

**UNIVERSITY OF MADRAS**  
**B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY**  
**SYLLABUS WITH EFFECT FROM 2023-2024**

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
<b>336C5B</b>	<b>Virology And Parasitology</b>	<b>Core Course X</b>	<b>Y</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>5</b>	<b>25</b>	<b>75</b>	<b>100</b>

**Course Objectives**

CO1	To gain knowledge on properties and classification of viruses and collection of relevant clinical samples for diagnosing viral infections.
CO2	To understand pathogenic microorganisms of viruses and the mechanisms by which they cause disease in the human body.
CO3	To gain knowledge about reemerging viral infections and develop diagnostic skills, including the use and interpretation of laboratory test in the diagnosis of infectious diseases.
CO4	Understand the types of parasites causing infections in the intestine.
CO5	To develop skills in the diagnosis of parasitic infections.

Unit	Details	No.of Hours	Course Objectives
I	General Properties, replication and Classification of viruses (Baltimore classification), Cultivation of viruses- in animals, embryonated eggs and tissue culture, Virus purification assays - collection and transport of clinical specimens for viral infections.	12	CO1
II	Viral diseases with reference to symptoms, pathogenesis, transmission, prophylaxis and control – Arboviruses (Flavi virus), Picorna viruses (Polio virus and Rhinovirus), Hepatitis viruses (HAV, HBV, HCV, HDV, HEV), Rabies virus, Orthomyxoviruses (Influenza virus) and Paramyxoviruses (Mumps and Measles virus), Pox viruses (Variola, Vaccinia), Herpes viruses (Herpes simplex, Varicella zoster), Adeno viruses, Rota viruses and HIV viruses. Oncogenic viruses (Human Papilloma virus): Introduction, characteristics of transformed cells, mechanism of viral oncogenesis and clinical manifestations.	12	CO2
III	Emerging and reemerging viral infections (SARS, Swine flu, Ebola, Dengue, Chikungunya- and Corona) – causes, spread and preventive measures. Detection of viruses in clinical specimens – Serological and Molecular diagnosis of virus infections – Antiviral agents, Interferons and Viral Vaccines, Immunization schedules.	12	CO3
IV	General introduction to Medical Parasitology, Classification of medically important parasites. Morphology, life cycle, pathogenesis, clinical features, laboratory diagnosis, prevention and treatment of diseases caused by the following organisms: <i>Entameoba histolytica</i> , flagellates ( <i>Giardia lamblia</i> , <i>Leishmania donovani</i> ), Sporozoa- <i>Plasmodium</i> spp.	12	CO4
V	Introduction to Helminthes, Platyhelminthes – <i>Taenia</i> – <i>Fasciola</i> – <i>Paragonimus</i> – <i>Schistosoma</i> spp. Nemathelminthes – Ascaris–	12	CO5

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	<i>Ankylostoma – Enterobius – Trichuris – Trichinella – Wuchereria – Dracunculus.</i> Collection, transport and examination of specimen Laboratory techniques in parasitology - Examination of faeces for ova and cyst by direct wet mount and iodine wet mount, Concentration methods (Floatation and Sedimentation techniques), Examination of blood for parasites. Cultivation of parasites.		
	Total	60	

**Course Outcomes**

<b>Course Outcomes</b>	On completion of this course, students will;	
CO1	Understand the structure and properties of viruses, cultivation methods and diagnosis of viral diseases.	PO5,PO10
CO2	Knowledge of basic and general concepts of causation of disease by the pathogenic microorganisms and various parameters of assessment of their severity and the methods of diagnosis.	PO5,PO10
CO3	Insights to treatment options of viral diseases.	PO5,PO10
CO4	Knowledge about the importance of protozoans in the intestine.	PO5,PO10
CO5	Knowledge of Nematodes as infectious agent	PO5,PO10

**TEXT BOOKS**

1.	S., Rajan(2007). Medical microbiology, MJP publisher.
2.	JeyaramPaniker, C.K. (2006). Text Book of Parasitology Jay Pee Brothers,NewDelhi.
3	AroraD.R. and AroraB. (2002). Medical Parasitology, 1 <sup>st</sup> Edition CBS Publishers & Distributors, New Delhi.
4	Chatterjee (1986). Medical Parasitology. Tata McGraw Hill, Calcutta.
5	Parija S. C. (1996). Text Book of Medical Parasitology.4th edition, Orient Longman, AllIndia Publishers & Distributors.

**References Books**

1	Jawetz, E., Melnick, J.L. and Adelberg, E.A. (2000). Review of Medical Microbiology, 19 <sup>th</sup> Edition. Lange Medical Publications, U.S.A.
2	Ananthanarayan, R. and JeyaramPaniker, C.K. (2009). Text Book of Microbiology, 8 <sup>th</sup> Edition. Orient Longman, Chennai .
3	Conrat HF, Kimball PC and Levy JA. (1988). Virology. II edition. Prentice Hall, Englewood Cliff, New Jersey..
4	Topley& Wilsons's (1990). Principles of Bacteriology, Virology and Immunity, 8 <sup>th</sup> Edition, Vol. III Bacterial Diseases, Edward Arnold, London.
5	Finegold, S.M. (2000). Diagnostic Microbiology, 10 <sup>th</sup> Edition. C.V. Mosby Company,St.Louis.

**Web Resources**

1	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4047123/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4047123/</a>
2	<a href="https://www.ncbi.nlm.nih.gov/pubmed/21722309">https://www.ncbi.nlm.nih.gov/pubmed/21722309</a>
3	<a href="https://www.sciencedirect.com/science/article/pii/S2211753919300193">https://www.sciencedirect.com/science/article/pii/S2211753919300193</a>
4	<a href="https://cmr.asm.org/content/30/3/811">https://cmr.asm.org/content/30/3/811</a>
5	<a href="https://www.nejm.org/doi/full/10.1056/NEJMoa1811400">https://www.nejm.org/doi/full/10.1056/NEJMoa1811400</a>

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<b>Methods of Evaluation</b>		
<b>Internal Evaluation</b>	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
<b>External Evaluation</b>	End Semester Examination	75 Marks
	Total	100 Marks

<b>Methods of Assessment</b>	
<b>Recall (K1)</b>	Simple definitions, MCQ, Recall steps, Concept definitions
<b>Understand / Comprehend (K2)</b>	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
<b>Application (K3)</b>	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
<b>Analyse (K4)</b>	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
<b>Evaluate (K5)</b>	Longer essay/ Evaluation essay, Critique or justify with pros and cons
<b>Create (K6)</b>	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

**Mapping with Programme Outcomes**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					M					M	
CO2					M					M	
CO3					M					M	
CO4					M					M	
CO5					M					M	