



# Course Specification

— (Postgraduate)

**Course Title:** Molecular Biology and Genetic Engineering

**Course Code:** Zoo 553

**Program:** Master

**Department:** Zoology Department

**College:** College of Science

**Institution:** King Saud University

**Version:** Course Specification Version Number

**Last Revision Date:** Pick Revision Date.



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## A. General information about the course:

### 1. Course Identification:

1. Credit hours: ( 2 )

### 2. Course type

A.  University  College  Department  Track

B.  Required  Elective

3. Level/year at which this course is offered: ( ..... )

### 4. Course general Description:

Detailed studies on the correlation between the histology and the function of the digestive, urinary and reproductive systems. Also, studying structural and functional changes during programmed cell death in different organs.

5. Pre-requirements for this course (if any):

6. Pre-requirements for this course (if any):

### 7. Course Main Objective(s):

- Providing students with profound theoretical knowledge in molecular biology and genetic engineering.
- To give students in-depth knowledge on the advanced methods used in genetics engineering.
- To provide students with basic and molecular concepts about the restriction enzymes, cloning vectors and cloning, construction of genomic, chromosome and cDNA libraries.
- To supply students with essential information on identification of specific clones sequences in cDNA and genomic libraries, DNA sequence analysis, application of genetic engineering, hazards and problems of recombinant DNA technology and the possible techniques to minimize bio-hazards.
- To give students essential knowledge on the state-of-the-art techniques implied in molecular biology enabling them to become scientific thinkers.

### 2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		100



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

### 3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	28
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify).....	
	<b>Total</b>	<b>28</b>

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

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Providing students with profound theoretical knowledge in molecular biology and genetic engineering.	<b>K1</b>	Classroom lectures and	Exam and Laboratory work
1.2	To provide students with basic and molecular concepts about the restriction enzymes, cloning vectors and cloning, construction of	<b>K2</b>	Classroom lectures and	Exam and Laboratory work





Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	genomic, chromosome and cDNA libraries.			
1.3	To give students in-depth knowledge on the advanced methods used in genetics engineering	<b>K3</b>	Classroom and lectures	Exam and Laboratory work
<b>2.0</b>	<b>Skills</b>			
2.1	Updated in-depth information in molecular biology and genetic engineering.	<b>S1</b>	Classroom and labs	Discussion during lectures
2.2	Essential information on identification of specific clones sequences in cDNA and genomic libraries, DNA sequence analysis, application of genetic engineering, hazards and problems of recombinant DNA technology and the possible techniques to minimize bio-hazards.	<b>S2</b>	Classroom and labs	Discussion during lectures
...				
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Developed communication skills	<b>V1</b>	Presentations and PowerPoint	Lab sessions
3.2	To give students essential knowledge on the state-of-the-art techniques implied in molecular biology enabling	<b>V2</b>	Presentations and PowerPoint	Lab sessions





Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	them to become scientific thinkers.			
...				

### C. Course Content:

No	List of Topics	Contact Hours
1.	Restriction enzymes	6
2.	Cloning vectors and cloning	6
3.	Construction of genomic, chromosome and cDNA libraries	4
4.	Identification of specific clones sequences in cDNA and genomic libraries	4
5.	DNA sequence analysis	4
6.	Application of genetic engineering	2
7.	Hazards and problems of recombinant DNA technology and the possible techniques to minimize bio-hazards	2
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<b>Total</b>		<b>28</b>

### D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Final written exam	27	40%
2.	Midterm exam	8	15%
3.	Midterm exam	17	15%
4.	Presentation	20	30%
...			

\*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	<a href="https://pdfs.semanticscholar.org/8cc1/b9fb0c13ed46d90a71666c6fb326c6febf1de.pdf">https://pdfs.semanticscholar.org/8cc1/b9fb0c13ed46d90a71666c6fb326c6febf1de.pdf</a>
Supportive References	
Electronic Materials	<a href="http://www.hhmi.org/biointeractive/genetic-engineering">http://www.hhmi.org/biointeractive/genetic-engineering</a>



<b>Other Learning Materials</b>	<b>Videos</b>
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## 2. Educational and Research Facilities and Equipment Required:

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
<b>Technology equipment</b> (Projector, smart board, software)	
<b>Other equipment</b> (Depending on the nature of the specialty)	

## F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
<b>Effectiveness of teaching</b>		
<b>Effectiveness of students assessment</b>		
<b>Quality of learning resources</b>		
<b>The extent to which CLOs have been achieved</b>		
<b>Other</b>		

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval Data:

<b>COUNCIL /COMMITTEE</b>	
<b>REFERENCE NO.</b>	
<b>DATE</b>	

