



University of Sadat City
Faculty of Veterinary Medicine
Dept. of Virology
(2014-2015)



Virology

(Basic Course)

MVSc COURSE SPECIFICATION

A. BASIC INFORMATION

University:	University of Sadat City
Faculty:	Veterinary Medicine
Program on which the course is given:	Master in Veterinary Medical Sciences (Virology)
Department offering the Course:	Virology
Course code:	--
Course title:	Virology
Lecture (hr/week):	3
Practical (hr/week):	4
Course coordinator:	Dr. Mohammed AboElkhair

B. PROFESSIONAL INFORMATION

1) Overall aims of course

By the end of this course, the students will have the scientific background about virus structure and replication, their pathogenesis, host immune response against them, and their control. The students, also, will know how to deal with samples containing viral particles. And the methods used for virus isolation. Also, they will be able to deal with the common viral diseases that affect animal and poultry flocks regarding laboratory diagnosis, prevention and control.

2) Intended learning outcomes of course (ILOs)

a) KNOWLEDGE AND UNDERSTANDING

By the end of this course, the graduate should be able to:

- a.1. Describe the nature of viruses, viral taxonomy and nomenclature, viral replication and viral genetics and evolution.
- a.2. Clarify the basis of virus-cell interactions, viral pathogenesis, and viral oncogenesis.
- a.3. Recognize the basis of immune response to viral infection and realize methods for preparation of vaccines.
- a.4. Explain theories how antiviral chemotherapy could work.
- a.5. Identify the epidemiology of viral infections.
- a.6. Recognize the precautions for dealing with viral samples.
- a.7. Clarify the major problems related to viral infection control.
- a.8. Express advanced knowledge about specific properties of different DNA and RNA virus families, diseases caused by them in animals and birds and their laboratory diagnosis and method of vaccination.

b) INTELLECTUAL SKILLS

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

- b.1. Aduit to select the suitable sample at proper time for viral diagnosis
- b.2. Detect the severity of viral infections based on the knowledge of virus structure and their pathogenesis
- b.3. Confirm the difference among various virus families based on their structure and strategy of replication.
- b.4. Optimize to choose the suitable method for virus diagnosis
- b.5. Detect the required measurements for prevention and control of viral diseases

c) PROFESSIONAL AND PRACTICAL SKILLS

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

- c.1. Practice processing clinical sample on arrival to laboratory for viral diagnosis and isolation.
- c.2. Apply different methods used for virus isolation in a clinical sample
- c.3. Employ some of serological tests used for detection of viral antigens or antibodies in clinical samples and analyze results
- c.4. Carry out some of molecular techniques used for identification of viruses

d) GENERAL AND TRANSFERABLE SKILL

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

- d.1. Plane effectively as part of a team.
- d.2. Improve make use of library facilities and IT tools.
- d.3. Code appropriate computer / keyboard skills including word
- d.4. Explain Processing, spreadsheets, presentation packages and graph plotting.

3) Topics and contents

Topic	No. of hours		
	Lect.	Pract.	Total
Introduction to the course and overview on origin of virology	3	-	3
Virus Structure	3	-	3
Virus Classification	3	-	3
Virus Multiplication	6	-	6
Virus genetics and variation	3	-	3
Virus pathogenesis	6	-	6
Immune response to virus infections	9	-	9
Viral oncogenesis	3	-	3
Antiviral chemotherapy	6	-	6
Epidemiology of animal viruses	6	-	6
Control of viral infections	9	-	9
Laboratory biosafety	-	4	4
General scheme of viral diagnosis	-	4	4
Sampling and sample preparation	-	12	12
Virus cultivation in ECE	-	8	8
Virus cultivation in tissue culture	-	24	24
Biological properties of viruses	-	24	24
Family: <i>Poxviridae</i>	3	-	3
Family: <i>Herpesviridae</i>	6	-	6
Families: <i>Adenoviridae</i> , <i>Papovaviridae</i>	6	-	6
Family: <i>Paramyxoviridae</i>	6	-	6
Family: <i>Reoviridae</i>	3	-	3
Family: <i>Coronaviridae</i>	3	-	3
Family: <i>Circoviridae</i>	3	-	3
Family: <i>Retroviridae</i>	6	-	6
Family: <i>Orthomyxoviridae</i>	6	-	6
Families: <i>Rhabdoviridae</i> , <i>Birnaviridae</i>	6	-	6
Family: <i>Bunyaviridae</i>	6	-	6
Family: <i>Picornaviridae</i>	6	-	6
Families: <i>Caliciviridae</i> , <i>Togaviridae</i>	6	-	6
Family: <i>Flaviviridae</i>	6	-	6
Prions: Agents of transmissible spongiform encephalopathies	3	-	3
Serology diagnosis of viral diseases	-	42	42
Molecular diagnosis of viral diseases	-	52	52
Vaccine quality control	-	6	6
Total	132	176	308

4) Teaching and learning methods

- 4.1. Lectures.
- 4.2. Practical.
- 4.3. Self-learning activities.

5) Student assessment

a. METHODS:

1- Written examination	For assessment of knowledge, back calling and Intellectual skills
2- Practical examination	For assessment of practical and professional skill.
3- Oral examination	For assessment of knowledge and Intellectual skills
4- Student activities	For assessment of knowledge and general and transferable skills

b. MATRIX ALIGNMENT OF THE MEASURED ILOS/ ASSESSMENTS METHODS:

	K.U (a)	I.S (b)	P.P.S (c)	G.S (d)
Written exam	a1-8	b2, b3, b5		-
Practical exam		1,4	c1, c2, c3, c4	-
Oral exam	a1-5	b1-5		-
Student activities (assay, seminar, etc.)	a3, a4, a5	b1, b4, b5		1-4

c. WEIGHT OF ASSESSMENTS:

Assessment	Allocated Mark	Evidence
Final written exam	50%	Marked and signed written paper
Practical exam	20%	Marked and signed practical exam paper
Oral exam	20%	Signed list of oral exam marks
Student assignments	10%	Representative samples of presented materials

6) List of references

6.1. Essential textbooks

- J **Veterinary Virology.** Murphy FA, et al. 1999 3rd eds.
- J **Veterinary virology.** Fenner F, et al. 1993
- J **Principles of virology: molecular biology, pathogenesis and control of animal viruses.** 2nd eds. Flint et al. 2004

Fields Virology. Fields BN, et al. 2004

Veterinary Immunology An introduction. Tizard, IR 2009 8th eds

6.2. Periodicals

- J American Society of Microbiology
- J Journal of Veterinary Microbiology
- J Journal of Archives of Virology
- J Journal of Virological Methods
- J Journal of Virology
- J Journal of General Virology
- J Virus research Journal
- J Virus genes Journal
- J Vaccines Journal

6.3. Web sites

www.ncbi.nlm.nih.gov

- www.sciencedirect.com

7) Facilities required for teaching and learning

- 7.1 Data-show.
- 7.2 Laboratory animals for experimental virology.
- 7.3 Network for technology transfer.
- 7.4 Laboratory kits for experimental virology.
- 7.5 Computer.

	Course coordinators	Head of department
Name	Dr. Mohammed AboElkhair	Prof. Dr. Shaaban Gadallah
Signature		

Matrix alignment of course topics and ILOs

Topic	No. of hours /week		Total hours	Hours for Lect.	Hours for Pract.	ILOs			
	Lect.	Pract.				K.U	I.S	P.P.S	G.T.S
						(a)	(b)	(c)	(d)
Introduction to the course and overview on origin of virology	3		3	3	-	1			
Virus Structure	3		3	3	-	1	3		1-4
Virus Classification	3		3	3	-	1,6	3		1-4
Virus Multiplication	3		6	6	-	1	3		1-4
Virus genetics and variation	3		3	3	-	1	1		1-4
Virus pathogenesis	3		6	6	-	2,6	1,2,3		1-4
Immune response to virus infections	3		9	9	-	3	4,5		1-4
Viral oncogenesis	3		3	3	-	2	3		1-4
Antiviral chemotherapy	3		6	6	-	4	5		1-4
Epidemiology of animal viruses	3		6	6	-	5	3		1-4
Control of viral infections	3		9	9	-	7	5		1-4
Laboratory biosafety		4	4	-	4		1,4	1	1-4
General scheme of viral diagnosis		4	4	-	4		1,4	1	1-4
Sampling and sample preparation		4	1,2	-	12		1,4	1	1-4
Virus cultivation in ECE		4	8	-	8		1,4	2	1-4
Virus cultivation in tissue culture		4	2,4	-	24		1,4	2	1-4
Biological properties of viruses		4	2,4	-	24		1,4	2	1-4
Family: <i>Poxviridae</i>	3		3	3	-	8	1,2,4,5		1-4
Family: <i>Herpesviridae</i>	3		6	6	-	8	1,2,4,5		1-4
Families: <i>Adenoviridae</i> , <i>Papovaviridae</i>	3		6	6	-	8	1,2,4,5		1-4
Family: <i>Paramyxoviridae</i>	3		6	6	-	8	1,2,4,5		1,3

Topic	No. of hours /week		Total hours	Hours for Lect.	Hours for Pract.	ILOs			
	Lect.	Pract.				K.U (a)	IS (b)	P.P.S (c)	G.T.S (d)
Family: <i>Reoviridae</i>	3		3	3	-	8	1,2,4,5		1,3
Family: <i>Coronaviridae</i>	3		3	3	-	8	1,2,4,5		1,3
Family: <i>Circoviridae</i>	3		3	3	-	8	1,2,4,5		1,3
Family: <i>Retroviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Family: <i>Orthomyxoviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Families: <i>Rhabdoviridae, Birnaviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Family: <i>Bunyaviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Family: <i>Picornaviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Families: <i>Caliciviridae, Togaviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Family: <i>Flaviviridae</i>	3		6	6	-	8	1,2,4,5		1,3
Prions: Agents of transmissible spongiform encephalopathies	3		3	3	-	8	1,2,4,5		1,3
Serology diagnosis of viral diseases		4	42	-	42			3	1,3
Molecular diagnosis of viral diseases		4	52	-	52			4	1,3
Vaccine quality control		4	6	-	6			3,4	--
Total			308	132	176				