Viral Immunology

(682M)

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:	**682 M**
Course title:	**Viral immunology**
Lecture (hr/week):	**1**
Practical (hr/week):	**2**
Course coordinator:	**Dr. Abdel Hameed Bazid**

B. PROFESSIONAL INFORMATION

1) Overall aims of course

Upon successful completion of the course, the student will have fundamental knowledge about the principle immune response against viruses, mechanisms of immunomodulation, and the strategies adopted by viruses to overcome the host immunity. The student will be able to apply different immunological assays for virus diagnosis

Intended learning outcomes of course (ILOs)

a) KNOWLEDGE AND UNDERSTANDING

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

a.1. Recognize concept of immunity and types of immunity against viral diseases
a.2. Express essential knowledge about mechanisms used by viruses to escape immune system.
a.3. Draw of fundamental knowledge about vaccines against viral diseases
a.4. Identify the role of components of immune system in defense against viral infections

b) INTELLECTUAL SKILLS

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

b.1. Confirm the required measurements for prevention and control of viral diseases
b.2. Compare between different types of immunity provoked by viral infections.
b.3. Ensure to choose suitable method for virus diagnosis

c) PROFESSIONAL AND PRACTICAL SKILLS

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

c.1. Classify different methods used for virus diagnosis
c.2. Apply serological tests used for detection of viral antigens or antibodies in clinical samples and analyze results Employ an effective method for virus control
c.3. Practice some of molecular techniques used for identification of immune response against virus infection

d) GENERAL AND TRANSFERABLE SKILL

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

d.1. Arrange effectively as part of a team.
d.2. Join make use of library facilities and IT tools.
d.3. Compose appropriate computer / keyboard skills including word
d.4. Format processing, spreadsheets, presentation packages and graph plotting.

2) Topics and contents

Topic	No. of hours		
	Lect.	Pract.	Total
Virus stucture and Antigenicity	2		4
Basic concepts in immunology	2		4
Innate immunity against viral infections	4		6
Role of Dendritic Cells in Antigen Processing and Presentation	2		4
Viral antigen recognition by B-cells and T-cell receptors	4		4
Antigen presentation to T lymphocyte	2		4
Macrophage and virus infection	4		4

Role of B and T Cells in Virus Infections	**4**		**6**
Cytokines and Toll-like Receptors and their role in Immune response	**4**		**6**
Mucosal immunity and its role against viral infection	**2**		**4**
Autoimmune diseases and viral infections	**2**		**2**
Virus Strategies to Escape the Immune System	**4**		**4**
Immuno-Modulation (immuno-suppression and immuno-therapy)	**2**		**4**
Viral Vaccines and Vaccination	**2**		**2**
Paper discussion	**4**		**4**
Laboratory safety		**4**	**4**
Sampling and sample preparation		**4**	**4**
Virus isolation on tissue culture		**20**	**20**
Biological properties of viruses		**20**	**20**
Serological diagnosis of virus infections		**20**	**20**
Molecular diagnosis		**20**	**20**
Total	44	88	132

3) Teaching and **learning methods**

4.1. Lectures.

4.2. Practical.

4.3. Self-learning activities.

4) 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	1-4	2,3		-
Practical exam		3	1,2,3	-
Oral exam	1-4	1,2, 3		-
Student activities (assay, seminar, etc.)	1-4			**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

5) List of references

6.1. Essential textbooks

- **Veterinary Virology. Murphy FA, et al. 1999 3rd eds.**
- **Veterinary virology. Fenner F, et al. 1993**

6.2. Recommended books

- **Principles of virology: molecular biology, pathogenesis and control of animal viruses.** 2nd eds. Flint et al. 2004
- **Veterinary Immunology An introduction.** Tizard, IR 2009 8th eds
- **Fields Virology.** Fields BN, et al. 2004.

6.3. Periodicals

- American Society of Microbiology
- Journal of Veterinary Microbiology
- Journal of Archives of Virology
- Journal of comparative mmunology
- Journal of Virology
- Journal of General Virology
- Virus research Journal
- Journal of Immunology
- Vaccines Journal

6.4. Web sites

- **www.ncbi.nlm.nih.gov**

- **www.sciencedirect.com**

6) 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. Abdel Hameed Bazid	Prof. Dr. Shaaban M. 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 (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Virus stucture and Antigenicity	1		2	2		1,2	1,2		1,2,3,4
Basic concepts in immunology	1		2	2		1	1,2		1,2,3,4
Innate immunity against viral infections	1		4	4		1,4	2		1,2,3,4
Role of Dendritic Cells in Antigen Processing and Presentation	1		2	2		1,4	1		1,2,3,4
Viral antigen recognition by B-cells and T-cell receptors	1		4	4		1, 4	2,3		1,2,3,4
Antigen presentation to T lymphocyte	1		2	2		1, 4	1,2,3		1,2,3,4
Macrophage and virus infection	1		4	4		1,3,4	1,2,3		1,2,3,4
Role of B and T Cells in Virus Infections	1		4	4		1,4	1,2,3		1,2,3,4
Cytokines and Toll-like Receptors and their role in Immune response	1		4	4		2,3,4	1,2,3		1,2,3,4
Mucosal immunity and its role against viral infection	1		2	2		1,4	1,2,3		1,2,3,4
Autoimmune diseases and viral infections	1		2	2		1,4	1,2,3		1,2,3,4
Virus Strategies to Escape the Immune System	1		4	4		2	1,2,3		1,2,3,4
Immuno-Modulation (immuno-suppression and immuno-therapy)	1		2	2		3	1,2,3		1,2,3,4

Topic	No. of hours /week		Total hours	Hours for Lect.	Hours for Pract.	ILOs			
	Lect.	Pract.				K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Viral Vaccines and Vaccination	1		2	2		3	1		1,2,3,4
Paper discussion	1		4	4			1,2,3		1,2,3,4
Laboratory biosafety		2			4		1	2	1,4
Sampling and sample preparation		2			4		3	1	1,4
Virus isolation on tissue culture		2			20		2	1	1,4
Biological properties of viruses		2			20		3	1	1,4
Serological diagnosis of virus infections		2			20		3	1,2	1,4
Molecular diagnosis		2			20		3	1,3	1,4
Total			132	44	88				