

**ELECTIVE COURSE**

**GEOG.714:**

**QUATERNARY GEOLOGY**

**3(3-0)**

**Course Objectives**

Through this course the students will be familiarized with the changes occurred in Quaternary period elsewhere in general and in Pakistan in particular.

**Learning Outcomes**

On the completion of this course the candidates are expected to be able to Collect and study archive and make available the concern information to aid in environmental studies for earth and ground water protection and locating industrial minerals.

**Course Outline**

**1. Introduction**

- Nature and scope

**2. General features of the Quaternary Period**

**3. Plio-pleistocene Boundary**

**4. The Pleistocene Period**

- Glaciations Geology
  - Glacial Periods
  - Glacial and non-glacial sediments
- Peri-glacial Features
  - Geographical distribution of peri-glacial zones
  - Past and present peri-glacial deposits
  - Permafrost- seasonally frozen grounds and the active layers
  - Peri-glacial structures
- Fluvial and inter fluvial
  - General features
  - Climatic floral and faunal characteristics

**5. Stereographical Investigations and Classification**

- Classical Models i.e. Alpines, North Europe, British, Isles, East Africa, North America
- The oceanic Record
- Dating Methods: Relative and Chronometric
- Fossil Record: Flora and Fauna.
- Sea level changes
- Correlation of Atlantic deep sea core and glacial models

**6. Holocene Period**

- General features
- Climatic changes
- Climatic sequence
- Effects on flora and fauna
- Geomorphic Processes

**Recommended Books**

1. R.G. West (2004) "Pleistocene Geology and Biology" (5th edition), Longman, UK
2. K.P. Oakley, (2003) "Man the Tool Maker", Methunen, UK.
3. D.Q. Bowen, (2002) "Quaternary Geology: A Stratigraphic Framework for Multidisciplinary work", Methunen, UK.

4. De, Terra & Paterson. T.T (2001) "Studies on the Ice Age in India and Associated Human Cultures", Anmol, Publishers, Delhi, India.
5. Movious, (2000) "The Lower Palaeolithic cultures of Southern and Eastern Asia (Transactions of the American Philosophical Society", Vol, III)
6. Higs & Broth well, (1999) "Science in Archaeology", McGraw Hills, USA.
7. T.T. Paterson & Drummond, (1990) "Span the Palaeolithic of Pakistan", McGraw hills.
8. F.R. & B. Alolchan, (1982) "The Rise of Civilization in India and Pakistan", Longman, UK.
9. D.P. Agarwal. (1981) "The Archaeology of India", Narosa Publishers, India.
10. H.D. Sinclair, (1980) "Stone Age Tools, Their Techniques, Names and functions"
11. D. Sinclair (1974) "Pre- history and Proto-history of India and Pakistan"