



Course specification

1-Basic information

Course Code:	BIC: 2225
Course title :	Molecular biology
Academic year:	2 nd academic Year (2018-2019)
Program title:	B. Sc. Veterinary Medical sciences
Contact hours/ week	3 hours/week, (1 Lect./week, 2 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to

- 1- Study 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- Study the impact of molecular biology and nucleic acids in animal health.
- 4- Understand the application of molecular biology in disease diagnosis, animal breeding bioinformatics and recent advances in biology.
- 5- Familiarize the students with basic principles of molecular biology and protein synthesis.
- 6- 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	week	No. of hours	Lectures (1 hs/week)	Practical (2 hs/week)
2 nd year – Second term Molecular biology - (Lec. 1h/ week, Pract. 2h/ week)	Chemistry of nucleoproteins (DNA and RNA structures)	1,2	5	3	2
	DNA replication and RNA synthesis	3,4	6	2	4
	Genetic code, protein synthesis and mutations	5,6,7,8	12	4	8
	Gene cloning & gene expression	9,10,11	12	4	8
	Molecular techniques in eukaryotes	12,13	4	-	4
	Total			39	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.



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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	15 th 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	20%
Final exams	50%
Oral exams	20%
Student activity	10%
	100%

8- List of references

8.1. Notes and books

Departmental notes: none

8.2. Essential books:

- Hand Book of Biochemistry
- Practical Clinical chemistry

8.3. Recommended texts

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

8.4. Journals, Websitesetc

Journals: Biomedicine and pharmacotherapy, clinical chemistry and molecular biology

Websites: 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	1,2	1	1	1,2,4
DNA replication and RNA synthesis	3,4	3	2	1	1,2,3,4
Genetic code, protein synthesis and mutations	5,6,7,8	3	2	2	1,2,3,4
Molecular techniques in eukaryotes	9,10,11	4	1,2,3	1,2,3	1,2,3,4
Gene cloning & gene expression	12,13	3	2	1	1,2,3,4

