

गोंय विद्यापीठ

ताळगांव पठार,

गोंय - ४०३ २०६

फोन : + ९१ - ८६६९६०९०४८



(Accredited by NAAC with Grade A+)

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GU/Acad –PG/BoS- CDT /2025-26/577

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CIRCULAR

The syllabus for the Change in Discipline Test (CDT) of **Master of Science in Microbiology** Programme, approved by the Academic Council in its meeting held on 7th November 2025 is attached.

The Dean/Vice-Dean (Academic) of the School of Biological Sciences and Biotechnology and the Principals of all the affiliated Colleges are requested to take note of the above and bring the contents of this Circular to the notice of all concerned, including students aspiring to pursue the Master's Programmes.

(Ashwin V. Lawande)
Deputy Registrar – Academic

To,

1. The Dean, School of Biological Sciences and Biotechnology, Goa University.
2. The Vice-Dean (Academic), School of Biological Sciences and Biotechnology, Goa University.
3. Principals of all the affiliated Colleges.

Copy to:

1. Controller of Examinations, Goa University.
2. Assistant Registrar (Admissions), Goa University.
3. Assistant Registrar Examinations (UG/PG), Goa University.
4. Director, Directorate of Internal Quality Assurance, Goa University for uploading the Syllabus on the University website.



GOA UNIVERSITY

**SYLLABUS FOR CHANGE OF DISCIPLINE TEST (CDT) FOR
MASTER OF SCIENCE IN MICROBIOLOGY PROGRAMME**

Effective from AY: 2026-27

Modules	Content
Module 1:	INDUSTRIAL MICROBIOLOGY
	Industrially important microbes, their source & isolation, Preservation & maintenance of strains, Strain improvement & development, Fermentation media, Precursors, Inducers and elicitors, Inhibitors, Antifoams, Types of bioreactors, Components, types of fermentations, Monitoring & control, Cell separation methods, Cell disruption, product concentration, product purification, Microbial productions
Module 2:	VIROLOGY
	Discovery of viruses, nature and definition of viruses, general properties, concept of viroids, virusoids, satellite viruses and Prions, Structure of Viruses, Molecular classification & nomenclature of viruses; Classification of bacteriophage, Lytic & lysogenic phages, Gene regulation in lambda phage, phage titre, oncogenic viruses, DNA and RNA viruses, metastasis, Emerging viruses, Interferon, Viral vaccine, Viruses as tools for vaccine development and molecular biology, construction of gene vectors, Viruses in therapy, Viruses in agriculture, biocontrol agents, biopesticides, Production of virus resistant/tolerant crops, cytopathic effects.
Module 3:	MYCOLOGY AND PROTISTA
	Mycology: Characters & phylogeny, anamorph & teleomorph, fungal structure & reproduction; Salient features. Fungal Physiology & Ecology, Fungal nutrition and growth, Fungal interaction, Economic importance of fungi, fungi from soil, examination of fungal morphology & staining techniques, quantifying fungal growth, enzyme by fungi Protozoology: Characteristics, cell structure, function, life cycles & reproduction, Taxonomy & Classification, ecological roles and importance, examination of blood smears Phycology: Characteristics, cell structure & function, life cycles & reproduction, Taxonomy and Classification, ecological roles & importance, Algal diseases in humans. algal culture.

Module 4	<p>INTRODUCTION TO BIOINFORMATICS</p> <p>bioinformatics as an interdisciplinary science; Scope & basis of bioinformatics, Biological Databases, File formats, Basic bioinformatics tools, phylogeny & applications of phylogenetic analysis; Applications of Bioinformatics</p>
Module 5	<p>MEDICAL MICROBIOLOGY</p> <p>Normal microflora, virulence factors, Respiratory diseases, Skin infections, Gastrointestinal diseases, Genito-urinary tract infections, Viral diseases, protozoan diseases, Fungal diseases, opportunistic mycoses, Media composition, preparation and use, identification of pathogens.</p>
Module 6	<p>AGRICULTURAL MICROBIOLOGY</p> <p>Organic matter decomposition by microorganisms, rhizosphere & endophytic microflora, microbivory, plant diseases, bacterial diseases, viral diseases, viroids, fungal diseases, control of diseases, Phytostimulation, biopesticides, Biofertilizers, Study of soil profiles, microflora of soils</p>
Module 7	<p>IMMUNOLOGY</p> <p>Innate and adaptive, tolerance and autoimmune disorders, history of immunology, immune cells, immune organs, antigen, haptens, B and T cell epitopes, T-dependent & T-independent antigens, adjuvants, antibodies, structure and function of MHC I and II, cytosolic and endocytic pathways, Primary & secondary immune responses, humoral immune response, complement system, hypersensitivity, Neubauer's counting chamber, differential leucocyte count, immunological techniques</p>
Module 8	<p>TAXONOMY AND SYSTEMATICS OF PROKARYOTES</p> <p>Microbial taxonomy and systematics, classification of microorganisms, three-domain, six-kingdom, eight-kingdom systems, endosymbiotic theory, phenotypic characters, bacteriophage typing, serotyping, chemotaxonomic markers, Nucleic acid based techniques, salient features of phylum, class & orders with representative examples of bacteria and Archaea</p>
Module 9	<p>FOOD MICROBIOLOGY</p> <p>Microorganisms in foods, sources of contamination, food spoilage & food contamination, principles and methods of food preservation, Health benefits, production of fermented oriental foods, Indian fermented foods, SCP, mushroom, enzymes, Food poisoning, food infections, food quality assurance, indices of food sanitary quality and methods of detection of food-borne pathogens, Hazard Analysis Critical Care Points (HACCP), quality management systems (QMS).</p>
References/ Readings:	<ol style="list-style-type: none"> 1. Agrios GN. (2004) Plant Pathology. 5th Edition. San Diego, Academic press. 2. Alexopoulos, C.J., Mims, C.W. and Blackwell, M., (2007) Introductory Mycology, John Wiley & Sons (Asia) Pvt. Ltd. 3. Banwart G.J., Basic Food Microbiology. (2004) 2nd Edition. CBS Publishers and Distributers Ltd.

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