

Division of Life Science
The Hong Kong University of Science and Technology

LIFS 4150 Plant Biotechnology

Fall semester, 2016/17

Credits: 3 (2 lectures + 1 tutorial)

Pre-requisites: LIFS 2210 or LIFS 2040, and LIFS 3140

Course coordinator: Prof. Ning Li

Instructors: Prof. Ning Li, Dr. Melody Leung

Course goals

This course introduces current status and future potential of plant biotechnology with emphasis on the fundamentals of plant molecular biology, proteomics and biotechnology. Using examples of marketable products from food industry, agriculture, and TCM medicines, the role of basic research in the development of biotechnology products will be discussed. Students are expected to proactively participate in the class discussion about biotechnological principles and advancement in tutorial sessions throughout the semester. At the end of the course, students will be asked to form groups to present an innovative plant biotechnology proposal, which integrates the knowledge learnt from class and literature and translate them into the industrial and business application.

Assessment scheme

Components	Percentage
A. Mid-term Examination	40
B. Final Examination	40
C. Tutorials	10
D. Group Presentation	10

Teaching Schedule

Monday	9:30-10:20am	Rm2302
Wednesday	9:30-10:20am	Rm2302
Friday	9:30-10:20am	Rm2302

Class outline

	Date	Topic	Instructor
1	2, 5, 7 Sept	<i>Inducible promoters and agrobacterium-mediated DNA transfer</i>	Li
2	9, 12, 14 Sept	<i>Engineering of herbicide-tolerant crops and cotton fiber improvement</i>	Li
3	19, 21, 23 Sept	<i>Genetic engineering of TCM</i>	Leung
4	26, 28, 30 Sept	<i>Medicinal organisms</i>	Leung
5	3, 5, 7 Oct	Production of animal proteins in plants	Leung
6	12, 14 Oct	<i>Genetic engineering of energy plants (hydrogen and methane)</i>	Leung
7	17 Oct	Midterm exam	Li / Leung
8	19, 21 Oct	<i>Flower development and biotechnology in floriculture</i>	Li
9	24, 26, 28 Oct	<i>Genetic engineering of fruits</i>	Li
10	31 Oct, 2, 4 Nov	<i>Plant as a bioreactor for lipids and oil production</i>	Li
11	7, 9, 11 Nov	<i>Genetic engineering of biotic and abiotic stress-tolerant plants</i>	Li
12	14, 16, 18, 21 Nov	<i>Plant functional and quantitative PTM proteomics</i>	Li
13/14	25, 28, 30 Nov	Group Presentations	Li / Leung
	TBC	Final Examination	Leung