Course Name: **Principle Environmental Science (SCBE301)** 2(2-0-6)
Classroom: Faculty of Science, Phayathai Campus
Quarter: Semester Summer/2023 (June -July 2024)

Course coordinator: Toemthip Poolpak, Ph.D.
Lecturer: Toemthip Poolpak, Ph.D (TP)

Course Description

Man, and environment interactions, principles of ecology, pollution and environmental health and toxicology; land, air and water resources; management of natural resources; sustainable and conventional sources of energy; balance of nature and the effects of pollutants and contaminants on natural resources; effects of pesticides and their related products on the environment.

Course Objectives

1. To understand the environmental and ecological principles
2. To be able to describe environmental situation in Thailand
3. To understand the basic concepts of ecotoxicology
4. To understand and be able to describe problems and impacts related to environmental pollution (air and water)
5. To understand the basic concepts of conventional and sustainable energy
6. To understand and be able to describe the basic concepts of biological and hazardous waste management.

Teaching and Evaluation Methods

Teaching will be in the classroom with interacting perspectives. A textbook is required and course content will follow the recommended textbook.

Final examinations are in a written format and will be announce at the beginning of the class or with this course outline.

Evaluation

1. Final examination 35%
2. Assignments and quiz 55%
3. Attendance 10%

Students will be evaluated from their total score (out of 100%). Grading system is A, B^+, B, C^+, C, D+, D and F.

Teaching Plan and Topic Objectives

Week	Date	Topic	Hr.	Instructor

1	June 19 09.30-11.30	Introduction to Environmental Science 1.1 Understanding our environment 1.2 Current conditions 1.3 Human development 1.4 Current Environmental Conditions 1.5 Investigating Our Environment	2	TP
2	June 19 13.00-15.00	Energy & Life 2.1 Energy for Life 2.2 Energy Flow and Materials Cycling	2	TP
3	June 20 9.30-11.30	Population Dynamic 3.1 Dynamic of population growth 3.2 Factors affecting population increase and decrease 3.3 Factors regulating population growth	2	TP
4	June 20 13.00-15.00	Human Population and World Problems 4.1 Human population growth: threat to the world 4.2 World population and world hunger 4.3 Trend for the Future	2	TP
5-6	June 24 09.30-11.30 13.00-15.00	Food and Agriculture 5.1 New crops and genetic engineering: Golden Rice 5.2 Soil: A Renewable Resource 5.3 Ways We Use and Abuse Soil	4	TP

		5.4 Sustainable Agriculture		
7-8	June 24 09.30-11.30 13.00-15.00	Environmental Health and Toxicology 6.1 Introduction to environmental health and toxicology 6.2 Routes of entry of pollutants into the environment 6.3 Movement, Distribution, and Fate of Toxins 6.4 Mechanisms for Minimizing Toxic Effects 6.5 Measuring Toxicity 6.6 Distribution of pollutants in the environment 6.7 Fate of pollutants in the environment 6.8 Effects of pollutants on ecosystem 6.9 Risk Assessment and Acceptance	4	TP
10-11	June 25 09.30-11.30 13.00-15.00	Air: Climate and Pollution 8.1 Global Warming 8.2 The Atmosphere and Climate 8.3 Climate Change 8.4 Climate and Air Pollution 8.5 Climate Processes and Air Pollution 8.6 Effects of Air Pollution 8.7 Air Pollution Control 8.8 El Nino & La Nina	4	TP
12-13	June 26 14.00-16.00	Water: Resources, Pollution and Treatment	4	TP

	July 3 09.30-11.30	9.1 Where Has the River Gone? 9.2 Water Resources 9.3 Major Water Compartments 9.4 Water Availability and Use 9.5 Freshwater Shortages 9.6 Water Management and Conservation 9.7 Water Pollution 9.8 Pollution Control 9.9 Types and effects of water pollution 9.10 Waste treatment technology 9.11 Biological methods for waste treatment		
14	July 3 13.00-15.00	Environmental Geology and Mining Wastes 10.1 Open-pit Mine 10.2 Minerals and Rocks 10.3 Economic Geology 10.4 Environmental Effects of Resource Extraction 10.5 Effects of mining, acid-mine drainage 10.6 Geologic hazards mineral resources; effects of mining	2	TP
15	July 5 09.30-11.30 13.00-15.00	Non-renewable Energy and Renewable energy 11.1 Fossil Fuels (Coal, Oil and Natural Gas) 11.2 Nuclear Fission and Nuclear reactors 11.3 Solar Energy 11.4 Wind Energy	4	TP

		11.5 Ocean Energy 11.6 An Alternative Energy Future?		
16	July 8 09.30-11.30	Review, Answer and Question	2	TP
17	July 15	Final examination	2	TP

Reference:

William P. Cunningham and Mary Ann Cunningham, 2020 Environmental Science. 15th Edition WCB/McGraw-Hill