



Virology Course Specification

Basic Information

Course Code	٢AVIR, ٢BVIR
Course Title	Virology
Academic Year	Third
Academic Program	Bachelor of Veterinary Sciences
Hours/week	Lectures: 2 Practical: 2
Term	First & Second

١. Course Aim

The course covers the fundamental principles related to the interaction of mainly animal viruses with host cells and molecular events during viral replication. General topics include chemical and physical properties of viruses, virus classification, cultivation of viruses, laboratory diagnosis and prevention and control of infection.

٢. Intended Learning Outcomes

٢.١. Knowledge and Understanding

On successful completion of this course, the student should be able to

- 2.1.1. Basic knowledge about structures, growth, replication, virulence of viruses.
- 2.1.2. Basic knowledge about types of infection, how viruses cause disease, immune response to infection,
- 2.1.3. Basic knowledge about treatment and the inhibitory action of the antiviral chemotherapy and laboratory diagnosis.
- 2.1.4. Basic knowledge about sterilization, and methods of sterilization.

٢.٢. Intellectual Skills

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

- 2.2.1. Critically assess laboratory results.
- 2.2.2. Understand the principle and operation of relevant laboratory equipment.
- 2.2.3 Able to correlate between different diseases and viruses associated with them to reach to final diagnosis.
- 2.2.4 Able to select the suitable sample and the suitable laboratory test for diagnosis.
- 2.2.5 Able to choose the required measurements for prevention and control of Viral diseases.
- 2.2.6. Perform some serological tests used for detection of viral antigens in clinical samples and analyze the results.
- 2.2.7. Practice molecular techniques used for virus detection.

2.3. Practical and Professional Skills

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



- 2.3.1. Work safely in a medical laboratory.
 ٢,٣,٢. Be able to access relevant literature and review information.
 2.3.3. Ability to understand different methods of laboratory diagnosis.
 ٢,٣,٤. Practice different methods used for isolation of viruses and their identification.
 ٢,٣,٥. Perform some serological tests used for detection of viruses in clinical samples and analyze the results.
 2.3.6 Practice molecular techniques used for viruses detection.
 2.3.7. Writing of a report for infection.

٢,٤. General and Transferable Skills

- By the end of this course, the student should be able to
 ٢,٤,١. The ability to use simple word and IT skills (i.e., data processing, software, internet, and multimedia) and the library to find information.
 2.4.2. The ability to be self-motivated learners and responsive to feedback.
 2.4.3. Working in team (i.e., sharing presentations and discussions and solving problem).
 2.4.4. Enhancement of research capability through working in independent projects.
 2.4.5. Reporting of the facts using printable sheets in the field of animal virology.
 2.4.6. Ability to write full scientific reports in the field of animal bacteriology and mycology.

٣. Course Contents

First Semester

Topic	Total (hr)	Lectures (hr)	Practical (hr)
▪ Introduction, discovery of viruses, Structure of viruses	8	4	4
▪ Chemical composition of viruses, Stability of viral infectivity, Viral taxonomy and nomenclature	10	5	5
▪ Replication of viruses	8	4	4
▪ Viral genetics	8	4	4
▪ Virus-host cell interaction	6	3	3
▪ Viral pathogenesis	8	4	4
▪ Immune response against viral infection	6	3	3
▪ Vaccines	6	3	3
▪ Total Teaching Hours	60	30	30

Second Semester

Topic	Total (hr)	Lectures (hr)	Practical (hr)
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▪ Double-stranded DNA virus families and diseases caused by their members; Herpesviridae, Poxviridae, Asfaviridae and Iridoviridae, Adenoviridae, Papillomaviridae.	8	4	4
▪ Single-stranded DNA virus families and diseases caused by their members; Parvoviridae, Circoviridae.	8	4	4
▪ Single-stranded RNA reverse transcribing viruses; Retroviridae.	8	4	4
▪ Double-stranded RNA virus families and diseases caused by their members; Reoviridae, Birnaviridae.	8	4	4
▪ Single stranded negative sense RNA virus families and diseases caused by their members; Rhabdoviridae, Paramyxoviridae, Bornaviridae, Orthomyxoviridae, Bunyaviridae.	12	6	6
▪ Single-stranded positive sense RNA virus families and diseases caused by their members; Coronaviridae, Arteriviridae, Picornaviridae, Flaviviridae, Togaviridae, Caliciviridae, Astroviridae.	12	6	6
▪ Prion diseases; Bovine spongiform encephalopathy (BSE), Scrapie.	4	2	2
Total	60	30	30
▪ Student activities			
○ Mini reviews from the web and the library (individual activity)	—	—	—
○ Presentations and seminars (individual activity)	—	—	—
○ Illustrative posters (group activity)	—	—	—
Total (∓ semesters)	120	60	60

* Contents sharing in the achievement of the intended learning outcomes; KU (knowledge and understanding), IS (intellectual skills), PPS (practical and professional skills) and GT (general and transferable skills).



Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding								Intellectual Skills						Practical & Professional Skills									General & Transferable Skills				
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	1	2	3	4	
1	General virology	60	X	x	X	X							x	x		x	x	X	X	X										
2	Special virology	60	X	X	x	x	X	X	x	x			X	x	x	X	X			X	X	X	X	X	X					
3	Student activities																									X	X	X	X	



٤. Teaching and Learning Methods

- 4.1. Lectures to gain knowledge and understanding skills.
٤,٢ Practical sessions for the students to gain practical skills.
- 4.3. Self directed learning skills.
4.4. Analyze the results and reach specific conclusion.
4.5. Writing a review paper to gain the skills of self-learning and presentation
4.6. Sample collection, preservation, examination and identification.

٥. Teaching and Learning Methods for Students of Limited Capabilities

- Activating office hours.
- Additional revisions for previously taught and difficult topics.
- Providing a summary for previous chapter at the end of each one.
- Following up student feedbacks.

٦,١. Methods	٦. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	2.1.1/2.1.2/2.1.3/2.1.4	2.2.1/2.2.2/2.2.3/2.2.4/2.2.5/2.2.6/2.2.7		
Practical exams			2.3.1/2.3.2/2.3.3/2.3.4/2.3.5/2.3.6/2.3.7	
Oral exams		2.2.1/2.2.2/2.2.3/2.2.4/2.2.5/		2.4.1/2.4.2/2.4.6
Student activities				2.4.1/2.4.2/2.4.3/2.4.4/2.4.5/2.4.6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

٦,٢. Exam Description

Written exams	<ul style="list-style-type: none"> • Short essays. • Drawings. • Multiple choice questions. • True or false. • Comparisons. • Giving the scientific term/information.
Practical exams	<ul style="list-style-type: none"> • Slideshow exams. • Multiple choice questions.



	<ul style="list-style-type: none"> Record designs and evaluation. Practical case studies.
Oral exams	<ul style="list-style-type: none"> The exam committee involves 3 examiners. Each evaluates the student by giving a separate score. The scores are then averaged. Examiners are provided with the course specification. The student randomly selects question cards.
Student activities	<ul style="list-style-type: none"> Self-learning activities are evaluated throughout the semester. For details, refer to the section: “Σ Teaching and Learning Methods”.

Exams and activities	٦,٣. Assessment Schedule	٦,٤. Weighing of Assessments	
	Week (in each semester)	Per semester	Total (%)
Semester work exam	4 th , 8 th and ١٧ th	8	16
Student activities	Throughout the semester	2	4
Final written exam	16 th	25	50
Final Practical exam	16 th	10	20
Final oral exam	16 th	5	10
Total		50	100

٧. List of References

٧,١. Course Notes

Departmental notes

٧,٢. Essential Books

- Veterinary Microbiology and Microbial Diseases, ٢٠٠٢, Quinn et al.
- Essentials of Veterinary Microbiology, ٥th ed., ١٩٩٥, Carter et al.
- Fields, B.N., Knipe, D.M., Chanock, R.M., Hirsch, M.S., Melnick, J.L., Monath, T.P. and Roizman, B. (١٩٩٦). Virology. Vol. ١&٢. ٣rd Ed. Raven Press, New York.
- Veterinary Microbiology, ١٩٩٩, Hirsh and Zee.
- Veterinary Mycology, Laboratory Manual, ١٩٩٨, Hungerford et al

٧,٣. Recommended Books

- Introduction to Modern Virology, Dimmok N.J. *et al.* Blackwell Science Fifth edition, ٢٠٠١
- Microbiology, Prescott L.M. *et al.* McGraw-Hill Fifth Edition ٢٠٠٢.
- Zuckerman, A.J., Banatvala, J.E. and Pattison, J.R. (١٩٩٤). Principles and Practice of Clinical Virology. John Wiley & Sons, New York.
- Galasso, G.J. (١٩٩٣). Practical Diagnosis of Viral Infections. Raven Press, New York.

٧,٤. Periodicals, websites, etc.

Scientific Journals

Scientific websites



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- <http://www.cdc.org>
 - <http://www.pubmed.org/>
 - <http://www.sciencedirect.com/>
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Course coordinator:

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