

Sustainable Innovations and Climate Action (SICA)

The "Sustainable Innovations and Climate Action" (SICA) course offers a comprehensive exploration of the intersection between emerging technologies and global environmental stewardship. Designed for graduate-level students, the curriculum focuses on how innovations such as Artificial Intelligence (AI), Carbon Capture and Storage (CCS), and climate prediction tools serve as primary drivers for sustainable development.

The course utilizes a systems approach to emphasize the fundamental interconnectedness of the three primary pillars of sustainability: environmental, economic, and social. Students examine the "Planetary Boundaries" framework, analyzing critical thresholds like climate change and biosphere integrity that humanity has already exceeded. By integrating theoretical frameworks with real-world case studies—such as the Sleipner CCS project in Norway or the Dubai Sustainable City—the program equips learners with the analytical skills necessary to evaluate technological solutions critically.

Key thematic modules include the circular economy, where waste is redefined as a resource, and the complex landscape of carbon markets, encompassing both compliance and voluntary systems. Participants also explore Nature-Based Solutions (NBS), including sustainable forestry and smart agriculture, as essential strategies for climate mitigation and adaptation. Ultimately, the course aims to foster "Strategic Foresight," enabling students to design and implement forward-thinking projects that address the climate emergency while promoting societal progress and long-term ecological resilience.