

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

Course Code	EGE 5101	Semester	I
Course Title	Geomorphology		
Credits	3	Type	Core

This is a participatory and employability based skill development course for ground water exploration, remote sensing, town and urban planning, various engineering projects etc.

Course Description

The course focuses on the origin, evolution of landforms, and the physical processes responsible for their creation and modification. This course will examine how surface processes interact to create landscapes and how climate, rock type, structure, and tectonics influence the formation of different landforms. The course also includes quantitative evaluation of landforms by morphometric analysis and identification of landforms from topographic maps and satellite images.

Course Outcome

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

- Understand the key characteristics of fluvial, coastal and tectonic geomorphology.
- Specify the linkages between geomorphic forms and processes.
- Appreciate the importance of tectonics in landform development.
- Ability to classify and describe landforms in a variety of environmental and climatic settings.
- Quantitatively use and evaluate geomorphological data with numerical and statistical methods.
- Identify, interpret and critically evaluate landforms and geomorphic processes from topographic maps, satellite images, and aerial photographs.

Course Structure

Module - 1

Fundamental concepts in geomorphology. Different models for the Evolution of landscape: Davis, Penck, King, Hack. Hill slopes: slope elements, classification, models of slope evolution, slope movement and stability factors. Influence of lithology and structure on geomorphic processes and landforms. Climatic geomorphology: Development of landforms under different climatic conditions.

Module – 2

Fluvial Geomorphology: Erosional and depositional landforms of rivers. Drainage systems and patterns. Stream ordering. Hypsometry. Morphometric elements and parameters - morphometric analysis of drainage basins. Laws of drainage composition, drainage density, stream frequency. Coastal geomorphology: Coastal processes, Coastal erosional and depositional landforms. Effect of sea-level changes. Tectonic geomorphology: Landforms in relation to tectonics. Geomorphic indicators of neotectonic activity.

Module – 3

Geomorphological mapping: Study of geomorphic features from topographic maps, aerial photographs and satellite images. Methods of preparation of the geomorphological map. Application of geomorphology in various fields of earth sciences, viz. Mineral exploration, Hydrogeology, Civil Engineering and Disaster Management. Geomorphology of India.

Evaluation & Grading

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

End Semester Assessment – 60%

References

- Agrawal, L.C. (2008). Introduction to Geomorphology. Pointer Publishers, 128p.
- Arthur L. Bloom (1978). Geomorphology (A Systematic Analysis of Late Cenozoic Landforms). Prentice-Hall, 510 p.
- Chorley, R.J., Schumm, S.A. and Sugden, D.E. (1984). Geomorphology, Methuen & Co., 605p.
- Holmes, A. (1993). Holmes Principles of Physical Geology, Edited by P. McL. D. Duff. Chapman and Hall, London; New York, 791p.
- Kale, V.S. and Gupta, A (2012). Introduction to Geomorphology. Anmol Publications, India.
- Ritter, D.F., Kochel, R.C., Miller, J.R. (2006). Process Geomorphology, Waveland Pr Inc., 652p. Huggett, R. (2016): Fundamentals of Geomorphology, Taylor&Francis, 578p.
- Savindra Singh (2018). Geomorphology, Pravalika Publications, Allahabad. 652p.
- Savindra Singh (2017). Physical Geography, Pravalika Publications, Allahabad.
- Sen, P.K. and Prasad, N. (2002). An Introduction to the Geomorphology of India. Allied Publishers Pvt. Ltd, 396p.
- Sharma, H.S. (1991). Indian Geomorphology, Concept Publishing Co., New Delhi, 358p.
- Sparks, B.W. (1979). Geomorphology, John Wiley & Sons Inc., 561p.
- Strahler A. N. and Strahler, A. H. (2008). Modern Physical Geography, John Wiley & Sons, New York, 652p.
- Thornbury, W.D. (1984). Principles of Geomorphology, John Wiley & Sons, 594p.