

Science International degree @ Mahidol (SIM)

Course Name : **Environmental Risk Assessment
(SCBE 318) 3(3-0-6)**

Lecture : Mon (09:30 - 12:30)

Semester : Semester II 2020

Course Syllabus

Course Coordinator: Toemthip Poolpak, Ph.D.

Course Instructure: Assoc Prof. Prayad Pokethitiyook, Ph.D. (PP)

Asst Prof. Dr. Raywadee Roachnakanun, Ph.D. (RR)

Course Description

The aim of this course is to introduce the students to the area of water and wastewater treatment. The course will cover water chemistry; characteristics of water & wastewater; primary, secondary & tertiary treatment processes; sludge disposal; and design of water and wastewater treatment plants. At the end of the course the students will have a working knowledge of the water and wastewater industry and have the skills to perform a preliminary design of a treatment plant. This will be achieved through descriptive lectures with an industry fieldtrips and tutorials.

Course Learning Outcomes

At the end of this course students should be able to:

1. Understand fundamental water chemistry;
2. Know how to characterize the constituents in potable water and wastewater;
3. Understand the physical, chemical and biological factors affecting the treatment processes;
4. Understand the fundamentals of water and wastewater treatment;
5. Be able to perform a preliminary design some steps in a water and/or wastewater treatment plant.

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. Discussion and critique on current research papers will be parts of this course to enhance students' critical thinking and knowledge of experimental methods.

Fieldtrip: To be announced when situation is provided.

Midterm and final examinations are in a written format and will be announce at the beginning of the class.

Evaluation

1. Mid-term examination	35%
2. Final examination	30%
3. Presentation, Fieldtrip & Reports	20%
4. Class assignments	10%
5. Attendants	5%

Note: If fieldtrip is scheduled, the score earned will be part of fieldtrip & report.

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

Tentative Schedule

Month	Date	Topic	Activity
January	18	Introduction	PP
	25	Human Risk Assessment – hazard identification	PP
February	1	Sustainability and Making Decisions Under Uncertainty; Risk Assessment Paradigm	PP
	8	Risk, Cost and Benefit Analysis (RCBA) in Risk Assessment and Management 1	PP
	15	Risk, Cost and Benefit Analysis (RCBA) in Risk Assessment and Management 2	PP
	22	Exposure Response Model for Risk Assessment 1	PP
March	1	Exposure Response Model for Risk Assessment 2	PP
	8	Probability Dose-Response Model and Toxicology 1	PP
	15-19	Mid-term Exam (w/calculator)	Exam
	22	Probability Dose-Response Model and Toxicology 2	PP
	29	Monte Carlo Model	PP
April	5	Risk Assessment and Modelling	RR
	19	Practical Analysis of Decisions for Risk Management 1	RR
	26	Practical Analysis of Decisions for Risk Management 2	RR
	10-21	Final Exam	Exam
March		Fieldtrip to solid waste treatment facility	PP

Abbreviation: L = Lecture; A = Assignments; TBA = To be announced

Field trip locations are tentative, exact locations will be announced in class.

Lab can be rearranged to fit your schedule.

Course Coordinator: Dr. Toemthip Poolpak (TP)

Lecturer: Assoc. Prof. Dr. Prayad Pokethitiyook (PP)
Asst Prof. Dr. Raywadee Roachnakanun (RR)