these alterations and the implications for sustainability. Topics include: energy flows, biogeochemical cycles, ecosystem structure and dynamics, pollution, global change, water resources, biodiversity, endangered species, protected areas, agriculture and food, forestry, marine resources, poverty and development and different worldviews. Potential for a sustainable society is discussed.	Fall: Dr. Philip Dearden; Spring: TBA
<a href="#">GEOG103</a>	Introduction to Physical Geography	Geography (GEOG)	Introduces the science of Physical Geography using an earth-systems approach. Course themes include global climates and climate change, hydrology and water resources, geomorphology and natural hazards, and biogeography; with focus on how geographic sciences are applied to address real world issues.	Fall: Dr. Eva Katrin Kwohl; Spring: Dr. Shannon Fargey
<a href="#">GEOG209</a>	Introduction to Environmental Management	Geography (GEOG)	Introduces students to the conceptual foundations of resource and environmental management by emphasizing geographic aspects of resource systems within environmental, social, economic, and policy frameworks. Using a variety of examples, it examines strategies and tools such as adaptive management approaches, ecosystem-based management, impact assessment, and conflict resolution.	Dr. Cameron Owens
<a href="#">GEOG272</a>	Introduction to Climatology and Hydrology	Geography (GEOG)	An investigation of the fundamental processes controlling climate and hydrology. Explores various factors and interactions that determine the spatial and temporal variations of individual climate elements. Special attention is given to the mutual interaction of climate with the Earth's surface and the role that ground surface type or cover plays in moderating local climate and hydrology.	Fall: TBA

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<a href="#">GEOG274</a>	Introduction to Biogeography	Geography (GEOG)	Examines the relationships among organisms - principally plants and animals - and their environment, emphasizing their distributions across a range of spatial and temporal scales. Examines basic ecological and evolutionary concepts affecting biogeographic processes of dispersal, speciation and extinction; how patterns of biodiversity change over space and time from early earth history to the contemporary environment; the nature of changing biotic distributions with increasing human impacts and global change.	Spring: Dr. David Duffuss
<a href="#">GEOG301</a>	Environmental Impact Assessment	Geography (GEOG)	An introduction to the objectives, philosophy, concepts, methods and social implications of environmental impact assessment (EIA). A critical examination of EIA as an analytical tool in the context of resource management and public policy is undertaken. Examples are drawn from B.C., Canada and other countries.	Spring: Dr. Cameron Owens
<a href="#">GEOG314</a>	Global Environment Change and Human Response	Geography (GEOG)	Based on four components: global environmental change; sustainable development; biodiversity; and population impoverishment and environmental degradation. Lectures and discussion emphasize the causes of global change, the present and expected impacts on natural and social systems, and response strategies that have been proposed or enacted.	Fall: Dr. Sophia Carodenuto
<a href="#">GEOG346</a>	Health, Environment and Community	Geography (GEOG)	Examines the dynamics and linkages between health and the environment at the micro scale of individuals to the macro scale of communities and nations. Definitions of health, wellness and well-being, as well as healthy communities; focusing on the range of factors, conditions and determinants that make people and place healthy or unhealthy.	Fall: Dr. Harvey Harrold
<a href="#">GEOG373</a>	Applied Climatology	Geography (GEOG)	A study of the application of physical principles to practical problems in climatology and the reciprocal interaction between climate and human activities. Topics include: urban effects on climate; air pollution; human bioclimatology; agricultural climatology; and methods of microclimatic modification.	Spring: Dr. David Atkinson
<a href="#">GEOG406</a>	Sustainable Cities	Geography (GEOG)	Explores the opportunities and challenges of planning ecologically, socially and environmentally just cities.	Spring: Dr. Cameron Owens
<a href="#">GEOG450</a>	Environment and Sustainability in Practice	Geography (GEOG)	Examines the decision making theory and real world processes associated with resources management at the policy and field levels. Case studies used to illustrate decision making behaviour, from conflict to co-operation. Simulation sessions, field trip and field methods review.	Spring: Dr. Sophia Carodenuto
<a href="#">HDCC200</a>	Introduction to Human Dimensions of Climate Change	Human Dimensions of Climate Change (HDCC)	An introduction to understanding and mitigating the impacts of climate change. After a basic introduction to the physical nature of climate change, the focus turns to impacts on humans in political, economic, sociological, and psychological terms, including possible mitigation and public policy strategies.	Fall: TBA; Spring: TBA

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<a href="#">HDCC300</a>	Climate Change for Social Transformation	Human Dimensions of Climate Change (HDCC)	An opportunity for critical engagement with climate change as physical transformation, cultural object and incitement to social transformation. This interdisciplinary course approaches climate change as complex phenomena that are co-constituted by social and natural worlds. The course introduces students to a variety of lenses, knowledge networks, culturally constructed narratives and social justice issues that help them understand why responding to climate change is challenging but also opens up opportunities for change.	Spring: TBA
<a href="#">HDCC400</a>	Seminar on Human Dimensions of Climate Change	Human Dimensions of Climate Change (HDCC)	Presentations by instructors, guest lecturers and students reinforce and extend knowledge of, and perspectives on, the impacts of climate change on humans. Strategies for mitigating the impacts are also considered.	Spring: TBA
<a href="#">HSTR101E</a>	Environmental History of the World	History (HSTR)	Explores the interaction between humankind and the global environment with emphasis on the post-1492 period. Central topics include the agricultural revolution, animal domestication, the Columbian Exchange, capitalism and industrialization, the impact of fossil fuels, species extinction, climate change, and environmentalism.	Fall: Dr. Jenny Clayton
<a href="#">LAW328/ES419</a>	Green Legal Theory	Law (LAW) <b>OR</b> Environmental Studies (ES)	Develops critical theoretical basis for extending the understanding of social/natural regulation beyond mainstream environmental law and policy; individual research, presentation and contribution to a developing new 'naturalist' understanding of law in its political economy and cultural context.	Spring: Dr. Mark Zion
<a href="#">LAW329</a>	Environmental Law	Law (LAW)	This is a foundational course for students interested in environmental law and policy. Students acquire an overview of recent developments and debates within this area. Topics addressed include federalism and the environment, common law rights and remedies, public participation and judicial review, market mechanisms for environmental protection, endangered species, and trade and the environment. A key focus concerns the extent to which environmental law reflects, or fails to reflect, evolving social and other values.	Fall: Dr. Christopher Tollefson

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<a href="#">LAW353</a>	Environmental Law Centre Clinic	Law (LAW)	An opportunity to study the theory and engage in the practice of public interest environmental lawyering in a supervised clinical setting. Students enrolled in the Clinic provide legal information and assistance to environmental NGOs, community groups and First Nations. They also develop public interest lawyering skills including advocacy through media, client counselling and case development and management. The class meets for a weekly seminar to discuss ongoing projects and related readings, and to exercise skills. At the end of term, every student submits for evaluation a major written product prepared for a designated clinic client.	Fall & Spring: Dr. Calvin Sandborn
<a href="#">MECH444</a>	Wind Power Systems	Mechanical Engineering (MECH)	History of wind power. Wind resource characteristics. Aerodynamic analysis: steady and unsteady rotor flow models, sectional aerodynamics. Aeroelastic response: structural models, degree of freedom reduction, time-domain simulation. Control: objectives, hierarchy, methods, classical and modern approaches. Electrical aspects: generator concepts and control, grid integration. Component design and structural analysis. Wind farms. Levelized cost of energy.	Fall: Dr. Curran Crawford
<a href="#">MECH459</a>	Fundamentals of Hybrid Vehicles	Mechanical Engineering (MECH)	Advance of hybrid electric vehicle (HEV) technology; power plants, electric propulsion systems, transmissions, and onboard energy storage systems; fuel cell vehicles; vehicle performance modelling and simulation using advanced vehicle powertrain modelling tools; design and optimization of HEV powertrain system; and HEV design case studies.	Fall: Dr. Zuomin Dong
<a href="#">MECH497</a>	Green Vehicle Technology Project	Mechanical Engineering (MECH)	General background of Hybrid Electric Vehicle (HEV) technologies; green vehicle technology training by industry experts; design using advanced modeling and simulation tools; design, analysis, prototyping and testing of vehicle subsystems or key components for green vehicle technology development. Each student presents a complete report at the end of the term and makes an oral presentation of the findings.	Spring: TBA
<a href="#">PHIL333/ES314</a>	Philosophy and the Environment	Philosophy (PHIL)	A philosophical investigation of the moral and conceptual dimensions of environmental problems. Different philosophies of the relation between humans and nature will be compared.	Fall: Dr. Thomas Heyd
<a href="#">POLI357</a>	Canadian Environmental Politics	Political Science (POLI)	An examination of political factors shaping development and implementation of Canadian environmental policy.	Spring: Dr. James Lawson
<a href="#">PHYS340</a>	Atmospheric Sciences	Physics (PHYS)	Introduction to the dynamic and thermodynamic processes governing the Earth's weather and climate. Emphasis on energy and temperature; cloud and precipitation processes; winds and weather systems; ocean-atmosphere interaction; El Nino; and past, present and future climates.	Spring: Dr. Adam Monahan

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<a href="#">RS307</a>	Religion & The Environment	Religious Studies (RS)	Surveys of the influence religious beliefs and practices have had upon humanity's understanding of the environment (nature). a Consideration of the contributions that religious ethics can make to our reflection on specific environmental issues.	Spring: Dr. Martin Adam
<a href="#">SPAN304</a>	Indigenous Latin America, Social Justice, Environment (in English)	Spanish (SPAN)	Focuses on globally relevant social and environmental issues being addressed by Indigenous peoples in countries such as Bolivia, Brazil, Guatemala, Mexico and Peru. In-depth study of themes including decolonization, education, and social mobilization. Lectures, film excerpts, guest speakers, student presentations and thought-provoking dialogue.	Fall: Dr. Gabriela Wieland McBee

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