



**MANGALORE UNIVERSITY**  
**DEPARTMENT OF BIOSCIENCES**

**M.Sc. ENVIRONMENTAL SCIENCE**

**ESH402 ENVIRONMENTAL METEOROLOGY AND GEOLOGY**

**Course Outcomes:**

CO1 Discuss about earth movements.

CO2 Study the geographical concepts related to environment.

CO3 Gain the knowledge of climatology and weather satellite images interpretation.

CO4 Learn in detail radioactivity.

**UNIT I (13 hours)**

Earth as a planet: Motions of the earth, seasons. Laws of thermodynamics: concept of fluid mechanics. Thermal balance: Heat production and loss, sea-surface interaction. SST, heat islands, electromagnetic spectra: solar radiation, photochemical and photosensitized reactions.

**UNIT II (13 hours)**

Radioactivity: Origin of radio nuclei, natural and artificial; their effects on the ecosystem; biological effect of radiation. Concepts of residence time of moisture and gaseous components.

**UNIT III (13 hours)**

Geographical concepts related to environment: economic geography, agro – climatic regions, industry and environment. Energy sources and consumption patterns in urban and rural areas. Climatology: Elements and factors of climate, climatic control, climate change, continental influence on climate, urban and rural climate; artificial climates, climate policy.

**UNIT IV (13 hours)**

Interpretation of Weather satellite images, surface temperature measurement, cloud top height determination, rain rate and wind velocity measurement and weather prediction, Use of microcomputers in instrumentation and in measurement systems.

**References**

1. Arya, S.P., 2002. Introduction to Micrometeorology 2<sup>nd</sup> Ed.
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3. Beven, K., 2002. Rainfall-Runoff Modeling: The Primer.
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6. Gardiner, V. & Dackombe, R.V., 1983. Geomorphological field manual. Allen & Unwin.
7. Gilbertson, D.D., Kent, M. & Pyatt, K.B., 1985. Practical ecology for Geography and Biology: Survey, Mapping and Data Analysis. Hutchinson.
8. Goudie, A. (ed.), 1990. Geomorphological techniques. Unwin Hyman.

9. Haines – Young, R.H & Petch, J.R., 1986. Physical Geography: its nature and methods. Harper.
10. Jones, A.P., Tucker M.E. & Hart, J.K., 1999. Description and analysis of Quaternary stratigraphic field sections. Quaternary Research Association Technical Guide 7. QRA.
11. Lal, R., 1994. Soil erosion research methods, 2<sup>nd</sup> ed. Ankeny: SWCS.
12. Matthews, H.M. & Foster, I.D., 1986. Field work exercises in human and physical geography, Arnold.
13. Parsons, T. & Knight, P.G., 1995. How to do your dissertation in geography and related disciplines. Chapman & Hall.
14. Ritchie, W., Wood, M., Wright, & Tait, D., 1988. Surveying and mapping for field scientists. Longman.
15. Rogers, A., Viles, H. & Goudie, A., 1992. The student's companion to Geography. Blackwell
16. Tucker, M., 1988. Techniques in sedimentology. Blackwell.

