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GU/Acad –PG/BoS - CDT/2025-26/692 Date: 09.01.2026

CIRCULAR

The syllabus of the Change of Discipline Test (CDT) for **Master of Science in Applied Geology** Programme, approved by the Standing Committee of the Academic Council in its meeting held on 24th & 25th 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: 2026.01.09 16:38:44 +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 APPLIED GEOLOGY PROGRAMME

Effective from AY: 2026-27

Modules	Content
Module 1:	Scope and importance of geology; branches and applications of geosciences; origin, shape, and structure of the Earth; internal layers of the Earth; introduction to plate tectonics; rocks and minerals; physical properties of minerals—colour, streak, lustre, hardness, cleavage, fracture, specific gravity; common rock-forming minerals—quartz, feldspar, mica, amphibole, pyroxene, olivine; crystal forms and symmetry; classification of minerals—silicates and non-silicates; silicate structures—framework, sheet, chain, and isolated types; economic importance and uses of minerals.
Module 2:	Classification of rocks—igneous, sedimentary, metamorphic; rock cycle; rock textures and structures; stratification and bedding; contours, scale, strike, and dip; folds, faults, and joints—types and importance; continental drift; plate boundaries and movements; earthquakes and volcanoes—causes and distribution; formation of the Himalayas; global tectonic activity
Module 3:	Laws of stratigraphy—superposition, original horizontality, cross-cutting relationships; geological time scale; major divisions of Earth's history; fossils and correlation of strata; Indian stratigraphy—major systems; geology of Goa—rock types, stratigraphy, mineral resources (iron ore, laterite, manganese); Goa Group—composition and economic importance.
Module 4:	Earth systems—lithosphere, atmosphere, hydrosphere, biosphere; hydrological cycle; fossils—definition, types, preservation, and uses; major fossil groups—molluscs, brachiopods, echinoids, trilobites, foraminifera; vertebrate evolution; human ancestry; Gondwana flora.
Module 5	Introduction to mining; surface and underground mining methods; role of geologists in mining and exploration; classification of mineral resources; environmental effects of mining; reclamation and conservation; engineering geology—rocks as construction materials; geological

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	considerations for dams, tunnels, and buildings; slope stability; landslides—causes and prevention.
Module 6	Weathering and erosion—mechanical and chemical processes; agents of erosion and deposition—rivers, wind, glaciers, and seas; landforms—valleys, dunes, moraines, deltas; drainage patterns and watersheds; introduction to geophysical methods—seismic, gravity, magnetic, and electrical; applications of geophysical surveys in geology; Earth's gravity and magnetism—basic concepts and significance.
References/ Readings:	1. Blyth, F. G. H., & de Freitas, M. H. (2018). *Geology for Engineers* (3rd ed.). CRC Press. 2. Grotzinger, J. P., & Jordan, T. H. (2020). Understanding Earth. Macmillan Learning. 3. Holmes, A. (2013). Principles of Physical Geology. Routledge. 4. Klein, C., & Hurlbut, C. S. Jr. (2021). Dana Manual of Mineralogy. Wiley. 5. Lutgens, F. K., Tarbuck, E. J., & Tasa, D. G. (2021). Essentials of Geology (13th ed.). Pearson. 6. Marshak, S. (2015). Earth Science (14th ed.). John Wiley & Sons. 7. Monroe, J. S., & Wicander, R. (2015). The Changing Earth: Exploring Geology and Evolution. Cengage Learning. 8. Mukherjee, P. K. (2013). A Textbook of Geology. World Press. 9. Rutley, F. (2019). Rutley's Mineralogy. Routledge. 10. Singh, P. (1978). A Textbook of Engineering and General Geology (3rd ed.). S. Chand & Company Ltd. 11. Duff, P. M. D. (1993). Holmes' Principles of Physical Geology. Springer. 12. Jain, S. (2014). Fundamentals of Physical Geology. Springer Geology. 13. Skinner, B. J., Porter, S. C., Park, J. J., & Park, J. (2004). The Dynamic Earth: An Introduction to Physical Geology. John Wiley & Sons. 14. Tarbuck, E. J., & Lutgens, F. K. (2002). Earth: An Introduction to Physical Geology. 7th ed. Upper Saddle River, N.J., Prentice Hall. 15. Twidale, C.R. (1975). Analysis of Landforms. 16. Black, R. M. (1988). The Elements of Palaeontology. Cambridge University Press. 17. Brookfield, M. E. (2008). Principles of Stratigraphy. John Wiley & Sons. 18. Clarkson, E. N. K. (2013). Invertebrate Palaeontology and Evolution. John Wiley & Sons. 19. Doyle, P. (2014). Understanding Fossils: An Introduction to Invertebrate Palaeontology. John Wiley & Sons.

	20. Kumar, R. (1985). Fundamentals of Historical Geology and Stratigraphy of India. 21. Press, F., & Siever, R. (2001). Understanding Earth. 22. Shah, SK. (2013). Elements of Palaeontology (1st ed.). The Geological Society of India. 23. Spencer, E. W. (1962). *Basic Concepts of Historical Geology*. 24. Berry and Mason: *Mineralogy*. CBS Publ. and Distr.

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