REPUBLIC OF YEMEN
SANA'A UNIVERSITY
Faculty Of Veterinary Medicine
Quality Assurance Unit
Program: Veterinary Medicine

Course Specification of Virology (2)

I. Course Identification and General Information:							
1	**Course Title:**	Virology (2)					
2	**Course Number & Code:**	MI357					
3	**Credit hours:**	**C.H**				**Total**	
		Theoretical	**Practical**	**Training**	**Seminar**		
		2	**1**	**0**	**0**	**3**	
4	**Study level/ semester at which this course is offered:**	Third Year - Second Semester					
5	**Pre –requisite (if any):**	MI356					
6	**Co –requisite (if any):**	None					
7	**Program (s) in which the course is offered:**	Bachelor's degree (B. Sc.) Veterinary medicine					
8	**Language of teaching the course:**	English					
9	**Location of teaching the course:**	Faculty of veterinary medicine					
10	**Prepared by:**	Dr. Fateh Ali Yahya Badi Dr. Faris Mohammed Ahmed Al-zailay					
11	**Date of approval:**						

II. Course description:

The main purpose of this course is introducing the academic background and practical experience about virology science, and how to approach a problems caused by a vital agent.
Laboratory diagnosis, and the methods used for virus isolation. Also to deal with the common viral diseases that affect animal and poultry flocks regarding laboratory diagnosis, prevention and control of infection.

Prepared by	Quality Assurance Unit	Dean of the Faculty	Academic Development Center & Quality Assurance
Dr. Fateh A. Badi Dr. Faris M. Al-zailay	Dr. Abdulraqeb Alshami	Ass. Prof. Dr. Abdu Alraoof Al-Shawkany	Ass. Prof. Dr. Huda Al-Emad

Rector of Sana'a University
Prof. Dr. Al-Qassim Mohammed Abbas

I. Intended learning outcomes (ILOs) of the course:

(A) Knowledge and Understanding:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Knowledge and Understanding.

Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding		Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
A2-	Illustrates basic concepts, principles, and theories related to animal production, animal health and nutrition, behavior management, breeding and care, and animal-related ethical Blogs.	**a1-**	Describe the causes, pathogenesis, clinical symptoms, diagnosis, immune response to infection, treatment and prognosis of the most important viral diseases
A3-	Identifies various causes of diseases and animal epidemics and how they can be diagnosed, including common diseases that life-threatening of animals, poultry and fish.	**a2-**	Illustrate the inhibitory action of the antiviral chemotherapy and laboratory diagnosis.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding		Teaching strategies/methods to be used	Methods of assessment
completing this course, students will be able to:		-Lectures using board, data shows and multimedia aids. - brainstorm. - discussion. -Self-learning by preparing essay and presentations (computer and faculty library) -Practical training (Clinical demonstrations, practice of skills, and discussions). - Laboratories visits	-Written exam -Practical exam -Oral exam - Quizzes - Report assignments - Discussion
a1-	Describe the causes, pathogenesis, clinical symptoms, diagnosis, immune response to infection, treatment and prognosis of the most important viral diseases		
a2-	Illustrate the inhibitory action of the antiviral chemotherapy and laboratory diagnosis.		

(B) Intellectual Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Intellectual skills

Program Intended Learning Outcomes (Sub-PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Intellectual Skills	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
B1-	Competently practices analytical and critical thinking skills in studying and assessing health problems and reading the results of animal medical examinations and in related sciences.	**b1-**	Choose the required measurements for prevention and control of viral diseases
B2-	Predicts an appropriate medical diagnosis for the most common disease states through analysis of clinical story data and the results of medical examinations of sick animal.	**b2-**	Analyze the difference among virus families based on the knowledge of virus structure and their pathogenesis

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Intellectual Skills.		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		- Lectures using board, data shows and multimedia aids. - brainstorm. - discussion. - Self-learning by preparing essay and presentations (computer and faculty library) - Practical training (Clinical demonstrations, practice of skills, and discussions).	-Written exam -Practical exam -Oral exam - Quizzes - Report assignments - Discussion
b1-	Choose the required measurements for prevention and control of viral diseases		
b2-	Analyze the difference among virus families based on the knowledge of virus structure and their pathogenesis		

		- laboratories visits	

(C) Professional and Practical Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Professional and Practical Skills

Program Intended Learning Outcomes (Sub-PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
C1-	Accurately records a comprehensive pathological story of a sick animal including information on healthy behavior and the necessary checks.	**c1-**	Practice processing clinical sample on arrival to laboratory for viral diagnosis and isolation.
C2-	Practicing practical, diagnostic, clinical and research skills, including the collection of samples in various fields of veterinary medicine and related sciences, in a safe and effective manner, taking into account the ethics of the profession.	**c2-**	Apply molecular techniques used for virus detection

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		-Practical training (Clinical demonstrations, practice of skills, and discussions). - Laboratories visits	Written exam -Practical exam -Oral exam - Quizzes - Report assignments - Discussion
c1-	Practice processing clinical sample on arrival to laboratory for viral diagnosis and isolation.		
c2-	Apply molecular techniques used for virus detection		

(D) General / Transferable Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **General and Transferable skills**			
Program Intended Learning Outcomes (PILOs) in General / Transferable skills		**Course Intended Learning Outcomes (CILOs) in General / Transferable skills**	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
D1-	Communicates effectively with Professional colleagues and animal owners and expresses his ideas clearly and objectively.	**d1-**	Communicate effectively with public, colleagues and appropriate authorities.
D2-	Develops his scientific, professional and research capabilities and follow what is emerging in his field of specialization and using computer applications and information and communication technology.	**d2-**	Achieve computer skills necessary to make use of medical databases and use the internet for communication.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		**Teaching strategies/methods to be used**	**Methods of assessment**
After completing this course, students will be able to:		-Self-learning by preparing essay and presentations (computer and faculty library) - Scientific visits - discussions - Assignments	-Written exam -Practical exam -Oral exam - Report assignments - Discussion - Note performance
d1-	Communicate effectively with public, colleagues and appropriate authorities.		
d2-	Achieve computer skills necessary to make use of medical databases and use the internet for communication.		

II. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect

Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours

1	Double-stranded DNA virus families and diseases caused by their members	a1, a2, b1, b2, c1, c2	Herpesviridae, Poxviridae, Asfaviridae and Iridoviridae, Adenoviridae, Papillomaviridae.	2	4
2	Single-stranded DNA virus families and diseases caused by their members	a1, a2, b1, b2, c1, c2	Parvoviridae, Circoviridae.	2	4
3	Single-stranded RNA reverse transcribing viruses	a1, a2, b1, b2, c1, c2	Retroviridae.	1	2
4	Double-stranded RNA virus families and diseases caused by their members	a1, a2, b1, b2, c1, c2	Reoviridae, Birnaviridae	2	4
5	Single stranded negative sense RNA virus families and diseases caused by their members	a1, a2, b1, b2, c1, c2	Rhabdoviridae, Paramyxoviridae, Bornaviridae, Orthomyxoviridae, Bunyaviridae.	3	6
6	Single-stranded positive sense RNA virus families and diseases caused by their members.	a1, a2, b1, b2, c1, c2	Coronaviridae, Arteriviridae, Picornaviridae, Flaviviridae, Togaviridae, Caliciviridae, Astroviridae	3	6
7	Prion diseases	a1, a2, b1, b2, c1, c2	Bovine spongiform encephalopathy (BSE), Scrapie	1	2
Number of Weeks /and Units Per Semester				**14**	**28**

b- Training Aspect:

Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Overview about diagnostic methods in veterinary virology	a1, a2, b1, b2, c1, c2	1	2
2	Detection of viruses by electron microscopy.	a1, a2, b1, b2, c1, c2	1	2
3	Direct detection of viral antigens using serological tests.	a1, a2, b1, b2, c1, c2	5	10

5	Detection of antiviral antibodies using serological tests.	a1, a2, b1, b2, c1, c2	5	10
6	Molecular detection of viral nucleic acid	a1, a2, b1, b2, c1, c2	2	4
Number of Weeks /and Units Per Semester			**14**	**28**

III. Teaching strategies of the course:

- Lectures and practical of every topic in the course.
- Collection of some information from textbooks.
- Institute laboratory visits, vaccine production company visit.

3-Assessment Methods:

- Written Mid-term To assess the skills of ability to remember and understand
- Written Final-term To assess the skills of ability to remember and understand
- Practical Final-term To assess professional and practical skills
- Oral Final-term To assess skills of discussion

I. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1	**Participation, quizzes and assignments**	**2-14**	**10**	**10%**	a1, a2, b1, b2, c1, c2
2	**Mid-Term Exam**	**8**	**10**	**10%**	a1, a2, b1, b2, c1, c2
3	**Mid-Term Practical Exam**	**8**	**10**	**10%**	a1, a2, b1, b2, c1, c2
4	**Final Practical Exam**	**15**	**10**	**10%**	a1, a2, b1, b2, c1, c2
5	**Oral Exam**	**15**	**5**	**5%**	a1, a2, b1, b2, c1, c2
6	**Final Exam**	**16**	**55**	**55%**	a1, a2, b1, b2, c1, c2
	Total		**100**	**100%**	

I. Students' Support:

Office Hours/week	Other Procedures (if any)
From Saturday to Wednesday at 8:00 a.m. till 2 p.m.	Student can contact with me via *e*-mail

IV. Learning Resource (MLA style or APA style)s:

1- Required Textbook(s) (maximum two)

- Printed departmental notes by staff members

2- Recommended Readings and Reference Materials

1- Clinical veterinary Microbiology (P.G. Quinn).
2- Veterinary virology, 3rd ed. (Murphy et al., 2000).
3- Field Virology. (BN et al., 2004).

3- Essential References

- Molecular biology, pathogenesis and control of animal viruses, 2nd ed. (Sharma and adlakha, 2009).
- Veterinary Microbiology (Dwight C. Hirsh)
- Veterinary Immunology (Ivan Tizard).
- Clinical Immunology (Catherine Sheehan).

4- Electronic Materials and Web Sites *etc*.

- WWW.PubMed.com
- www.ncbi.nlm.nih.gov
- www.Vet.net.com
- www.Science Direct web site

5- Other Learning Material:

- **Department notes:** available for students to purchase from the department.
- White board, overhead projector and data show presentations used during teaching.
- Laboratory , apparatus, Chemicals, glasses reagents and media, Kits

X. Course Policies:

1 Class Attendance:
Mandatory to attend all course lectures

2	**Tardiness:** Not allowed at all. Students must be in class or in the practical session 10 minutes prior to the beginning of lectures or practical session
3	**Exam Attendance/Punctuality:** Attendance is mandatory; absence is accepted with valid excuse
4	**Assignments & Projects:** All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse
5	**Cheating:** Not tolerated and may lead to **EXPELLING** the student from the program
6	**Plagiarism:** Not tolerated **AT ALL** and may lead to **EXPELLING** the student from the program
7	**Other policies:** **1.** All devices must be on silent or at least on vibration during lectures/labs **2.** Before any exam (written, oral) we must check student's identity (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. **3.** Any of type/ form of cheating is not allowed no matter what. **4.** Maintain silence during lectures/exam and disturbance is not allowed. For any questions students should raise their hand and wait for permission to talk.

Course Plan of Virology (2)

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Fateh A. Y. Badi Dr. Faris M. A. Al-zailay	**Office Hours**					
Location & Telephone No.	Dhamar Governorate 770667223	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	Farisvet4@gmail.com	8am 2pm	8am 2pm	8am 2pm	8am 2pm	8am 2pm	-

II. Course Identification and General Information:						
1-	**Course Title:**	Virology (2)				
2-	**Course Number & Code:**	MI357				
3-	**Credit hours:**	**C.H**				**Total**
		Th.	**Seminar**	**Pr.**	**F. Tr.**	
		2	-	1		3
4-	**Study level/year at which this course is offered:**	Third Year -Second Semester				
5-	**Pre –requisite (if any):**	MI356				
6-	**Co –requisite (if any):**	None				
7-	**Program (s) in which the course is offered**	Bachelor's degree (B. Sc.) Veterinary medicine				
8-	**Language of teaching the course:**	English				
9-	**System of Study:**	Regular / Semester				
10-	**Mode of delivery:**	Lecturers, practical laboratory works				
11-	**Location of teaching the course:**	Faculty of veterinary medicine				

III. Course Description:

The main purpose of this course is introducing the academic background and practical experience about virology science, and how to approach a problems caused by a vital agent.
Laboratory diagnosis, and the methods used for virus isolation. Also to deal with the common viral diseases that affect animal and poultry flocks regarding laboratory diagnosis, prevention and control of infection.

IV. Intended learning outcomes (ILOs) of the course:

After completing this course, students will be able to:

a1- Describe the causes, pathogenesis, clinical symptoms, diagnosis, immune response to infection, treatment and prognosis of the most important viral diseases
a2- Illustrate the inhibitory action of the antiviral chemotherapy and laboratory diagnosis.
b1- Choose the required measurements for prevention and control of viral diseases
b2- Analyze the difference among virus families based on the knowledge of virus structure and their pathogenesis.
c1- Practice processing clinical sample on arrival to laboratory for viral diagnosis and isolation.
c2- Apply molecular techniques used for virus detection.
d1- Communicate effectively with public, colleagues and appropriate authorities.
d2- Achieve computer skills necessary to make use of medical databases and use the internet for communication.

V. Course Content:

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Double-stranded DNA virus families and diseases caused by their members; Herpesviridae, Poxviridae, Asfaviridae and Iridoviridae, Adenoviridae, Papillomaviridae.	1,2	4

2	Single-stranded DNA virus families and diseases caused by their members; Parvoviridae, Circoviridae.	3,4	4
3	Single-stranded RNA reverse transcribing viruses; Retroviridae.	5	2
4	Double-stranded RNA virus families and diseases caused by their members; Reoviridae, Birnaviridae.	6,7	4
5	Mid-Term	8	2
6	Single stranded negative sense RNA virus families and diseases caused by their members; Rhabdoviridae, Paramyxoviridae, Bornaviridae, Orthomyxoviridae, Bunyaviridae.	9,10,11	6
7	Single-stranded positive sense RNA virus families and diseases caused by their members; Coronaviridae, Arteriviridae, Picornaviridae, Flaviviridae, Togaviridae, Caliciviridae, Astroviridae.	12,13,14	6
8	Prion diseases; Bovine spongiform encephalopathy (BSE), Scrapie	15	2
9	Final Exam	16	2
Number of Weeks /and Units Per Semester		**16**	**32**

b- Training Aspect:

Order	Training Tasks	Week Due	Contact hours
1	Overview about diagnostic methods in veterinary virology	1	2
2	Detection of viruses by electron microscopy.	2	2
3	Direct detection of viral antigens using serological test.	3,4,5,6,7	10
4	Mid-Term Exam	8	2
5	Detection of antiviral antibodies using serological test	9,10,11,12,13	10

6	Molecular detection of viral nucleic acid	14,15	4
7	Final Exam	16	2
Number of Weeks /and Units Per Semester		16	32

VI. Teaching strategies of the course:

- Lectures depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- Training visits to dairy farms as well as milk processing plants.
- Practical sections: Laboratory examination of milk, milk products, by chemical and microbiological methods.
- Self-learning (Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library).
- Summer training course.
- Assays and reviews.

Discussion groups.

VII. Assessment Methods:

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

No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	**Participation, quizzes &assignments**	All	10	10%
2	**Mid-Term Exam**	8th	10	10%
3	**Mid-Term Practical Exam**	8th	10	10%
4	**Final Practical Exam**	15th	10	10%
5	**Oral Exam**	15th	5	5%
6	**Final Exam**	16th	55	55%

	Total	**100**	**100%**

VIII. Learning Resources:

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1- Required Textbook(s) (maximum two).

- Clinical veterinary Microbiology (P.G. Quinn).
- Veterinary virology, 3rd ed. (Murphy et al., 2000).
- Field Virology. (BN et al., 2004).

2- Essential References.

- Molecular biology, pathogenesis and control of animal viruses, 2nd ed. (Sharma and adlakha, 2009).
- Veterinary Microbiology (Dwight C. Hirsh)
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- Clinical Immunology (Catherine Sheehan).

3- Electronic Materials and Web Sites *etc*.

- WWW.PubMed.com
- www.ncbi.nlm.nih.gov
- www.Vet.net.com
- www.Science Direct web site

XI. Course Policies:

1	**Class Attendance:** Mandatory to attend all course lectures
2	**Tardiness:** Not allowed at all. Students must be in class or in the practical session 10 minutes prior to the beginning of lectures or practical session
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4	**Assignments & Projects:**

	All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse
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7	**Other policies:** 1. All devices must be on silent or at least on vibration during lectures/labs 2. Before any exam (written, oral) we must check student's identity (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. 3. Any of type/ form of cheating is not allowed no matter what. 4. Maintain silence during lectures/exam and disturbance is not allowed. For any questions students should raise their hand and wait for permission to talk.