



Advanced Concepts in Sustainability

Course Outline

COURSE DESCRIPTION

This self-paced, 6.5-hour online course is designed to equip students with a strong foundational knowledge of sustainability and the balance between environmental, social, and economic systems. The materials provide students with a thorough expansion on sustainability topics such as ecosystems, energy and water challenges, life-cycle analysis, new technology, and climate change science. The course incorporates hands-on activities, online modules, discussion forums, and dynamic instruction methods.

LEARNING OUTCOMES

1. Define sustainability and describe the environmental, economic, and social aspects of the triple bottom line.
2. Describe the profound impact humans have had on the ecosphere, and explain the importance of biodiversity and ecosystem services.
3. Describe the global inequities of sustainability decision-making, and the intersection of sustainability with global health issues.
4. Understand the economic factors of sustainability and the role of government in providing public goods and market incentives for the expansion of sustainability initiatives.
5. Identify new trends in technology (and their relation to the emerging green economy) such as renewable energy, new agriculture, transportation innovations, and green building design and practice.
6. Define the role of consumers, businesses, and media in promoting sustainability.

INSTRUCTIONAL RESOURCES

The 6.5 hours of directed instruction is accessed online through any internet connection. The course consists of ten sequential units which contain all of the instructional resources participants will need to complete the course. These include a variety of instructional formats, such as video, animations, presentations, guided activities, and readings.

DATES AND TIMES

This online course is self-paced and will take about 10.5 hours to complete. Students must have an internet connection and access to GEF's learning management system in order to complete the course. All units must be completed within 90 days of enrollment.

COURSE REQUIREMENTS

Participants are expected to complete all seven units, which include the following components:

1. Pre- and Post-Self Assessments
2. Guided Activities
3. Unit Readings
4. Check for Understanding Questions

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Unit 1: Sustainable Development: The Social Challenges

Essential Question: How does society and governance contribute to sustainability and what are the essential elements of quality of life for people?

The Big Idea: Moving from the environmental perspective, the second pillar of sustainability is social equity: sharing the benefits of economic growth within and between nations and providing opportunities for all people to live productive lives. This goal is equivalent to **sustainable development**, which aims to meet humanity’s present needs while not jeopardizing the ability of future generations to meet their needs. Severe global inequities in income, education, and access to healthcare and resources are primary challenges that we must overcome in order to create a sustainable world. Additionally, inequality needs to be understood in the context of overall global population and economic growth. Finally, the challenge of sustainable development is not solely the role of governments, but rather the responsibility of all global citizens.

Topics Covered:

- What is sustainable development?
- Global inequities in all dimensions of sustainability
- Population growth, energy use, and sustainable development
- Health and sustainability
- Sustainability, society, and social change

Unit 2: The Economics of Sustainability

Essential Question: How are traditional economic systems limited to encouraging sustainability on global, regional and local scales?

The Big Idea: Understanding economics is integral to understanding sustainability. The prefix *eco*, derived from the ancient Greek word for “house,” is the base of the words “economics” and “ecology.” Both disciplines study the behavior of systems and relationships between parts of systems. However, the current global economic system operates in ways that discount ecological relationships or health, and it is marked by several unsustainable trends. By prioritizing monetary returns on investments over all other measures of well-being, our system makes economic growth obligatory even when it is unsustainable. Although economic growth provides benefits to society, unsustainable growth is linked to inequality, natural resource depletion, and pollution. Current market incentives are reinforcing these trends, and there is little pressure from the global economic system to decrease economic inequality, make economic growth more sustainable, or rein in resource depletion and pollution. However, progressive approaches such as the economic valuation of nature offer hope that the global economic system can become truly sustainable.

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Topics Covered:

- Dominant global economic trends: economic growth
- Market failures and externalities
- Tragedy of the commons and the free rider problem
- Ecological economics
- Placing a value on nature
- Creating a sustainable economic system

Unit 3: Government and Sustainability

Essential Question: What are the roles of governments in addressing sustainability market failures?

The Big Idea: Individuals, organizations, and businesses have essential roles to play in the transition to **sustainability**. However, the scale of challenges such as **climate change**, water scarcity, global **biodiversity** loss, and widespread economic inequality is so large that it is necessary for governments to play a leading role. In addition, as outlined in Unit 7, the current configuration of the global economic system is in many ways fundamentally unsustainable. For these reasons, most sustainability advocates look to governments in order to promote environmental health and social equality. Governments have successfully addressed some environmental concerns such as **acid rain** and **ozone depletion**, yet they have been much less successful at promoting a comprehensive sustainability agenda. This unit takes a look at the various roles of government, and considers their challenges, effectiveness, and how our evolving understanding of sustainability is driving substantial changes to governmental approaches.

Topics Covered:

- Successes and Challenges of Regulations
- Policy Successes and Challenges
- Pollution Markets: Cap and Trade
- Political Constraints on Government Action: Climate Change
- The Problems of Enforcement
- Case Study: Chesapeake Bay Watershed

Unit 4: New Technology and Innovative Sustainability Approaches

Essential Question: What new technologies are being developed to address sustainability issues and why is important that consumers embrace demand for them?

The Big Idea: Technological innovation is a vital part of sustainability. While no single technology is a “silver bullet” that will transform the way humans live on the planet, a range of innovations in design, energy, transportation, water use, and buildings are making significant improvements. It will take the positive actions of all people, creatively using appropriate technology over an extended period, to achieve sustainable societies.

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Many sustainable technological solutions are available now, but resistance to change short-sighted approaches to problem-solving often stand in the way. Looking at technology from within an integrated sustainability framework allows innovations to have long-lasting impact.

Topics covered:

- Nature as a role model – biomimicry
- The future of energy
- Sustainable transportation
- Innovations in water Systems
- Green building
- Green jobs and the green economy

Unit 5: Toward a Sustainable Future

Essential Question: What important cultural and fundamental shifts must continue happening in businesses, governments, media, and societies in order to fully promote and implement sustainability?

The Big Idea: The primary goal of sustainability is to transform our economy from a system that is based on waste and destruction to a system that aligns with the ecological balance of our planet. This is no small task, as it means overturning entrenched business and political practices that value short term profit and growth over sustainability. Despite this enormous challenge, there are some encouraging developments underway which point to an emerging sustainable society and economy.

Topics Covered:

- Sustainable design and sustainable cities
- Consumer choice and demand for sustainability
- Business sustainability initiatives and corporate social responsibility
- Organizations and new social media promoting sustainability around the world
- An emerging sustainability mindset