



Course Specifications

Course Title:	Molecular Biology
Course Code:	2014104-3
Program:	Bachelor in Botany
Department:	Biology Department
College:	College of Sciences
Institution:	Taif University

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description.....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	3
C. Course Content	4
D. Teaching and Assessment	4
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	4
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	5
1. Learning Resources	5
2. Facilities Required.....	5
G. Course Quality Evaluation	6
H. Specification Approval Data	6

A. Course Identification

1. Credit hours:	3 hr
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	10 th level / 4 th year
4. Pre-requisites for this course (if any):	Genetics 2012201-2
5. Co-requisites for this course (if any):	None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hr/Week	100%
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	20
3	Tutorial	-
4	Others (specify)	-
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description:

This course deals with studying the composition and structure of nucleic acids, emphasizes the concept of the central dogma of molecular biology, by which, DNA replicates to form another molecules of DNA, and is transcribed to produce RNA. In turn, RNA is translated to form proteins, then, proteins exert the cellular functions stored in DNA.

2. Course Main Objective:

This course describes the central dogma of molecular biology which explains how cells promote growth, division and development. At the end of the course student will be able to demonstrate a clear understanding of the molecular mechanism of replication, transcription and translation.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Recognize facts, principles, scientific terminology and concepts across molecular biology.	K1
1.2	Apply basic requirements and routine procedures used to investigate	K3

CLOs		Aligned PLOs
	replication, transcription and translation in prokaryotes and eukaryotes.	
2	Skills:	
2.1	Analyze concepts of DNA replication and transcription.	S1
2.2	Demonstrate the functions of nucleic acids in different biological systems.	S4
3	Values:	
3.1	Conduct tasks based on convincing evidences with autonomy.	V2

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1: Introduction to molecular biology <ul style="list-style-type: none"> • The basic properties of cells, • Overview of the central dogma of MB 	3L+2P
2	Chapter 2: Structure and function of nucleic acids (DNA and RNA) <ul style="list-style-type: none"> • In prokaryotes • In eukaryotes 	3L+2P
3	Chapter 3: <ul style="list-style-type: none"> • Structure of genes in Prokaryotes & Eukaryotes • Molecular mechanism of DNA replication and its enzymes in Prokaryotes & Eukaryotes 	6L+4P
4	Chapter 4: Molecular mechanism of transcription and its enzymes <ul style="list-style-type: none"> • In prokaryotes • In eukaryotes 	6L+4P
5	Chapter 5: Molecular mechanism of translation and its enzymes <ul style="list-style-type: none"> • In prokaryotes • In eukaryotes 	6L+4P
6	Chapter 6: <ul style="list-style-type: none"> • Gene regulation at different levels • Techniques of molecular biology 	6L+4P
Total		30L+20P

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding:		
1.1	Recognize facts, principles, scientific terminology and concepts across molecular biology.	Lectures Interactive learning	Paper-based exams
1.2	Apply basic requirements and routine procedures used to investigate replication, transcription and translation in prokaryotes and eukaryotes.	Lectures Interactive learning	Paper-based exams
2.0	Skills:		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	Analyze concepts of DNA replication and transcription.	Open discussion Problem solving	Paper-based exams Practical exam
2.2	Demonstrate the functions of nucleic acids in different biological systems.	Small group activities Open discussion	Practical reports
3.0	Values:		
3.1	Conduct tasks based on convincing evidences with autonomy.	Small group activities Interactive learning	Activities Evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	5 th	20%
2	Semester Activities	Periodic	10%
3	Practical Reports	Weekly	20%
4	Final Practical Exam	11 th	10%
5	Final Exam	12 th	40%
Total			100%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

6 hours per week (as defined in the teaching schedule of the faculty member) for academic advice and consultations.

Teaching staff is also available using Blackboard web site and Taif University “Edugate” System.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- Robert Weaver (2012). Molecular Biology, 5 th Edition, WCB/McGraw-Hill.
Essential References Materials	- Darnell, J., Lodish, H., Baltimore, D. (1990). Molecular Cell Biology, Scientific American Books, New York, USA.
Electronic Materials	Blackboard website Website of Saudi digital Library
Other Learning Materials	Digital programs and professional software

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration)	- Classrooms for 40 students\lecture. - Molecular biology laboratory for 20 students\ lab

Item	Resources
rooms/labs, etc.)	activity.
Technology Resources (AV, data show, Smart Board, software, etc.)	- Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Software tools of molecular biology

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Peer Reviewer Students	Direct Indirect
Extent of achieving the course learning outcomes	Peer Reviewer Students	Direct Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Department
Reference No.	Committee number 14 - Academic Year 1442-1443H
Date	22\5\2022G – 21\10\1443H

كلية العلوم
قسم الأحياء
College of Science
Department of Biology



عمادة كلية العلوم
Deanship of Science College
جامعة الطائف
TAIF UNIVERSITY