गोंय विद्यापीठ
ताळगांव पठार,
गोंय - ४०३ २०६
फोन : + ९१ - ८६६९६०९०४८

Goa University
Taleigao Plateau,Goa - 403 206
Tel : +91-8669609048
Email : registrar@unigoa.ac.in
Website : www.unigoa.ac.in

(Accredited by NAAC with Grade A+)

GU/Acad –PG/BoS - GU-ART /2025-26/745 Date: 04.02.2026

CIRCULAR

The approved syllabus of the Goa University–Admission Ranking Test (GU-ART) for **Post Graduate Diploma in Clinical Genetics and Medical Laboratory Techniques** Programme 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
Digitally signed by ASHWIN V LAWANDE
Date: 2026.02.04 16:17:56 +05'30'

(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 GOA UNIVERSITY-ADMISSIONS RANKING TEST (GU-ART) FOR POST GRADUATE DIPLOMA IN CLINICAL GENTEICS AND MEDICAL LABORATORY TECHNIQUES PROGRAMME

Effective from AY: 2026-2027

Modules	Content
Module 1:	**Cell Biology**
	Cell Structure and Functions: Structure of prokaryotic cell and eukaryotic cell, Cell size, shape, arrangement, components of the cell. Plasma membrane, structure, composition and functions. Cell organelles—Structure and functions. Nucleus – Prokaryotic vs eukaryotic DNA organization, Interphase nucleus- Nuclear envelope, Chromatin, Nucleolus. Cell junctions.
Module 2:	**Biochemistry**
	Carbohydrates -Structure and Biological importance of Monosaccharides, Disaccharides, Polysaccharides and Glycoconjugates. Lipids - Classification of Lipids. Building blocks of lipids - fatty acids, glycerol, ceramide. Storage lipids - triacylglycerol and waxes. Structural lipids in membranes. Derived lipids - cholesterol & its importance. Proteins & Enzymes - Classification, structure & physico-chemical properties of amino acids, essential and non-essential amino acids. Peptide bond, Proteins- simple, conjugated and derived. Fibrous and globular proteins. Classification of Enzymes; Cofactors, Co-enzymes, Zymogens, Iso-enzymes, Factors affecting enzyme activity, Michaelis-Menten equation, Km, Lineweaver-Burk plot.
Module 3:	**Genetics**
	Prokaryotic and Eukaryotic chromosome organisation, Cell division: - Mitosis and Meiosis, Lampbrush chromosome and Polytene chromosome. Gene and chromosomal mutations, Mutagens, Characteristics of a cancer cell, Genetics & Sex Determination, Monohybrid, Dihybrid crosses and Mendel's Laws Multiple Alleles and Multiple genes, Sex linked, Sex limited and Sex influenced inheritance. Construction of a pedigree chart, Cytoplasmic inheritance, Role of Mitochondria in Maternal inheritance, Operon: Structure and regulation, transformation, transduction and transfection, lytic and lysogenic cycles.

Module 4:	**Techniques and instrumentation**
	Microbial growth control, disinfection, sterilization, antiseptic, sanitizer, germicide. Physical and chemical methods of microbial control, Light microscopy, Fluorescence microscopy, Electron Microscopy, Flow cytometry, Chromosome banding, FISH, Transmission and Scanning electron microscopy, pH meter, Centrifugation, Spectrophotometry, Chromatographic techniques – Column, thin layer, paper, affinity, gas chromatography, Gel filtration, Ion exchange and High performance liquid chromatography, electrophoresis, sonication.
References/ Readings:	1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2014). Molecular Biology of the Cell (6th ed.). Garland Science. 2. Berg, J. M., Tymoczko, J. L., & Stryer, L. (2006). Biochemistry (6th ed.). W. H. Freeman and Co. 3. Chatterjea, M. N., & Shinde, R. (2012). Textbook of Medical Biochemistry. Jaypee Brothers Medical Publishers. 4. Enderle, J. D. (2006). Bioinstrumentation. Morgan & Claypool Publishers. 5. Gardner, E. J., Simmons, M. J., & Snustad, D. P. (2006). Principles of Genetics (8th ed.). Wiley. 6. Hammes, G. G. (2005). Spectroscopy for the Biological Sciences. John Wiley & Sons, Inc. 7. Hardin, J., Bertoni, G., & Kleinsmith, L. (2014). Beckers World of the Cell (8th ed.). Pearson Benjamin Cummins Publishing House. 8. Murray, R. K., Granner, D., Mayes, P., & Rodwell, V. (2003). Harper's Illustrated Biochemistry (26th ed.). McGraw-Hill Education. 9. Naik, P. (2023). Essentials of Biochemistry. Jaypee Brothers Medical Publishers. 10. Nelson, D. L., & Cox, M. M. (2017). Lehninger Principles of Biochemistry (7th ed.). W. H. Freeman and Co. 11. Ninfa, A. J., & Ballou, D. P. (2009). Fundamental Laboratory Approaches for Biochemistry and Biotechnology. Fitzgerald Science Press, Inc. 12. Notting, B. (2009). Methods in Modern Biophysics. Springer Verlag. 13. Powar, C. B. (2010). Cell Biology. Himalaya Publishing House. 14. Powar, C. B. (2010). Genetics (Vol. 1). Himalaya Publishing House. 15. Verma, P. S., & Agarwal, V. K. (2010). Genetics (9th ed.). S. Chand Publications.