Addis Ababa University
Addis Ababa Institute of Technology
School of Civil & Environmental Engineering

2019/20 (2012 E.C.) A.Y

Introduction to Environmental Engineering (CEng 3181), ***Cr. hrs: 3***

Consultation hours:

Instructor:

Course objective

The general objective of the course is to provide students with an understanding of the basic principles and knowledge for improving the environment for human habitation and to remediate polluted sites.

Generally, students will start thinking like an Environmental Engineer and be creative problem solvers to meet today's challenges (how pollution in the air and water is controlled or how contaminated waste sites are cleaned up or how exposure and risk on human is assessed)

- Addresses the physical, chemical and biological principles of the environment
- Addresses water and air pollution control, recycling, waste disposal, and public health issues
- Address environmental impact of proposed construction projects through Environmental Impact Assessment. Specifically, by the end of the course students should be able to:

✓ Explain the basic processes and values of the environment

✓ Discuss the importance of environmental considerations in all engineering endeavors.

✓ Demonstrate understanding of types, sources, effects and control of environmental pollution

✓ Demonstrate understanding of environmental impact assessment as a tool for sustainable development

1. INTRODUCTION

1.1. What is environmental engineering

1.2. Environmental Policies and Legislation

1.3. Ethics

2. CONCEPTS OF ECOLOGY AND NATURAL RESOURCES

2.1. Components of the environment

2.2. Ecological processes and natural cycles

2.3. Major global environmental hazards

3. INTRODUCTION TO ENVIRONMENTAL PROCESSES

3.1. Unifying theories

3.2. Material Balance

4. WATER QUALITY ENGINEERING

4.1. Water pollutants and their sources

4.2. Water quality management in surface water

5. AIR POLLUTION

5.1. Physical and chemical fundamentals

5.2. Sources and classification of pollutants

5.3. Air pollution Meteorology

5.4. Atmospheric dispersion

5.5. Air pollution control

6. SOLID WASTE MANAGEMENT

6.1. Solid waste Quantities and characteristics

6.2. Collection and processing

7. ENVIRONMENTAL IMPACT ASSESMENT

7.1. Definition and purpose of EIA

7.2. The EIA process ***Final***

Evaluation Mechanism

- Assignment 10%
- Test 1 15%
- Test 2 15%
- Quiz 10%
- Final exam 50%

References

1. Environmental Engineering, 4th ed., by Ruth F. Weiner and Robin Matthews
2. Environmental Pollution and Control, 4th ed. by J. Jeffrey Peirce, P. Aarne Vesilind, Ruth F. Weiner
3. Introduction to Environmental Engineering, 4th ed. by Mackenzie L. Davis and David A. Cornwell

- Attendance: 80% is minimum requirement to sit for the exam
- **Any problems, personal or otherwise, affecting grades or attendance should be brought to the instructor's attention.**