

**Programme: M.Sc. (Microbiology)**

**Course Code: MIO 101**

**Title of the Course: MEDICAL VIROLOGY [T]**

**Number of Credits: 3**

**Effective from Academic Year: 2018-19**

<b>Prerequisites</b>	The student should have basic understanding of viruses.	
<b>Objective:</b>	This course develops concepts in structure, classification, cultivation, assay and pathogenesis of disease-causing viruses.	
<b>Content:</b>		
<b>1.</b>	<b>Virus: Structure, Cultivation and Assay</b>	<b>(12)</b>
<b>1.1</b>	<b>Viruses</b>	
A.	Introduction.	
B.	Visualization by electron microscopy.	
C.	Structure: envelope, capsid, nucleic acid.	
D.	Defective viruses.	
E.	Classification.	
<b>1.2</b>	<b>Viral genome</b>	
	Genomic diversity - DNA or RNA, segmented or non-segmented.	
<b>1.3</b>	<b>Cultivation and assay of viruses</b>	
A.	Cultivation - <i>in vitro</i> using cell cultures: primary, secondary cultures, cell lines. - <i>in ovo</i> using chick/duck egg embryo. - <i>in vivo</i> using experimental animals	
B.	Viral multiplication and interference.	
C.	Assay by physical methods and by infectivity and cultivation methods Detection by plaque, pock, polykaryocytes, haemadsorption, immunofluorescence, cytopathogenicity, tumor formation.	
<b>2.</b>	<b>Viral Diseases</b>	<b>(12)</b>
<b>2.1</b>	<b>Viral agents of disease:</b> structure, mode of replication and pathogenesis Picornavirus: Enteroviruses (polio) and rhinoviruses (upper respiratory tract); Herpes group: Herpes simplex, Herpes zoster, Cytomegalovirus, Epstein Barr virus. Hepatitis (A, B, C, D, E); HIV; Orthomyxoviruses: Influenza. Paramyxoviruses: Mumps and Measles; Arboviruses: Togavirus - Rubella; Rhabdovirus: Rabies; Corona Virus: SARS. Emerging viral agents of disease.	
<b>2.2</b>	<b>Oncogenic viruses</b> DNA viruses: Papova and Adeno viruses, Herpes EBV and HCV. Retrovirus.	

<b>3.</b>	<b>Antiviral Combat</b>	<b>(12)</b>
<b>3.1</b>	<b>Virus-Host interactions.</b> Host specific and nonspecific defense mechanisms; neutralizing antibodies; interferon.	
<b>3.2</b>	Viral vaccine development and viral chemotherapy. Traditional vaccine preparations and newer methods - molecular approach	
<b>Pedagogy:</b>	Lectures/tutorials/assignments/self-study	
<b>References/Readings</b>	Davis, B. D., Dulbecco, R., Eisen, H. N. and Ginsberg, H. S., Microbiology, Harper and Row Publishers.	
	Microbiology and Immunology - Online, Department of Pathology, Microbiology and Immunology, University of South Carolina School of Medicine.	
	White, D. O., Fenner, F., Medical Virology, Gulf Professional Publishing.	
	Cohen, A., Medical Virology, John Wiley & Sons, Incorporated.	
	Evans, B., Perspectives in Medical Virology, Volume 1, Elsevier.	
	De La Maza, L. M., Peterson, E. M., Springer Science & Business Media.	
<b>Learning Outcomes</b>	Explain morphology, mode of infection, multiplication of medically important viruses and their treatment.	