

More details on PLC:

Renewable Energy, Just Energy Transitions, and Energy Democracy

Crystal Brown, Assistant Professor, Social Science & Policy Studies

Geopolitics and the Pursuit of Net- Zero

This course will examine, discuss, and debate the geopolitics surrounding the pursuit of net-zero carbon emissions in international relations as it relates to the global move towards renewable energy. Tracking the ramifications of climate change impacts countries, companies, and individuals, which have produced many roadblocks to the essential objective of achieving net-zero carbon emissions. In particular, the course will explore the geopolitics of renewable energy on institutions and organizations that structure international relations.

Soroush Farzin, Assistant Professor of Teaching, Architectural Engineering

Back to Fundamentals: Sun, Wind & Earth in Architectural Design Strategies

The first step in the building industry to combat the effects of climate change and GHG emissions is reducing the energy consumption of buildings. Many studies show that traditional design strategies can effectively reduce reliance on mechanical systems while ensuring human comfort. This project aims to incorporate new models in Architectural Design Studio 1 (AREN 2002) so that students learn the fundamentals of designing in harmony with nature while designing an energy-efficient building.

John Galante, Assistant Professor of Teaching, Humanities and Arts

Revisions to INTL 2910: Topics in Global Studies: Past, Present, and Future of Global Energy

This project will update an International and Global Studies course on global energy that examines fossil fuel use and dependency, carbon dioxide and local pollutant emissions, demand-side mitigation efforts, and the production and consumption trajectories for alternative fuels. Revisions will create greater balance in geographic areas of focus and allow for more engagement with both transportation fuels and power generation. It will update modules based on recent energy and environmental policies, technological innovations, and volatility in global markets and industries.

Jianyu Liang, Professor, Mechanical & Materials Engineering

Renewable Energy and Energy Transition Applications in Introductory Materials Science

This project will create renewable energy and energy transition-focused examples and mini course projects for ES 2001, Introduction to Materials Science and Engineering. Materials science and engineering play a pivotal role in renewable energy and energy transition designs and applications. This project will provide easily adaptable renewable energy-centered examples to help students develop a deep understanding of key materials science and engineering concepts as well as renewable energy needs and concepts.

Geoff Pfeifer, Associate Professor of Teaching, Humanities & Arts and Integrative & Global Studies

Energy Justice/Just Energy Transitions Modules for the Great Problems Seminars

With the help of others in the PLC, I will construct educational modules for the two GPS courses that I teach to help deepen student understanding of issues surrounding the uneven distribution of clean, consistent energy resources for communities and also help them see that simply transitioning to green forms of energy does not ameliorate these issues and can further entrench long standing economic, environmental, and social injustices unless we think carefully about how those transitions are managed.

Adam Powell, Associate Professor, Mechanical & Materials Engineering

Adapting Materials Processing for Climate Change Mitigation

This project will update ME 2820 Materials Processing to discuss how manufacturing needs to change for consistency with societal greenhouse gas reduction goals. Metal processing contributes around 15% of human energy and industrial emissions, mainly in the steel industry. Most emissions are from metal oxide reduction which will be a new course unit. Course units will consider all aspects of emissions including electricity generation and transportation.

Aaron Sakulich, Associate Professor, Civil and Environmental Engineering

Energy Consumption, Trends, and Transitions in the Construction Materials Industry

In CE3026 students investigate the material properties of concrete, metals, wood, plastic, and other materials widely used in the construction industry. While students learn a great deal about chemical/material properties, and the course contains some limited information on economics, the sustainability of these materials is not discussed in depth. With greater professional focus on examining the environmental impacts of materials selected for construction projects, there is a growing need for students to understand how energy is used to produce materials.

Lisa Stoddard, Associate Professor of Teaching, Social Science & Policy Studies and Integrative and Global Studies

Green, Black, Brown, and Pink: Under-recognized Innovators in Sustainability, Climate, and Energy

Environmental studies and sciences are among the least diverse fields in STEM. This proposed course will focus on environmental sustainability, climate, and energy through the lenses and narratives of those scholars, innovators, and leaders who are often under-recognized. This includes those in BIPOC communities, LGBTQIA+ communities, as well as those from different positions of class, ability, and national origin. We will explore how these key narratives and theories inform and transform our understanding of climate and energy problems.

Mike Timko, Associate Professor, Chemical Engineering

A University Accessible Course on Bioenergy as a Renewable Energy Technology

The project is to modify an existing chemical engineering course on bioenergy to make it accessible and useful to the campus community more broadly.