The Hong Kong University of Science and Technology

Division of Life Science

LIFS 4150 Plant Biotechnology

Fall semester, 2023-24

Credits: 3 (2 lectures + 1 tutorial)

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

Course Coordinator: Prof. Ning Li

Instructors: Dr. Amy Li, Prof. Ning Li, Prof. Joseph Wong

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, aquaculture 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, application and advancement throughout the semester. At the end of the course, students might 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 potential applications.

Assessment Scheme

Components	Instructors	Percentage
Quiz 1	AL	35%
Quiz 2	NL	25%
Literature review	JW	25%
Oral presentation	JW	15%

Teaching Schedule

Day	Time	Venue
Monday	12:00 – 12:50	LT-D
Wednesday	12:00 – 12:50	LT-D
Friday (Tutorial)	12:00 – 12:50	LT-D

Date	Topic	Instructor
Week 1 1 Sep	Course Introduction	AL
Week 1 4, 6, 8 Sep	Medicinal plants & natural drug molecules	AL
Week 2 11, 13, 15 Sep	Plant tissue culture	AL
Week 3 18, 20, 22 Sep	Molecule extraction & bioassay	AL
Week 4 25 Sep	Revision	AL
Week 4 **27 Sep**	**Quiz 1**	**AL**
Week 4 29 Sep	Group Presentation introduction	JW
Week 5 4, 6 Oct	Inducible promoters and agrobacterium-mediated DNA transfer	NL
Week 6 9, 11, 13 Oct	Genetic engineering of herbicide-tolerant crops/ cotton fiber	NL
Week 7 16, 18, 20 Sep	Quantitative and functional PTM Proteomics and interactomics	NL
Week 8 **25 Oct**	**Quiz 2**	**NL**
Week 8 27 Oct	Group Presentation introduction	JW
Week 9 30 Oct, 1, 3 Nov	Phycological (aquatic plants) Biotechnology I	JW
Week 10 6, 8, 10 Nov	Group presentation I	JW
Week 11 13, 15, 17 Nov	Group presentation II	JW
Week 12 20, 22, 24 Nov	Group presentation III	JW
Week 13 27, 29 Nov	Group presentation IV	JW