

## Specification for Genetics course 2019/2020

### A-Affiliation

1.	<b>Relevant program</b>	Bachelor of Veterinary Medical Science (BVMSc)
2.	<b>Department offering the course</b>	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.	<b>Course title</b>	<b>Genetics</b>
2.	<b>Course code</b>	207 (A) I
3.	<b>Level</b>	2 <sup>nd</sup> year
4.	<b>Semester</b>	First semester
5.	<b>Total hours/week</b>	3
6.	<b>Lecture hours/week</b>	1
7.	<b>Practical hours/week</b>	2

### C-Professional Information

#### 1- Course learning objectives

The aim of the course is to provide the basis of inheritance of different genetic traits  
Provide the students with the necessary knowledge about fine structure of chromosome  
Know and understand the genetic material, replication, expression and mutation.

#### 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 inheritance.
- a2- Mention and Explain different mechanisms of chromosomal aberration and its reflection on phenotype of individual diseases.
- a3- Identify different characteristics of genetic material and different methods of its manipulation and applications.
- a4- Discuss and explain genetic variations.
- a5- Relate between the genetic material, diseases, immunity and the control of these diseases.
- a6- Relate 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- Differentiate among different stages of the cell cycle microscopically including mitosis and meiosis.

- b2- Interpret the karyotype reports.
- b3- Evaluate the chromosomal aberrations (numerical or structural)
- b4- Discover relationship between the exposure to environmental pollutants and incidence of chromosomal aberrations and increased incidence of cancer.
- 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 chromosome number and karyotyping of different species.
- c2- Diagnose phenotypic malformation and sterility problems associated with chromosomal aberrations.
- c.3- Examine normal and abnormal spermatogenesis through preparation of chromosome from the tests.
- 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

### 3- Course contribution in the program ILOs:

Course ILOS	Program ILOS
A <b>Knowledge and understanding</b>	a <sup>1</sup>
B <b>Intellectual skills</b>	b <sup>3</sup>
C <b>Professional and practical skills</b>	c <sup>8</sup>
D <b>General and transferable skills</b>	d <sup>1,5,6</sup>

#### 3.1- Course contents:

Topic	Lecture hours	Practical hours
Cytological basis of inheritance	1	6
Mathematical principles required for genetic problems	1	4
Transmission and quantitative genetics	1	6
Phenotypic expression	1	4
Linkage, crossing over and chromosome mapping	1	6
Some special cases of interphase chromosome	1	4
Kariological (chromosomal) studies	1	-
Chromosomal banding technique	1	-
Chromosomal aberrations: • Numerical changes.	1	-

• Structural changes		
Sex determination	1	-
Fertility as affected by chromosome	1	-
The genetic material	1	-
DNA replication	2	-
The genetic code	1	-
<b>Total hours</b>	<b>15</b>	<b>30</b>

**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
Cytological basis of inheritance	a1,a2	b1,b2,b3,	c1,c2,c3	d1,d2,d3
Mathematical principles required for genetic problems	a1,a2	-	-	d1
Transmission and quantitative genetics	a1,a2,	b1,b2,b3	c1,c2,	d1,d2,d3
Phenotypic expression	a1,a2,		c2,	d1,d2,d3
Linkage, crossing over and chromosome mapping	a1,a2,	b3	c2,	d1
Some special cases of interphase chromosome	a1,a2,	b1,b2,	c1,c2,	d1,d2,d3
Kariological (chromosomal) studies	a1,a2,	b2,b3	c1,c2,	d1,d2,d3
Chromosomal banding technique	a1,a2,	b2,b3	c1,c2,	d1,d2,d3
Chromosomal aberrations: • Numerical changes. • Structural changes	a1,a2,a3,a4 a5,a6,	b2,b3	c1,c2,	d1,d2,d3
Sex determination	a1,a2,a3,a4 a5,a6,	b4 b5	c1,c2,c3,c4	d1,d2,d3
Fertility as affected by chromosome	a1,a2,a3,	b4 b5	c1,c2,c3,c4	d1,d2,d3
The genetic material	a3,a4 a5,a6,	,b4,b5	c1,c2,c3,c4	d1,d2,d3

DNA replication	,a3,a4 a5,a6,	,b4,b5	c1,c2,c3,c4	d1,d2,d3
The genetic code	,a3,a4 a5,a6,	,b4,b5	c1,c2,c3,c4	d1,d2,d3

#### 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
	a6	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 and	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

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 <sup>th</sup> week	15
Practical exam	14 <sup>th</sup> 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](http://www.Pubmed.com)
- [www.ekb.eg](http://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**

