

University: Damanhur
Department: Microbiology

Faculty: Veterinary Medicine

Virology Course Specifications (2010 - 2010)

Program(s) on which the course is given: BVSc
Department offering the program: ---
Department offering the course: Microbiology
Major or Minor element of programs: Major
Academic year /Level: 3rd Year 1st and 2nd semester
Date of specification approval:

A. BASIC INFORMATION

Title: Virology **Code:** 3AVIR, 3BVIR
Hours:

| | | |
|----------------------------|-----------------------------|----------------------|
| Lectures 2 hrs/week | Practical 2 hrs/week | Total 120 hrs |
|----------------------------|-----------------------------|----------------------|

B. PROFESSIONAL INFORMATION

1. Overall aims of the course:

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.

1. Intended Learning Outcomes (ILOs):

2. Intended Learning Outcomes (ILOs) of the Course:

Student will learn the essential concepts of virology which include the structure of different viruses, properties, replication, types of infection, how viruses cause disease, immune response to infection, treatment and the inhibitory action of the antiviral chemotherapy and laboratory diagnosis.

b. Intellectual Skills:

- b1** Critically assess laboratory results.
- b2** Understand the principle and operation of relevant laboratory equipment
- b3** Able to correlate between different diseases and viruses associated with them to reach to final diagnosis.
- b4** Able to select the suitable sample and the suitable laboratory test for diagnosis
- b5** Able to choose the required measurements for prevention and control of viral diseases.

c. Professional and Practical Skills:

- c.1 Work safely in a medical laboratory.
- c.2 Be able to access relevant literature and review information.
- c.3 Ability to understand different methods of laboratory diagnosis.
- c.4 Practice different methods used for isolation of viruses and their identification.
- c.5 Perform some serological tests used for detection of viral antigens in clinical samples and analyze the results.
- c.6 Practice molecular techniques used for virus detection.

d. General and Transferable Skills:

- d.1. The ability to use simple word and IT skills (i.e., data processing, software, internet, and multimedia) and the library to find information.
- d.2. The ability to be self-motivated learners and responsive to feedback.
- d.3. Working in team (i.e., sharing presentations and discussions and solving problem).
- d.4. Enhancement of research capability through working in independent projects.
- d.5. Reporting of the facts using printable sheets in the field of animal virology.
- d.6. Ability to write a full scientific reports in the field of animal virology.

3. Contents:

3.1. Lecture Contents:

I. First semester

| Topics | |
|--------------------|--|
| 1 | Introduction, discovery of viruses, Structure of viruses |
| 2 | Chemical composition of viruses, Stability of viral infectivity, Viral taxonomy and nomenclature |
| 3 | Replication of viruses |
| 4 | Viral genetics |
| 5 | Virus-host cell interaction |
| 6 | Viral pathogenesis |
| 7 | Immune response against viral infection |
| 8 | Vaccines |
| Total hours 30 hrs | |

II. Second Semester

| Topics | |
|--------------------|---|
| 1 | Double-stranded DNA virus families and diseases caused by their members; Herpesviridae, Poxviridae, Asfaviridae and Iridoviridae, Adenoviridae, Papillomaviridae. |
| 2 | Single-stranded DNA virus families and diseases caused by their members; Parvoviridae, Circoviridae. |
| 3 | Single-stranded RNA reverse transcribing viruses; Retroviridae. |
| 4 | Double-stranded RNA virus families and diseases caused by their members; Reoviridae, Birnaviridae. |
| 5 | Single stranded negative sense RNA virus families and diseases caused by their members; Rhabdoviridae, Paramyxoviridae, Bornaviridae, Orthomyxoviridae, Bunyaviridae. |
| 6 | Single-stranded positive sense RNA virus families and diseases caused by their members; Coronaviridae, Arteriviridae, Picornaviridae, Flaviviridae, Togaviridae, Caliciviridae, Astroviridae. |
| 7 | Prion diseases; Bovine spongiform encephalopathy (BSE), Scrapie. |
| Total hours 30 hrs | |

3.2. Laboratory Contents:

I. First semester

| Topics | |
|--------------------|--|
| 1. | Safety Orientation |
| 2. | Diagnosis of viral diseases |
| 3. | Collection, preservation and transport of virus containing specimens |
| 4. | Uses of Embryonated chicken eggs in virus isolation |
| 5. | Tissue culture and its use in virus isolation |
| 6. | virus isolation in Laboratory animal |
| 7. | Virus quantitation |
| 8. | Techniques for identifying virus isolates |
| Total hours 30 hrs | |

iii. Second Semester

| Topics | |
|--------------------|---|
| 1. | Detection of viruses by electron microscopy. |
| 2. | Direct detection of viral antigens using serological tests. |
| 3. | Detection of antiviral antibodies using serological tests. |
| 4. | Molecular detection of viral nucleic acid. |
| Total hours 30 hrs | |

4. Teaching and Learning Methods:

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

5. Student Assessment Methods:

| Exam | | |
|------|----------------------|--|
| 5.1 | Written Mid-term | To assess the skills of ability to remember and understand |
| 5.2 | Written Final-term | To assess the skills of ability to remember and understand |
| 5.3 | Practical Final-term | To assess professional and practical skills |
| 5.4 | Oral Final-term | To assess skills of discussion |

Assessment Schedule (in each semester):

| | Exam | Week |
|--------------|----------------------|------------------|
| Assessment 1 | Written Mid-term | 8 th |
| Assessment 2 | Written Final-term | 15 th |
| Assessment 3 | Practical Final-term | 15 th |
| Assessment 4 | Oral Final-term | 15 th |

Weighing of assessments

| | Exam | Per Semester (%) | Total (%) |
|--------------|----------------------|------------------|-----------|
| Assessment 1 | Written Mid-term | 10 | 20 |
| Assessment 2 | Written Final-term | 25 | 50 |
| Assessment 3 | Practical Final-term | 10 | 20 |
| Assessment 4 | Oral Final-term | 5 | 10 |
| Total | | 50 | 100 |

6. List of References:

6.1. Course Notes:

- Printed departmental notes by staff members

6.2. Essential Books:

- Clinical veterinary Microbiology (P.G. Quinn).
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- Veterinary Microbiology (Dwight C. Hirsh)
- Veterinary Immunology (Ivan Tizard).
- Clinical Immunology (Catherine Sheehan).

6.3. Recommended Books:

- Clinical veterinary Microbiology (P.G. Quinn).

6.4. Periodicals, websites, etc

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7. Facilities Required for Teaching and Learning

- Microscopes, computers (personal and notebook)
- Overhead projectors, video tapes
- Audio-video facilities

Course Coordinator: Dr. Madeha Salah Ibrahim

Head of Department: Prof. Dr. Hatem Salah El-Din

Date: