CENTRAL UNIVERSITY OF KERALA
DEPARTMENT OF GEOLOGY
M.Sc. GEOLOGY

Course Code	EGE 5103	Semester	I
Course Title	Stratigraphy		
Credits	3	Type	Core

This is an employability based Field geology skill development course for bio and lithostratigraphy in Geological mapping

Course Description

Stratigraphy is the science of understanding the variations in the successively layered character of rocks and their composition. These rocks may be sedimentary, volcanic, metamorphic or igneous This program aims to teach systematic stratigraphy with special reference to Indian geology with special case studies of world stratigraphy. The students are equipped with different correlation methods and stratigraphic nomenclature.

Course Outcome

By the end of the course, students are expected to be able to:

- Define and apply the principles of stratigraphy in Geological problems, describe the evolution of Precambrian and Proterozoic stratigraphic units of India.
- Summarise the main environmental conditions that occurred in each geological period, illustrate the paleogeography, tectonic history of the Earth during the Precambrian and the Phanerozoic time, apply stratigraphic methods to analyse the evolution of past environments.
- To better understand the newer fields of stratigraphy, include Sequence stratigraphy, seismic stratigraphy, cyclostratigraphy, magnetostratigraphy and chemostratigraphy.
- Intellectual and practical skills in order to apply stratigraphic principles in order to understand the stratigraphy of an area. Compare between different methods of stratigraphic correlation and apply the suitable one in an area.

Course Structure

Module - 1

Development of Stratigraphy: Contributions of the pioneers of Stratigraphy, Code of stratigraphic nomenclature. Major incidents in the Earth's History. The concept of the Precambrian. Distinguishing features and classification of the Precambrian. Precambrian stromatolites, their status as time markers and classification of the Late Proterozoic.

Module - 2

Fundamental and newer classification of stratigraphy, Lithostratigraphy: Procedures for establishing, extending and naming of Lithostratigraphic units. Biostratigraphy: Nature of biostratigraphic units – Life communities and Death assemblages. Procedures for establishing and extending biostratigraphic units. Chronostratigraphy: Formal and Informal chronostratigraphic units, Procedures for establishing and naming of chronostratigraphic units. Concepts of Magnetostratigraphy, Chemostratigraphy, Event stratigraphy and Sequence stratigraphy.

Module - 3

Distribution of Precambrian rocks in India. Indian Standard stratigraphic column, hiatuses and breaks. Models for the evolution of Precambrian crust. Shields - cratons and mobile belts. Low-grade and high-grade terrains. Precambrian shield areas. Precambrian's of southern India. Palaeozoic stratigraphy: Palaeozoic formations of India with special reference to type localities, history of sedimentation and fossil content. Mesozoic stratigraphy: Mesozoic formations of India with special reference to type localities, history of sedimentation and fossil content. Gondwana Supergroup and Gondwanaland. Deccan Volcanics. Cenozoic stratigraphy: Cenozoic formations of India. Rise of the Himalayas and the evolution of Siwalik basin. Kerala and Cambay basins. Quaternary Stratigraphy – glacial and interglacial cycles. Paleogeography and major events during different periods. Age problems in stratigraphy.

Evaluation &Grading

Lab Assessment – 10%
Skill development (Analytical, Writing and Presentation) – 10%
Class Test – 20%

End Semester Assessment – 60%

References

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- Pichamuthu, C.S. (1985), Archaean Geology, Indian Soc. of Earth Scientists, Oxford and IBH Publishing Co., New Delhi, vol.14, 221p
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- Spencer, E W (1962) Basic concepts of Historical geology, Oxford IBH, New Delhi
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