Course Syllabus

1. Program of Study Bachelor of Science (Biological Sciences)
Faculty/Institute/College Mahidol University International College

2. Course Code ICBI 344
Course Title Environmental Science

3. Number of Credits 4 (4-0-8) (Lecture/Lab/self-study)

4. Prerequisite *(s)* none

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

6. Trimester/ Academic Year
2nd Trimester / every academic year

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)*

1. To understand the environmental and ecological principles
2. To be able to describe environmental situation in Thailand
3. To understand biological and physical resources and biodiversity
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.

9. **Course Outline**

week	Topics/Seminar	Hours			Instructor
		Lecture	Lab	Self-study	
1	Introduction 1.1 Understanding our environment 1.2 Current conditions 1.3 Human development 1.4 Tools for building a better world	4	0	8	Dr. Prayad Pokethitiyook
2	Matter Energy and Life & Biomes, Restoration and Management 1.5 From atoms to cells 1.6 Energy and matter 1.7 Biological communities and species interaction 1.8 Community properties 1.9 Terrestrial biomes 1.10 Aquatic ecosystems	4	0	8	Dr. Prayad Pokethitiyook

	1.11Ecosystem management				
3	Population, Human Population, and Environmental Health 1.12Population dynamics 1.13Human populations 1.14Demographic transition, Dynamics of population growth 1.15Factors that increase or decrease populations	4	0	8	Dr. Prayad Pokethitiyook
4	Biodiversity and Biological Resources 1.16Biodiversity and the species concept 1.17Endangered species management and biodiversity protection 1.18Botanical gardens and captive breeding problems	4	0	8	Dr. Prayad Pokethitiyook
5	Land use: Forests and Rangelands 5.1 Principles and concepts of ecotourism 5.2 Preserving nature 5.3 Parks and Nature Reserves 5.4 Wildlife Refuges	4	0	8	Dr. Prayad Pokethitiyook
6	Plant Pest and Pest Control 6.1 DDT and the silence spring 6.2 Pesticides uses and types 6.3 Pesticide problems 6.4 Alternatives to current pesticide uses	4	0	8	Dr. Prayad Pokethitiyook
7	Midterm Examination	4	0	8	Dr. Prayad Pokethitiyook
8	Ecological Health and Toxicology 8.1 Movement, distribution and fate of toxins 8.2 Mechanisms for minimizing toxic effects 8.3 Measuring toxicity 8.4 Risk assessment	4	0	8	Dr. Prayad Pokethitiyook
9	Conventional and Sustainable Resources 9.1Coal, oil and natural gas 9.2 Nuclear power 9.3Conservation of energy 9.4Photovoltaic and solar energy 9.5Energy from biomass 9.6Hydropower	4	0	8	Dr. Prayad Pokethitiyook
10	Climate Change and Air Pollution 10.1 Air, climate and weather 10.2 Air pollution : Human – caused 10.3 Effects of air pollution 10.4 Air pollution control	4	0	8	Dr. Prayad Pokethitiyook

11	Water Use, Management and Water Pollution 11.1 Water resources, availability and uses 11.2 Water supplies and management 11.3 Types and effects of water pollution 11.4 Water pollution control	4	0	8	Dr. Prayad Pokethitiyook
12	Solid and Hazardous Wastes 12.1 Solids, toxic and hazardous wastes 12.2 Solids and hazardous wastes disposal methods 12.3 Urbanization and sustainable cities	4	0	8	Dr. Prayad Pokethitiyook
	Total	48	0	96	

11. Teaching Method *(s)*

1. Lecture
2. Suggested readings
3. Discussion in class

12. Teaching Media

1. Powerpoint Presentations
2. Texts and teaching materials

13. Measurement and Evaluation of Student Achievement

Student achievement is measured and evaluated by

13.1 The ability to describe the environmental and ecological principles.

13.2 The ability to describe environmental situation in Thailand

13.3 The ability to describe the biological and physical resources and biodiversity

13.4 The ability to describe problems and impacts related to environmental pollution (air and water)

13.5 The ability to describe the basic concepts of conventional and sustainable energy

13.6 The ability to describe the basic concepts of biological and hazardous waste management.

Student's achievement will be graded according to the college and university standard using the symbols: A, B+, B, C+, C, D+, D and F. Minimal passing level is 60%. Student who earns 85% up will have Grade A, 80-84% Grade B+ , 75-79% Grade B, 70-74% Grade C+, 65-69% Grade C, 60-64% Grade D+, 55-59% D, less than 55 Grade F. Students must attend at least 80% of the total class hours of this course.

Ratio of mark

1. Mid-term examination	40%
2. Final examination	40%
3. Quiz, report and presentation	20%
Total	100%

14. Course evaluation

14.1 Students' achievement as indicated in number 13 above.

14.2 Students' satisfaction towards teaching and learning of the course using questionnaires**.**

15. Reference *(s)*

1. Cunningham, W.P. and Saigo, B.W. Environmental science. 6th Edition USA. WCB/McGraw-Hill. 2002.

16. Instructor *(s)*

Associate Professor Dr. Prayad Pokethitiyook

17. Course Coordinator

Associate Professor Dr. Prayad Pokethitiyook