

# CURRICULUM DEVELOPMENT PROJECTS

## 2021-2024 SUMMARIES



THE UNIVERSITY OF BRITISH COLUMBIA  
**Sustainability Hub**

Sustainability Education Fellows  
Climate Education Grants  
Climate and Wellbeing Education Grants



## Land Acknowledgement

The Sustainability Hub office is located at the UBC Point Grey campus situated on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam). As part of the larger UBC community, we are guests and settlers on the traditional, ancestral, and unceded territories of the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), Selílwitlh (TseilWautuh), and Syilx (Okanagan) Nations.

In our pursuit of sustainability, climate action and climate justice, we understand that protecting human rights is indelibly woven into the fabric of environmental protection and sustainability.



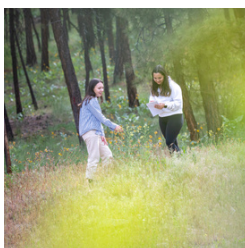
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# About

University graduates are entering a world impacted by climate change, biodiversity loss, food and water insecurity, and upheaval in economic and social systems. Addressing these issues requires transformative perspectives, innovation, and new approaches. The Sustainability Hub catalyzes interdisciplinary teaching and curriculum innovation through the Sustainability Education Fellows program, Climate Education Grants (CEG) and Climate and Wellbeing Education Grants (CWEG). This report showcases some of the projects that the Hub has supported in recent years with the hope of inspiring more faculty members across disciplines to develop sustainability and climate change curricula at UBC.

## Sustainability Education Fellows



Sustainability Education Fellows grants are awarded to UBC Vancouver faculty members who are leading the design of sustainability courses and programs. The program looks to advance and diversify sustainability education opportunities for students across campus in all disciplines. The program has been run by the Sustainability Hub since 2010 and has contributed over \$750,000 to curriculum development projects.

## Climate Education Grants 2021-2023



The Climate Education Grant program has the goal of quickly improving the depth and delivery of climate change content in existing courses by integrating and/or bolstering topics such as climate adaptation and resilience, climate justice, climate science, climate economics, climate law, planning and policy, and complex systems thinking. Instructors receive a grant of up to \$5,000 to revise, deliver and assess one course.

## Climate and Wellbeing Education Grants 2023-2024



The Climate and Wellbeing Education Grants support faculty from UBC Vancouver and UBC Okanagan to promote wellbeing in the classroom, particularly while teaching and learning about challenging topics such as climate change. A grant of up to \$6,000 is provided per instructor to revise and deliver materials, activities and/or resources for an existing course.

This grant is offered by the Sustainability Hub in partnership with the UBC Office of Wellbeing Strategy.





## Sustainability Education Fellows Grants

The Sustainability Hub's Sustainability Education Fellows Program provides grants to UBC Vancouver faculty to develop or enhance curriculum and contribute to advancing sustainability education at UBC. Since 2010 it has provided over \$750,000 in grants to more than 80 UBC faculty members enhancing and creating dozens of sustainability modules, courses, and programs reaching thousands of students every year.

The Sustainability Fellows span a wide range of disciplines and areas of expertise from architecture to poetry, and civil engineering to medicine. Explore some of the projects developed since 2021, and discover how the Sustainability Fellows are pushing the boundaries of interdisciplinary sustainability education.

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Photo courtesy of Canva



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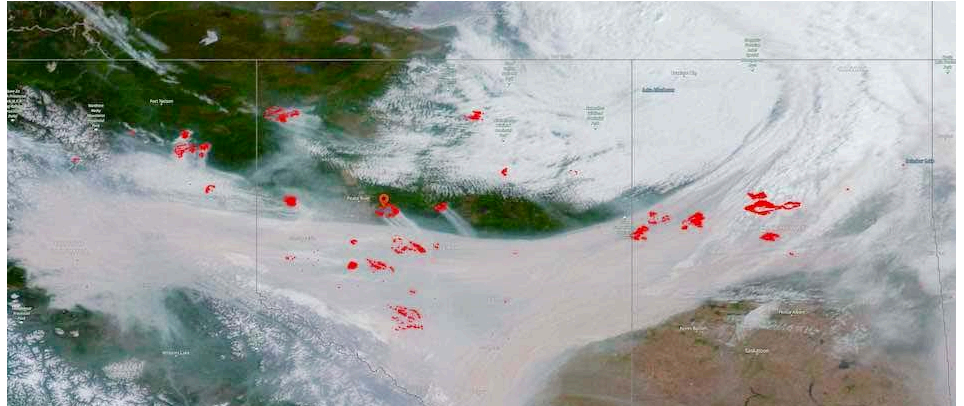
# Forest-fire, Weather and Climate: An Element of Applied Meteorology and Sustainability

**Dr. Roland Stull**  
**Dr. Ian Mckendry**

Earth, Ocean and Atmospheric Sciences, Faculty of Science  
Geography, Faculty of Arts

Project Year: 2021-2023

Link: ATSC 413 - Forest Fire Weather & Climate



Wildfire hazards are increasingly threatening people living near the urban and forest interface. British Columbia is currently in a “catch-22” where citizens demand that fires near homes and communities be suppressed, but the resulting build-up of forest fuels causes forest fires to be more extreme, devastating and difficult to suppress.

## **LIVING WITH FIRE**

With climate change, population growth, and forest fire suppression practices exacerbating these hazards, expertise in wildfire management is urgently needed. Dr. Roland Stull and Dr. Ian Mckendry recognized that students, as future experts, will be required to debate this conflict and explain how their decisions as citizens and their actions as experts can shape the future environment of BC.

## **BUILDING EXPERTISE IN WILDFIRE MANAGEMENT**

They worked with two graduate students, Laim Buchart and Chris Rodell and created a 4th-year course Atmospheric Science (ATSC) 413 "Forest-fire Weather and Climate". The course offers technical training needed to understand wildfire environmental issues, recommends decisions on sustainable policies in the face of climate change, utilizes geographic information systems to characterize spatial aspects of fires and population, and applies weather forecasting to firefighting scenarios.

The grant supported the drafting of a newly approved course proposal, crafting a web page for ATSC 413 content delivery, hiring graduate students specializing in forest-fire weather research for course design assistance, collaborating with Environment and Climate Change Canada (ECCC) on "synoptics" topics that need to be covered, curating textbooks, materials and resources, selecting wildfire case studies, generating course content for web servers, and developing quizzes on Canvas. The course was delivered for the first time during the fall 2023 semester.

Photos courtesy of [EOAS, UBC](#)

# Developing the Climate Studies and Action Certificate

**Dr. Tara Ivanochko** Earth, Ocean and Atmospheric Sciences, Faculty of Science

**Dr. Jessica Dempsey** Geography, Faculty of Arts

Project Year: 2021/22

Link: [Certificate in Climate Studies and Action](#)



There are a wide range of faculty doing climate-related research and teaching on the UBC Vancouver campus, but they are dispersed across different faculties and departments. This project brings together students, faculty and staff focusing on climate change to develop an interdisciplinary climate themed credential for UBC students.

## OVERVIEW OF THE CLIMATE STUDIES AND ACTION CERTIFICATE PROGRAM

Dr. Tara Ivanochko and Dr. Jessica Dempsey collaboratively created the Climate Studies and Action Certificate. This program was designed to address the growing need for education focused on climate science and justice-based actions. The certificate offers undergraduate students across UBC an opportunity to earn a credential that equips them with the knowledge and skills necessary to tackle the climate emergency.

The certificate requires the completion of 18 course credits, including three core courses, one elective, a seminar series, and a capstone project. The curriculum integrates academic study with community-based learning, providing students with practical experience alongside theoretical knowledge. This initiative aligns with UBC's Climate Emergency Task Force recommendations, aiming to expand climate education and foster a culture of engagement and advocacy within the UBC community and beyond.

## NAVIGATING COMPLEXITIES IN CERTIFICATE DEVELOPMENT AND APPROVAL

A significant portion of the program development involved curricular design, resulting in the creation of syllabi for new courses integral to the certificate. These courses, including GEOG 202, and the capstone GEOG / EOSC 402, were designed to provide students with a comprehensive understanding of climate change, its impacts, and potential solutions. The project also required the preparation of documentation for curriculum committee approval, including a financial model and a memorandum of understanding (MOU) between the Faculties of Arts and Science.

The development and approval process for the Climate Studies and Action Certificate was complex, involving coordination across multiple faculties and administrative offices. The primary challenge was meeting the stringent curriculum committee deadlines with all required documentation and approvals. However, thanks to the collaborative efforts of individuals within the Faculties of Art and Science, and the Provost's office, these challenges were effectively managed.

Photos courtesy of Canva

# Urban Planning, Architecture and Indigenous Community Planning in the Context of Sustainability: An Interdisciplinary Curriculum for Education at UBC and Beyond

**Dr. Allison Earl**

School of Architecture and Landscape Architecture, Faculty of Applied Science

**Dr. Margaret (Maggie) Low**

School of Community and Regional Planning, Faculty of Applied Science

Project Year: 2021-2022

Link: [Dr. Margaret \(Maggie\) Low UBC Profile](#)



School districts, community partners and pre-service teachers alike are hungry for a focus on sustainability in education. As the trend to innovate and influence with exciting new content and approaches continues, Dr. Allison Earl and Dr. Maggie Low seek to contribute to this process by joining the existing team of UBC professors, school districts and community partners.

## **MOTIVATION**

In 2018, the Education for Sustainability Cohort was launched in the Teacher Education Program at UBC. Over the past two years, full cohorts of 36 teacher candidates have engaged with and contributed to this innovative approach, showcasing the strong demand from school districts, community partners, and pre-service teachers for a sustainability-focused education.

Building on this success, the project developed four interconnected course modules to integrate sustainability education across various UBC disciplines. These modules included:

- Indigenous Community Planning
- Sustainable Urban Architecture and Tactical Urbanism
- Participatory Planning with Children
- Systems Thinking

The modules were piloted in four UBC courses—EDST 401, ARCH 568, DES 130, and LARC 525—spanning the disciplines of Education, Architecture, and Landscape Architecture, and reached approximately 380 students. The courses were delivered in both in-person and online formats, often incorporating outdoor learning components to adapt to the needs of the students and the unique challenges posed by the COVID-19 pandemic.

## **TESTIMONIAL FROM STUDENT**

“I thought this lesson was really interesting. I loved seeing how children's voices were being incorporated into city planning. We speak a lot about bringing students into nature to do place based teaching, but this lesson gave me many ideas of how to do that in a more urban landscape.”

Photos courtesy of Canva

# Climate Change Education Through Immersive Media

**Dr. Sandra Scott**

Curriculum and Pedagogy, Faculty of Education

**Dr. Lindsay Rogers**

Biochemistry and Molecular Biology, Faculty of Medicine

Project Year: 2022-2024

Link: [Ocean Education: Developing knowledge, caring, and taking action](#)

Educating for sustainability informs and inspires learners to prioritize eco justice and advocate and take action for clean air, water, and soil for all. The project's guiding question was how can emerging media enrich existing UBC courses by connecting learners and providing an immersive learning environment for climate education?

One of the greatest threats to life on Earth today is anthropogenic climate change and, as a result, communities are experiencing worldwide environmental destruction. Sustainability-focused climate change education is crucial to addressing the world's environmental crises. Using emerging media, this project supported a seminar series entitled Ocean Education: Developing knowledge, caring, and taking action. The series centred on Climate and Nature education and Ocean Optimism with each speaker presenting their research, teaching, and community engagement with a focus on the Salish Sea.

The speaker series has been integrated into two Faculty of Education courses: EDCP 538 Theory and Research in Environmental Education, and EDUC 430 The Community Field Experience. It is now featured on the Edith Lando Virtual Learning Centre [website](#).

In 2024, this project will focus on developing a Climate Education Platform, an interactive map-based platform where learners can view, discuss, and upload additional content, linking climate history, research, hope, impact, and action to specific geographic locations within their community.



Photo courtesy of [UBC Edith Lando Virtual Learning Centre](#)

# Climate Communications: Developing a Transdisciplinary Approach to Understanding and Engaging the Social Complexity of Climate Action

**Dr. Kai Chan**  
**Dr. Shannon Hagerman**  
**Dr. Gail Hochachka**

Institute for Resources, Environment and Sustainability, Faculty of Science  
Forest Resources Management, Faculty of Forestry  
Forest Resources Management, Faculty of Forestry

Project Year: 2022-2024

Link: [FRST 521C-105/RES 500Z-101 Climate Change Communications and Engagement](#)

Inspiring and enabling climate action can be difficult due to the psychological complexity of the issue, an insufficient social mandate for climate policies, an array of justice and equity concerns, and systemic barriers to low-carbon futures.

In this past year, Dr. Shannon Hagerman, Dr. Kai Chan, and a Postdoctoral Teaching Fellow, Dr. Gail Hochachka developed a new graduate-level seminar course that engages interdisciplinary learners about the complex dimensions of climate change communication and engagement. In this course, students will learn about, and practice addressing, the challenge of climate change engagement—critically, actively, self-reflectively, and creatively. The seminar course emphasizes students gaining practical skills and competencies around community engagement in climate action.

The course included student-led applied projects as the final assignment. For this, students identified, designed, piloted, and reflected on different forms of communications and public engagement approaches, connecting these activities with real-world climate action. This course was approved by Senate as a formal graduate course in May 2024.

## **PUBLICATIONS INSPIRED BY COURSE CONTENT**

Inspired in part by course content, Dr. Gail Hochachka and one of the graduate students, Timothy Linsell, published the following articles:

- Hochachka, G. (2024). When concern is not enough: Overcoming the climate awareness-action gap. *Ambio*. <https://doi.org/10.1007/s13280-024-01999-5>
- Linsell, T. (2024). The failure of climate-policy communication. *Policy Options*. <https://policyoptions.irpp.org/magazines/january-2024/poor-communication-climate-policy/>



Photos courtesy of [Ian Betley](#), (Flickr).

# Sustainable Living Through Family Contexts

**Dr. Silvia Bartolic** Sociology, Faculty of Arts  
**Dr. Kerry Renwick** Curriculum & Pedagogy, Faculty of Education

Project Year: 2021-2023

Link: [Dr. Silvia Bartolic UBC Profile](#)  
[Dr. Kerry Renwick UBC Profile](#)

Dr. Silvia Bartolic and Dr. Kerry Renwick embarked on a project to address a gap in sustainability education – a focus on the practices and transmission of values in everyday living decisions that are made in the context of family.

## **FAMILIES AS AGENTS OF CHANGE**

Families are one of the main socialization agents of individuals and are impacted in their decision-making by social norms and social policy. This project aims to build an appreciation of sustainability in the context of human ecology and everyday living that contributes to sustainable practices through a new certificate program – Sustainability and Family. This new certificate program is designed to be taken by undergraduate students in the family studies minor within the Bachelor of Arts and those preparing for the teacher education program in home economics. There are also opportunities for students to take these courses as part of the Diploma of Education (Home Economics).

## **DEVELOPING A NEW CERTIFICATE PROGRAM**

To develop this new certificate, Dr. Silvia Bartolic and Dr. Kerry Renwick have created four new syllabi: one theory-based course focused on sustainability in the family, and three experiential learning-based courses allowing students to explore sustainability in food and clothing provision, as well as the utilization of family resources. Currently, these four syllabi await accreditation in both the Faculty of Arts and the Faculty of Education. Following this, the process of consolidating the syllabi into a certificate program will be identified and initiated by December 2024.



Photo courtesy of [Ioann-Mark Kuznietsov \(Unsplash\)](#)

# Engineering Economics

**Dr. Tamara Etmanski** Civil Engineering, Faculty of Applied Science  
**Dr. Gabriel Potvin** Chemical & Biological Engineering, Faculty of Applied Science

Project Year: [2022-2023](#)

Link: [Launching new sustainability-focused engineering economics modules: materials, instructor reflections and student feedback](#)

The modern engineer must understand economic principles and be able to apply them in the evaluation of environmental and social costs of a project, including those associated with climate change, mental health, equity, and social and cultural capital.

As a requirement for graduation, all engineering students in Canada must take an Engineering Economics course (as stipulated by the Canadian Engineering Accreditation Board). This requirement is based on the need for engineers to be able to apply economic principles in the making of technical engineering decisions, mainly through the evaluation of direct financial costs during the design, operation and decommissioning phases of a project. This approach, however, does not evaluate the true costs of projects.

## DEVELOPING NEW MODULES

To address this gap, Dr. Tamara Etmanski and Dr. Gabriel Potvin developed four self-contained content modules on sustainability-related aspects of project costing, to be integrated in Engineering Economics courses in engineering programs at UBC and beyond:

- Module 1: Ecological and value-based accounting
- Module 2: Assessment of social impacts of engineering projects
- Module 3: Circular Economy models for costing and project planning
- Module 4: Social and cultural capital considerations

## ACHIEVEMENTS

These modules were deployed in CIVL 403 - Engineering Economics for students in Civil Engineering. At the end of each module, students in attendance were asked to fill out a feedback survey on the content, with a focus on interest and relevance to the course and their training as engineers. The data was analyzed, and a paper was drafted based on the results. It was published as a [peer-reviewed conference proceedings paper](#) and was presented at a national conference.



Top to bottom: Photos courtesy of [ThisisEngineering RAEng \(Unsplash\)](#) and [Canva](#)

# Case-based Learning on the Topic of “Sustainability in the Agri-Food and Environment Sector”

Dr. Kelleen Wiseman Food and Resource Economics, Faculty of Land and Food Systems

Project Year: [2022-2023](#)

Link: [FRE\\_V 516 - Financial and Marketing Management in Agri-food Industries](#)

Climate change has traditionally been studied in a science-based context. However, if we are to make progress, climate change and sustainability must also be brought into the business disciplines in an applied and active manner.

This project, led by Dr. Kelleen Wiseman, focused on integrating sustainability into business education within the agri-food and environment sector. It focused on the development of four new case studies, designed for integration into two business courses:

- FRE 516: Financial and Marketing Management in Agri-food Industries,
- FRE 302: Small Business Management in Agri-Food Industries.

These case studies explored topics such as sustainability entrepreneurship, the incorporation of sustainability into small to medium-sized business operating plans, sustainability reporting systems, and competitive analysis within the Agri-Food and Environmental sectors.

## **APPLICATION TO SMALL AND MEDIUM ENTERPRISES**

The unique approach of this project lay in its focus on small to medium enterprises, diverging from the typical focus on larger corporations. By utilizing a case-based learning method, students were exposed to real-world scenarios involving sustainability challenges and opportunities, allowing them to apply theoretical models and tools to practical business problems. The cases were developed using firms and products from the UBC Master of Food and Resource Economics (MFRE) program’s extensive network of project partners, ensuring relevance and applicability.

Photo courtesy of [Canva](#)



# Achieving Sustainability in Global Health: Developing an Interdisciplinary Course on Global Health Policy and Systems

**Dr. Veena Sriram**  
**Dr. Peter Berman**

School of Public Policy and Global Affairs, Faculty of Arts

School of Population and Public Health, Faculty of Medicine

Project Year: 2021-2023

Link: [Dr. Veena Sriram UBC Profile](#)

**The COVID-19 pandemic sparked student interest in courses offering a global perspective on the convergence of health policy, health systems, and sustainability.**

Dr. Veena Sriram and Dr. Peter Berman seized the opportunity to develop an interdisciplinary undergraduate course on global health policy and systems, addressing core sustainability challenges. This course is co-taught by faculty with complementary disciplinary backgrounds and extensive international experience. Dr. Peter Berman, a health economist with over forty years of expertise in global health research, teaching, and leadership roles at the World Bank, joins forces with Dr. Veena Sriram, a social scientist specializing in the politics of health policy processes.

They developed a module on sustainability and planetary health (four sessions in total, including two classes taught by Dr. Milind Kandlikar) and developed two teaching cases presented through video: One with Dr. Patricia Spittal and the Cedar Project focused on sustainability and planetary health in British Columbia, and another one on the same topic in collaboration with Dr. Renzo Guinto of St. Luke's Medical Center in Manila in the Philippines.

## **TESTIMONIAL FROM STUDENT**

"It reminded me of how glad I am to be learning about this topic, and how important it is that planetary health was included in this curriculum (and hopefully the curriculum for many other courses at UBC)... I think that all of us in the course will walk away with more of an appreciation for planetary health and I will be interested to see how the field evolves as it gains more traction."



Image courtesy of [Canva](#)

# Integrating JEDDII Lens in Sustainability Education

JEDDII | Justice, Equity, Diversity, Decolonization, Inclusion, and Indigenization

**Dr. Kim Snowden**

Institute for Gender, Race, Sexuality and Social Justice, Faculty of Arts

**Dr. Leonora Angeles**

School of Community and Regional Planning, Faculty of Applied Science

Project Year: 2022-2024

Link: [GRSJ 300: Intersectional Approaches to Thinking Gender](#)



Students in Gender, Race, Sexuality and Social Justice often ask us “What now? What can we do with this knowledge?” and I think that developing an interdisciplinary and experiential curriculum that integrates JEDDII lens in sustainability will provide students with unique opportunities to engage with urgent and pressing social and global issues on a practical level throughout their degree.

## DEVELOPING A JEDDII DATABASE

Dr. Kim Snowden and Dr. Leonora Angeles have consistently used a common evaluation tool and analytical framework to assess the integration of JEDDII perspectives in sustainability across the Institute for Gender, Race, Sexuality and Social Justice (GRSJ) curricula. They have reviewed twenty course syllabi, using the results to develop a comprehensive database of readings, websites, and films relevant to GRSJ course offerings. Faculty members in the Institute are encouraged to adopt this evaluation tool, analytical framework, and accompanying templates to review their own content and integrate some of these resources into their teaching and courses. This resource enables regular and sessional faculty members to incorporate sustainability and ecological perspectives, climate and nature emergencies, post-capitalist circular economy principles, and community resilience from JEDDII perspectives.

Through this project, Dr. Snowden and Dr. Angeles have also successfully developed a new GRSJ 309 course on Intersectional Approaches in Thinking Sustainability Through JEDDII with a community-based, experiential, or action-research focus to complement GRSJ 300 - Intersectional Approaches in Thinking Gender.

## KILLAM TEACHING AWARDS

Dr. Kim Snowden was awarded one of the 2023 Killam Teaching Awards at the Faculty of Arts. In the project report, the project team expressed gratitude for the Sustainability Education Grant (that funded this project), which further strengthened her curriculum vitae (CV) and award nomination.

Left to right: Photos courtesy of [Gayatri Malhotra \(Unsplash\)](#) and [Tim Mossholder \(Unsplash\)](#)

# Enhancing BEST 304: Introducing an Innovative Sustainability Module and Incorporating an Industry Site Visit

**Dr. Faride Unda**

Wood Science, Faculty of Forestry

Project Year: 2023-2024

Link: [Dr. Faride Unda UBC Profile](#)



As an important step in shifting away from traditional fossil-fuel-based feedstocks, BEST 304 is introducing a new module designed to equip students with the knowledge to innovate in the creation of eco-friendly bioproducts using non-conventional feedstocks, such as algae and agricultural straw. By focusing on these alternative sources, the module aims to significantly reduce the environmental impact of agricultural practices.

## **INTRODUCING A NEW MODULE AND FIELD TRIP**

A new module was created for BEST 304 focusing on biomaterials production using non-conventional feedstocks. A thorough review of scientific literature guided the development of laboratory protocols suitable for a third-year lab course. A successful day trip to BC Research (BCRI) was organized for 38 students, exposing them to pilot-scale biomass utilization technology. The visit provided students with practical insights into biomaterials production and optimization processes in the pulp and paper industry.

The project faced several challenges. Adapting advanced lab protocols for undergraduates was difficult because of limited equipment and materials, requiring a careful balance between complexity and accessibility. Additionally, finding the right duration for the module to ensure effective learning was important. Coordinating a large group visit to an industry facility required extensive planning and collaboration to ensure that every student had a meaningful experience.

Nevertheless, the project achieved good results. The new module successfully introduced students to innovative biobased materials and enhanced their practical skills through hands-on laboratory work. The industry visit provided valuable real-world insights, fostering students' understanding of industrial processes and strengthening their networking and communication skills.

Photos courtesy of [Canva](#)

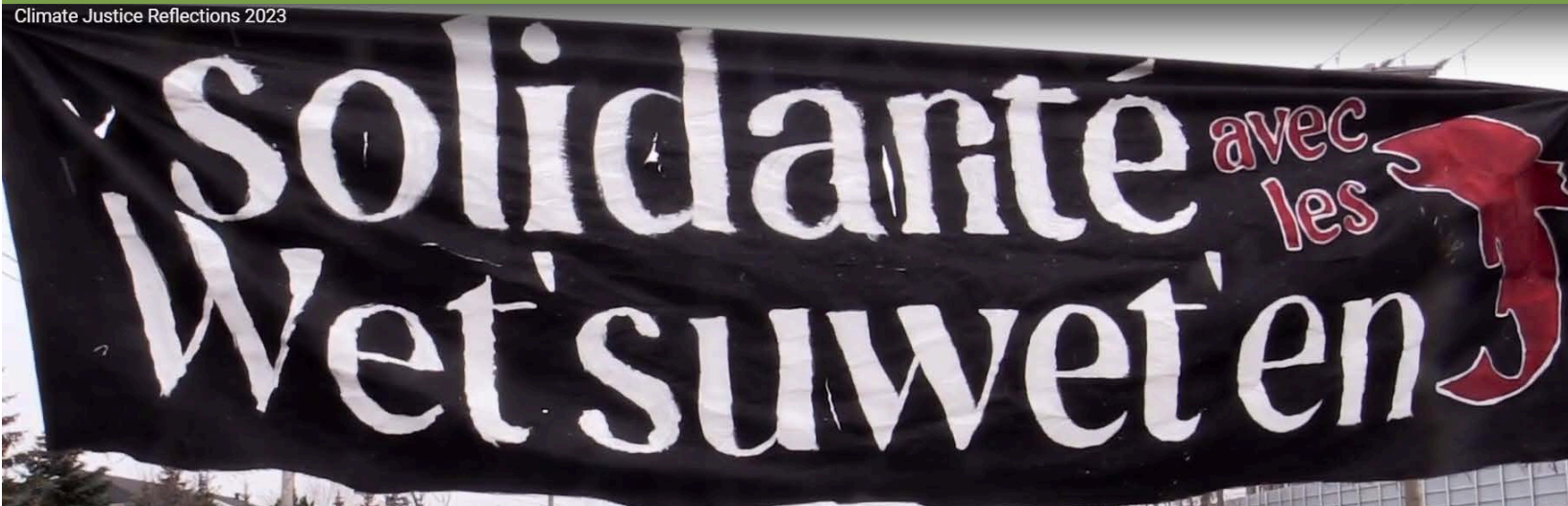
# Climate Justice Reflections

**Avi Lewis** Geography, Faculty of Arts

Project Year: 2023-2024

Link: [Climate Justice Reflections Film](#)

Climate Justice Reflections 2023



The film "Climate Justice Reflections" is a 12-minute film led by Avi Lewis, aiming to capture the voices and experiences of diverse local leaders engaged in climate justice efforts. This film documents the Climate Justice Study Collective, a project of the Centre for Climate Justice at UBC, comprising Indigenous elders, youth activists, artists, community organizers, and other key figures in Vancouver, as they confront the climate crisis and advocate for intersectional solutions.

This project involved the filming of "Climate Justice Reflections", which weaves a narrative of struggle, resilience, and hope by showcasing the experiences and community-driven responses of the Climate Justice Study Collective (CJSC) to climate emergencies. Created as a visual educational tool, the film aims to deepen the creative climate curriculum of GEOG 302 - Climate Justice, a part of the new Certificate in Climate Studies and Action at UBC.

## FILM AS VISUAL EDUCATIONAL TOOL

The project team began by capturing footage from a public event featuring members of the CJSC, which served as a critical starting point for the narrative. Following the event, interviews were conducted with community Collective members and faculty, allowing for a diverse range of perspectives and experiences to be documented. The final film was completed and used in the GEOG 302 class in the winter 2023 term.

Learning from Avi Lewis's experience, it's important to consider several key factors for similar projects. Flexibility in scheduling is essential to accommodate unforeseen delays or changes, while ensuring that all equipment is reliable and suited to the project's needs is critical to avoid technical setbacks. Additionally, having the expertise of experienced professionals can provide invaluable guidance, helping less experienced team members navigate challenges and enhance their skills.

The film was shown as part of a renewed emphasis on a culture of care within the classroom. This segment was well-received and highlighted positively in many student evaluations. Both the midterm check-in survey and the formal Student Experience of Instruction (SEI) survey at the end of the term reflected positive feedback from students regarding the inclusion of the film.

A screenshot of the [Climate Justice Reflections Film](#)

# Increasing Accessibility of Field-based Sustainability Science Education: Developing A New Course in Conservation Research of Aquatic Resources

**Dr. Nolan Bett**  
**Dr. Scott Hinch**

Forest and Conservation Sciences, Faculty of Forestry  
Forest and Conservation Sciences, Faculty of Forestry

Project Year: 2023-2024

Link: [Natural Resources Conservation program](#)



This new course provides an alternate pathway for students in the NRC program, enabling them to learn field skills that are critical to their future employment, while drastically reducing financial burden and providing greater student accessibility.

A critical component of the Natural Resources Conservation (NRC) program in the Faculty of Forestry is an intensive, three-month, field-based capstone course. However, conducting remote fieldwork in physically challenging environments poses accessibility issues for students with physical concerns and those facing extenuating circumstances, such as caregiving responsibilities for children or family members. These challenges are further compounded by growing financial constraints.

To improve the accessibility of this field course, Dr. Nolan Bett, Dr. Scott Hinch, and Graduate Academic Assistant Paige Roper developed a new three-credit “field studies” course. To support financial accessibility, the project team utilized department and lab vehicles to transport students to field site locations, eliminating travel expenses. Students were not required to purchase any special gear, and rain boots were provided. The course was designed to include only daytime trips (no overnight visits), allowing for greater flexibility for students with personal commitments. Additionally, the amount of in-class time was limited by offering asynchronous learning materials.

## **POSITIVE STUDENT FEEDBACK**

Students expressed their appreciation for the more flexible and less demanding schedule in comparison to the capstone course in an evaluation survey. Overall, they were pleased with the structure of the course and felt that it effectively accommodated their needs.

# Approaches to Stewarding Forested Foodlands in Líl'wat First Nation

**Dr. Robert VanWynsberghe**  
**Dr. Tonya Smith**

Educational Studies, Faculty of Education  
Forest Resources Management, Faculty of Forest

Project Year: 2023-2025

Link: [Protecting Líl'wat food sovereignty](#)



The aim of this project is to develop a new course that offers experiential, place-based learning, equipping students to address complex issues related to creating climate-just futures in response to the climate emergency.

This project supports the development of an interdisciplinary summer course with the Líl'wat First Nation that features collaboration on the themes of Indigenous land-based pedagogies, food security and sovereignty, forest stewardship and restoration, Indigenous land rights and ecology.

The course is co-created with Líl'wat First Nation instructors studying and mobilizing on Indigenous food sovereignty issues. In the course, students are provided with the opportunity to reside in Líl'wat First Nation to learn practical, firsthand knowledge about Líl'wat pedagogical methods.

These methods relate to Líl'wat teaching concepts such as *ntákmen* (our way; the Líl'wat way), *kúlstarń* (taking only what you need), *nxeqmín* (Líl'wat laws based on natural laws) and the S7ístken Research Protocol, which is a specific ethical framework developed for and by the Líl'wat Nation. Students are invited to engage with diverse Líl'wat Indigenous perspectives on land stewardship and restoration; histories of colonization and Indigenous resistance; and contemporary processes to enhance and restore Líl'wat holistic land-based health through the tending of forested foodlands.

## **BUILDING RESPECTFUL RELATIONSHIPS WITH INDIGENOUS COMMUNITIES**

During the course planning, some critical topics were addressed regarding the course's operation within a colonial institution that has historically caused harm to Indigenous Nations, including the Lil'wat Nation. Key considerations included:

- Building respectful relationships with the Lil'wat Nation by obtaining necessary permissions and involving interested Lil'wat instructors in the planning process
- Creating a core teaching team that would include both UBC and Lil'wat instructors
- Accurately representing the historical marginalization of Indigenous Nations and appropriation of Indigenous knowledge
- Balancing community involvement in the course planning to avoid placing excessive demands on Lil'wat members while ensuring their feedback was included
- Presenting Indigenous worldviews and pedagogies in a non-extractive and inclusive manner, with attention to clarifying the benefits and costs for Lil'wat participants and determining how students from the Lil'wat community could engage alongside UBC Education students

[Photo courtesy of UBC Faculty of Forestry](#)



## Climate Education Grants

Climate Education Grants provide support to individual faculty members wishing to incorporate climate change content and teaching approaches into existing undergraduate and graduate courses at UBC Vancouver.

On December 5, 2019, the President and Board of Governors of UBC declared a climate emergency, driven by student leadership. This grant program aims to quickly improve the depth and delivery of climate change content in existing courses, bolstering topics such as climate adaptation and resilience, climate justice, climate science, climate economics, climate law, planning and policy, complex systems thinking, and climate and people.

10 grants were awarded in 2021-2022 and 11 grants in 2022-2023.

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Systems Approaches to Climate Change: Perspectives from Iceland

Dr. Lee Groat

Earth, Ocean and Atmospheric Sciences, Faculty of Science

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Addressing the Climate Emergency with Improvements to EOSC 442:  
Climate Measurement and Analysis

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Earth, Ocean and Atmospheric Sciences, Faculty of Science

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Lessons Learned from the Pandemic in Addressing The Climate Crisis;  
Revising a Research Module for GEOG314: Analyzing Environmental  
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### Witchcraft, Witch Persecutions, and Ecological Events

Dr. Kyle Frackman      Central, Eastern, and Northern European Studies,  
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Dr. Ben Mortenson      Occupational Science & Occupational Therapy,  
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Caren Lombard      Sauder School of Business

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Dr. Bianca Eskelson      Forest Resources Management, Faculty of Forestry

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Dr. Amirpouyan Shiva      Anthropology, Faculty of Arts

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### Fostering A Climate Action Pedagogy Through Geomatics Courses in Forestry

Dr. Paul Pickell      Forest Resources Management, Faculty of Forestry



Photo courtesy of Canva

# Systems Approaches to Climate Change: Perspectives from Iceland

**Dr. Lee Groat**

Earth, Ocean and Atmospheric Sciences, Faculty of Science

Project Year: 2021-2022

Link: [Iceland Field Course: Systems Approaches to Regional Sustainability](#)



Our goal was to bring Iceland to the students and have them grapple with real-time climate impacts that the island and its people face.

This project created a “What is Iceland Like Today? Climate Change” module within the Integrated Science course ISCI 361: Iceland Field Trip – Systems Approaches to Regional Sustainability. Dr. Lee Groat curated live video footage comprised of expert interviews and real-time footage across the entire island, examining the impacts of climate change on Iceland’s landscapes and how Iceland is contributing to climate mitigation strategies. This content was packaged in an engaging and accessible format for the virtual ISCI 361/461 course offering. Students were able to experience Iceland through this footage as a substitute for in-person learning due to the pandemic restrictions. They were able to “visit” receding glaciers, “see” rare and declining species, and “investigate” carbon capture technologies, to name a few.

## STUDENT SCIENTIFIC POSTER PRESENTATION

The project team initially proposed using Log Books as a summative learning assessment, as had been done in the field versions of this course. However, they found that the students were eager to engage with one another and wanted to provide an opportunity for them to work together and to showcase what they had learned in a more active format. As such, they had small groups of students research a topic related to sustainability in Iceland that is currently being influenced by climate change. Students presented their selected topics in a formal scientific poster and presentation. Topics ranged from Iceland’s herring stock collapse and recovery to invasive species proliferation, to the challenges Iceland faces with glacial melt.

Photos courtesy of UBC [Department of Integrated Science](#)

# Addressing the Climate Emergency with Improvements to EOSC 442: Climate Measurement and Analysis

**Dr. Michael Lipsen**

Earth, Ocean and Atmospheric Sciences, Faculty of Science

Project Year: 2021-2022

Link: [Dr. Michael Lipsen UBC Profile](#)

As the UBC Declaration of a Climate Emergency unfolds, more students are seeking classes that teach them how to identify the early warning signs of anthropogenic climate change and monitor earth systems' response.

This project revamped EOSC 442 to include new skill-building exercises and projects that demonstrate key climate time-series data demonstrating the global Climate Emergency. The project team redesigned computer-laboratory assignments to take advantage of new publicly available datasets and open-source Python™ programming packages. They created online computer coding modules for students to complete before the first class aiming to accelerate student learning of basic coding skills.

## **ENHANCING CLIMATE RESEARCH EXPERIENCE THROUGH KEYSTONE PROJECTS**

One of the course deliverables includes a keystone project where students apply all the skills they have learned to analyze a fundamental climate dataset and show a statistically significant climate change signal. An outcome of this project involves producing phytoplankton biomass data, not currently collected for the Salish Sea in the Vancouver area. This project offers an exciting opportunity to publish data gathered by EOSC 442 students, which was previously inaccessible due to course restrictions. It immerses students in an authentic climate research experience from field sampling to laboratory and computer analysis, with the potential for academic publishing of results.

Photo courtesy of [Alexander Dunkel](#) (Flickr)

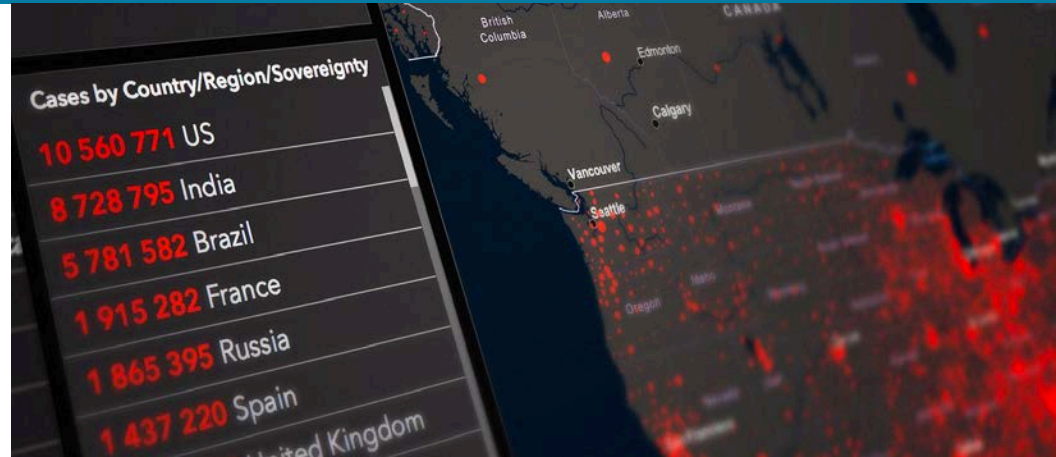
# Lessons Learned from the Pandemic in Addressing The Climate Crisis; Revising a Research Module for GEOG314: Analyzing Environmental Problems

**Dr. Michele Koppes**

Geography, Faculty of Arts

Project Year: 2021-2022

Link: [GEOG 314 Analysing Environmental Problems](#)



Efforts to stop the spread of COVID-19 by “flattening the curve” represent one of the largest and best observed abrupt changes to anthropogenic forcing of the earth system and climate in the modern era. These shifts present an opportunity to learn about both the effects of anthropogenic climate change on earth system processes, and the relationships between human and natural systems.

GEOG 314 is a problem-based learning course introducing students to key concepts and techniques in environmental research, focusing on present-day challenges in climate change assessment, hazards, and mitigation. Dr. Michele Koppes developed a new module within this course, exploring the impact of societal reactions to COVID-19 on atmospheric composition and land use. The module includes new lecture content and lab materials analyzing the BC floods in Nov 2021 and their relationship to extreme weather events (such as the heatwave and atmospheric river), as well as sea level rise due to climate change. Students have the opportunity to analyze the effects of changes in anthropogenic activity during the pandemic shutdown on air quality, clouds, and the carbon cycle.

## RESEARCH ASSISTANT RECRUITMENT AND HYBRID TEACHING INNOVATIONS

A key aspect of the project involved the careful recruitment of graduate students who possessed the necessary pedagogic and content expertise for the Research Assistant positions. This process was particularly important as it ensured that the team had the right skills to support the certificate's development. Additionally, the shift to hybrid teaching brought unique opportunities to innovate and adapt course materials. By making these materials accessible in multiple formats and through various means of engagement, the course was able to enhance the learning experience for students, regardless of their location or situation.

Photos courtesy of [Canva](#)

# A Community Dashboard for Climate Model Analysis

Dr. Philip Austin

Earth, Ocean and Atmospheric Sciences, Faculty of Science

Project Year: 2021-2022

Link: [New interactive teaching and learning resources to explore climate and Earth science concepts](#)

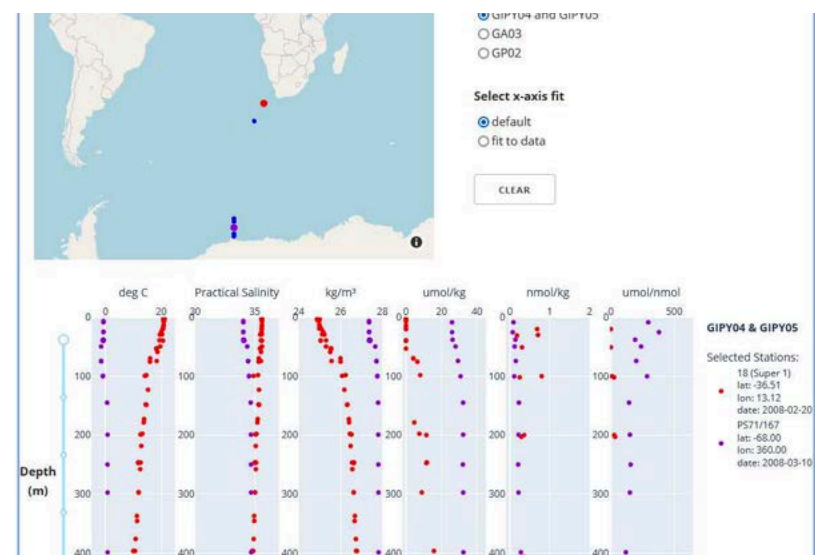
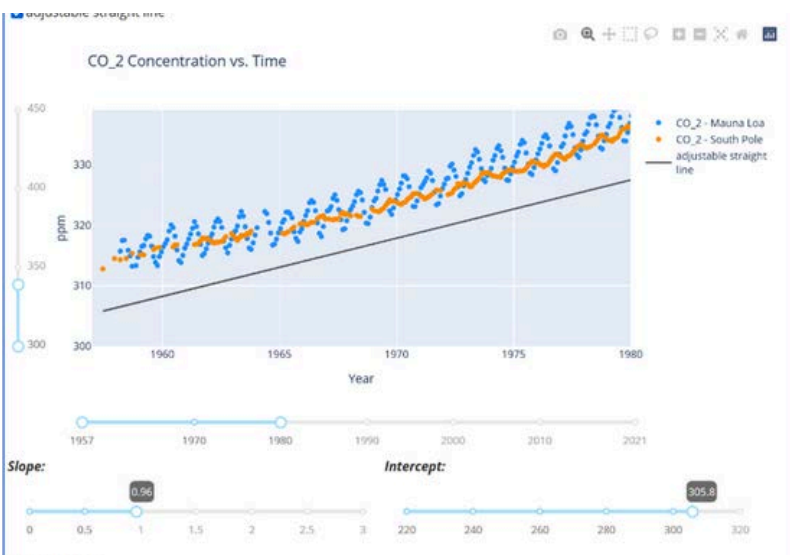
Our goal is to help students compare natural climate variability with anthropogenically forced climate change, understand geographical differences in climate change intensity and impact, appreciate uncertainties in climate change knowledge across different models, and quantify the differences between a 'business as usual' scenario and a moderate 2°C warmer world by 2100.

A Climate Dashboard was designed for use in the EOSC 340 global climate change course, and for broader use in climate courses at UBC. The focus of the dashboard is to present climate model simulation data that is archived in the commercial cloud, allowing students to probe differences between climate models for particular geographical regions and different Coupled Model Intercomparison Project Phase 6 (CMIP6) models, presenting those differences in either map or scatterplot formats.

## INFRASTRUCTURE DEVELOPMENT FOR HOSTING CLIMATE DASHBOARDS

The climate dashboard is used in large classroom settings, requiring the development of hardware and software infrastructure to host and monitor all dashboards running on departmental servers throughout the term. The department has provided a repurposed research machine with 24 CPU cores and 126 GB of RAM. As part of the work for this grant, a hosting service was developed on this machine to deploy eight dashboards used in five EOSC courses. Additionally, a suite of open-source software tools has been developed to easily add new dashboards, Jupyterhubs, and websites to any server ([see this repository for details](#)).

The project team expressed gratitude for being able to attract a highly talented developer, Jacob Mcfarlane, and an experienced group in dashboard development. The project team continues developing dashboards and aspires to offer tutorials to other departments interested in producing and hosting their own dashboards on UBC servers or in the commercial cloud.



Photos courtesy of [UBC EOAS](#)

# Enriched Learning Through an Interactive Case-Based Online Module: Nursing 290 Health Impacts of Climate Change

**Raluca Radu**

Nursing, Faculty of Applied Science

Project Year: 2021-2022

Link: [Nursing 290 Health Impacts of Climate Change](#)



We want to introduce students to a Canadian-based example of how climate change has detrimental impacts in our own country. Situating this module in a Canadian context will engage students on a more personal level and serve as an excellent means to underline current local climate issues.

The goal of this project is to enable students to learn about the impact of climate change on a Canadian community through a problem-based case study approach. The course is designed as an online interactive tool on the Canvas platform, allowing students to work on it throughout the academic term. This project enables the creation of a case study assignment that focuses on local examples from British Columbia, helping students better understand the intricate ways in which the health of BC residents can be affected by wildfires and how a Canadian community has been or may potentially be impacted by climate change. The foundational concepts of this case study include climate adaptation and resilience, health equity, and the social determinants of health.

## **OVERCOMING CHALLENGES: FROM LITERATURE SEARCH TO LYTTON WILDFIRE CASE STUDY CREATION**

The project team initially planned to select a case study from existing Canadian literature but found none that adequately addressed the health impacts of climate change from a specific environmental event. So, they decided to create a new case study from scratch, focusing on the Lytton wildfire in July 2021. This case study aims to educate students on wildfires, Indigenous Sovereignty in fire management, and the associated health impacts. Additionally, it introduces different approaches to wildfire safety and disaster planning.

The project team is inspired to create a user guide to accompany the case study in the future, aiming to support educators who wish to integrate it into their courses.

Photos courtesy of [Canva](#)

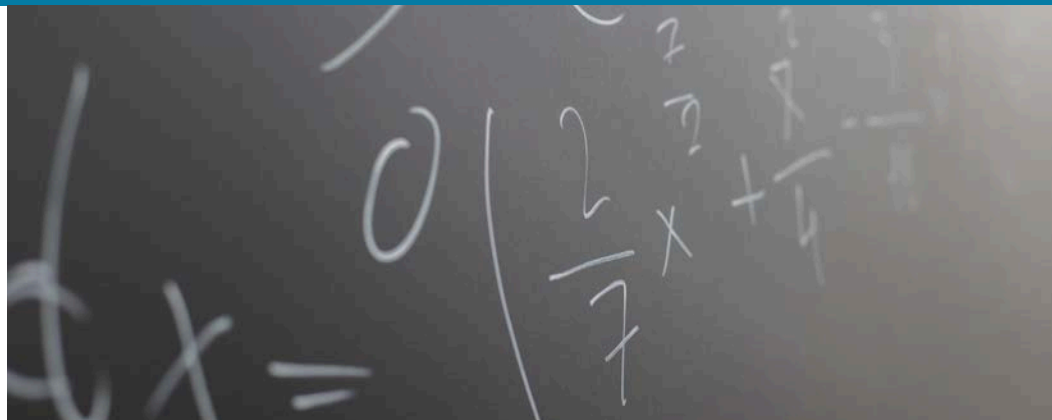
# Mathematical Models of Climate Change: How Do They Work?

Dr. Rebecca Tyson

Computer Science, Mathematics, Physics and Statistics, UBC Okanagan

Project Year: 2021-2022

Link: [Rebecca Tyson's Teaching Pages: Math 225 - Ordinary Differential Equations - Course Materials](#)



Climate change predictions are a critical first step in developing action against climate change. Unfortunately, the aphorism "all models are wrong, but some are useful" (Box, 1979) has been misused to discredit climate change modelling work. The success of this type of propaganda is at least partly due to the fact that the general population is so woefully illiterate with respect to mathematics that it has no ability to determine which model predictions are useful. Even quantitative science students have difficulty addressing that broad criticism of climate change models, because they are rarely taught how such models work.

Box, G. E. (1979). *Robustness in the strategy of scientific model building*. In *Robustness in statistics* (pp. 201-236). Academic Press.

This project aims to include meaningful climate modelling examples throughout the Math 225: Introduction to Ordinary Differential Equations course and use these models to motivate the mathematical tools traditionally taught. This will provide students with the opportunity to emerge with all of the technical skills that they would learn in the regular course but with the bonus of directed and meaningful content about climate change.

Developed by a recent BSc graduate, Sarah Wyse, the project introduced eight new group work projects and extensive pedagogical materials to the catalogue of ordinary differential equation (ODE) climate change models.

## CLIMATE ANXIETY TRIGGERED BY CLIMATE CHANGE CONTENT

After delivering the first few group work projects, the project team realized that many of the students suffered from various degrees of climate anxiety. To help address this and support student healthy learning, the team has worked to include a climate anxiety workshop as part of the lecture, and to involve the students in some positive action for change.

## TESTIMONIALS FROM STUDENTS

"The carbon emission and the disease modeling were the topics that I had the most fun learning, it was something out of the textbook, and the course was not just about solving differential equations to get marks."

"I enjoyed seeing the mathematical models and working with the EnRoads simulator to see what the major factors of everyday life contribute the most to climate issues that we are seeing in the world around us today."

Photos courtesy of [Canva](#)

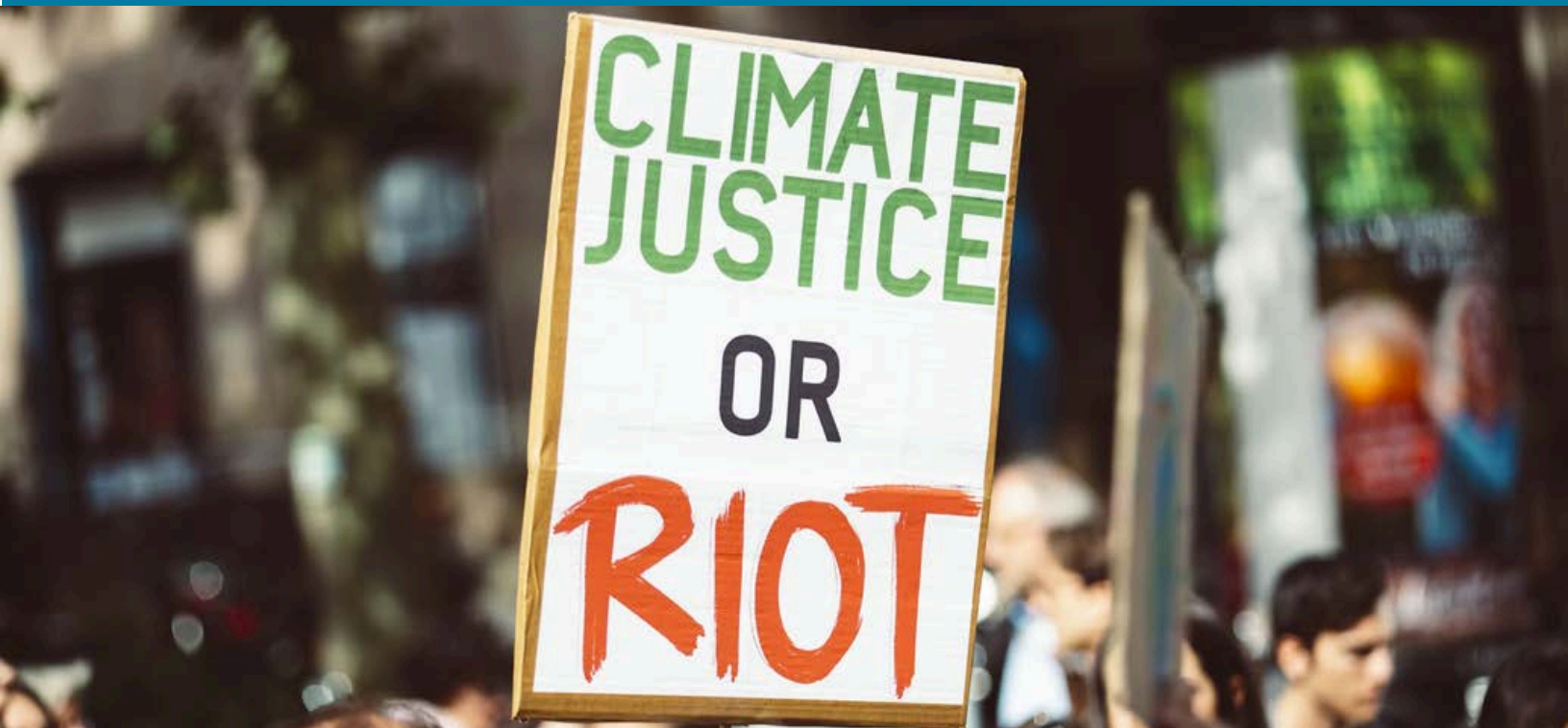
# The Literatures of Environmental Protest

Dr. Vin Nardizzi

English Language and Literatures, Faculty of Arts

Project Year: 2021-2022

Link: [Dr. Vin Nardizzi UBC Profile](#)



Our climate emergency is anthropogenic, which is why scientists are considering designating most of the twentieth century and the current century as the Anthropocene epoch. No one should deny the science that demonstrates that humanity – indeed human beings in the West – have had an outsized role in accelerating the emergency. And yet, at the same time, the Humanities have played too small a role in educating our students on this topic.

Dr. Vin Nardizzi believes that Humanities disciplines, like his own, have skills, materials, and expertise to contribute to this interdisciplinary exercise in problem-solving that we have not yet delivered. Inspired by his belief, he developed a new course ENGL 244: Literature and the Environment to demonstrate the ways that literature,

broadly defined, has had a tangible impact on environmental policy and social protest movements in the 20th and 21st centuries. This course asks students to read foundational examples of environmental literature as well as the texts of the policies and mission statements that they inspired. This project enables the development of a core section of this course's content: the archives of Greenpeace, an organization that was established in 1970-71 in Vancouver, highlighting Vancouver's status as a key locale in the early days of the global environmental movement.

## GREENPEACE HISTORY SURPRISES STUDENTS

During classroom sessions on the history of Greenpeace in the media, lecturers witnessed that the students, many of whom grew up in Vancouver or Canada, expressed surprise about the very local connections to what is, today, a multinational activist movement. This recognition was a bonus: the eyes of students shone during these conversations.

Photo courtesy of [Markus Spiske](#) (Unsplash)



# Introducing Climate Science within a New Biochemistry and Molecular Biology Course

**Dr. Lindsay Rogers**

Biochemistry and Molecular Biology, Faculty of Medicine

Project Year: 2021-2022

Link: [Dr. Lindsay Rogers UBC Profile](#)

Understanding climate science from a biochemical perspective supports understanding these processes at a fundamental level and elucidates potential biotechnology-based solutions. The objective of this project was to produce biochemical illustrations of several electron transport chains which are relevant to climate science.

The Biochemistry and Molecular Biology department at UBC Vancouver introduced a new course in 2020 titled "Biochemistry and Society: Current Issues" (BIOC470), with a significant focus on climate science. This course uniquely integrates climate science into biochemistry by exploring the biochemical processes behind greenhouse gas production and potential biotechnological solutions to mitigate climate change.

In this project, Dr. Lindsay Rogers developed detailed biochemical illustrations of six key electron transport chains involved in global carbon and nitrogen cycles for the BIOC470 course. These illustrations were created to enhance the teaching of climate science within a 400-level biochemistry course, addressing a gap in available teaching resources.

The project involved three main phases: the design and illustration of the electron transport chains, the creation of new learning activities incorporating these resources, and their implementation in the classroom.

The outcome of the project included the production of [educational resources](#) that support 16 hours of course content within BIOC470, and an educational article submitted to a peer-reviewed journal.



Photo courtesy of Canva

# Partnering with Patients and Caregivers

**Dr. Adrian Yee**

Centre for Health Education Scholarship, Faculty of Medicine

Project Year: 2022-2023

Link: [Dr. Adrian Yee UBC Profile](#)

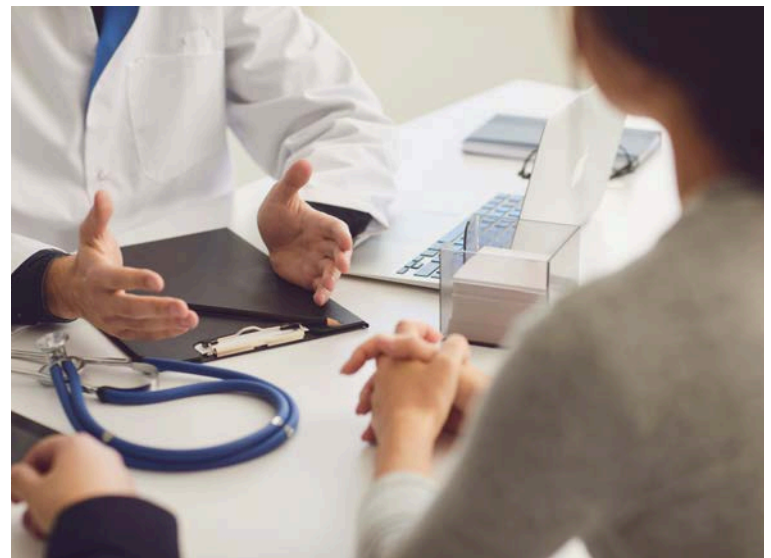
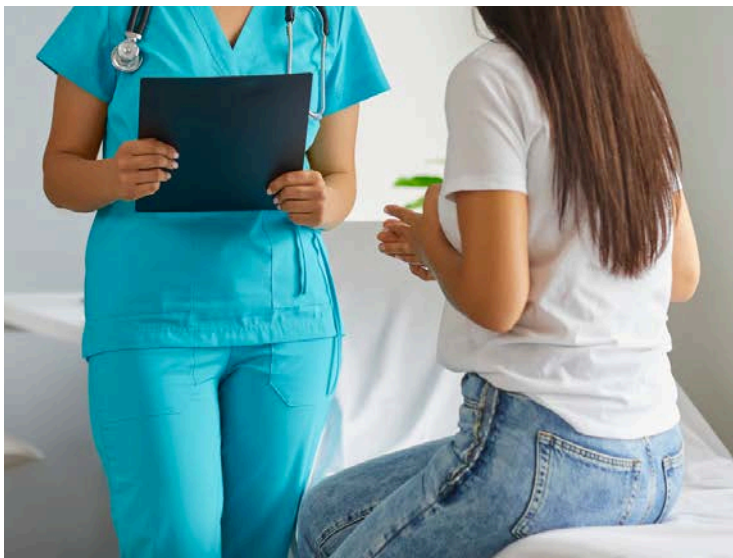
The Climate Emergency is causing significant disruption and transformation worldwide. Dr. Adrian Yee aims to enhance students' understanding of planetary health within the MD program, with a particular focus on human wellbeing.

## **INTEGRATING PLANETARY HEALTH INTO MEDD 411, 412, 421, AND 422**

Recognizing that Planetary health education intersects with sociocultural, economic, antiracism, and Indigenous Cultural Safety education, Dr. Adrian Yee collaborated with patients and caregivers to develop learning outcomes and educational activities aligned with the MD program. He integrated Planetary Health into MEDD 411, 412, 421, and 422 (1st and 2nd Year) curricula, reflecting current knowledge and practices in mitigating climate change impacts on human wellbeing. The development of these interdisciplinary curricula incorporates the perspectives of partner patients and caregivers.

## **PATIENT'S STORY**

"I am also a child of living and growing up in gold mining, so my brother and I have both been affected by arsenic poisoning cadmium, heavy metals and we both grew up in that environment, so you kind of wonder if that's part of my illness. Climate change is huge, I live in the Okanagan now I grew up in the north living on Vancouver Island and seeing the changes in the ecosystems, all the way around last year I lived in the middle of the fires, and I had my car packed for over three weeks trying to flee the fires. And the lack of response or resources trying to contain the fires and having fires just 18 kilometres away from me was quite horrific. And just seeing all these viruses that are exploding in my first career as a nurse and seeing the changes within the medical system and the resources that we're running out of way far behind of curing viruses that are exploding. And we don't have the resources to protect what we have. And it's quite frightening so I'm all about trying to give us some kind of input and try to get above it." - Patient



Photos courtesy of [Canva](#)

# Community Organizing for Climate Justice

**Dr. Antoine Coulombe**

School of Social Work, Faculty of Arts

Project Year: 2022-2023

Link: [Dr. Antoine Coulombe UBC Profile](#)



One definition of climate justice is “a human-centered approach to tackling climate change whilst addressing the many intersecting social issues that created it.” Given the social work profession’s commitment to the pursuit of social justice, social work education and practice have the capacity to take action on climate change and the social issues that created and maintain it.

In this project, Dr. Antoine Coulombe utilized a community-organizing approach to conceptualize the integration of climate justice into Social Work curriculum. Two classes were dedicated to content on climate justice during the summer 2022 offering of SOWK 440C/529A.

Class 1 provides students with an overview of climate justice, examples of climate change and injustice, theories/approaches from social work specific to the climate or environment and a session with a guest speaker (Maddie, Community and Sustainability Manager at Food Stash, Vancouver).

Class 2 enables students to reflect on the previous class, the themes from the literature review, an overview of what is happening in the community regarding organizing for climate justice and significant time for case studies in small groups. They engaged in three case studies based on real-life climate emergencies in BC: the 2021 heat dome, the 2021 wildfires and the 2021 flooding and landslides.

Overall, the student feedback was positive and demonstrated how Climate Justice is becoming an essential topic in students’ lives.

Photos courtesy of [Lawrence Makoona](#) (Unsplash)

# Incorporating A Virtual/Augmented Reality Field Trip in the GEOG 302 Climate Justice Course

Avi Lewis Geography, Faculty of Arts

Project Year: 2022-2023

Link: [Audio Tour of Whey-Ah-Wichen](#)



A digital “extended land acknowledgement” to ground the study of climate justice within the Indigenous territories that UBC operates. The Whey-Ah-Wichen audio tour was created in collaboration with Rueben George, Sundance Chief and Manager, Tsleil-Waututh Nation Sacred Trust, who provided insight into Indigenous resistance to the Trans Mountain Pipeline Expansion (TMX) project.

Avi Lewis created the Climate Justice course (GEOG 302), which aims to 'look under the hood' and better understand the disproportionate impacts of climate change through examinations of concrete movements, organizations, policies, and solutions. For students to gain insight into Indigenous perspectives surrounding climate justice and address questions on various scales and sites, this project developed a pair of augmented reality (AR) and virtual reality (VR) field trips on the unceded Selilwiltulh (Tsleil-Waututh) territory, designed to serve as an 'extended land acknowledgement.' These trips will involve students participating in either a self-guided trip to the Selilwiltulh (tsleil-waututh) Nation developed with AR technology, or a fully VR tour tailored flexibly depending on the unique situation of the student.

This AR/VR experience grounds the study of climate justice in a real, ongoing climate justice campaign on the lands where students live and study. In a broader sense, incorporating Indigenous ways of knowing and worldviews is a fundamental starting place for the pursuit of climate justice and action: through the implementation of this tour, students will gain an understanding of the land, its histories and present from an Indigenous perspective, as a precursor to the study of climate justice playing out in contemporary Vancouver. These tours extended techniques developed by Geography faculty (e.g., see [Virtual Spatial Experiences website](#)).

Left: A snapshot of the [Tapestry – Virtual Spatial Experiences](#), developed with funding from Microsoft and the [UBC TLEE](#). Right: Screenshot of the Whey-Ah-Wichen audio tour at <https://ubc.tapestry-tool.com/spatial-xp/tapestry/field-trips/#/nodes/355/view/355>

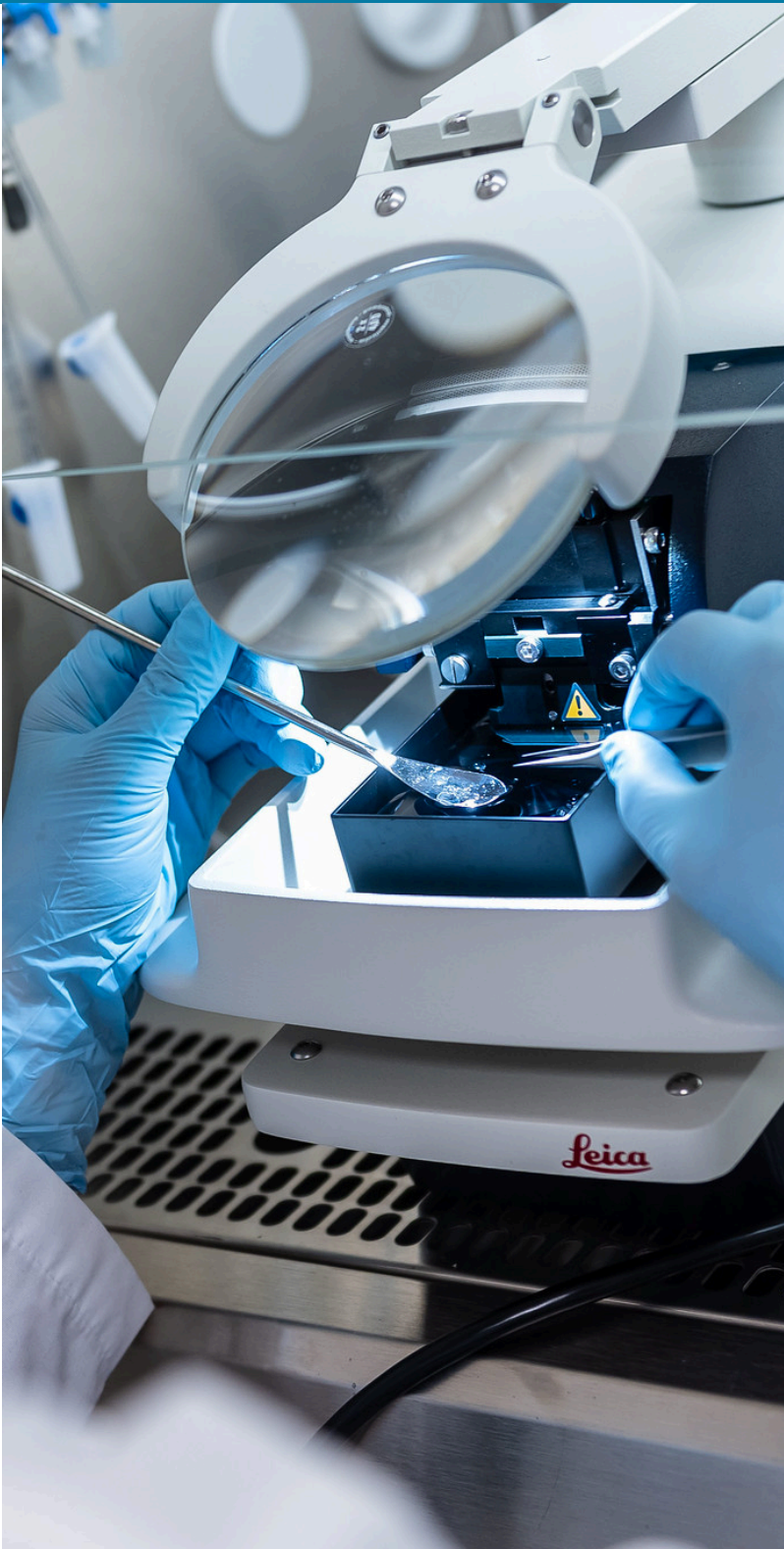
# Improving Climate Analysis in Chemical, Biological and Environmental Engineering Capstone Design Courses

**Dr. Jonathan Verrett**

Chemical & Biological Engineering, Faculty of Applied Science

Project Year: 2022-2023

Link: [Dr. Jonathan Verrett UBC Profile](#)



This project helps students select from a suite of analysis tools that they can choose from when conducting environmental and social analyses with a focus on the climate impacts of their design.

Engineering students culminate their degrees with a capstone design experience in their final year of study (CHBE 453/454). During this experience, students in the Chemical Engineering and Chemical & Biological Engineering programs work on designing a chemical or biological process.

As part of this project, students incorporate environmental and social analysis into their projects, with climate concerns becoming a major driver of project feasibility. In the past, this analysis focused on process efficiency and pollution prevention. In alignment with changes to environmental analysis courses in these programs, Dr. Jonathan Verrett provides students with tools to perform a more holistic environmental analysis on their projects.

## **LIFE CYCLE ASSESSMENT & LIFE CYCLE ANALYSIS**

A streamlined life cycle assessment and a preliminary environmental systems analysis were added to assist in evaluating process options. In the later project stages, when the process was more well-defined, more in-depth analyses including a life cycle analysis were included.

# From Responsibility to Action, Integrating Climate Content into COMM314: Strategies for Responsible Business

**Dr. Justin Bull**

Sauder School of Business

Project Year: 2022-2023

Link: [COMM 314 - Strategies for Responsible Business](#)



COMM 314 is designed to provide students with an objective view of the intersection between business and sustainability. Throughout the course, students are asked to reflect on their learnings, apply analytical frameworks, and evaluate an organization's climate strategy.

Dr. Justin Bull's approach to improving the climate curriculum is centered around three workstreams. Collectively, these streams will expose students to intersections of business, the climate crisis, and society.

- **WORKSTREAM 1: CLIMATE THROUGH A NON-BUSINESS LENS**

Students engage with the broader academic literature and thinkers, reaching beyond their home faculty to find research, ideas, and topics that challenge their perceptions of the climate crisis.

- **WORKSTREAM 2: CLIMATE COMMUNICATIONS IN THE WORKPLACE**

The messaging plank is specifically designed to provide students with the communication skills and confidence to recommend sustainable solutions in the workplace.

- **WORKSTREAM 3: CLIMATE AND INEQUALITY**

Students debate cynical views people have regarding climate justice and international perspectives of climate. They get to understand their own positionality in the climate crisis and how this affects their worldview.

Photos courtesy of [Canva](#)

# (Re)imagining Information Policy Through a Climate Justice Lens

Dr. Lisa Nathan

School of Information, Faculty of Arts

Project Year: 2022-2023

Link: [LIBR 561 \(3\) Information Policy](#)



During the first class gathering of LIBR 561: Information Policy each year, students are introduced to the adage, information policy is only needed when people disagree about how information should be managed. Whether we are discussing Twitter’s terms of service, Apple’s privacy policies, or ‘Right to Repair’ legislation, there is a recognition that disagreement is at the heart of the field. Yet, what has not been done (to date) is to explicitly discuss how the policy decisions that address these disagreements remain fixed in the epistemic assumptions of the past, particularly Europe’s “Age of Enlightenment”, valuing ideas from the height of colonization and imperialism.

The audacious goal of this project is to initiate (re)envisioning information policy as a field of study. LIBR 561 is particularly well positioned to engage with the concept of epistemic justice because information policy, whether dealing with data privacy policies, the rights of Indigenous peoples, impacts of colonialism, terms of service, or copyright legislation is only needed when there is a difference, when there is disagreement on how information should be managed, including when there is disagreement on what constitutes “information”. How these differences are adjudicated, the principles that are reinforced, the values that are determined as relevant, all influence who benefits and who is harmed by information policies.

## REDESIGNING LIBR 561

Dr. Lisa Nathan redesigned LIBR 561 course, enabling learners to recognize examples of information policy supporting racial, cultural, ecological, and epistemic injustice (often intertwined), and identify myriad ways information policy is leveraged to “imagine otherwise”, supporting climate justice goals by enforcing information management practices that value and respect difference (e.g., epistemic, cultural, economic).

## TESTIMONIALS

“[the project] informs ways I incorporate climate justice into all courses I teach (e.g., INFO 100 and INFO 456).”

“assignments saw a dramatic uptick in the number of innovative and climate justice-oriented topics students selected.”

Left to right: Photos courtesy of [Canva](#) and [Montezuma Meets Cortés](#) | [Unknown Artist \(Public Domain\)](#)

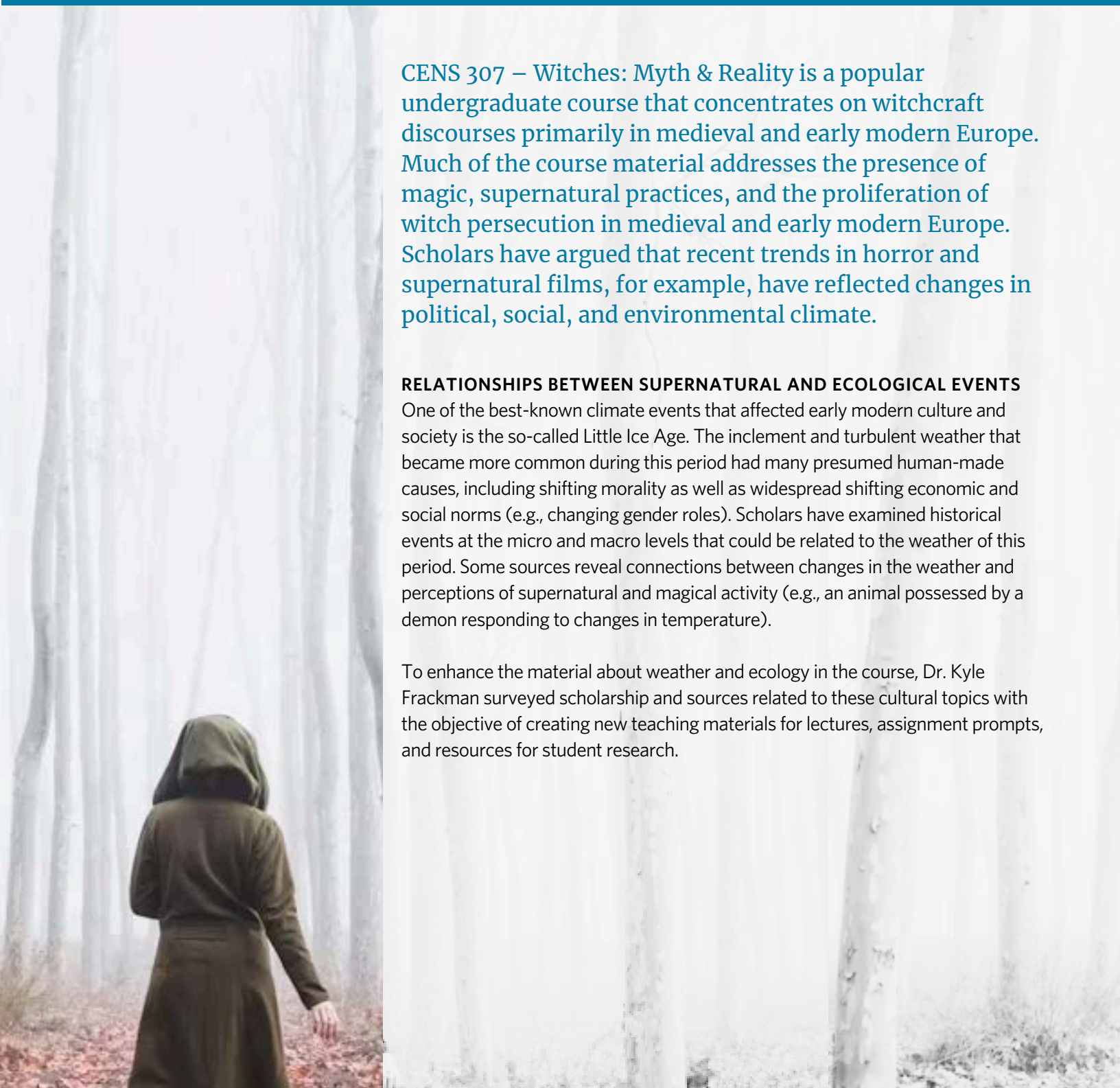
# Witchcraft, Witch Persecutions, and Ecological Events

Dr. Kyle Frackman

Central, Eastern, and Northern European Studies, Faculty of Arts

Project Year: 2022-2023

Link: [CENS - 307: Witches: Myth and Reality](#)

A person wearing a dark, hooded robe stands with their back to the camera in a misty, foggy forest. The trees are tall and thin, with light-colored bark, and the ground is covered in fallen leaves. The overall atmosphere is mysterious and ethereal.

CENS 307 – Witches: Myth & Reality is a popular undergraduate course that concentrates on witchcraft discourses primarily in medieval and early modern Europe. Much of the course material addresses the presence of magic, supernatural practices, and the proliferation of witch persecution in medieval and early modern Europe. Scholars have argued that recent trends in horror and supernatural films, for example, have reflected changes in political, social, and environmental climate.

## RELATIONSHIPS BETWEEN SUPERNATURAL AND ECOLOGICAL EVENTS

One of the best-known climate events that affected early modern culture and society is the so-called Little Ice Age. The inclement and turbulent weather that became more common during this period had many presumed human-made causes, including shifting morality as well as widespread shifting economic and social norms (e.g., changing gender roles). Scholars have examined historical events at the micro and macro levels that could be related to the weather of this period. Some sources reveal connections between changes in the weather and perceptions of supernatural and magical activity (e.g., an animal possessed by a demon responding to changes in temperature).

To enhance the material about weather and ecology in the course, Dr. Kyle Frackman surveyed scholarship and sources related to these cultural topics with the objective of creating new teaching materials for lectures, assignment prompts, and resources for student research.

Photo courtesy of [Miriam Espacio](#) (Usplash)



# Integrating and Implementing Climate Change Education for Graduate Level Courses in the Masters of Occupational Therapy (MOT) Program

**Dr. Ben Mortenson**

Occupational Science & Occupational Therapy, Faculty of Medicine

Project Year: 2022-2023

Link: [Dr. Ben Mortenson UBC Profile](#)



Climate change and health are inextricably linked, because climate change can have a direct impact on health. It also has a disproportional effect on people with disability, because of the structural socioeconomic marginalization they experience. Occupational therapy and Occupational science can play a vital role in helping people resume daily activities among those adversely affected by climate disasters.

## **INTEGRATING CLIMATE EDUCATION INTO OCCUPATIONAL SCIENCE & OCCUPATIONAL THERAPY (OSOT) COURSES**

In this project, Dr Ben Mortenson systematically studied the MOT program, and identified five courses whereby climate education can be integrated:

- OSOT 527: Becoming an Evidence-Informed Occupational Therapy Practitioner,
- OSOT 513: Health, Illness & Occupation
- OSOT 547: Developing Evidence for Occupational Therapy Practice
- OSOT 549: Small Group Tutorial component of the Professional Development of the Occupational Therapist II
- OSOT 551: Societal and Environmental Influences on Occupation & Occupational Therapy Practice

## **CONSULTATION WITH MASTER OF OCCUPATIONAL THERAPY (MOT) STUDENTS AND FACULTY MEMBERS**

To ensure the inclusion of climate education in the MOT courses is relevant, a student survey was conducted, revealing that 100% of respondents either strongly or somewhat agreed that, "It is important to consider climate change and sustainability issues.", and 94% indicated that they strongly or somewhat agreed that "Climate change and sustainability should be integrated into the content of relevant MOT course(s)." Interviews with faculty members further confirmed a shared commitment to prioritizing climate and sustainability education within the MOT program.

Supported by this positive feedback, Dr. Ben Mortenson has planned to revise courses across the MOT curriculum to include a total of 12 hours of climate change education.

Photos courtesy of [Canva](#)

# Climate-focused ESG Reporting and Analysis

Caren Lombard

Sauder School of Business

Project Year: 2022-2023

Link: [COMM 486E - Climate-Focused ESG Reporting and Analysis](#)

Corporations, including banks, accounting firms, consulting firms, and public sector entities, need individuals skilled in climate-related financial matters. Furthermore, competencies in climate-related reporting are now foundational skills included in the new Chartered Professional Accountants (CPA) Canada competency map. This new course is being developed in response to significant demand from both students and industry, aiming to equip graduates with the necessary skills to meet this market need.

## **DEVELOPING STUDENT SKILLS IN ESG REPORTING AND CARBON ACCOUNTING**

Dr. Caren Lombard developed a new pilot course - Climate-focused ESG reporting and analysis to provide students with the background to understand the importance of Environmental, Social and Governance (ESG) reporting to stakeholders of publicly traded corporations. The course also enables students to analyze information from corporate ESG disclosures to estimate the impact on corporate cash flows, cost of capital, and in turn, on corporate valuation. The course also includes an experiential learning component focused on carbon accounting for SMEs. Through collaborating with the UBC SEEDS program and UBC Food Services procurement, the course involved students working with SMEs, including MEC's supply chain partners. Groups of three students worked with ten SMEs to calculate Scope 1 and 2 emissions and some Scope 3 emissions. Several SMEs continued to work with students over the summer.

## **INCLUDING LCA AND ADVANCED WORKSHOPS ON SCOPE 3 EMISSIONS**

Moving forward, Dr. Caren Lombard plans to include advanced workshops on Scope 3 emissions, life cycle assessment (LCA), and product carbon footprints, along with the development of modular resources to educate students on carbon accounting across various faculties and courses. The goal is to make carbon accounting basics a standard part of the curriculum for commerce and related programs.

## **TESTIMONIAL FROM STUDENT**

"Out of my 5 years here at UBC, I would say that COMM486E has introduced and embedded the most tangible and applicable skills that I can carry forward past graduation into any career path. Whether it be communicating with clients, consulting, presentation, research, or data analysis and visualization coupled with learning new software, I would recommend this course for anyone looking to pursue a green job or just interested in learning more about the intersections of business and climate action!"

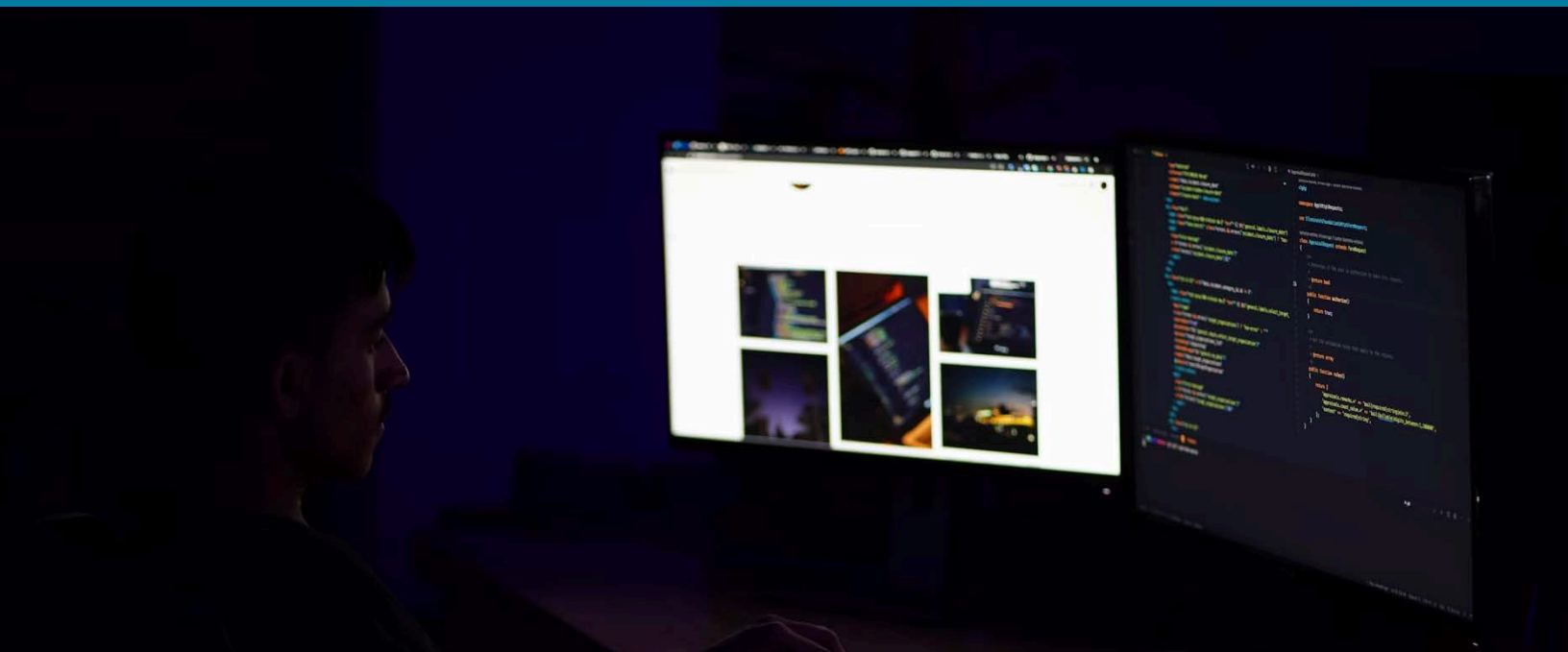
[Photos courtesy of Pickpik](#)

# Incorporating Climate Variables into Models - Variable Selection Strategies

**Dr. Bianca Eskelson** Forest Resources Management, Faculty of Forestry

Project Year: 2022-2023

Link: [FRST 430 & 533 Course Materials](#)



Statistical models support natural resources research and management by providing predictions and inferences about observed relationships. Model selection approaches for small sets of fixed independent variables are well established. However, when including climate variables in our models, researchers often face the need to select a subset of highly correlated variables for our models.

## MODULE DEVELOPMENT FOR CLIMATE VARIABLE SELECTION

To give students practical experience with the material, they added a Canvas assignment that covers this topic using permanent sample plot (PSP) field data from Quebec. In this assignment, students used the data set to work through several model building and variable selection approaches. They employed a linear model to analyze diameter growth as a function of tree- and stand-level variables, as well as climate variables. Students then compared the results to draw conclusions related to climate change research questions.

## INTEGRATING PRACTICAL APPLICATIONS INTO THE CURRICULUM

Dr. Bianca Eskelson and her Worklearn student, Liam Gilson, collaborated to develop a new course module for course FRST 430/533C that focuses on variable selection of correlated climate variables. They created case study examples that show variable selection with correlated climate data, each accompanied by detailed R code scripts. These case studies included short write-ups that provided background on the data set, research/modelling questions, the modelling approaches used, and the results.

Photos courtesy of [Mohammad Rahmani](#) (Unsplash)

# Anthropology of Electronic Waste

**Dr. Amirpouyan Shiva** Anthropology, Faculty of Arts

Project Year: 2022-2023

Link: [Dr. Amirpouyan Shiva UBC Profile](#)



**Traditionally, anthropology of media courses have mostly focused on the messages and contents that media help convey. The materiality and environmental impacts of media does not receive sufficient attention in the anthropology of media curriculum. This project aims to change this tendency by addressing the harms and long-lasting effects of e-waste on bodies, livelihoods, and landscapes.**

Dr. Amirpouyan Shiva revised the "Anthropology of Media" (ANTH378) course to integrate a critical examination of electronic waste into the curriculum. This initiative recognized that while media anthropology traditionally focused on the content and messages conveyed by media, it had largely overlooked the materiality of media devices and their environmental impacts.

The revised course incorporated new readings, documentary films, and active learning activities to address e-waste. Key components included:

- **Active Learning Activities:** Students engaged in autoethnographic and object ethnographic projects to explore the lifecycle of electronic devices and their environmental implications.
- **Readings and Films:** Up-to-date research and documentaries were added to highlight the environmental consequences of e-waste.
- **Interactive Projects:** Students interacted with data visualization tools and websites, such as *Reassembling Rubbish*, to better understand e-waste.

The revised syllabus fosters a deeper understanding of how media devices impact the environment, encouraging students to consider both the material and symbolic aspects of media technologies. By integrating these elements, the course sought to enhance students' critical awareness of digital media's role in climate change and waste management.

Photos courtesy of [Rwanda Green Fund](#) (Flickr)

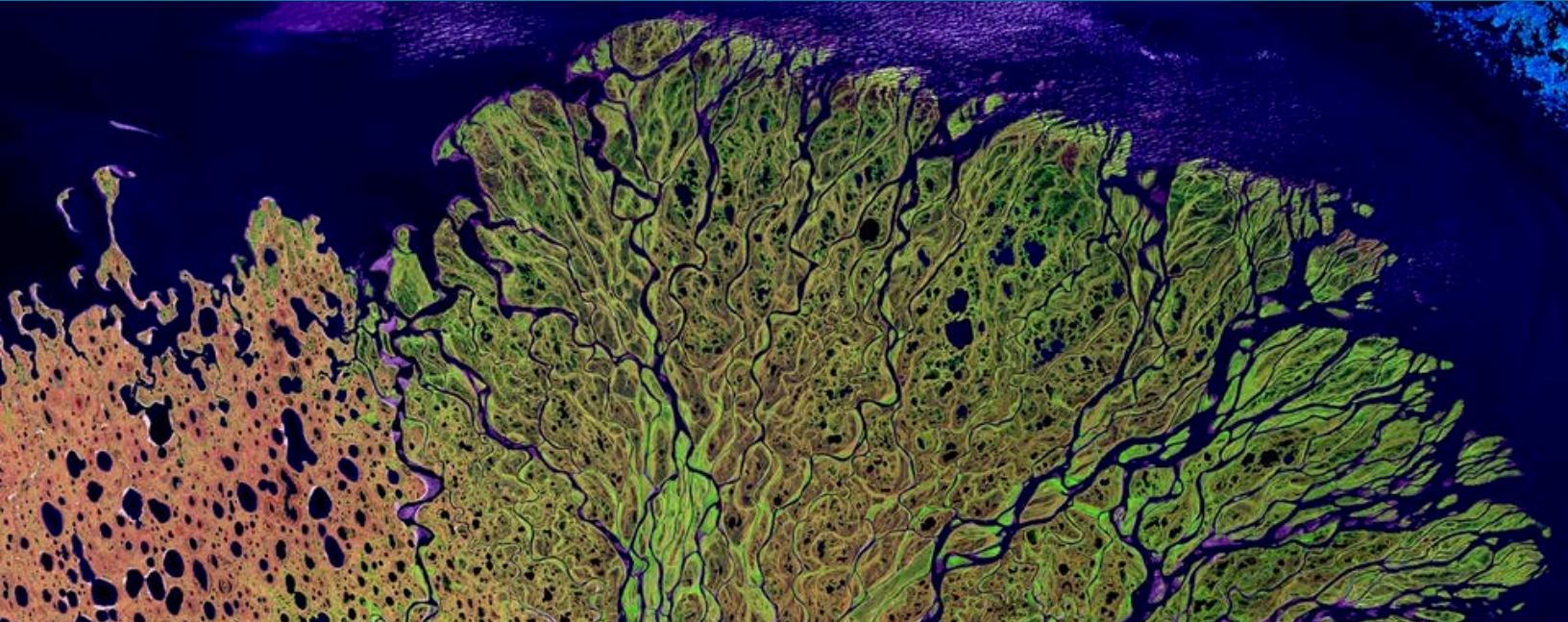
# Fostering a Climate Action Pedagogy through Geomatics Courses in Forestry

**Dr. Paul Pickell**

Forest Resources Management, Faculty of Forestry

Project Year: 2022-2023

Link: [Dr. Paul Pickell UBC Profile](#)



Students in Forestry recognize the threat that the climate crisis poses to their future livelihoods and profession. As they are increasingly confronted with the reality of how climate change will impact their work in forest management and conservation, they understand the need for educational tools and strategies that prepare them to address these challenges effectively. The integration of climate action into their coursework is essential for equipping them with the skills and knowledge necessary to navigate and mitigate the environmental issues they will face in their careers.

Geographic Information Systems (GIS) and remote sensing were identified as crucial tools for addressing climate challenges, yet existing geomatics courses did not fully incorporate these tools for tackling climate-related issues. To address this gap, Dr. Paul Pickell initiated this project aimed to integrate climate action into the geomatics curriculum by developing new computer-based lab assignments across three undergraduate courses: CONS 340 (Introduction to GIS for Forestry and Conservation), FRST 443 (Remote Sensing for Ecosystem Management), and a newly introduced second-year course.

These assignments utilized remote sensing satellite data and geospatial analysis to explore critical climate topics such as deglaciation, flooding, wildfire risk, urban forest adaptation, and sea ice melting. Students were expected not only to analyze data but also to communicate their findings through written recommendations to Canadian decision-makers. This approach was designed to foster a climate action pedagogy that emphasized real-world impact and practical solutions.

Photos courtesy of [USGS](#) (Unsplash)



## Climate and Wellbeing Education Grants

Climate and Wellbeing Education Grants provide support to faculty members wishing to incorporate climate change and wellbeing-related content and pedagogies into existing undergraduate and graduate courses at UBC.

The program encourages faculty to include course content connections between climate change and human health and wellbeing given "climate change is the greatest global health threat facing the world in the 21st century, but it is also the greatest opportunity to redefine the social and environmental determinants of health" ([The Lancet Countdown on health and climate change](#)). At the same time, the program promotes paying close attention to the wellbeing of students and instructors in the learning environment by sharing tools and approaches as well as by hosting open discussions on the topic.

The Sustainability Hub and UBC Wellbeing partnered to award 12 grants in 2023-2024.



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Political Science, Faculty of Arts

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Enriching Climate Change Curriculum for CONS 127 Observing the Earth from Space

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Dr. Adrian Yee

Centre for Health Education Scholarship, Faculty of Medicine



# Revising An Introductory Urban Forestry Course to Incorporate Climate Change and Wellbeing

**Dr. Andrew Almas**

Forest Resources Management, Faculty of Forestry

Project Year: 2023-2024

Link: [UFOR 100 Greening the City](#)



Climate change mitigation, adaptation and human wellbeing are fundamental aspects of the discipline of Urban Forestry. However, these topics are not yet specifically addressed in an intentional learning module in lower-year courses.

## **INTEGRATING CLIMATE CRISIS EDUCATION INTO URBAN FORESTRY COURSES**

Dr. Andrew Almas created lecture modules in the UFOR100 (Greening the City) course with corresponding lab assignments, test questions, and discussion board topics that directly address the climate crisis in relation to Urban Forestry practice.

A new assignment was created to delineate the synergies that exist between the greenery in urban areas, human wellbeing, and climate change mitigation and adaptation. It introduces a reflection on the practice of assisted migration of tree species in urban areas with its associated opportunities and constraints related to the climate crisis. This module serves to address the current gap that our students encounter when beginning this degree, while importantly building interest and competencies allowing students to pursue this topic in greater depth in upper-year Urban Forestry courses.

Photo courtesy of Canva

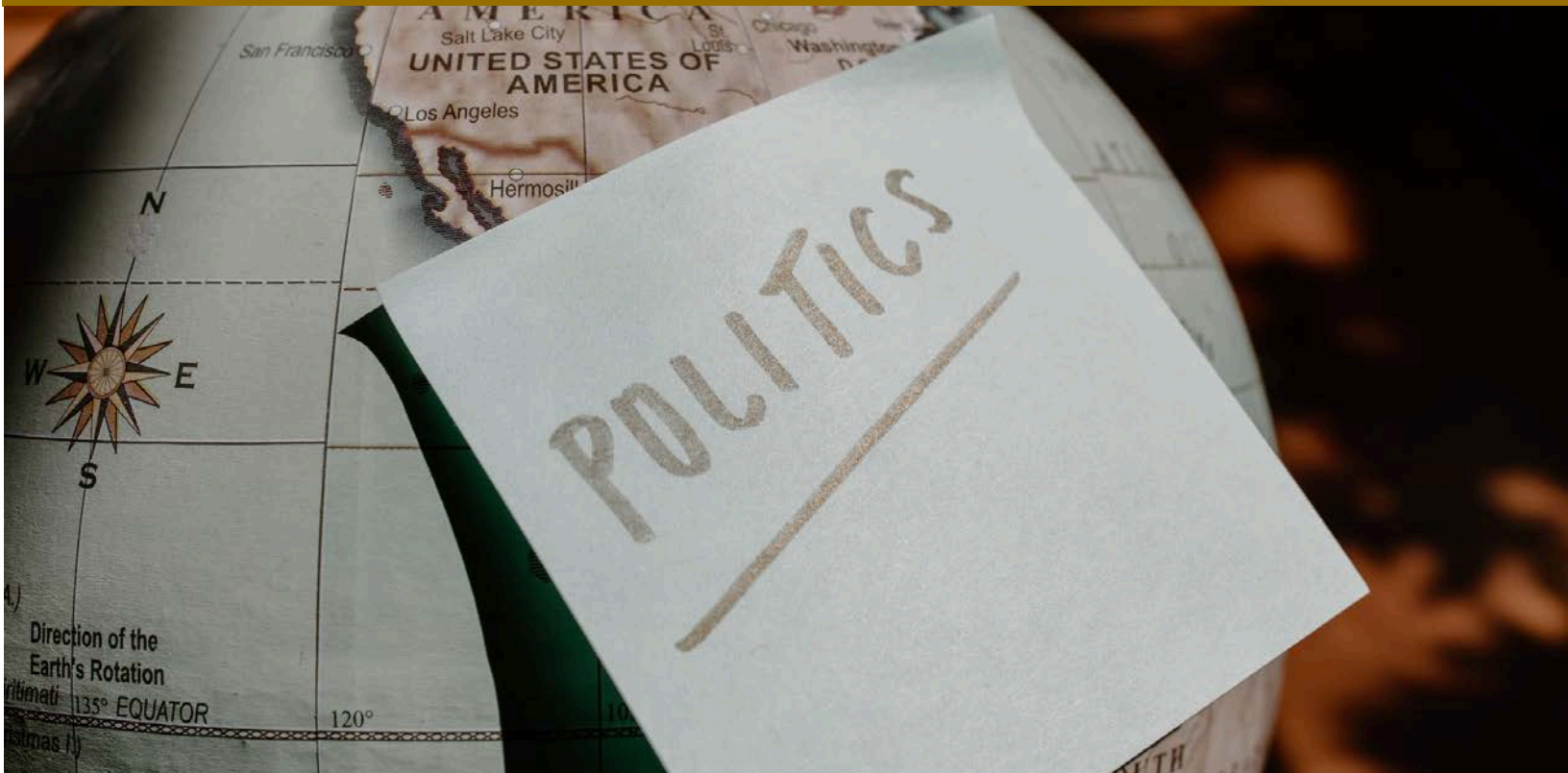
# Introducing the Study of Politics through the Politics of Climate Change

**Dr. Bruce Baum**

Political Science, Faculty of Arts

Project Year: 2023-2024

Link: [POLI\\_V100 - Introduction to Politics](#)



By connecting abstract political concepts to real-world climate challenges, Dr. Bruce Baum aims to foster a deeper understanding of justice, power, and democracy among students in his Poli 100 Introduction to Politics course.

## **CLIMATE-FOCUSED REVISION OF POLI 100**

Dr. Bruce Baum revised the Poli 100 course to focus on the climate crisis, employing part-time teaching assistants and support from UBC's Center for Teaching, Learning, and Technology. He restructured the course to integrate climate-related readings, discussions, and case studies that connect key political concepts and modern ideologies to the climate crisis – such as justice, norms, empirical reality, power, the state, rights, democracy, gender, racism, globalization, and Indigeneity – to practical problems of widespread interest.

He introduced "In the news" segments to relate current events to course themes, invited guest speakers with expertise in the climate crisis, and adapted assignments, maintaining analytical rigour while addressing the challenges of climate change and new AI developments.

Photo courtesy of Canva

# Enriching Climate Change Curriculum for CONS 127 Observing the Earth from Space

Chris Colton

Forest Resources Management, Faculty of Forestry

Project Year: 2023-2024

Link: [Chris Colton UBC Profile](#)

The foundation of CONS 127 in Earth observation science is critically intertwined with some of the most novel climate change research as well as its impact on humans. It has the potential to provide students with a holistic perspective on the newest technologies and tools used to track, monitor, and predict climate change-related phenomena and understand the implications on human wellness.



## DEVELOPMENT OF EARTH OBSERVATION MODULE IN CONS 127

The primary objective of this project was to create a new three-week module on Earth observation and the climate emergency within the CONS 127 course. This initiative involved the development of six new lectures and three assignments to explore critical topics related to climate change, such as urbanization, sea level rise, food security, and climate-based inequities. The first week focused on the consequences of urbanization and sea level rise, utilizing Earth observation technologies to identify high-risk areas and inform community planning. The second week addressed food security and agricultural impacts, specifically analyzing land conversions from palm oil plantations using space-based data. The final week delved into the geopolitical aspects of climate change, examining how night lights datasets can reveal the impacts of climate conflicts on human health and wellbeing, particularly in developing nations.

## STRUCTURED APPROACH TO MODULE DEVELOPMENT

To ensure the effectiveness of the module, the team employed a structured approach. They developed clear learning objectives for the overall module, each week, and each lecture, creating detailed outlines that maintained a cohesive flow throughout the course. The project involved conducting literature reviews, gathering references, and integrating a variety of graphic materials such as maps, satellite imagery, and videos to enhance the learning experience. A significant focus was placed on the captivating nature of Earth observation imagery, which was identified as a crucial component for engaging students in the subject matter.



Photos courtesy of Canva

# Revising EDST 503 for Use in MEd in Education for Sustainability, Regeneration and Resilience

**Dr. Kari Grain**

Educational Studies, Faculty of Education

Project Year: 2023-2024

Link: [Dr. Kari Grain UBC Profile](#)

In an age of interlocking crises, we urgently need new theoretical and practical models to meaningfully respond to the complex emotional demands that systemic crises place on people. Founded on the principles of adult education, this revision puts forth a novel approach to acquiring skills, attitudes, and dispositions related to regenerating our wellbeing through hope.

The project involved the development of a new graduate course titled “Education for Sustainability, Regeneration and Resilience” (EDST 520: Critical Emotion Studies and the Climate Crisis), collaboratively designed by Dr. Grain and Dr. VanWynsberghe for an inter-faculty audience, including students from Education, Land and Food Systems, and Forestry. This marks the first time the course is being offered across faculties, building on previous iterations while incorporating revisions based on Dr. Grain’s book, “Critical Hope.”

The course explores the role of emotion in social movements related to the climate crisis, highlighting the political aspects of climate injustice. New modules were created to address topics such as Climate Change Emotions, Wellbeing Strategies, and Hope, allowing for flexible applications beyond the course, including professional development opportunities.



Photos courtesy of [Nik](#) (Unsplash)

# Interactions Between Pandemics and Climate Change: Incorporating New Content and Teaching Strategies in the Sociology Course SOCI 290 Global Pandemics

**Dr. Katherine Lyon**      Sociology, Faculty of Arts

Project Year: 2023-2024

Link: [Multimodalities in Sociology Course Design](#)



Climate change contributes to the emergence and spread of new infectious diseases, and can affect the ability of marginalized groups to anticipate, respond to, and recover from pandemics.

## **INTEGRATING CLIMATE CHANGE AND PANDEMICS IN SOCIOLOGICAL STUDIES**

Content related to the climate crisis and its intersections with past, current, and future pandemics was integrated into the SOCI 290, which accommodates up to 120 students annually. The content incorporated through lectures, readings, and case studies, highlighting specific connections between climate change and pandemics within various sociological frameworks, including disaster studies, health sociology, racial and colonial studies, environmental sociology, gender studies, and media.

Through revised engagement strategies, reflection exercises, and assessments, students explored how the wellbeing of different social groups is influenced by the interplay between pandemics and climate change, while also identifying personal wellbeing management strategies throughout the course.

Photo courtesy of Canva

# Kin(esiology) in Climate: Health Stories from Our Shared City

**Dr. Liv Yoon**

Kinesiology, Faculty of Education

Project Year: 2023-2024

Link: [Local Stories of Climate and Wellbeing](#)  
[Kinesiology and Climate Change](#)



We aim to empower students to recognize the real-world implications of climate issues and understand how health is intricately shaped by social constructs and influenced by various environmental factors.

## **CONNECTING CLIMATE CHANGE AND HEALTH: VOICES FROM VANCOUVER**

This project integrated the themes of the climate crisis, health, and social inequities into the KIN 262 Health, Policy, and Society course. By producing a video and an accompanying study guide, the project localized the impact of climate change through the personal stories of Vancouver residents experiencing its effects firsthand. The video highlighted the lived experiences of individuals facing disproportionate health challenges due to climate change, introducing critical concepts such as 'climate (in)justice' and 'climate (in)equity.' The accompanying study guide provided additional context and resources, enriching discussions on core topics such as social determinants of health and the relationship between climate change and social inequality.

Photo courtesy of Canva

# Integrating Planetary Health into Pharmacy Education

**Dr. Robert Pammett**

Faculty of Pharmaceutical Sciences

Project Year: 2023-2024

Link: [Dr. Robert Pammett UBC Profile](#)

Healthcare systems significantly impact the environment with approximately 5% of global greenhouse gas emissions being attributed to this industry. Among these emissions, approximately 25% are pharmaceutical-related, stemming from activities such as manufacturing, procurement and direct medication use.



There is increasing recognition of the need to formally incorporate planetary health content into pharmacy education to prepare future pharmacists for the environmental challenges they will face in their practice.

## **EMBEDDING PLANETARY HEALTH COMPETENCIES**

Dr. Robert Pammett embarked on this project to develop asynchronous content by leveraging experts in the field from across Canada, including Ontario, Saskatchewan, and British Columbia, from both public and private sectors. His works focused on evaluating and refining the educational module on planetary health for pharmacy students at UBC. It involved conducting research to identify core competencies for pharmacy education related to planetary health across Canadian pharmacy faculties. Based on evaluation findings and research insights, the team developed and enhanced content for the PHRM 441 course and an elective course, while also incorporating considerations for student wellbeing through collaboration with the Faculty's Student Wellbeing Working Group. Additionally, the project facilitated the integration of planetary health competencies into the pharmacy curriculum through Faculty-wide Education Forum meetings.



Photos courtesy of [Andrey Metelev](#) (Unsplash)

# Creating Synergy in Teaching and Learning; Linking Climate Action with Nutrition and Wellbeing Curriculum

**Dr. Sally Stewart**

Health and Exercise Sciences, Faculty of Health and Social Development, UBC Okanagan

Project Year: 2023-2024

Link: [HES 200 Course Outline](#)



**Nutrition and wellbeing are closely linked to climate, in aspects such as what we eat, why we choose certain foods, where our food comes from, how it is produced and consumed, and how we manage food waste.**

Dr. Sally Stewart revised the curriculum of HES 200 Nutrition, HINT 331 Nutrition for Health Professions, and HEAL 100 Introduction and Principles of Health and Wellbeing to enhance student awareness, knowledge, and skills related to the impact of climate change on health and nutrition. The revisions included integrating topics such as the effects of climate change on crop yield, local eating behaviors, sustainable farming methods, and the influence of cultural and Indigenous food practices on climate and health.

Experiential learning tasks, guest speakers, field trips, and online learning opportunities were added to provide practical experiences. These new curricula empower students to understand health as a social construct influenced by environmental factors, equipping them with the skills to address environmental challenges in their future careers.

Photo courtesy of [Freepik](#)



# Strengthening Climate Change Concepts, Tools and Critical Thinking in ENVL Core Courses

**Dr. Zeina Baalbaki**

Civil Engineering, Faculty of Applied Science

Project Year: 2023-2024

Link: [Dr. Zeina Baalbaki UBC Profile](#)



**Environmental Engineering professionals are at the forefront of tackling climate change, by quantifying and mitigating its impacts through the implementation of Engineered systems.**

Dr. Zeina Baalbaki enhanced climate change content in key Environmental Engineering Program courses (ENVL), specifically ENVE 202 and ENVE 401. The project aimed to provide students with a holistic understanding of climate change impacts on human health and wellbeing, establish technical correlations between climate change and environmental spheres, and develop a framework for adapting engineering designs to mitigate these impacts. Four interactive modules were created: one highlighting the historical and current impacts of climate change on wellbeing, another offering a technical analysis of climate change processes, a third providing a guideline for climate change adaptation in capstone projects, and a final module featuring real-world case studies. The modules included lectures, videos, exercises, and case studies, supported by an instructor guide to ensure sustainable integration into the curriculum.

# Tackling Climate Action through Children's Literature

**Dr. Tanya Kyi**

Creative Writing, Faculty of Arts

Project Year: 2023-2024

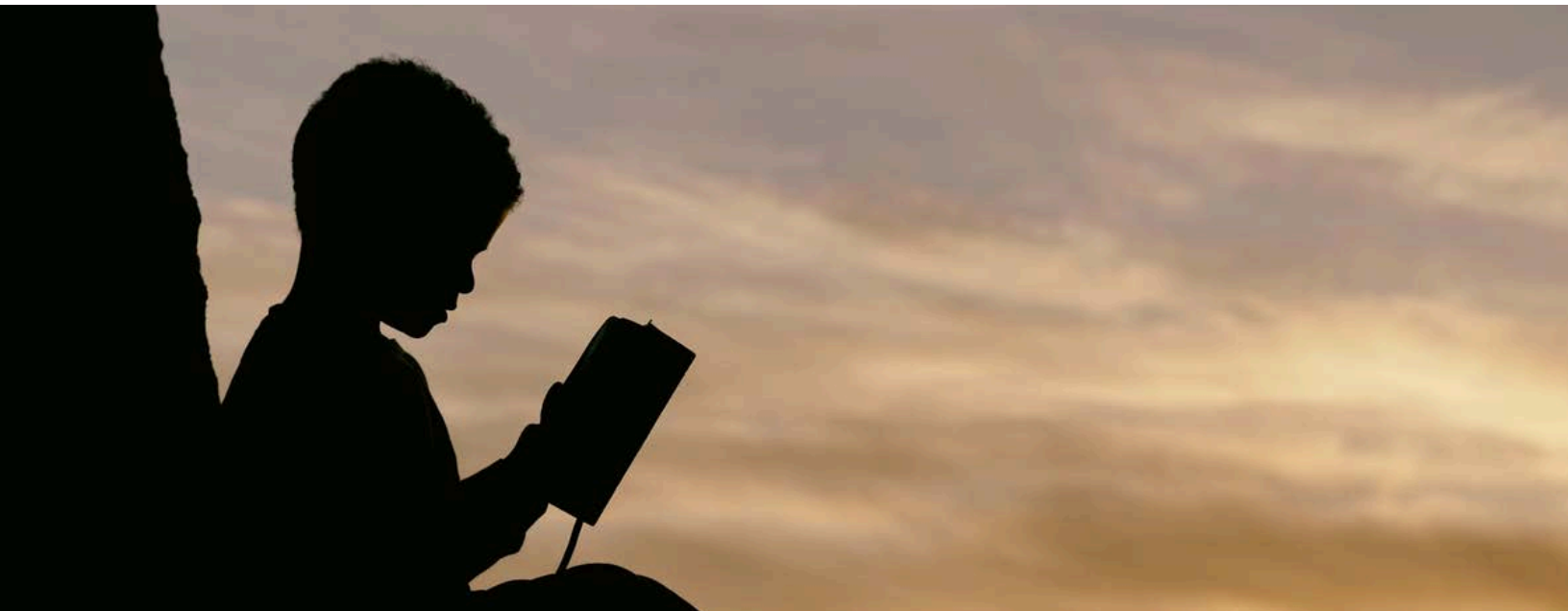
Link: [CRWR - Creative Writing 203, 403 and 503](#)

**Introducing children to climate issues requires a deep understanding of the subject as well as a focus on potential action and current reasons for optimism. We need to leave young readers with a sense of possibility rather than a sense of despair.**

Dr. Tanya Kyi adapted creative writing modules for second-year, fourth-year, and graduate students at UBC to enhance climate communication skills with the aim to address the pressing need for climate education in children's literature while fostering a sense of optimism and agency among young readers. The project team researched recent publications, conducted interviews with professional book creators and Indigenous and settler researchers, and explored new approaches with CRWR 203, 403, and 503 students. Climate action emerged as a central theme in contemporary children's books, enabling parents and teachers to approach the topic meaningfully.

While young readers need to grasp climate change and its effects, it was important to address the potential for heightened climate anxiety among children and teens.

A new module and climate-communications assignment were integrated into the course Introduction to Writing for Children and Young Adults (CRWR 203), allowing for testing and modification in advanced classes. New materials, discussion topics, and mini-assignments were incorporated into the advanced courses and are planned for annual implementation. The major assignment in CRWR 203 was reformatted to focus on climate issues, guiding students to explain climate change science and incorporate topics such as Indigenous land stewardship and leadership. The project provided resources to assist students in selecting topics that included reasons for optimism and youth action. Additionally, video interviews with writers, illustrators, and climate researchers were created to enrich the course content. Sensitivity to students' climate anxieties was prioritized throughout the project, ensuring that the approach was thoughtful and supportive.



Photos courtesy of [Andrey Metelev](#) (Unsplash)

# Building Connective Tissue of Care In the Classroom: Reimagining GEOG 302

Avi Lewis

Geography, Faculty of Arts

Project Year: 2023-2024

Link: [GEOG 302 - Climate Justice](#)



In the context of the overlapping crises of climate impacts, poverty, housing insecurity, hunger, and white supremacy, cultivating classrooms where students can think about and feel through climate change impacts is imperative. In a world that desperately needs climate justice, opening space for students to have generative and supported conversations about the affective contours of the climate emergency will allow them to push past paralysis and mobilize into action.

Avi Lewis spearheaded a project to revise the curriculum for GEOG 302: Climate Justice at UBC, with a strong focus on integrating emotional and psychological wellbeing into the course. The course attracts a diverse group of students and challenges them to explore the connections between the climate crisis and various structures of power and injustice. Recognizing the emotional toll this content can have, the project lead created a learning environment that supports students' mental health by embedding community care into the course's pedagogy, projects, and materials.

## INTEGRATING COMMUNITIES OF CARE

The project assembled a small student collective to research and implement strategies that would foster a supportive classroom atmosphere. These strategies included the introduction of "learning pods"—small groups within the larger class to facilitate intimate discussions and mutual support—as well as the incorporation of content specifically addressing the emotional impacts of climate change. The course was also designed to include hopeful, solution-oriented case studies in each session, helping students maintain a sense of possibility and action amidst the often overwhelming challenges of climate justice.

The curriculum was designed to be iterative, with continuous feedback and refinement built into its structure. By engaging students in the course design process and regularly updating the syllabus based on their research and input, the project aimed to create a dynamic and responsive learning environment. Ultimately, the revisions to GEOG 302 sought to balance the difficult realities of the climate crisis with constructive, hopeful approaches, empowering students to engage deeply with climate justice while maintaining their emotional resilience.

Photos courtesy of Canva

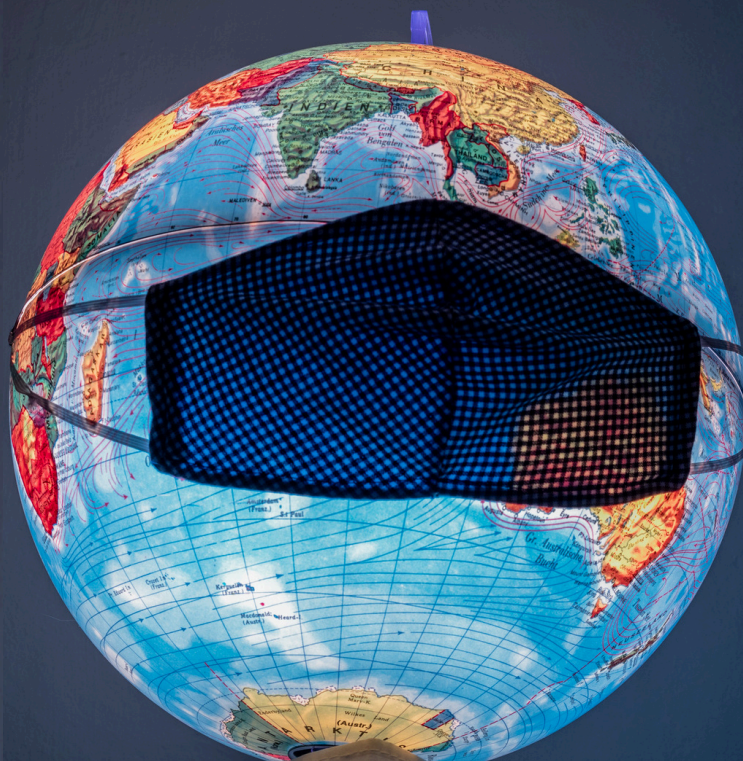
# Integrating Planetary Health and Wellbeing through a Constructivist Approach

**Dr. Adrian Yee**

Centre for Health Education Scholarship, Faculty of Medicine

Project Year: 2023-2024

Link: [UBC's Doctor of Medicine Undergraduate Program's Curriculum](#)



**Recognizing the accelerating climate emergency and its profound impact on human health, this project sought to deepen medical students' understanding of the intricate connections between planetary health and human well-being.**

Dr. Adrian Yee spearheaded this project aimed at enhancing medical education by integrating planetary health concepts into UBC's Doctor of Medicine (MD) Undergraduate Program. Recognizing the accelerating climate emergency and its profound impact on human health, the project sought to deepen medical students' understanding of the intricate connections between planetary health and human well-being. Guided by the Engage, Assess, Align, Accelerate, and Account (E4As) framework, the project aligned with Sustainable Development Goal 13: Climate Action, emphasizing the urgency of climate-responsive healthcare.

In its first phase, the project team integrated planetary health into the curriculum in 2022, setting a solid foundation for further development. The project's second phase focused on embedding planetary health into the case-based learning (CBL) curriculum for first- and second-year medical students. This approach aimed to bridge foundational science with clinical practice, empowering students to apply their knowledge in real-world scenarios. The project also prioritized co-creation, involving patient partners and community members in updating weekly learning objectives and materials to ensure they reflect diverse perspectives and address the needs of a changing healthcare landscape.

Photos courtesy of [Günter Hentschel](#) (Flickr)

# Acknowledgments

We want to thank all faculty members who work hard to bring sustainability education to UBC students. Through your commitment, passion, creativity and hard work, you help us all move forward in addressing the interconnected issues that impact our lives, our health and the health of this planet we call home.

We also want to thank our friends at the Office of Wellbeing Strategy for the support offered over the last couple of years to increase our reach and help us integrate wellbeing and health into our granting programs.

Lastly a huge thank you to Carmen Wan from the Sustainability Hub for the time and effort that has gone into producing this compendium of projects and stories and to everyone at the Hub who reviewed and helped us improve this resource over time. This is a living document that will be continuously updated with new and past projects.

**Sustainability Hub:** The mission of the Sustainability Hub is to inspire people to act upon the planet's most urgent challenges through UBC's academic and operational sustainability leadership.

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