

# Environmental Science Technology

General Engineer  
Subjects Elective  
2 credit

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## 1. Course Description

The Kyoto Protocol is the international agreement under the United Nations Framework Convention on Climate Change (UNFCCC) signed in Kyoto in December 1997. The Kyoto Protocol aimed to reduce the collective greenhouse gas emissions of developed countries by at least 14% below the 1990 levels between 2008 and 2012. This aim is referred to as the first commitment period.

The Earth's temperature is increasing at unprecedented speed. Rising temperatures will raise sea levels, reducing supplies of fresh water as flooding occurs along coastlines worldwide and saltwater spreads inland. Based on provisional calculations, by the end of the 21st century, the average global temperature will increase by about 1.4~5.8 °C, and the average sea level will increase 10~80 cm from the present level.

In this lecture, students will first learn about how humans impact the environment. This will be followed by several topics discussing the environment and energy. Students will be expected to understand and think about how to solve these problems.

## 2. Course Objectives

In this lecture, we will introduce topics on environment and energy, understand their concepts and actual situation, and discuss the proposals for solutions. We aim to raise awareness of each student about grasping environmental problems and solving them without merely accumulating knowledge.

- (1) You can acquire the actual situation of the global environment and its problems.
- (2) You can acquire the fundamental knowledge leading to basic solutions to environmental problems.
- (3) You can master the fundamental knowledge of environmental preservation and biomass recycling.

## 3. Grading Policy

An intermediate presentation at the eighth lecture of the course must be obligated. Furthermore, at the fifteenth lecture of the course, students must give an oral presentation (20 min talk + 10 min discussion).

The final grade for this course will be determined by a combination of marks given for your presentation and your participation in discussions.

## 4. Textbook and Reference

Textbook

Not specified. All lectures are done using ppt. In addition, we will separately distribute the materials.

## 5. Requirements(Assignments)

Classes are conducted in a lecture type while using ppt materials.

## 6. Note

## 7. Schedule

- |      |   |
|------|---|
| [1]  | Humans and the Environment  |
| [2]  | Global Climate Change due to CO <sub>2</sub> Emissions            |
| [3]  | Global Warming Due to Greenhouse Gases Other than CO <sub>2</sub> |
| [4]  | Ozone Layer Depletion   |
| [5]  | Air Pollution and Acid Rain                                       |
| [6]  | New Energy Sources  |
| [7]  | Current Topics on Global Warming                                  |
| [8]  | Open Discussion on Lectures (1)~(7)                               |
| [9]  | Agrochemicals and Dioxin  |
| [10] | Effect of Pollution on Ecosystems                                 |
| [11] | Ecological Problems Related to Waste and Recycling                |
| [12] | Recycling of Plastics   |
| [13] | Biomass Feedstock   |
| [14] | Current Topics Regarding Recycling                                |
| [15] | Summary and Exam  |