

SM-531
SUSTAINABLE DEVELOPMENT
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Course Description: This course addresses issues of sustainable development at the local, regional and global scales. Topics include understanding of the definitions, history, current status and future outlook of sustainable development. Population dynamics, wealth distribution, principles of economic growth, social dimensions of sustainable growth (poverty, food security, health, education, social inclusion), biodiversity and ecosystem dynamics, climate change. Sustainable development stakeholders and their roles and responsibilities including individuals, advocacy groups, local, regional and country level governing bodies, NGO's and corporations. Legal, policy and regulatory aspects of sustainable development. A systems view of sustainability and sustainable development including the concepts of planetary boundaries and resiliency.

SYLLABUS

LECTURE	TOPICS	READING	HOME WORK
1	History and current status of sustainable development efforts. Principles of economic growth. UN sustainable development goals (SDGs). Environmental threats of economic growth.	Chapter 1 & Chapter 14	
2	Population dynamics. Social and economic inequalities. The concept of the Human Development Index (HDI).	Chapter 2 & Chapter 3	HW 1 Due
3	Fundamentals of and history of economic development. Factors influencing economic development. The role of technology on economic growth. Causes of poverty and strategies to end it.	Chapter 4 & Chapter 5	HW 2 Due
4	Social implications of sustainable growth. Social inclusion, gender and other social inequalities. The ethics of wealth, poverty and inequality. Implicit and explicit bias.	Chapter 7	HW 3 Due

5	Education at the global scale. The role of technological advancements in sustainable development. Case studies.	Chapter 8	HW 4 Due
6	Global health and health care challenges. Designing and financing health care systems. Case studies.	Chapter 9	HW 5 Due
7	Global food security. Sustainable food supply. Environmental threats to food production. Case studies.	Chapter 10	HW 6 Due
8	Systems approaches to sustainable development. Planetary boundaries and global tipping points. History of global climatic changes.	Chapter 6	HW 7 Due
9	Climate change. Basic science behind climate change. Greenhouse gases global emissions. Strategies for mitigation and adaptation practices.	Chapter 12	HW 8 Due
10	Biodiversity and ecosystem protection. Threats to the land ecosystems. Oceans and fisheries. Deforestation.	Chapter 13	HW 9 Due
11	Water on earth and its implications in sustainable development. Water footprint and virtual water.	Handouts	HW 10 Due
12	The concept of resiliency. Urbanization and resilient cities. Designing smart infrastructure. Planning sustainable development in the urban setting.	Chapter 11	HW 11 Due
13	Systems approaches to sustainable development: The food-energy-water nexus.	Handouts	HW 12 Due
14	Final Project Presentations and Exam		

Notes: There will be a total of 14 weekly 2.5-hour meetings for this course inclusive of lectures, exams and student presentations. There will be several reading assignments, which will be handed out well in advance of each lecture.

Recommended Textbook: *The Age of Sustainable Development*, Jeffrey D. Sachs, Columbia University Press

Learning Outcomes: The course has the following learning outcomes:

1. Understanding the history and basic principles of sustainable development.
2. Understanding of world population growth and dynamics and its impact on sustainable growth.
3. Understanding social and economic inequalities and their impact on sustainable growth.
4. Understanding the principles of economic growth and the factors influencing the degree of development in different parts of the world.
5. Understanding the state of world poverty, the factors influencing it and various steps for mitigation.
6. Understanding various social factors influencing education, health care, food production and industrial growth in the developing world.
7. Understanding the drivers and impacts of climate change.
8. Understanding the salient characteristics of biodiversity and ecosystems.
9. Understanding environmental issues in the developing world.
10. Introduced into concepts of systemic thinking, systems integration and complexity as they apply to sustainable development.
11. Understanding the concept of resiliency and planning and designing for resiliency.

Course Assignments:

Homework Assignments: Students will be required to submit certain completed homework assignments covering important topics. Homework will be due two weeks after they are assigned. The homework will be in form of short essays in a set of assigned CRITICAL QUESTIONS. The essays should be no less than 2 pages. (1.5 line spacing 12 font size)

Course Project Requirements: This is a “critical thinking” course and requires full participation by all students on a weekly basis. There is a semester long project required for the course. Student groups will be assigned a Sustainable Development Goal (SDG). The group will work as a team and will be responsible for presenting its assigned SDG in class according to the schedule provided in the next slide. The format of presentation will be as follows: (1) a 20-minute team presentation. Each presentation should consist of not more than 15 power point slides. Each slide must be supported by appropriate notes and a full list of citations. At the end of this presentation the students should identify 2-4 critical issues related to the SDG. (2) a 15-minute panel discussion on the identified critical issues. The presenters should engage their fellow students in a lively discussion of the topics. As a homework assignment the class should come prepared to participate in the discussion every week (see guidance).

Term Paper Requirement: Each student will be responsible for writing a term paper on their assigned STG. ***This is an individual effort not a group paper.*** The students in the group should decide a-priori which set of topics each should cover in their paper. The paper shall be no longer than 15 pages. (1.5 line spacing 12 font size)

Grading:

Students will be graded on:

1. Attendance and class participation: 10%
2. Exams: 40%
3. Homework assignments: 25%
4. Project/Paper: 25%