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(Accredited by NAAC with Grade A+)

GU/Acad –PG/BoS - CDT /2025-26/732 Date: 28/01/2026

CIRCULAR

The syllabus of the Change of Discipline Test (CDT) for **Master of Science in Remote Sensing and Geographical Information System** 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 Earth, Ocean and Atmospheric Sciences 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: 2026.01.28 17:00:02 +05'30'

(Ashwin V. Lawande)
Deputy Registrar – Academic

To,
1. The Dean, School of Earth, Ocean and Atmospheric Sciences, Goa University.
2. The Vice-Dean (Academic), School of Earth, Ocean and Atmospheric Sciences, 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 REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM PROGRAMME

Effective from AY: 2026-2027

Modules	Content
Module 1:	**Fundamentals of Earth and Environmental Sciences**
	Structure and composition of the Earth, Earth's energy balance and atmospheric layers, Weather, climate, and hydrological cycle, Landforms, geomorphic processes, and plate tectonics, Natural resources and environmental degradation, Ecosystems, biogeochemical cycles, and sustainability
Module 2:	**Basics of Remote Sensing**
	Principles of electromagnetic radiation (EMR), Interaction of EMR with atmosphere and surface features (soil, vegetation, water), Platforms and sensors (optical, thermal, microwave), Spectral signatures and resolution concepts, Satellite systems: Landsat, IRS, Sentinel, MODIS, etc., Applications of remote sensing in natural resource management and the environment
Module 3:	**Fundamentals of GIS and GPS**
	Introduction to Geographic Information Systems, Spatial and non-spatial data; raster and vector models, Map projections and coordinate systems, Spatial data acquisition and digitisation, Introduction to Global Positioning System (GPS), Applications of GIS in urban planning, agriculture, hydrology, and disaster management
Module 4:	**Cartography, Statistics, and Data Interpretation**
	Elements of maps: scale, projection, symbols, and legends. Contouring and interpretation of topographic maps, Basic descriptive statistics: mean, median, mode, standard deviation, Correlation and regression (conceptual understanding), Graphical representation of spatial data, Interpretation of satellite images and thematic maps
Module 5:	**Computers and Programming Concepts**
	Basics of computer hardware and software, Operating systems and file management, Concepts of databases and spreadsheets, Introduction to programming logic (flowcharts, variables, loops, conditional statements),

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	Overview of Python and MATLAB in geospatial analysis, Internet and cloud-based data access for geospatial studies
References/ Readings:	1. Lillesand, T., Kiefer, R.W., & Chipman, J. (2015). Remote Sensing and Image Interpretation (7th Ed.). Wiley. 2. Ian, H. (2010). An introduction to geographical information systems. Pearson Education India. 3. Jensen, J. R. (2009). Remote sensing of the environment: An earth resource perspective 2/e. Pearson Education India. 4. Campbell, J. B., & Wynne, R. H. (2011). Introduction to remote sensing. Guilford Press. 5. Gupta, R. P. (2017). *Remote sensing geology*. Springer. 6. Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2015). *Geographic information science and systems*. John Wiley & Sons. 7. Schowengerdt, R. A. (2006). Remote sensing: models and methods for image processing. Elsevier.

Approved by: Academic Council on 7th November 2025