Name of Faculty	:	Faculty of Science
Name of Program	:	Master of Science
Course Code	:	2MSB02
Course	:	Virology
Type of Course	:	Professional Core
Year of Introduction	:	2023-24

Prerequisite	:	Basics of Virology and the diseases caused by viruses
Course Objective	:	To carry out research and development on viral diseases, development of reagents and rapid kits. To serve as a reference diagnostic center for the government and private hospitals and pathology laboratories. This Virology Course provides *a foundation to understanding virus replication cycles and mechanisms of viral entry and spread of infection*.
Course Outcomes	:	At the end of this course, students will be able to:
	CO1	Provides a foundation to understanding virus replication cycles and mechanisms of viral entry and spread of infection.
	CO2	compare and contrast methods used for laboratory diagnosis of viral infections.
	CO3	Coherently analyse and report outcomes of virological research in oral and written output.
	CO4	Remembering the various types viruses.

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			**Credits**	**Examination Marks**				
				Theory Marks		**Practical Marks**		**Total marks**
L	**T**	**P**	**C**	**SEE**	**CIA**	**SEE**	**CIA**	
4	0	0	4	70	30	0	0	100

Legends: ***L****-Lecture;* ***T****–Tutorial/Teacher Guided Theory Practice;* ***P*** *– Practical,* ***C*** *– Credit,* ***SEE*** *– Semester End Examination,* ***CIA*** *- Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.*

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping with Cos
1	Classification of viruses (ICTV / ICNV, Baltimore) Structural components: morphology and ultrastructure of virus –segmented. Virus related structures (Viroids and Prions) Replication and its Mechanism of virus (lytic and lysogenic cycle)	10	22%	CO1
2	Structure and replication of Bacteriophages, Lytic ds linear DNA virus (T2 and T7). Lysogenic ds linear DNA virus (lambda phage). SS circular DNA virus (Ø X 174). Male specific filamentous ss RNA virus (M13, F17, covid19). Oncogenic viruses.	10	22%	CO1, CO3
3	Cultivation of viruses using embryonated eggs, experimental animals and cell cultures (Cell-lines, cell strains and transgenic systems). Purification of viruses by adsorption, precipitation, enzymes, serological methods – Haeme-agglutination and ELISA. Assay of viruses – Physical and Chemical methods (Electron Microscopy and Protein and Nucleic acids studies.) Infectivity Assays (Plaque and end-point).	13	29%	CO2
4	Host and virus factors involved in pathogenesis, patterns of infection. Pathogenesis of animal viruses (Adenovirus, Herpes virus, Hepatitis virus, Picorna virus, Poxvirus and Orthomyxovirus). Pathogenesis of plant (TMV, Cauliflower mosaic virus) Host cell transformation by viruses and oncogenesis of DNA and RNA viruses.	**12**	**27%**	**CO3, CO4**

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	**25**	**25**	**-**	**25**	**25**	**0**

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Major Equipment / Instruments

Sr. No.	Name of Major Equipment/ Instruments and Software
1	Analytical Balance
2	Autoclave
3	Micropipettes
4	Stains
5	Light Microscope
6	Anaerobic jar
7	UV Chamber
8	Hot Air Oven
9	Centrifuge
10	Electrophoresis
11	SDS PAGE
12	PCR
13	Deep Freezer
`14	Autoradiography

Suggested Learning Websites

Sr. No.	Name of Website
1	https://journals.asm.org/journal/jvi

Reference Books

Sr. No.	Name of Reference Books
1	Flint S.J. V. R. Racaniello, L. W. Enquist V. R. Rancaniello, A. M. Skalka,(2003),
2	Principles Virology: Molecular Biology , Pathogenesis, and Control of Animal viruses
3	Microbiology Knipe 5thEd. Lippincott Williams & Wilkins3. MahyB.WJ. And Kangro H.O.(1 996), Virology Methods Manual