Course Syllabus

1. Program of Study Bachelor of Science (Biological Sciences)

Faculty/Institute/College Mahidol University International College

2. Course Code ICBI 344 / ICNS 253 **Course Title** Environmental Science

3. Number of Credits 4 (Lecture-Lab) (4-0)

4. Prerequisite *(s)* ICNS 112 or equivalent

5. Type of Course Major required; minor elective; GE (Natural Science)

6. Trimester/ Academic Year TBA

7. Course Description

Ecological concepts related to the problems of pollution and their impact on agriculture and wildlife communities, natural resources, sustainable development and maintenance of clean environment.

8. Course Objective *(s)*

To understand the environmental and ecological principles
To be able to describe environmental situation in Thailand
To understand biological and physical resources and biodiversity
To understand and be able to describe problems and impacts related to environmental pollution (air and water)
To understand the basic concepts of conventional and sustainable energy
To understand and be able to describe the basic concepts of biological and hazardous waste management.

Course Outline

Week	Topic		Instructor
	Lecture	Hour	
1	Introduction Understanding our environment Current conditions Human development Tools for building a better world Matter Energy and Life & Biomes, Restoration and Management From atoms to cells Energy and matter Biological communities and species interaction Community properties Terrestrial biomes Aquatic ecosystems	4	Prayad

	Ecosystem management		
2	Population, Human Population, and Environmental Health Population dynamics Human populations Demographic transition, Dynamics of population growth Factors that increase or decrease populations	4	Prayad
3	Biodiversity and Biological Resources Biodiversity and the species concept Endangered species management and biodiversity protection Botanical gardens and captive breeding problems	4	Prayad
4	Land use: Forests and Rangelands Principles and concepts of ecotourism Preserving nature Parks and Nature Reserves Wildlife Refuges	4	Prayad
5	6. Plant Pest and Pest Control DDT and the silence spring Pesticides uses and types Pesticide problems Alternatives to current pesticide uses	4	Prayad
6	Midterm Examination	4	Prayad
7	Ecological Health and Toxicology	4	Prayad

	Movement, distribution and fate of toxins Mechanisms for minimizing toxic effects Measuring toxicity Risk assessment		
8	Conventional and Sustainable Resources Coal, oil and natural gas Nuclear power Conservation of energy Photovoltaic and solar energy Energy from biomass Hydropower	4	Prayad
9	Climate Change and Air Pollution Air, climate and weather Air pollution : Human – caused Effects of air pollution Air pollution control	4	Prayad
10	Water Use, Management and Water Pollution Water resources, availability and uses Water supplies and management Types and effects of water pollution Water pollution control	4	Prayad
11	Solid and Hazardous Wastes Solids, toxic and hazardous wastes Solids and hazardous wastes disposal methods Urbanization and sustainable cities	4	Prayad
12	Final examination		

	Total	**44**	

10. Teaching Method *(s)*

Method of teaching consists of lecturing, field trip, and presentation.

11. Teaching Media

Textbooks, Handouts and LCD projectors.

12. Measurement and evaluation of student achievement

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

13. Course evaluation

1. Mid-term examination 40%
2. Final examination 40%
3. Quiz, report and presentation 20%

Total 100%

14. Reference *(s)*

William P. Cunningham and Barbara W. Saigo 2002 Environmental Science. 6^{th} Edition WCB/McGraw-Hill

15. Instructor *(s)*

Associate Professor Dr. Prayad Pokethitiyook

16. Course Coordinator

Associate Professor Dr. Prayad Pokethitiyook