

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	高级生物实验方法概论/Essential advanced biological methods
2.	课程性质 Compulsory/Elective	选修/Elective
3.	课程学分/学时 Course Credit/Hours	48
4.	授课语言 Teaching Language	中/英双语
5.	授课教师 Instructor(s)	宋昆
6.	是否面向本科生开放 Open to undergraduates or not	否
7.	先修要求 Pre-requisites	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 无
8.	教学目标 Course Objectives	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 高级生物实验方法概论是生命科学学院研究生的选修课程, 旨在帮助学生深入理解生物研究中的先进生物技术及其发展的科学背景, 学习科学研究的严谨方法, 激励其科学好奇心和勇气, 并培养学生热爱自然、关爱社会、珍视生命的情操, 提高生命科学知识素养而开设的综合性素质教育必修课程。该课程的讲授内容涵盖目前生命科学领域主要的常用实验方法, 有助于研究生对今后课题相关实验方法的学习与理解。 Essential advanced biological methods is an elective course for all majors in School of Biology. It is designed to help student gain deep understanding of the advanced biotechnologies used in scientific research, and their developments. It is to train their vigorous research methods, inspire their scientific curiosity and courage. It is also to help them establish general scientific characters, such as loving nature, devoting to society, respective to life. The course covers the major common methods in the field of live sciences, which is helpful for graduate students to understand the methods using in their own research projects in the future.
9.	教学方法 Teaching Methods	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 本课程为理论讲授课程, 通过 PPT 和短视频进行生物学方法的介绍。 This is a theoretical course. The teacher introduces the biological knowledge with powerpoint slides as well as some brief videos.
10.	教学内容 Course Contents	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)
	Section 1	Pulse-chase methods
	Section 2	The principle of the detection of biomacromolecules

Section 3	Ultra-high sensitive sequencing at single-cell level
Section 4	Gene editing
Section 5	The basic principle of generating transgenic animals
Section 6	The principle of imaging technologies in cell biology
Section 7	Lineage tracing
Section 8	Optogenetics and modulation of cell and animal activities
Section 9	Chemogenetics and modulation of cell and animal activities
Section 10	
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11. 课程考核 Course Assessment	
	<p>(① 考核形式 Form of examination; ②. 分数构成 grading policy; ③ 如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <p>出勤 Attendance (20%); 课堂表现 Class Performance (10%); 课程项目 Projects: Student presentation (25%); 期中考试 Mid-Term Test (20%); 期末报告 Final report (25%)</p>
12 教材及其它参考资料 Textbook and Supplementary Readings	
	<p>无教材, No textbook 参考资料为授课 PPT 和相关文献, 每次课的参考资料都不一样, 由授课老师提供。 There supplementary readings are PPT slides and scientific publications in English. It is different for each lecture and will be provided by the teacher.</p>