

## SULTAN QABOOS UNIVERSITY COURSE OUTLINE

## PROGRAM: Bachelor of Science in Plant Sciences

1.	Course Code PLNT3201						
2.	Course Title	Agricultural Biotechnology					
3.	Credits	3 Cr Hrs, 12 Cr Points, 6 ECTS					
4.	Pre-requisite Course(s)	BIOL21	)1				
5.	<b>Co-requisite Course(s)</b>	N/A					
6.	Equivalent Course(s)	CROP32	01, CROP2201				
7.	Incompatible Course(s)	N/A					
8.	Course Category	Univ	University Requirement University Elective				
		Colle	ge Requirement	College Elective			
		🛛 Depa	rtment Requirement	Department Elective			
		Speci	alization Requirement	Specialization Elective			
		Other	(specify):				
9.	Course Owner	College:	CAMS	Department: Plant Sciences			
10. Course Type			re	Lecture/Lab			
			re/Seminar	Lecture/Studio			
		Lectu	re/Tutorial	Lecture/Lab/Tutorial or Seminar			
		Tutor	ial	Laboratory (Practical)			
			or Work Placement	Studio			
Se			nar	Internship			
Wo			shop	Project			
11. Language of Instruction English							
12.	<b>Course Description</b>						
This coure aim is to introduce the students about the basic biotechnology tools that are used in to improve the agriculture production. The students will learn how the agriculture technology improve from ancient to modern biotechnology, as well as its vital role in future food security. In addition to the introductory biotechnology techniques, the students will also expereince hands-on activities throughout the course which involve the sample collectoin, nucleic acid extraction, polymerase chain reaction, gel electrophoresis and use of restriction endonucleases followed by presentation by the students about the the role of modern biotechnology to enhance agriculture produce. The course will also highlight the concepts and principles of modern agricultural biotechnology procedures.							
13.	<b>Teaching/Learning Strate</b>	gies					
Lectures, accompanied by laboratory sessions, where students will provide hand-on opportunity as blended learning. Animation videos, followed by individual/group presentations relevent to agricultural biotechnology, where they can learn better about the subject.							
14. Assessment Components and Weight [%]							
$\square$	Quizzes 10%		Practical 15%	$\bigcirc$ Other (specify): Presentation 5%			
Homework assignments			Project				
$\square$	In-term examination(s) 20%	, D	$\boxtimes$ Final examination 50%				
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 <sup>nd</sup> Edition (Pearson International							

William J. Thieman and Michael A. Pallandino. 2009. Introduction to Biotechnology, 2<sup>nd</sup> Edition (Pearson International Edition).

Research Journals and other web/internet resources

17.	7. 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.	apply the knowledge and skills relevant to the specialization	1.	interpersonal communication skills and alignment with culture of international		relish good citizenship qualities, be conscious of		
2.	communicate effectively and use information and communication technologies	2.	labour market to assist them in practical life and in living successfully skills and motivation for independent		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.		

/Course Learning Objective Att   1. Identify the role of agricultural biotechnology and its application in crop sciences A.1.1= Graduates will have knowledge and skills in crop sciences	A.1 A.1
1.   Identify the role of agricultural biotechnology and its application in crop sciences   A.1.1 = Graduates will have knowledge and skills in crop sciences     Parform and explain the stops for the nucleic acid   A.1.1 = Graduates will have knowledge and skills in crop sciences	A.1 A.1
application in crop sciences skills in crop sciences   Parform and avalage the stars for the nucleic acid A 1 1 - Graduates will have knowledge and	A.1
Derform and avalage the stars for the nucleic acid A 1.1 - Graduates will have knowledge and	A.1
2 renorm and explain the steps for the nucleic acid A.1.1 – Graduates will have knowledge and	
extraction and quantification skills in crop sciences	
Search out the relevant scientific litteraute on A.2.2= Graduate will be able to use the	A.2
3. specific agricultural biotechnology infromation technology for searching and	
processing biological data relevant to crop	
sciences	
4. Identify and explain th role of different plant cell A.1.1= Graduates will have knowledge and	A.1
organelles skills in crop sciences	
5. Describe the history and principles of polymeraze A.I.1= Graduates will have knowledge and	A.I
canin reaction skills in crop sciences	
Explain in writing the structues of nucleotide, A.3= Graduates will be able to analyze and	A.3
6. deoxyribonucieic and ribonucieicacid interpret data, draw conclusion and propose	
production and protection	
Compare DNA fragments and their sizes using A 3- Graduates will be able to analyze and	۸3
different endonuclease restirciton enzymes	А.5
7. anterpret data, draw conclusion and propose solutions to different issues in crop	
production and protection	
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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	PLNT3201	Course Title	Agricultural Biotechnology		
Semester/ Year	Fall, Spring	Section(s)	10, 11		
Day, Time, and Place					
<b>Course Coordinator</b>	Muhammad Shahid				
Office Location	Plant Biotechnology	Office Hours			
	Lab 115 (116)				
Office Tel. Ext.	1209	Email	mshahid@squ.edu.om		

Tentative Schedule							
Week	Lecture #	Topic/Material to be covered	Assessment				
1	1	An introduction to Agricultural Biotechnology	quiz 1				
2	1	An overview of agribiotech products and practical applications in the filed	quiz 2				
3	1	Isolation of total nucleic acid (DNA) and application of gel electrophoresis	mid test				
4	1	Basic understanding about cell, structure and its functions	mid test				
5	1	Introduction to genes, genomes	mid test				
6	1	Introduction to DNA structure and Chromosomes	mid test, final				
7	1	Polymerase Chain Reaction (PCR)	mid test, final				
8	1	Types of PCR	final				
9	1	Central Dogma of biology	final				
10	1	The application of agrobacterium in agricultural biotechnology	final				
11	1	Introduction to restriction endonucleases/enzymes	final				
12	1	Introduction to molecular cloning and transformation	final				
13	1	Introduction to plasmid vectors and recombinant DNA	final				
14	1	Replication of DNA	final				
15							
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