



## Department of Life Sciences, School of Science University of Management and Technology

### MB-202: General Virology

<b>Lecture Schedule</b>	Wed / Sat – <b>Section N1</b> (02:00 – 03:15 PM)	<b>Semester</b>	Spring 2021
<b>Pre-requisite</b>	--	<b>Credit Hours</b>	03 ( <b>03 contact hours</b> ) theory
<b>Instructor</b>	Muhammad Ali	<b>Contact</b>	<a href="mailto:muhammad_ali@umt.edu.pk">muhammad_ali@umt.edu.pk</a>
<b>Office</b>	S3-37 (Ext. 3449)	<b>Office Hours</b>	03:00 – 05:00 PM ( <b>Monday - Saturday</b> )
<b>Specific Outcome</b>	<p>The purpose of the course is to provide introduction to biology of animal, plant, bacterial and fungal viruses focusing on structure, infective cycle, interactions with host, transmission, and methods of detection and control. The scope of the course ranges from molecular virology to aspects of epidemiology. Current topics in virology are highlighted including aquatic viral ecology, emerging viruses and the practical.</p>		
<b>Learning Outcomes</b>	<p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Critically analyze primary literature pertaining to viruses and their interaction with host organisms and individual host cells</li> <li>• Diagram replication strategies for the major classes of viruses</li> <li>• Discuss various methods for culturing viruses</li> <li>• Explain different strategies for viral gene expression, infection patterns and pathogenesis</li> <li>• Explain the differences between different classes of viruses</li> <li>• Discuss various methods used to study viral gene expression, infection patterns and pathogenesis</li> </ul>		

	<ul style="list-style-type: none"> <li>• Identify reliable sources of information about epidemics, emerging viruses, and vaccination programs</li> <li>• Describe prevention and treatment strategies associated with various viral infections</li> <li>• Identify viruses associated with biocontrol and other beneficial technologies</li> </ul>
<b>Course Content</b>	<p>Following topics will be included in this course (<i>detailed week-wise breakup is given at the end of the document</i>):</p> <ul style="list-style-type: none"> <li>• The emphasis will be on host-virus interactions at the molecular and cellular level.</li> <li>• The major focus will be viruses with origin of animal, plant, insect, fungus and bacteria.</li> </ul>
<b>Learning Resources</b>	<p>Text Book</p> <ul style="list-style-type: none"> <li>• Carter and Saunders. Virology: Principles and Applications. Wiley Publishing, 2013</li> </ul>
	<p>Reference Book</p> <ul style="list-style-type: none"> <li>• Alan, J. C. (2005) Principles of Molecular Virology. Elsevier, Amsterdam.</li> <li>• Wagner, E.K., Hewlett M.J., Bloom D.C., and Camerini, D. Basic Virology, 3rd edition, Blackwell Publishing, 2007</li> </ul>
<b>Teaching Kits</b>	<p>All didactic material will be shared on:</p> <ul style="list-style-type: none"> <li>• PowerPoint slides and book shared on LMS</li> <li>• Recording (if any) on <a href="https://www.youtube.com/channel/UCRhcR-WWDuSrluUsRE7rd7g">https://www.youtube.com/channel/UCRhcR-WWDuSrluUsRE7rd7g</a></li> </ul>
<b>Grading Policy</b>	<ul style="list-style-type: none"> <li>• Assignments 10%</li> <li>• Quizzes 10%</li> <li>• Midterm 20%</li> <li>• Presentation 10%</li> <li>• Final 50%</li> </ul>

<b>Date (DD-MM- YYY)</b>	<b>Week</b>	<b>Topic</b>	<b>Recordings</b>
03-03-2021	1	Introduction to General Virology	On campus
06-03-2021			
10-03-2021	2	Virus Genome Replication (Part I)	On campus
13-03-2021			
17-03-2021	3	Coming soon	
20-03-2021			
24-03-2021	4	Coming soon	
27-03-2021			
31-03-2021	5	Coming soon	
03-04-2021			
07-04-2021	6	Coming soon	
10-04-2021			
14-04-2021	7	Coming soon	
17-04-2021			
21-04-2021	8	Coming soon	
24-04-2021			
<b>28-04-2021</b>	<b>9</b>	<b>Midterm</b>	
<b>01-05-2021</b>			
05-05-2021	10	Coming soon	
08-05-2021			
12-05-2021	11	Coming soon	
15-05-2021			
19-05-2021	12	Coming soon	

22-05-2021			
26-05-2021	13	Coming soon	
29-05-2021			
02-06-2021	14	Coming soon	
05-06-2021			
09-06-2021	15	Coming soon	
12-06-2021			
16-06-2021	16	Coming soon	
19-06-2021			
23-06-2021	17	Coming soon	
26-06-2021			
<b>Final Exam</b>		<b>June 28 to July 10, 2021</b>	

Last date of course withdrawal: **June 18, 2021**

Eidul Fitar: **May 10-15, 2021**

General Virology Course (Lectures, 2 CFU -16 hr):

- Structure, composition and classification of bacterial, plants and animal viruses. Viral genomes, capsids and envelope: structure-function relationships ( 2hrs);
- Different entry mechanisms of viruses into host cells: bacterial, plants and animal viruses.(2hr);
- The different steps in a viral replication cycle ( 2hrs).
- Virus-host interaction and the course taken by different virus infections. ( 2hrs).
- Virus cultivation, characterization and quantification (1hr);
- Replication strategies of ss+RNA virus ( eg: Picornavirus) (2hrs) and dsDNA viruses ( es: SV40 and Herpes simplex virus) (2hrs);
- Replication of Retroviruses. HIV and AIDS (3hrs)

Viruses Use Cellular Strategies

Replication of Positive Sense RNA Viruses

Replication of Negative Sense RNA Viruses

Subviral agents

Replication of DNA Viruses I

Replication of DNA Viruses II

Replication of Viruses Using Reverse Transcription

HIV & Related Lentiviruses

Hepadnaviruses

Structure of rhinovirus

Satellites

Prions