



Course Specification

— (Bachelor)

Course Title: Introduction To Biotechnology

Course Code: 2051204 -3

Program: Bachelor in Biotechnology

Department: Biotechnology Department

College: College of Science

Institution: Taif University

Version: V4

Last Revision Date: 3/1445 – 9/2023



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A. General information about the course:

1. Course Identification

1. Credit hours:					
3 (2 Lecture, 1 Lab)					
2. Course type					
A.	<input type="checkbox"/> University	<input checked="" type="checkbox"/> College	<input type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input checked="" type="checkbox"/> Required		<input type="checkbox"/> Elective		
3. Level/year at which this course is offered: (2nd level/1st year)					
4. Course general Description:					
This course is concerned with the general principles and applications of biotechnology. It covers the basic structure and function of genetic material, expression of genetic information, DNA technology and its applications, vectors, recombinant DNA technology, techniques for production of transgenic plants and animals, and applications of biotechnology in agriculture, environment, and medicine.					
5. Pre-requirements for this course (if any):					
None					
6. Co-requirements for this course (if any):					
None					
7. Course Main Objective(s):					
The main objective of this course was to describe the history of biotechnology, to outline the molecular basis of biotechnology, to know essential terminology in biotechnology and to recognize the various applications of biotechnology.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		



No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	15
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize the history of biotechnology, the gene structure and the gene expression processes	K1	Lecture	Written Exam
1.2	Identify the socioeconomic relevance of biotechnological applications	K2	Lecture	Oral Exam
1.3	Describe the agricultural, medical, pharmaceutical and environmental applications of biotechnology	K3	Lecture	Written Exam
2.0	Skills			
2.1	Evaluate the different methods and applications of biotechnology	S2	Project	Report
3.0	Values, autonomy, and responsibility			
3.1	Not applicable	-	-	-



C. Course Content

No	List of Topics	Contact Hours
1.	Introduction and historical aspects	2
2.	Structure & replication of nucleic acids	4
3.	Gene expression	4
4.	DNA Technology	2
5.	Vectors, Plasmids, Bacteriophage, cosmids, Artificial Chromosomes	2
6.	Introduction of genes to plant cells	4
7.	Agricultural applications of biotechnology	4
8.	Introduction of genes to animal cells	4
9.	Medical and pharmaceutical applications of biotechnology	2
10.	Environmental and industrial applications of biotechnology	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	Week 7	20%
2.	Periodical exam	Week 10	10%
3.	Report, Oral Exam	Week 11	10%
4.	Practical Exam	Week 15	20%
5.	Final Exam	Week 16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	An Introduction to Biotechnology: The Science, Technology and Medical Applications. 1st Ed., W T Godbey, Academic Press 2014
Supportive References	Introduction to biotechnology. 2nd Ed., Thieman, William J., Pearson/Benjamin Cummings, 2009.
Electronic Materials	NBCI website: https://www.ncbi.nlm.nih.gov
Other Learning Materials	<ul style="list-style-type: none"> - Online videos of biotechnology, DNA models - http://biologybiotechnology.unicam.it/ - https://www.bio.org/



2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	One classroom 2 hours per week for each section Laboratory 3 hours per week for each practical section
Technology equipment (projector, smart board, software)	Data show, internet connection.
Other equipment (depending on the nature of the specialty)	Microscopes, Thermocycler, Gel electrophoresis and Gel Documentation units. Glass slides. Microscopic stains

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer Review, Students	Direct (Independent Reviewer), Indirect (survey)
Effectiveness of Students assessment	Faculty members	Direct (Random Correction)
Quality of learning resources	Students	Indirect (survey)
The extent to which CLOs have been achieved	Faculty members	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT COUNCIL
REFERENCE NO.	6
DATE	5/11/2023

