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

Prerequisites	The student should have basic understanding of viruses.	
Objective:	This course develops concepts in structure, classification, cultivation, assay and pathogenesis of disease-causing viruses.	
Content:		
1.	**Virus: Structure, Cultivation and Assay**	**(12)**
1.1	**Viruses**	
A.	Introduction.	
B.	Visualization by electron microscopy.	
C.	Structure: envelope, capsid, nucleic acid.	
D.	Defective viruses.	
E.	Classification.	
1.2	**Viral genome**	
	Genomic diversity - DNA or RNA, segmented or non-segmented.	
1.3	**Cultivation and assay of viruses**	
A.	Cultivation - *in vitro* using cell cultures: primary, secondary cultures, cell lines. - *in ovo* using chick/duck egg embryo. - *in vivo* 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.	
2.	**Viral Diseases**	**(12)**
2.1	**Viral agents of disease**: 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.	
2.2	**Oncogenic viruses** DNA viruses: Papova and Adeno viruses, Herpes EBV and HCV. Retrovirus.	

3.	**Antiviral Combat**	**(12)**
3.1	**Virus-Host interactions**. Host specific and nonspecific defense mechanisms; neutralizing antibodies; interferon.	
3.2	Viral vaccine development and viral chemotherapy. Traditional vaccine preparations and newer methods - molecular approach	
Pedagogy:	Lectures/tutorials/assignments/self-study	
References/ Readings	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.	
Learning Outcomes	Explain morphology, mode of infection, multiplication of medically important viruses and their treatment.	