

Specification for Genetics and genetic engineering course 2019/2020

A-Affiliation

1.	Relevant program	Bachelor of Veterinary Medical Science (BVMSc)
2.	Department offering the course	Animal Wealth Development

Date of specification approval: ministerial decree No. 1727 on 26/4/2017
(Approved in this template by the department council on 1/10/2019)

B-Basic information

1.	Course title	Genetics and Genetic engineering
2.	Course code	214(B) II
3.	Level	2 nd year
4.	Semester	Second semester
5.	Total hours/week	4
6.	Lecture hours/week	2
7.	Practical hours/week	2

C-Professional Information

1- Course learning objectives

The aim of the course is to provide the student the knowledge about recombinant DNA and genetic engineering, the knowledge about genetic manipulation and methods for studying the genome.

2- Intended learning outcomes of the course (ILOs):

a- Knowledge and understanding

After successful completion of the course the students should be able to:

- a1- Describe basis of genetic engineering
- a2- Mention different characteristics of genetic material and different methods of its manipulation and applications.
- a3- Discuss and explain inherited diseases and their control .
- a4- Distinguish between the genetic material, diseases, immunity and the control of these diseases.
- a5- Identify the ability to coal late different pieces of accurate information

b- Intellectual skills

After successful completion of the course the students should be able to:

- b1- Evaluate the genetic expression.
- b2- Interpret the genetic problems.
- b3- Discover relationship between the genetic tool for control of inherited diseases.

b5- Distinguish area where further research is necessary and is aware beyond current ethical codes list

c- Professional and practical skills

After successful completion of the course the students should be able to:

- c1- Investigate genetic materials and gene expression.
- c2- Measure genotoxicity of different environmental pollutants.
- c.3- Examine similarities and differences between different species based on DNA polymorphism.
- c.4- Conduct appropriate range of Experimental techniques

d- General and transferable skills

After successful completion of the course the students should have the following skills

- d1- Search skill
- d2- Team working skill.
- d3- Communication skill
- d4- problems solving skill

3- Course contribution in the program ILOs:

Course ILOS	Program ILOS
A Knowledge and understanding	a ¹
B Intellectual skills	b ³
C Professional and practical skills	c ⁸
D General and transferable skills	d ^{1,5,6}

3.1- Course contents:

Topic	Lecture hours	Practical hours
Genetic expression	4	-
Regulation of protein synthesis	4	-
Mutation and DNA repair mechanism	4	-
The genetic manipulation	4	5
Recombinant DNA and genetic engineering	3	5
Methods for studying the genome	3	-
Inherited diseases of biochemical origin	2	-
Immunogenetics	2	-
Genetic resistance and pathogens	2	-
Control of inherited diseases	2	-
Kariological (chromosomal) studies	-	5
Chromosomal banding technique	-	5
Chromosomal aberrations: <ul style="list-style-type: none"> • Numerical changes. • Structural changes 	-	5

Sex determination	-	5
Total hours	30	30

The midterm and practical exams are included during the semester

3.2- ILOs matrix:

Topic	A) Knowledge and understanding	B) Intellectual skills	C) Professional and practical skills	D) General and transferable skills
Genetic expression	a1,a2	b1,b2,b3,	c1,c2,c3	d1,d2,d3
Regulation of protein synthesis	a1,a2	-	-	d1
Mutation and DNA repair mechanism	a1,a2,	b1,b2,b3	c1,c2,	d1,d2,d3
The genetic manipulation	a1,a2,		c2,	d1,d2,d3
Recombinant DNA and genetic engineering	a1,a2,	b3	c2,	d1
Methods for studying the genome	a1,a2,	b1,b2,	c1,c2,	d1,d2,d3
Inherited diseases of biochemical origin	a1,a2,	b2,b3	c1,c2,	d1,d2,d3,d4
Immunogenetics	a1,a2,	b2,b3	c1,c2,	d1,d2,d3,d4
Genetic resistance and pathogens	a1,a2,a3,a4 a5	b2,b3	c1,c2,	d1,d2,d3
Control of inherited diseases	a1,a2,a3,a4 a5,	b4 b5	c1,c2,c3,c4	d1,d2,d3
Kariological (chromosomal) studies	a1,a2,a3,	b4 b5	c1,c2,c3,c4	d1,d2,d3,d4
Chromosomal banding technique	a3,a4,a5	,b4,b5	c1,c2,c3,c4	d1,d2,d3
Chromosomal aberrations: • Numerical changes. • Structural changes	,a3,a4,a5	,b4,b5	c1,c2,c3,c4	d1,d2,d3
Sex determination	,a3,a4,a5	,b4,b5	c1,c2,c3,c4	d1,d2,d3,d4

4- Teaching, learning and assessment methods:

ILOs	Teaching and Learning methods	assessment method
------	-------------------------------	-------------------

	L	P&M	D&S	p	Ps	Bs	semester	midterm	oral	practical	written	
Knowledge and understanding	a1	x	x	x	0	0	x	x	x	x	0	x
	a2	x	x	x	x	0	x	x	x	x	0	x
	a3	x	x	x	0	0	x	x	0	x	0	x
	a4	x	x	x	0	0	x	x	0	x	0	x
	a5	x	x	x	0	0	x	x	0	x	0	x
Intellectual skills	b1	x	x	x	0	x	x	x	x	x	0	x
	b2	x	x	x	0	x	x	x	x	x	0	x
	b3	x	x	x	0	x	x	x	0	x	0	x
	b4	x	x	x	0	x	x	x	0	x	0	x
	b5	x	x	x	0	x	x	x	0	x	0	x
Practical	c1	0	x	x	x	0	0	x	0	x	x	x
	c2	0	x	x	x	0	0	x	0	x	x	x
	c3	0	x	x	x	0	0	x	0	x	x	x
	c4	0	x	x	x	0	0	x	0	x	x	x
General skills	d1	x	x	0	0	x	x	x	0	x	0	x
	d2	0	0	x	x	0	0	x	0	x	0	0
	d3	0	0	0	0	x	0	x	0	x	0	0
	d4	x	x	x	x	x	x	x	0	x	0	x

L :Lecture, P&M: Presentations & Movies, D&S: Discussions & Seminars PT: Practical training, Ps: Problem solving, Bs: Brain storming

5- Assessment timing and grading:

Assessment method	timing	grade
Mid-term exam and semester work	6 th week	15
Practical exam	14 th week	20
oral exam	End of semester	15
Written exam	End of semester	50
total		100

6- List of references

6.1- Course notes: department notes

6.2- Essential books (text books)

- P.S. Verma, V.K. Aggarwal (2006). Genetics
- Philip W.H. (2006). Genetic of population
- S. Sundara Rajan (2005) Cytogenetics

6.3- Recommended books

- Course note.
- P.S. Verma, V.K. Aggarwal (2006). Genetics.
- William, Michael, Charlot (2006). Concept of genetics

6.4- Periodicals, Web sites, . . . etc

- Journal of Animal Science.
- Genomic Journal.
- Genetics Journal
- www.Pubmed.com

- www.ekb.eg

7- Facilities required for teaching and learning

- Lecture Hall: Writing board and Data show.
- Genetics Lab.
- Central laboratory.
- Central research of experimental animals

Course coordinator: Dr. FATMA EID MOUSSA.

Head of department Dr. EMAN RAMDAN

Signature

Date...1/10/2019

