

SULTAN QABOOS UNIVERSITY

COURSE OUTLINE

PROGRAM: Plant Sciences

1. Course Code	PLNT4003					
2. Course Title	Recombinant DNA Technology					
3. Credits	3					
4. Pre-requisite Course(s)	PLNT3201 (Agricultural Biotechnology) + CR					
5. Co-requisite Course(s)	N/A					
6. Equivalent Course(s)	N/A					
7. Incompatible Course(s)	N/A					
8. Course Category	University Requirement	University Elective				
	College Requirement	College Elective				
	Department Requirement	Department Elective				
	Specialization Requirement	Specialization Elective				
	Other (specify):					
9. Course Owner	College: CAMS	Department: Plant Sciences				
10. Course Type	Lecture	Lecture/Lab				
	Lecture/Seminar	Lecture/Studio				
	Lecture/Tutorial	Lecture/Lab/Tutorial or Seminar				
	Tutorial	Laboratory (Practical)				
	Field or Work Placement	Studio				
	Seminar	Internship				
	Workshop	Project				
11. Language of Instruction English						
12. Course Description						
Recombinant DNA Technolog	y (PLNT4003) is an advanced course which	is designed for both undergraduate and				
course will provide theoretical	and practical knowledge in cloning strategies, s	about recombinant DNA technology. The creening of recombinants, plasmid DNA.				
and manipulation of gene expres	ssion in agrobacterium mutation analysis as well	as other recombinant DNA technology.				
13. Teaching/Learning Strategies						
Lectures						
Field trip						
Scientific writings						
14. Assessment Components a	and Weight [%]					
Quizzes 10%	Practical 20%	Other (specify):				
Homework assignments	Project					
\square In-term examination(s) 25%	6 Final examination 45%					
15. Grading Method						
A-F Scale Pass/Not passed						
16. Textbook(s) and Supplemental Material						
William J. Thieman and Michael A. Pallandino. 2009. Introduction to biotechnology, 2 nd Edition (Pearson International Edition).						
Research Journals and other web/internet resources						

17.	17. Matching Course Objectives with Program Outcomes and SQU Graduate Attributes					
	SQU Graduate Attributes					
А.	SQU graduates should be able to:	В.	SQU graduates possess	C.	SQU graduates should	
1. 2.	apply the knowledge and skills relevant to the specialization communicate effectively and use information and communication technologies	1. 2.	interpersonal communication skills and alignment with culture of international labour market to assist them in practical life and in living successfully skills and motivation for independent		relish good citizenship qualities, be conscious of their national identity and be socially responsible, engage in	
3.	critically analyze complex information and present it in simple clear manner	3. 4.	learning and engagement in lifelong learning and research work ethics and positive values, and intellectual independence and autonomy teamwork skills and display potential leadership qualities		community affairs and be mindful of contemporary issues.	

#	Intended Student Learning Outcome /Course Learning Objective	Relevant Program Outcome(s)	Applicable Attribute(s)
1.	To gain a theoretical and practical knowledge of various techniques used in the field of recombinant DNA technology.	A sound basis in appropriate natural sciences	A1
2.	To motivate and develop hands on activity in the context of sample collection, isolation and detection of diverse pathogens.	Ability to engage in learning processes	B2
3.	To train students to use different techniques (total nucleic acid extraction, DNA detection tools, cloning and transformation techniques etc.) throughout the course.	Sufficience knowledge in the area of specialization.	B2
4.	To improve the presentation skills, each student will be assigned a presentation topic from the field and he/she will deliver talk independently.	Communicate confidently and effectively with others	A3
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16. Student Responsibilities

It is the student's responsibility to know and comply with all University Academic Regulations relevant to participation in this course. These regulations specifically include attendance requirement and students' academic code of conduct.

For attendance, it is the student's responsibility to be punctual and to attend all classes.

Students are expected to perform their work with honesty and avoid any academic misconduct, which is defined as the use of any dishonest or deceitful means to gain some academic advantage or benefit. This can take many forms, including but not limited to, the following: copying, plagiarism, collusion and forging documents. For full details, please refer to the Undergraduate Academic Regulations and to the Student Academic Misconduct Policy.

Additionally, this course requires that you:

COURSE INFORMATION				
Course Code	PLNT4003	Course Title Recombinant DNA Technology		
Semester/Year	Spring/2023	Section(s)	10, 11	
Day, Time, and Place	Sunday, 02:15-04:05	15-04:05 Tuesday, 02:15-04:05		
Course Coordinator	Coordinator Dr. Muhammad Shahid			
Office Location	Agriculture College	Office Hours	Tuesday, 10:00-11:50	
	Agri Annex Building			
	1st floor Plant			
	Biotechnology Lab			
	115 (116)			
Office Tel. Ext.	1209	Email	mshahid@squ.edu.om	

Tentative Schedule							
Week	Lecture #	Topic/Material to be covered	Assessment				
1		Introduction to recombinant DNA technology	quiz1				
2		Basic techniques used in apmlification of DNA	quiz1				
3		Latest tools and procedures used in recombinant DNA technology	quiz2				
4		Cloning vectors their types, characteristics and applications	quiz2				
			quiz 1>Week#4				
5		Application of restriction endonucleases in recombinant DNA technology	mid				
6		Restriction analysis of plasmid DNA and their sizes dtermination	mid				
			quiz 2>Week#6				
7		Elution of DNA fragments from agrarose gel and DNA ligation	mid				
8		Bacterial transformation	final				
9		Construction and screening of recombinant DNA libraries	final				
			Mid test >Week#9				
10		Plasmid isolation and restriction analysis	final				
11		Application of real time PCR in quantification of expresson in cells	final				
12		Plant tissue culture and its applications	final				
13		Application of E. Coli and agrobacterium in recombinant DNA technology	final				
14		Introduction to different hybridization techniques	final				
15		final exam 21/05/2023 @ 08:00-11:00					
16							
17							

APPENDIX A: INSTRUCTORS OF MULTIPLE SECTIONS					
Section	Instructor	Day, Time, and Place	Office Location and Extension	Email	Office Hours

APPENDIX B: ADDITIONAL INFORMATION