



## Course specification

### 1-Basic information

<b>Course Code:</b>	MOL: 2225
<b>Course title :</b>	Molecular biology
<b>Academic year:</b>	2 <sup>nd</sup> academic Year (2017-2018)
<b>Program title:</b>	B. Sc. Veterinary Medical sciences
<b>Contact hours/ week</b>	3 hours/week, (1 Lect./week, 2 Practical/week)
<b>Approval Date</b>	

### 2-Professional information

**Overall aims of course:**

**This course aims to**

- 1- Studying the structures and function of genes, chromosomes, DNA and RNA.
- 2- Understanding the tools used in recombinant DNA technology including: restriction enzymes, host-vector systems, gene isolation and cloning.
- 3- To study the impact of molecular biology and nucleic acids in animal health.
- 4- To understand the application of molecular biology in disease diagnosis, animal breeding bioinformatics and recent advances in biology.
- 5- To familiarize the students with basic principles of molecular biology and protein synthesis.
- 6- To approach student to the advanced computational techniques that are applied in modern approaches to solve complex molecular biology problems.

**3- Intended learning outcomes of course (ILOs)**

**a-Knowledge and understanding:**

**By the end of this course the student should be able to:**

- A1- Define molecular biology and describe the chemistry of nucleotides and nucleic acids
- A2- State the differences between DNA and RNA structurally and functionally.
- A3- Recognize DNA replication, RNA and protein synthesis.
- A4- Describe the scientific and theoretical backgrounds for molecular diagnostic techniques and to differentiate between their applications.

**b- Intellectual skills**

**By the end of this course the student should be able to:**

- B1-** Interpret on molecular biochemical parameters.
- B2-** Point out the clinical significance of over expression of certain genes with their clinical correlation.
- B3-** Analyze and solve certain problems associated with molecular and genetic disorders (gene mutation and post-transcriptional disorders).



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### C-Professional and practical skills

**By the end of this course the student should be able to:**

- C1- Estimate the concentration of some body proteins by certain techniques such as gel electrophoresis.
- C2- Perform the steps of some traditional molecular essays such as DNA hybridization.
- C3- Practice certain molecular techniques such as conventional PCR and RT-PCR.

### D-General and transferable skills

**By the end of studying the course, the student should be able to:**

- D1- Work in a group and manage time in lab or during preparation of seminars.
- D2-The student respects the role of staff and co-staff members regardless of degree or occupation.
- d3- Utilize new technological tools.
- d4- Utilize efficiently library facilities and IT tools.

## 4-Topics and contents

Course	Topic	No. of hours	Lectures (1 hs/week)	Practical (2 hs/week)
1 <sup>st</sup> year – Second term – Basic Biochemistry – (Lec. 2h/ week,	Chemistry of nucleoproteins (DNA and RNA structures)	7	5	1
	DNA replication and RNA synthesis	4	2	1
	Genetic code, protein synthesis and mutations	13	3	4
	Molecular techniques in eukaryotes	15	3	7
	Total	52	13	13

## 5-Teaching and learning methods

- 5.1- Lectures (brain storm, discussion) using board, data shows.
- 5.2- Self learning by preparing essays and presentations (computer researches and faculty library)
- 5.3- Practical (blood and tissue samples).

## 6-Teaching and learning methods for the students with disabilities

Office hours and special meeting.



## Course specification

### 7-Student assessment

#### 7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	A1,A2,A3,A4	B1, B2, B3		
Practical Exam		B2,B3	C1,C2,C3	D1, D2,D3
Oral Exam	A1,A2,A3	B1, B2,B3		D4

#### 7.2. Assessment schedules/semester:

Method	Week(s)
Practical exams	14 <sup>th</sup> weak
Final exams	managed by administrations
Oral Exam	The same day of the final exam.

#### 7.3. Weight of assessments:

Assessment	Weight of assessment
Practical exams	30%
Final exams	50%
Oral exams	20%
Student activity	
	100%

### 8- List of references

#### 8.1. Notes and books

**Departmental notes:** none

#### 8.2. Recommended texts

- Haper's of Biochemistry.
- Biochemistry and clinical correlation.

#### 8.3. Journals, Websites .....etc

**Journals:** Biomedicine and pharmacotherapy, clinical chemistry and molecular biology

**Websites:** [www.pubmed.com](http://www.pubmed.com).

Course Coordinators

Head of Department



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Topic	Week	Intended learning outcomes of course (ILOs)			
		K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Chemistry of nucleoproteins (DNA and RNA structures)	1,2,3,4,5	1,2	1	1	1,2,3,4
DNA replication and RNA synthesis	6,7	3	2	1	1,2,3,4
Genetic code, protein synthesis and mutations	8,9,10	3	2	2	1,2,3,4
Molecular techniques in eukaryotes	11,12,13	4	1,2,3	1,2,3	1,2,3,4

