SH03053 ENVIRONMENTAL BIOTECHNOLOGY
(CÔNG NGHỆ SINH HỌC MÔI TRƯỜNG)
(Credits: 2: lecture 2; practice: 0; self-study: 6)

EXPECTED LEARNING OUTCOME

Course objective	COURSE EXPECTED LEARNING OUTCOMES After successfully completing this course, students are able to:	Expected learning outcomes of program
Knowledge		
CELO 1	Present some applications of environmental biotechnology and causes of soil contamination. Analyze and select technology to treat contaminated soil in situ and ex situ. Present the criteria for assessing wastewater and the scientific basis of the wastewater treatment process by biological methods.	ELO3, ELO6
CELO 2	Present the process of wastewater treatment by microorganisms; Present the operation of some wastewater treatment systems; Describe the mechanism of nitrogen and phosphorus removal from wastewater.	ELO3, ELO6
CELO 3	Present in detail the scientific basis of the process of organic waste treatment and recovery of contaminated soil by biological means.	ELO3, ELO6
Skills		
CELO 4	Fulfill one's duty to improve the well-being of the society, and protect the environment.	ELO14
Personal autonomy and responsibility		
CELO 5	Acitively acquire new knowledge and experience to improve one's professional qualifications. Demonstrate honesty in report, tests, and exams	ELO15

CONTENT

Chapter 1. Environmental biotechnology: scope and some applications;
Chapter 2. Contaminated soil and biological measures in the remediation of contaminated soil;
Chapter 3. Wastewater and scientific basis in wastewater treatment;
Chapter 4. Waste water treatment by biotechnological measures;
Chapter 5. Organic waste treatment technology;
Chapter 6. Phytoremediation

## STUDENT TASKS

✓ **Attendance:** All students taking this course must attend at least 2/3 of the total theoretical hours of the course, actively participate in discussions.
✓ **Discussion:** discuss the questions that the lecturer raises in the lessons and discussion periods
✓ **Preparing for the lesson:** All students attending this course must prepare for the lesson according to the learning plan given by the lecturer.
✓ **Mid-term exam**: Students who do not take the midterm exam will be given a score of zero.
✓ **Final exam**: All students taking this course must take the final exam
✓ For online learning: Students need to install online learning software and fulfill the requirements for online learning.

TEACHING METHODS

✓ Lecturers will teach theoretical lessons using presentations, oral communication and illustration methods; guide students to discuss in groups
✓ Blended learning: Teaching through the E-learning system
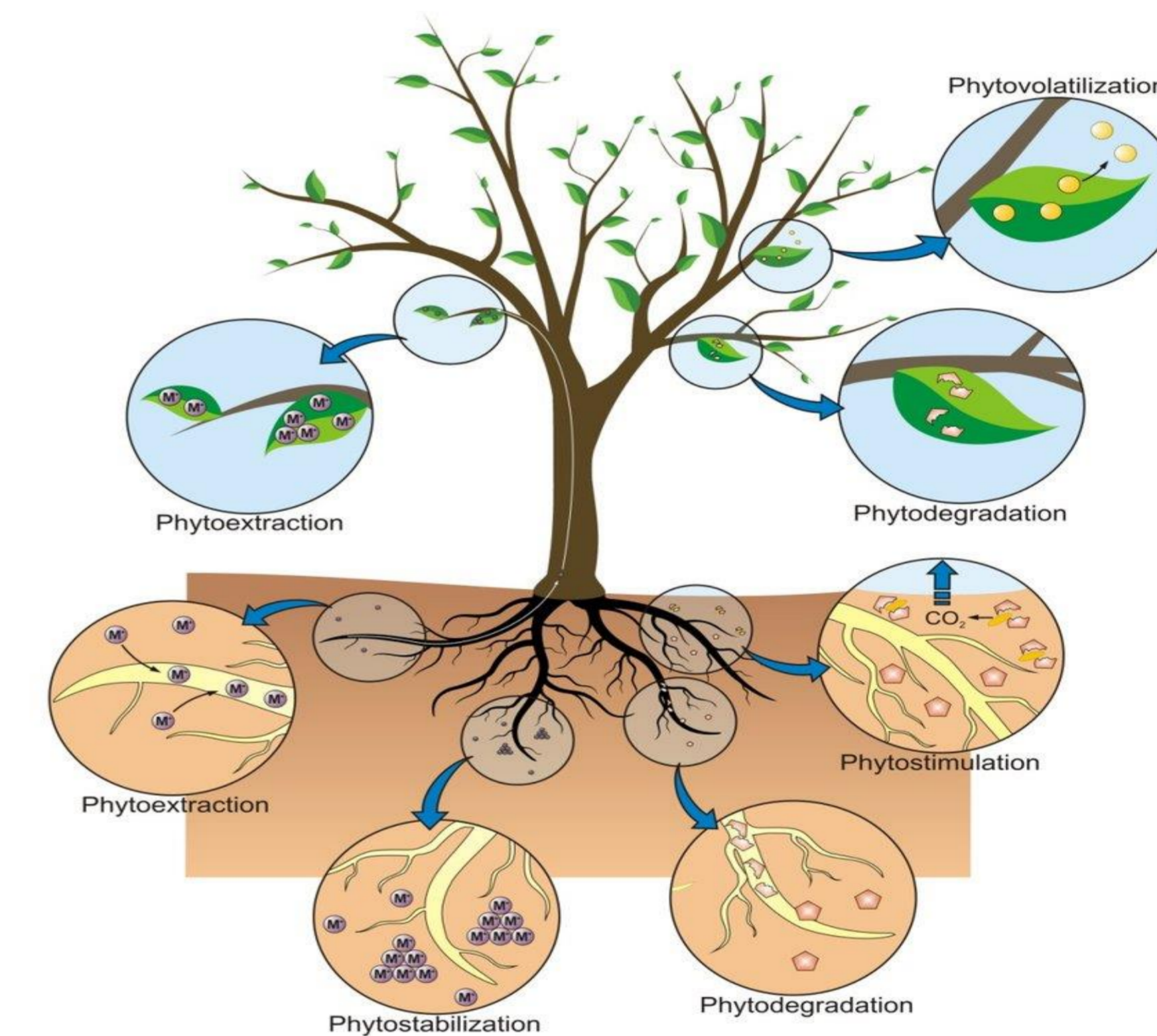
ASSESSEMENT METHODS

• Grade: 10 marks
• The average mark of the course is the sum of the rubric marks after multiplied by the respective ratio of each rubric
• Attendance: 10%
• Mid-team exam: 30%, writing or test quiz.
• Final exam/: 60%: writing or test quiz

LEARNING METHODS

✓ Students read class materials by themselves, prepare for the lessons based on the learning plan given by the lecturers before going to class, listen to the lectures, learn through the E-learning system.
✓ Students participate in learning activities in class: answering questions, doing exercises, discussing in groups.

LECTURERS

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