



MANGALORE UNIVERSITY

DEPARTMENT OF MICROBIOLOGY

MSc Microbiology

MBH401 Virology

OBJECTIVES

After studying this course, the learners will be able to –

1. Isolation, preservation and maintenance of viral particles.
2. Techniques in managements of viral diseases.
3. To understand structural and functional characteristics of viruses.
4. To learn different types of viruses and their causative diseases.
5. To learn prevention and treatment methods of viral infections.

COURSE OUTCOME

- CO1: Identification and classification of different types of viruses.
CO2: Diagnosing viral disease of plant, animal and human.
CO3: Employment in diagnostic labs as virologist.
CO4: Practical approach to isolation and culturing of viruses.

Unit I

Virus: Definition, History, theories of origin. Importance of viral study, scope, general Morphology, Chemical composition. Ultra Structure of virion, Types of Envelops and Nucleic acids and their composition, Viral classification: Baltimore Classification, LHT classification, ICTV classification

Unit II

Plant viruses: General symptoms, economic importance, diseases in pulses: transmission and control. Special references - BCMV, PMV, SMV, ULCV, BYMV, Human viruses: importance epidemiology symptoms and control measures - HIV, H1N1 Ebola virus, SARS virus, Small pox virus, Rabies virus, Zica virus. Bacterial viruses: classification, Lytic and lysogenic cycle. Phage therapy, biotechnological applications

Unit III

Diagnostic methods in Virology: principle, procedure, merits and demerits. Physical assays: Microscopy- Electron Microscopy, Immunosorbent EM, Histopathological examination, Biological - cytopathic effect, plaque assay, Pock assay, Serological assays: Enzyme linked Immunosorbant Assay, Dot immune binding assay, RIA, Western blot analysis, Immunofluorescence

Unit IV

Cultivation of viruses: cell culture techniques and their types, fertilized egg, Maintenance of virus- Host plant inoculation test, indicator plant test Multiplication of viruses: attachment, uncoating, penetration, biosynthesis and release viral pathogenesis: transmission, tropism, virulence, host factors, host defense mechanism.

Note: Each unit is for 14h

