



LEAD CITY UNIVERSITY

Faculty of Basic Medical and Applied Sciences

Department of Microbiology

COURSE PARTICULARS

Course code: MCB 415

Course Title: Virology and Tissue Culture

No. of Units: 3

Status: Compulsory

LECTURER'S DETAILS

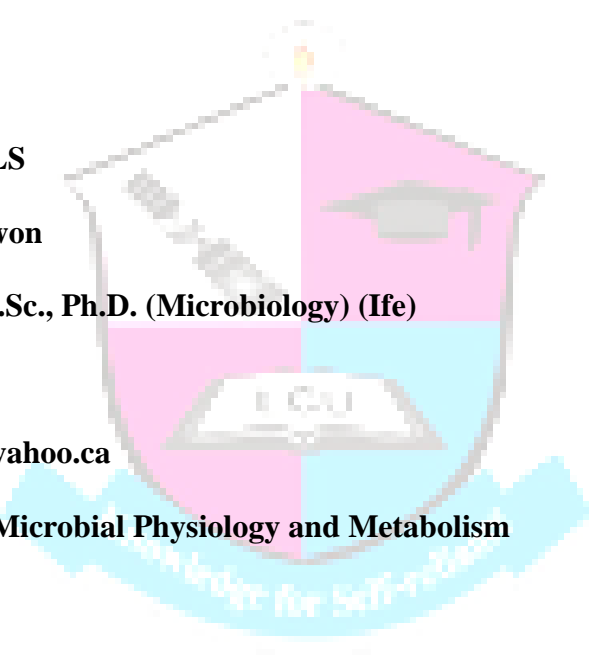
Name: Prof. AO Adejuwon

Qualifications: B.Sc., M.Sc., Ph.D. (Microbiology) (Ife)

Phone: 08069781680

Email: ao_adejuwon@yahoo.ca

Area of Specialization: Microbial Physiology and Metabolism



Name: Prof. Allan Femi Lana

Qualifications: B.Sc. (Madison, Wisconsin), M.Sc., Ph.D. (Amherst, Massachusetts)

Phone: 08126262172

Email: allanfemilana@yahoo.co.uk

Area of Specialization: Virology/Integrated Pest Management

Name: OA Akintobi

Qualifications: B.Sc., M.Sc. (Microbiology) (Ife)

Phone: 08033558903

Email: biyitob@gmail.com

Area of Specialization: Microbial Physiology and Metabolism, Mycology, Medicinal Plants

COURSE DESCRIPTION: Attention will be given to *Viruses pathogenic* for man and animals with emphasis on *virulence*, type of disease produced, methods of control. The bacteriophages will be used in some of the laboratory practicals to demonstrate the characteristics of the viruses. Represented animal viruses will also be studied in the laboratory to demonstrate the nature of viral *virulence*.

Methods of viral cultivation and identification with special reference to tissue culture techniques will also be introduced.

COURSE OBJECTIVES:

- I. To introduce students to basic virology
- II. To explain animal and human viral diseases and complications with reference to the pathogenesis thereof.
- III. Provide guidance in the prevention and control of viral diseases
- IV. Lead and guide students through some laboratory work in virology as related to culture and control of viruses as well as diagnosis of viral infection and diseases

ASSESSMENT

Class Attendance	10 marks
Tests and Assignments	30 marks
Final Examination	60 marks

LECTURE PLAN

Week	Topic
Week 1	History and principles of virology. General properties of viruses and their Importance
Week 2	Structure of viruses-size, genomes and types, capsid, envelopes and enzymes. Bacteriophages
Week 3	Viral reproduction

Week 4	General classification of viruses, classification of DNA-containing viruses, RNA-containing viruses and medically important viruses
Week 5	Viroids and Prions and their diseases-Zoonoses
Week 6	Viral pathogenesis; infected cell, infected patient
Week 7	Host defences; non-specific-Interferons
Week 8	Specific defences:active and passive immunity, viral vaccine
Week 9	Laboratory diagnosis of viral infection. Cell and Tissue culture and virus cultivation and isolation.Cancer and tumour viruses.Laboratory diagnosis in virology
Week 10	Antiviral chemotherapy, drug development. Viral oncology and basic viral Epidemiology
Week 11	Clinically important viral pathogens and Zoonotic viral infections. Swine flu, SARS etc
Week 12	Some important DNA enveloped and non-enveloped viruses
Week 13	Some important RNA non-enveloped viruses. Respiratory and enteroviruses-polio myelitis etc
Week 14	Some important RNA enveloped viruses, Retroviruses- HIV/AIDS
Week 15	Revision and Tutorials

READING LIST

1. Prescott, Harley and Klein's MICROBIOLOGY (2008) 8th Edition by J.M. Willey, L.M.Sherwood and C.J. Woolverton. MC Graw Hill, New York.
2. Lippincott's Illustrated reviews MICROBIOLOGY (2007) 2nd Edition by R. Harvey, P.C. Champe and B.D. Fisher. Lippincott Williams and Wilkins – A WoltersKluwer Company, Philadelphia Baltimore. New York. London. Buenos Aires Hong Kong Sydney, Tokyo.
3. MICROBIOLOGY – A Human perspective (2004) by E.W. Nester, D.G. Anderson, C.E.Roberts,, Jr .N.N. Pearsal, Chan and Krieg (2005) Tata McGraw – Hill,N.Y.
4. Schaum's Outlines- Theories and Problems of Microbiology (2006) 4th Edition.
5. Microbiology by Peleczar, Chan and Krieg (2005) tata McGraw – Hill, New Delhi.
6. Jwetz, Manick and Adelberg's Medical Microbiology by Brooks, G.G&. Butel and J.S.Morse (2004) 23rd Edition.
7. Microorganisms and Human diseases by E.A. Mayer.
8. White D.O and Fenner F.J. (1994) Medical Virology. Academy press.
9. Knipe, David M., Howley, Peter M. (2007) Field's Virology, Lippincott, Williams and Wilkins.

10. John B. Carter and Venetia A. Saunders (2007) Virology Principles and Applications. John Wiley and sons Ltd.
11. Baker F.J., Silverton R.E., Palliter C.J. (2001) Virology. In: Baker and Silverton's Introduction to Medical Laboratory technology. 7th edition.
12. Brian W.J., Mahy and HillarO. Kangro (1996) Virology Methods Manual. Academy Press Ltd. Haqrcourt brace and Company Publishers N.Y.
13. Fagbemi A.H (2001). Medical Virology Supplement U.I., Ibadan.

TUTORIAL QUESTIONS

Part A

1. The viruses are characteristically unique among microorganisms. Discuss
- 2a. Using well labelled diagrams only, distinguish between a named bacteriophage and an Influenza virus
- 2b. Mention the various bacteriophages you have studied
- 3a. Enumerate the general characteristics of the viral enzymes
- 3b. Discuss the various attributes of the viral genome
4. Write concisely on reproduction of a named bacteriophage

NB: Diagrams are not necessary

Part B

- 5a. What are the methods used in the detection of viruses in an infected cell?
- 5b. Write comprehensively on the following:
 - (i) Cultivation of viruses
 - (ii) Oncoviruses
6. Write concisely on groups of DNA viruses
7. What is viral immunity and how are vaccines developed?
8. Write on the Poxviridae. What are the major characteristics of the variola and vaccinia viruses?

Part C

9. Describe the structure and other characteristics of Lambda phage and a named T-even phage

NB: Diagrams are not required

- 10a. Describe the two major types of capsid symmetry that are found in viruses
- 10b. Mention the major criteria that form the basis of classification of viruses
11. How would you classify the Herpesviridae? What are the properties of members of this group?
12. AIDS is severe and pandemic. Write extensively on the causal virus and the development so far in tackling this deadly disease