Earth System Science and Policy (ESSP)

Minor in Sustainability Studies (https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/earthsystemscienceandpolicy/essp-minor/)

ESSP 160. Sustainability & Society. 3 Credits.
Human interactions with the natural environment are often perceived as conflicts between environmental protection and socio-economics. Sustainability attempts to redefine that world view by seeking balance between the 'three Es' -environment, economy, equity. This course examines the concept of sustainability, the theory behind it, and what it means for society. F.

ESSP 200. Sustainability Science. 3 Credits.
This course will provide an integrated, system-oriented introduction on the concepts, theories and issues surrounding a sustainable future for humans and the Planet Earth. The course will address the concept of sustainability, the concept of a system, explore human world views, provide an introduction to energy, complexity and ecosystems, and examine resources use, food production, industrial development and the prospects for a sustainable future. S.

ESSP 310. Sustainable Food Systems. 3 Credits.
This course will examine the need for development of sustainable food production systems. The course will introduce the concept of an integrated agro-ecosystem. Students will learn how food production systems work, how they impact natural ecosystems, how fragile the human food resource has become, and gain an appreciation of the complexity of relationships between humans and food. F, even years.

ESSP 320. Land and Water Sustainability. 3 Credits.
This course covers topics of sustainability of physical landscapes and water on the Earth. Class lectures will introduce concepts related to landscape use, perception of landscape and water use as a resource, and most importantly how to use the physical landscape and freshwater as a resource in a manner to which it will be viable for future generations (i.e. landscape and water resource sustainability). Topics include, but are not limited to snow and glacier melt water, ground water, mountain environment resources, river flood plain land use, and water use in desert environments. F, odd years.

ESSP 330. Environmental Change: Adaptation & Mitigation. 3 Credits.
The objective is to introduce the varieties of adaptation and mitigation strategies to address four main sustainability challenges: land use/land cover change, climate change, water security, and biodiversity loss. The major physical processes of the Earth systems will be examined, together with the natural and anthropogenic changes in these processes; then, the societal impacts from modifications to the Earth systems will be described; finally, the strategies of adaptation and mitigation will be compared, using a variety of regional case studies as examples. S, odd years.

ESSP 333. Oceanography. 3 Credits.
Oceanography introduces the ocean and the study of the ocean, which regulates our climate, maintains our atmosphere, and serves as an enormous resource. The course explores all aspects of the oceans- their physics, chemistry and biology, as well as the structure of the basins that contain them. Students will learn how the oceans interact with the atmosphere and the solid Earth, understand the role played by the oceans, not only as a producer of food and source of recreation, but as a transporter of heat energy, sink for greenhouse gases, and moderator of the climate. In the end, students will come away with a deeper understanding of how the ocean works and greater appreciation for the benefits we derive from it. F, odd years.

ESSP 410. Why Cry for the Cryosphere?. 3 Credits.
This course will provide an integrated, system-oriented perspective on the concepts, processes, and issues surrounding all of the cold environment locations on Earth (i.e. the Arctic, Antarctic, Sub-Arctic, high elevations, and seasonally cold regions of the planet) also known as the cryosphere. The course focuses on how human-environmental relationships have an impact on, as well as are impacted by the cryosphere. Topics include, but are not limited to, climate change impacts on snow, glaciers, permafrost, and sea ice; changes in the cryosphere impacting human's living on the landscape; and the importance of the cryosphere in relation to sustainability of the Earth and human systems. S, odd years.

ESSP 420. Sustainable Energy. 3 Credits.
This course is an interdisciplinary exploration of Sustainable Energy. The interdisciplinary exploration includes the analysis of renewable energy systems as well as the socio-economical, political, and environmental aspects of renewable energy. The course will specifically analyze the origin and dimensions of global energy issues and identify how renewable energy issues and policies are critical to the sustainable future of global environmental quality, economic growth, social justice, and democracy. S, even years.

ESSP 450. Environmental and Natural Resource Economics. 3 Credits.
This course will cover the general topics in the field of environmental and natural resource economics: market failure, pollution regulation, the valuation of environmental amenities, renewable and non-renewable resources management, and the economics of biodiversity conservation, climate change and sustainability. The course has a strong focus on the interaction between human society and natural environmental systems and the connection between market equilibrium and social sustainability. F, odd years.

ESSP 460. Global Environmental Policy. 3 Credits.
Governance and policy are the most common strategies used to address environmental problems. This course introduces students to the foundation, development, actors, process, challenges, and future outlook of global environmental policy. By navigating various levels of US and global governance, students will explore a variety of concepts and principles in the development and implementation of environmental policies. S, odd years.

ESSP 499. Special Topics in Sustainability. 1-4 Credits.
Investigation and detailed study of special topics related to sustainability issues. The course may include a lab if applicable. Repeatable once with different topic. Maximum of 8 credits. Repeatable to 8.00 credits. On demand.