PABLO

SENG 101: Introduction to Environmental Studies

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What I will cover - course content

1. Unit 1: Humans and the Environment
2. Unit 2: Resources and population
3. Unit 3: The ecosystem
4. Unit 4: Pollution and pollution control
5. Unit 5: Water pollution studies
6. Unit 6: Environmental laws and contemporary issues
7. Unit 7: Wastewater treatment
8. Unit 8:Disease and disease control
9. Unit 9: Microbial pathogens and their control
10. Unit 10: Water supply and sanitation, solid waste management

Human and the Environment

- **Humans and the Environment**: the sun and solar system, electromagnetic spectrum, the earth, plate tectonics, ocean floor spreading, continental drift,
- **human societies and their impacts on the environment**: hunter gatherer societies, agricultural society, industrial society etc.

Resources and population:

- Renewable and non-renewable resources,
- The looming crises
- Earthmanship society

- The environment: environment and society, environmental ethics

The ecosystem:

- **the ecosystem**: world major ecosystems, the tropical environments, the tropical rain forest, the tropical savannah, the tropical deserts
- **how the ecosystem functions**: levels of organization of matter, ecosystem structure, non-biotic portion, living biotic portion, climate, the soil, pyramid of numbers, energy and biomass, biogeochemical cycles limiting factors in an ecosystem

Pollution and pollution control:

- Pollution and pollutants,
- Degradable and non-degradable forms of pollutant,
- Air pollution, - Thermal inversion,
- Climate change etc.

Water pollution studies:

- Properties of water,
- Eutrophication,

- Heavy metal contaminants,
- Environmental quality parameters, biochemical oxygen demand, chemical oxygen demand, nitrites etc.

Environmental laws and contemporary issues

- history of environmental laws in Ghana and the world,
- types, principles and levels of environmental laws,
- environmental impact assessment,
- life cycle and risk analysis etc.,

Wastewater treatment:

- Levels of waste water treatment,
- Conventional and non-conventional treatment systems

Other topics

- Disease and disease control,
- Microbial pathogens and their control,
- Water supply and sanitation,
- Solid waste management

Mode of Delivery

1. Lectures
2. Tutorials and seminars
3. Laboratory/practical sessions

4. Group work
5. Oral presentations and
6. Assignments

Learning objectives/outcomes

By the end of this module, students should be able to:

1. Understand the interaction between humans, nature and the environment.
2. To gain knowledge on the planet earth and its surrounding bodies, resources, environment and climate change
3. Discuss the basic environmental laws and policies in Ghana and the world.

4. Appreciate the ecosystem and its structure, pollution, environmental impact assessment and treatment of waste.
5. Explain issues related to water and sanitation and solid waste management

- Have an overview of humans, nature and environment.
- To gain knowledge on the planet earth and its surrounding bodies, resources, environment and climate change
- Discuss the basic environmental laws and policies in Ghana and the world.
- Appreciate the ecosystem and its structure, pollution, environmental impact assessment and treatment of waste.

- Explain issues related to water and sanitation and solid waste management

Structure of module

1. Lectures/Tutorials – Between 7-10 weeks
2. Field trips – to be determined
3. Assignments – 3 major assignments (In groups)
4. Quizzes – About 2 (Unannounced)
5. Mid semester exams (March 22 – 26)
6. Final exams (April 12 - 30)

Grading

1. **Continuous Assessment – 40%**
   a. Class Assignments – 15%
   b. Quizzes – 10%
   c. Mid Semester Examinations – 10%
   d. Attendance – 5%

2. **End of Semester Examinations – 60%**

Ground rules

1. No phone calls and related social media activities in class – phones should be off or on silent
2. No use of other electronic devices/gadgets (laptops, tablets, etc) in class
3. No conversation in class
4. Students expected to be punctual to class – appropriate punishment will be given to students who arrive 30 minutes after lectures begin

Reading Materials

1. Kiely, G., Environmental Engineering. McGraw Hill, 1996. ISBN: 007091272

2. Awuah, E., Environmental and Sanitation Studies for the Tropics, 2012, Third Revised Edition
3. AWWA/APHA, Standard Methods for the Examination of Water and Wastewater.
4. Cunningham, W.P., Cunningham A.M., Principles of Environmental Science, Inquiry and Applications New York:. McGraw Hill, 2002
5. Ram, S. Gupta, Environmental Engineering and Science. An Introduction Government Institutes Rockville, MD, 2004.