

Special Topics in Environmental Engineering III: Environmental Biotechnology (CIEE 747 / IMSC 222)

Semester Syllabus

Part 1: Course Information

Instructor Information

Instructor: Prof. SHIM, Hojae

E-mail: hjshim@umac.mo

Course Description

This course reflects the most current and exciting fields of environmental science engineering, as a combination of ET (Environmental Technology) and BT (Bio-Technology) and would enable students first to connect two different facets of environmental biotechnology, principles of environmental microbiology and environmental engineering. They can develop the basic concepts and quantitative tools in the principles part and then can apply those in the applications part. They will be able to, in the long run, exploit microbiological processes to improve environmental quality, such as preventing the discharge of pollutants into the environment, cleaning up contaminated environments, and recovering valuable resources for human society. For students not already having a solid background in environmental microbiology, this course will also provide fundamentals in taxonomy, metabolism, genetics, and microbial ecology, by addressing the microbiology concepts that are most essential for understanding the principles and applications of environmental biotechnology.

Prerequisite

None

Course Duration

42 contact hours, 3 hours per week (3-credit course)

Credit: 3

Compulsory/elective course: Elective

Part 2: Course Objectives

1. To reflect the most current and exciting fields of environmental science engineering, as a combination of ET (Environmental Technology) and BT (Bio-Technology).
2. To connect two different facets of environmental biotechnology, principles of environmental microbiology and environmental engineering and develop the basic concepts and quantitative tools in the principles part and then can apply those in the applications part.

3. To exploit microbiological processes to improve environmental quality, such as preventing the discharge of pollutants into the environment, cleaning up contaminated environments, and recovering valuable resources for human society.
4. For students not already having a solid background in environmental microbiology, to provide fundamentals in taxonomy, metabolism, genetics, and microbial ecology, by addressing the microbiology concepts that are most essential for understanding the principles and applications of environmental biotechnology.

Part 3: Major Assessment Methods

Homework (2):	20%
Midterm exam:	35%
Final exam (or Project):	45%