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UNIVERSITY OF MYSORE

Estd. 1916

VishwavidyanilayaKaryasoudha
Crawford Hall, Mysuru- 570 005

No.AC2(S)/319/2023-24 Dated: 08.11.2023

Notification

Sub:- Minor modifications of the Syllabus of Microbiology (PG) programme with effect from the Academic year 2023-24.

Ref:- 1. Decision of Board of Studies in Microbiology (PG) held on 07-02-2023.
2. Decision of the Faculty of Science & Technology meeting held on 15-03-2023.
3. Decision of the Academic Council meeting held on 24-03-2023.

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The Board of Studies in Microbiology (PG) which met on 07-02-2023 has resolved to recommended and approved the minor modifications in the syllabus of Microbiology (PG) Programme with effect from the academic year 2023-24.

The Faculty of Science & Technology and Academic Council at their meetings held on 15-03-2023 and 24-03-2023 respectively has also approved the above said minor modifications to the syllabus. Hence, it is hereby notified.

The syllabus contents may be downloaded from the University Website i.e., www.uni-mysore.ac.in.

Registrar 13/11/2023
Registrar
University of Mysore
Mysore

To;

1. The Registrar (Evaluation), University of Mysore, Mysuru.
2. The Chairman, BOS/DOS in Microbiology, Manasagangothri, Mysuru.
3. The Dean, Faculty of Science & Technology, DoS in Mathematics, MGM.
4. The Director, PMEB, Manasagangothri, Mysuru.
5. Director, College Development Council , Moulya Bhavan, Manasagangothri, Mysuru.
6. The Deputy Registrar/Assistant Registrar/Superintendent, Administrative Branch and Examination Branch, University of Mysore, Mysuru.
7. The PA to Vice-Chancellor/ Registrar/ Registrar (Evaluation), University of Mysore, Mysuru.
8. Office Copy.

Annexure I

The amended M.Sc. Microbiology syllabus for the year 2022-23

I Semester	**MB 1.1 Hardcore: Virology**	
	Existing	Amended
	UNIT II Propagation, purification, characterization and identification of plant viruses: General methods of propagation of plant viruses; purification using centrifugation, chromatography and electrophoresis technique.	**UNIT II** Plant Virus: Propagation, Cultivation, Isolation (purification using centrifugation, chromatography and electrophoresis technique) and detection of Viruses
	UNIT IV • Viral transformation and oncogenesis: Oncogenic viruses, viral transformation via cell cycle control pathways, activation of cellular signal pathways and other mechanisms • Newly emerging and life threatening diseases – COVID-19 and variants, Ebola,Marburg, Machupo viruses	**UNIT IV** • Viral transformation and oncogenesis: Oncogenic viruses and mechanism of transformation by EBV, HPV and HTLV-1 • Newly emerging and life threatening diseases – COVID-19 and variants, KFD virus and ZIKA virus
MB 1.4 Soft-core: Microbial Genetics		
	UNIT II	**UNIT II** Regulation of competence in Bacillus
	UNIT IV Mutation and mutagenesis: Nature, type and effects of mutations. Mutagenesis	**UNIT IV** Mutation and mutagenesis: Nature, type and effects of mutations. Mutagenesis • Concept of gene: Muton, Recon and cistron
II Semester	**MB 2.2 Hardcore: Immunology**	
	UNIT I • Antigens and Antibodies: Antigen processing and presentation, properties of antigen, Super antigen, Hapten, Haptens and the study of antigenicity Microbes as antigen Antigen recognition and MHC molecules	**UNIT I** • Major Histocompatibility Complex (MHC) and Antigen presentation: Types, Structure and functions of MHC molecules, Presentation of Bacterial and Viral Antigens: Phagocytosis, Processing and presentation of antigens by Class I and class II MHC molecules. • Antibodies (Immunooglobulins) – structure and function, clonal selection and Ig class switching
	UNIT II	**Shifted from UNIT I** • **Antigens and Antibodies**: **Antigens:** Properties of antigen, Super antigen,

	• **Hypersensititivity**: Immunodeficiency diseases Hormones and environmental factors in induction of autoimmune processes	Hapten. • **Major Histocompatibility Complex (MHC) and Antigen presentation:** Types, Structure and functions of MHC molecules, Presentation of Bacterial and Viral Antigens: Phagocytosis, Processing and presentation of antigens by Class I and class II MHC molecules. • **Antibodies (Immunooglobulins)** – Structure and function, clonal selection, and Ig class switching. Monoclonal-antibodies and its clinical applications, Antibody engineering (Construction of monoclonal antibodies Lymphoma and other diseases by genetically engineered antibodies). • **Hypersensititivity**: Immunodeficiency diseases-
	UNIT III • **Transplantation of tissues and organs:** Exception from rejections • Tumours and immune system • UNIT IV: Immuno techniques and Immunotherapy.(Renamed)	**UNIT III** • **Transplantation of tissues and organs:** HLA Typing: • Kidney and bone marrow transplantations. Renamed and Shifted to UNIT III from UNIT IV • **Antigens and Antibody reactions :** Agglutination,complement fixation, ELISA, immunodiffusion, immunoelectrophoresis, immunoflourescence, immunoprecipitation, Radioimmunoassay and Western blotting
	UNIT IV • Vaccines and Vaccination • Manipulation of immune mechanisms • Immunotechniques and	**UNIT IV** **Immune response to Infectious diseases:** • Viral Diseases; Neutralization of Viruses, Cell mediated immunity to control Viral pathogens, Viruses can evade defense mechanisms. Bacterial

	Immunodiagnosis	Diseases: Immune response to extracellular and intracellular bacteria, bacteria can evade defense mechanisms, Immune response to Bacterial pathogenesis. Parasitic Diseases: Immune response to Malaria, Trypanosoma, Leishmaniasis. Fungal Diseases: Innate and Acquired Immunity to control fungal infections <u>Renamed Vaccines and Vaccination as Vaccines</u> • Vaccines – Definition, active and passive immunization, designing vaccines for active immunization. Live attenuated vaccines, Inactivated or killed vaccines, Subunit vaccines (Toxoids, Bacterial polysaccharide capsules, viral glycoproteins, Recombinant vaccines, multivalent subunit vaccines), DNA vaccines. Effectiveness of vaccines, Vaccine safety, current vaccines and National vaccination schedule**.**
III Semester	**MB 3.1 Hardcore: Molecular biology**	
	UNIT IV Regulation of gene expression in prokaryotes and Eukaryotes	**UNIT IV** Regulation of gene expression in prokaryotes and operon concept- lac, trp and arabinose. 2 component regulatory system- Constitutive, Regulatory genes.
IV Semester	**MB 4.2 Soft-core: Environmental Microbiology**	
	UNIT I Air Microbiology Aquatic Microbiology	**UNIT I** • Environment and Ecosystem: Physical, chemical and biological aspects of environment, natural habitats of microorganisms, microorganisms in ecosystem as producers and decomposers. • Soil microbiology: Genetic regulation of nitrogenase.
	UNIT II Soil Microbiology	**UNIT II** • **Air Microbiology:** Microorganisms in air, sources of air-borne microorganisms. Brief account of air-borne diseases of humans,

		plants and their significance. • **Aquatic Microbiology:** Eutrophication-role of nitrogen and phosphorus in eutrophication, process and control of eutrophication.
	UNIT III **Microbes in extreme environment And Space Microbiology.**	**UNIT III** **Culture-dependent and independent approaches for microbial diversity in environment:** Culture-dependent approaches and their limitations, and culture-independent molecular approaches for understanding microbial diversity in the environment. Viable but nonculturable bacteria. Introduction to Metagenomics.
	UNIT IV Cellulose, pectin	**UNIT IV** Cellulose, pectin and plastic degradation

CHAIRMAN 14/1
BOARD OF STUDIES
MICROBIOLOGY (PG)
UNIVERSITY OF MYSORE