كليـــة الطب البيطرى
FACULTY OF VETERINARY MEDICINE

Specification for Virology (B) course

2025/2026

1-Basic information

1.	**Course title**	Virology **(B)**							
2.	**Course code**	VIR.322							
3.	**Department offering the course**	Virology							
4.	**Number of hours**	Theoretical	2	Practical	1(2)	Other	0	Total	3(4)
5	**Course Type**	√ **Obligatory** **Elective**							
6	**Level**	3rd year							
7	**Semester**	Springl semester							
8.	**Academic program**	Bachelor of Veterinary Medicine (BVM)							
9.	**University**	Benha University							
10.	**Faculty**	Veterinary medicine							
11.	**Name of course coordinator**	Prof. Dr. Ayman S. El-Habaa							
12.	**Course Specification Approval Date**	Faculty council/ 27-8-2025							
13	**Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)**	Department council on 8/7/2025							

2-Course overview

- **Course contents written in the program bylaw:**

Viral groups including the families and the selected viruses of significant importance to animals (cattle, buffalo, sheep, goats, equines, poultry, rabbits, fish, pet and wild animals) and their public health significance among human population covering taxonomy, antigenicity, epidemiology, diagnosis and control.

3- Course Learning Outcomes "ILOs"

	(NARS) outcomes		Course outcomes	
	Code	Text	Code	Text
Knowledge and understanding	2.7	Various causes of animal diseases, their pathogenesis, macro- and micro-scopic pathological lesions, and laboratory diagnosis	a1	Classify viruses based on epidemiological and physico-chemical criteria.
			a2	List viral families of medical veterinary importance belong to Riboviruses & Deoxyriboviruses..
			a3	Realize the basic of viral families classification & tell the viruses included in genera within the families know.
			a4	Define and illustrate diagrams for different viruses of veterinary importance.
			a.5	Mention the type of host affected by different members of viral families belong to either Riboviruses or Deoxyriboviruses.
			a.6	Describe the physico-chemical, biological and antigenic properties for different viral members related to Riboviruses & Deoxyriboviruses families.
			a.7	Mention the serological and non-serological methods used for identification of suspected viral samples.
	2.9	General and specific epidemiological pattern of animal population diseases and the most effective immunization protocols.	a.8	Trace the strategies to protect and combat each viral infection by vaccines.
			a.9	Explain the basic of Lab. Diagnosis for each member of viruses having veterinary importance.
	2.12	The accurate measurements of veterinary quarantine.	a.10	Describe the method used in molecular virology for viral detection and identification.
			a.11	- Describe the aim and methods for viral purification
Intellectual skills	4.4	Proficiently secure diagnostic reasoning, develop problem lists and differential diagnosis	b1	Plan and apply classification for different viruses.
			b2	Distinguish the natural & susceptible host affected by

		in order to deductively and critically reach the most appropriate solution (s) and management of the addressed clinical problems		different viruses.
			b3	- Evaluate the general properties of viruses families & their members.
			b4	- Create a diagram for viruses structures & schemes for viruses classification.
	4.3	Inculcate a rigorous approach to problem identification and solving.	b.5	- Differentiate between biological properties of different viruses.
			b.6	- Choose the test method for virus control.
			b.7	- Develop Lab. diagnosis for each viral infection.
			b.8	- Link between the antigenic properties, viruses types and their control.
			b.9	- Diagnosis and give prognosis for different viral infections.
			b.10	- Compare between viruses belonging to same family or related to each other.
			b.11	- Choose suitable techniques for viral identification.
			b.12	- Interpret the results of different techniques used for viral identification
Practical skills	3.4	Perform clinical examination of diseased cases and collect relevant samples.	c1	- Apply aseptic conditions during techniques of virus identification.
			c2	Prepare and make serial dilutions from either antigen or antibody.
	3.5	Appropriately select and interpret findings of the common clinical and laboratory diagnostic procedures to reach and adopt the most convenient therapeutic and manage mental approach	c3	- Prepare several working solutions like physiological & phosphate buffer saline.
			c4	Prepare purified serum preserve and treat the collected sera to get rid of inhibitory substances & media.
			c.5	Prepare washed R.B.Cs with certain concentration for Haemagglutination and Haemagglutination inhibition tests.
	3.13	Minimize the risk of contamination, cross infection and predisposing factors of	c.6	- Prepare of different hyper immune sera using known reference antigens.

		diseases	c.7	- Prepare the agrose to be used in AGPT and gel electrophoresis.
			c.8	Perform Haemagglutination, Haemagglutination inhibition, Haemadsorption and Haemadsorption test and interpret the results.
			c.9	Perform infectivity titeration and plaque count formation test for 1measurement of viruses infectivity.
			c.10	Perform neutralization test using tissue culture & low fertile egg and discuss the results.
			c.11	Perform both single radial & double immunodiffusion test & interpret the result.
			c.12	- fluorescent antibody technique for detect in of viral Ag in sequential tracing of viral protein Ag at different internal times .
			c.13	- Perform different types of for detection of either viral Age its Ags ELISA techniques with its modification.
			c.14	Make nucleic acid extraction & identification
General skills	5.1	Work under pressure and / or contradictory conditions.	d1	Work under pressure during virology lab cession
	5.5	Search for new information and technology as well as adopt life–long self-learning ethics.	d2	Search for new information in field of virology
	5.6	Utilize computer and internet skills.	d3	Utilize computer and internet skills, read paper via internet in field of virology

4- Teaching and learning methods					
Lectures	√	**Discussion & seminar**	√	**Practical**	√
Presentation & movies	√	**Problem solving**	√	**Brain storming**	√
Others					

Course Schedule:

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)	Training (Practical/Clinical/ .....)	Self-learning (Tasks/ Assignments/ Projects/ ...)	Other (to be determined)
W1	Classification of viruses Purification and concentration of viruses	**3(4)**	**2**	**1(2)**		0
W2	Classification of viruses Purification and concentration of viruses	3(4)	**2**	**1(2)**		0
W3	Riboviruses (RNA-viruses)1 Purification and concentration of viruses	**3(4)**	**2**	**1(2)**	Formative quiz	0
W4	Riboviruses (RNA-viruses)2 Non serological techniques for viruses	**3(4)**	**2**	**1(2)**		0
W5	Riboviruses (RNA-viruses)3 Non serological	**3**	**2**	**1(2)**		0

	techniques for viruses					
W6	Riboviruses (RNA-viruses)4 Non serological techniques for viruses	**3(4)**	**2**	**1(2)**	Formative quiz	0
W7	Semester work (one hour exam)	-	-	-		-
W8	Riboviruses (RNA-viruses)5 Non serological techniques for viruses	**3(4)**	**2**	**1(2)**		0
W9	Deoxyriboviruses (DNA-viruses)1 Serological techniques for viruses	**3(4)**	**2**	**1(2)**		0
W10	Deoxyriboviruses (DNA-viruses)2 Serological techniques for viruses	**3(4)**	**2**	**1(2)**	Formative quiz	0
W11	Deoxyriboviruses (DNA-viruses)3 Serological techniques for viruses	**3(4)**	**2**	**1(2)**		0
W12	Deoxyriboviruses (DNA-viruses)4 Serological techniques for viruses	**3(4)**	**2**	**1(2)**		0

W13	Deoxyriboviruses (DNA-viruses)5 Serological techniques for viruses	**3(4)**	**2**	**1(2)**		0
W14	Deoxyriboviruses (DNA-viruses)6 Serological techniques for viruses	**3(4)**	**2**	**1(2)**	Formative quiz	0
W15	Practical exam	-	-	-		-

5- Assessment timing and grading:

a- Assessment methods (summative and formative)

1. **Formative assessment**: including (weekly quizzes, homework assignments and surveys).
2. **Summative assessment** including (quizzes, class activities, semester work, practical exam, oral exams and final written exams).

b- Assessment schedule and weight

Assessment method	Assessment Timing (Week Number)	Marks/ Scores	Percent Percentage of total course Marks
Semester work including one hour exam	7th week	10	10%
Formative assessment	Throughout the semester	-----	------
Practical exam	15th week	30	30%
oral exam	End of semester	10	10%
Written exam	End of semester	50	50%
Assignments / Project /Portfolio/ Logbook	3rd, 6th , 10th ,14th week	-------	-------
Field training	--------	----------	-------
Other (Mention)	-------	--------	-------
Total		100	100%

6- Learning resources and supportive facilities:

Learning resources	**Main reference**	**Student handbook**: Edit by Staff members
	Essential books (text books)	•Alan J. Cann (2016) Principles of Molecular Virology. •Jane Flint (2015) Principles of Virology •John Carter (2007) Virology Principles And Applications •Dilip K. Sarma (2006) a text book of veterinary virology and viral diseases
	Recommended books	•Alan J. Cann (2016) Principles of Molecular Virology. •Jane Flint (2015) Principles of Virology •Dilip K. Sarma (2006) a text book of veterinary virology and viral diseases •J. Versteeg (1985) A colour atlas of virology.
	Periodicals, Web sites, . . . etc	•Veterinary bulletin. •www.wsvma.org •www.ekb.eg
	Learning platform	Thinqi

Supportive facilities	**Devices & instruments**	Devices □inverted Microscope □laminar air flow □deep freezer and refrigerator □water bath □egg Incubator and Co2 incubator □hot air oven □autoclave □microfuge □PCR thermal cycler □gel electrophoresis instruments □tubes and epindorff □automatic and mouth Pipette □Cylinder □beaker □HA plates □agrose □neutralization plates □ balance □nucleic acid Extraction kits
		1. Teaching hall 2. Virology laboratory. 3. Routine chemical kits for tissue culture. 4. Molecular virology unit 5. Serological unit 6. Central laboratory

Matrices:

A- Content and ILOs matrix:

Topic	A) Knowledge and understanding	B) Intellectual skills	C) Professional and practical skills	D) General and transferable skills
Classification of viruses	a1	b1		d1, d2, d3
Riboviruses (RNA-viruses)	a2,3,4,5,6	b2,3,4,5,6,7,8		d1, d2, d3
Deoxyriboviruses (DNA-viruses)	a2,3,4,5,6	b2,3,4,5,6,7,8		d1, d2, d3
Purification and concentration of viruses	a6,8	b9,10	c1,2,3,4	d1, d2, d3
Non serological techniques for viruses	a7,9	b9,10,11,12	c5,9,14	d1, d2, d3
Serological techniques for viruses	a7,8,9	b9,10,11,12	c6,7,8,10,11,12,13	d1, d2, d3
Molecular techniques for viruses	a10, a11	b9,10,11,12	c1,2,3,14	d1, d2, d3

B- Teaching and learning methods and ILOs matrix:

ILOs		Teaching and Learning methods						
		L	P&M	D&S	P	Ps	Bs	Gt
Knowledge and understanding	a1	√	√	√			√	
	a2	√	√	√			√	
	a3	√	√	√			√	
	a4	√	√	√			√	
	a5	√	√	√			√	
	a6	√	√	√			√	
	a7	√	√	√			√	
	a8	√	√	√			√	
	a9	√	√	√			√	
	a10	√	√	√			√	
	a11	√	√	√			√	
Intellectual skills	b1	√	√	√		√	√	
	b2	√	√	√		√	√	
	b3	√	√	√		√	√	
	b4	√	√	√		√	√	
	b5	√	√	√		√	√	
	b6	√	√	√		√	√	

	b7	√	√	√		√	√	
	b8	√	√	√		√	√	
	b9	√	√	√		√	√	
	b10	√	√	√		√	√	
	b11	√	√	√		√	√	
	b12	√	√	√		√	√	
Professional and practical skills	c1		√	√	√	√		√
	c2		√	√	√	√		√
	c3		√	√	√	√		√
	c4		√	√	√	√		√
	,c5		√	√	√	√		√
	,c6		√	√	√	√		√
	,c7		√	√	√	√		√
	,c8		√	√	√	√		√
	,c9		√	√	√	√		√
	,c10		√	√	√	√		√
	,c11		√	√	√	√		√
	,c12		√	√	√	√		√
	,c13		√	√	√	√		√
	,c14		√	√	√	√		√
Genera skills	d1	√	√	√	√	√		√
	d2	√	√	√			√	
	d3			√			√	√

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

C- Assessment methods and ILOs matrix:

ILOs		assessment method				
		Formative assessment	semester	Oral	practical	Written
Knowledge and understanding	a1	√	√	√		√
	a2	√	√	√		√
	a3	√	√	√		√
	a4	√	√	√		√
	a5	√	√	√		√
	a6	√	√	√		√
	a7	√		√		√
	a8	√		√		√
	a9	√		√		√
	a10	√		√		√
	a11	√		√		√
Intellectua skills	b1		√	√		√
	b2		√	√		√
	b3		√	√		√
	b4		√	√		√

	b5		√	√		√
	b6		√	√		√
	b7			√		√
	b8			√		√
	b9			√		√
	b10			√		√
	b11			√		√
	b12			√	√	√
Professional and practical skills	c1			√	√	
	c2			√	√	
	c3			√	√	
	c4			√	√	
	,c5			√	√	
	,c6			√	√	
	,c7			√	√	
	,c8			√	√	
	,c9			√	√	
	,c10			√	√	
	,c11			√	√	
	,c12			√	√	
	,c13			√	√	
	,c14			√	√	
General skills	d1			√		
	d2			√		√
	d3			√		

-Course coordinator: Prof. Dr. Ayman S. El-Habaa
-Head of department Prof. Dr. Ehab M.El-Nahas
-Program coordinator: Prof. Dr. Mahmoud Abouelroos