

课程大纲 COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	Synthetic Biology
2.	课程性质 Compulsory/Elective	Elective
3.	课程学分/学时 Course Credit/Hours	3 学分/48 学时 3 credits/48 hours
4.	授课语言 Teaching Language	英语/English
5.	授课教师 Instructor(s)	何俊龙/Ho Chun Loong
6.	先修要求 Pre-requisites	无/Not applicable
7.	教学目标 Course Objectives	
	The objective of the course is to guide students to understand the fundamentals of cellular engineering for various applications including medical therapies, industrial output and environmental sustainability. Students will further be trained in critical thinking and analysis; while learning to dissect and deliberate on current ideas.	
8.	教学方法 Teaching Methods	
	Classes will be conducted along with assignments, presentations and in-depth discussions. Quizzes will be weaved into the lecture to facilitate student's attention to the class. Students will be needed to do individual assignments and presentation, and work together in a group discussion.	
9.	教学内容 Course Contents	
	Section 1	Introduction to Synthetic Biology and course introduction
	Section 2	Design, Build, Test, Learn cycle
	Section 3	Genetic Parts
	Section 4	Protein Parts
	Section 5	Circuitry designing
	Section 6	Analysis of design: A study on -omics
	Section 7	Synthetic Biology in therapeutic application
	Section 8	Synthetic Biology in bioproduction and industry
	Section 9	Synthetic Biology in environmental sustainability
	Section 10	Synthetic Biology in Agriculture
	
10.	课程考核 Course Assessment	
	Attendance: 5% Class performance: 10% Projects: 20% Assignments: 30% Final presentation: 20% Final exam: 15%	

11. 教材及其它参考资料 Textbook and Supplementary Readings

- [1] Molecular Biology and Biotechnology 6th Edition, Ralph Rapley and David Whitehouse, Royal Society of Chemistry, 2015, ISBN: 978-84973-795-1
- [2] Fundamentals of Systems Biology: From Synthetic Circuits to Whole-cell Models. Markus W. Covert, CRC Press, 2015, ISBN: 978-1-4200-8410-8