

OCES 1030 - Environmental Science

Learning Outcomes

By the end of this course, the students are expected to be able to

- 1) Comprehend essential environmental concepts such as life supporting system, biodiversity and biomes, natural resources, sustainability, and their inter-relationships,
- 2) Develop a broad interest and connect the knowledge to their major study,
- 3) Recognize the importance of harmony among human, the nature, and a sustainable living society,
- 4) Apply the knowledge in daily life and contribute to environmental protection.

Course Format

Two lectures per week.

Course Assessment (TENTATIVE)

- Midterm Examination (about 40 %)
- Final Examination (about 60%)

Major Reference

Cunningham, W.P. and Cunningham, M.A. (2020) *Principles of Environmental Science: Inquiry and Application*. 9th Edition. McGraw-Hill Companies, Inc.

Lecture Outline and Schedule (TENTATIVE)

Lecture Topic

Part 1: Matter & Energy (Chapters 2 & 13)

- 1) Course Introduction & Energy, Matter and Resources in the Environment (I)
- 2) Energy, Matter and Resources in the Environment (II)
- 3) Energy, Matter and Resources in the Environment (III)

Part 2: Biomes & Biodiversity (Chapter 5)

- 4) Earth's Major Biomes (I)
- 5) Earth's Major Biomes (II)
- 6) Biodiversity & Its Significance (I)
- 7) Biodiversity & Its Significance (II)

Part 3: Food & Nutrition (Chapter 7)

- 8) Food Security & Nutrition (I)
- 9) Food Security & Nutrition (II)

10) **Midterm Exam**

Part 4: Human Populations & Sustainability (Chapter 4)

- 11) Human Populations & Sustainability (I)
- 12) Human Populations & Sustainability (II)

Part 5: Environmental Health & Toxicology (Chapter 8)

- 13) Environmental Health
- 14) Environmental Toxicology

Part 6: Atmosphere, Climate & Pollution (Chapter 9)

- 15) Atmosphere: Air Circulation and Climate
- 16) Atmosphere: Greenhouse Gases and Renewable Energy
- 17) Air Pollution: Acid Rain, Ozone, Ocean Acidification

Part 7: Water Resources & Pollution (Chapter 10)

- 18) Water Supply, Usage and Cycle
- 19) Water Conservation and Technology
- 20) Aquatic Hypoxia and Eutrophication
- 21) Water Pollution and Remediation

Part 8: Microplastics

- 22) Microplastics: Global and Local Impacts
- 23) Microplastics: Detection and Removal

Part 9: Solid & Hazardous Wastes (Chapter 13)

- 24) Solid Wastes and Remediation (I)
 - 25) Solid Wastes and Remediation (II)
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