

## Introduction

This course is designed to introduce the basic principles of paleontology - the study of fossil organisms in the geological record. Topics to be covered include: processes of fossilization; principles of evolution as evidenced by the fossil record; taxonomy and the recognition and naming of fossil species; biostratigraphy as a means of dating a rock and/or learning about ancient environments; geochemistry of fossils as a means to understand ancient habitats and behaviors.

## Course Objectives

Students should be able to read and follow most technical papers and talks in paleontology. Develop an understanding of the discipline of palaeontology. Develop an understanding of the prehistoric life.

## Course Learning Outcomes:

On completion of the course, the students will be able to;

1. **Acquire** theoretical knowledge about prehistoric life at different stages of Geological Time Scale.
2. **Compare** different osteology of vertebrate groups.
3. **Collect** the fossils from field
4. **Evaluate** the palaeocology and palaeoenvironment associated with different faunal elements.

## Course Contents:

The history of life; Earth, Shells of earth (Atmosphere, hydrosphere, biosphere and lithosphere); Rock, types of rocks (Igneous rocks, sedimentary rocks and metamorphic rocks); Fossil, types and uses of fossils, Nature of fossils, Processes of fossilization (Study of process of dying and what processes occur to animals after their death, Geological concepts of fossilization); Geological time scale; Pre-Cambrian life, Post-Cambrian life (Paleozoic life, Mesozoic life, Cenozoic life); A brief history of the Siwaliks; Geochronometry (Uranium/Lead dating, radiocarbon dating, Fission track dating and palaeomagnetism); Evolutionary histories of camels, horses, elephants and man.

## Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

## Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

## Assessments and Examination

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks

## Books Recommended

1. Young J.Z., 2001. (3<sup>rd</sup> edition). Life of vertebrates. London, Oxford Univ. Press.
2. Dunbar C.O., 1960. Historical Geology. John Willey and Sons Inc. New York.

3. Brouwer, A., 1977. General Palaeontology, Oliver and Boyd, London.
4. Gilbert, Colbert, E.H., 1980. Evolution of vertebrates, John Wiley and Sons Inc. New York.
5. Moore, R.C. Lalicker, G.C., Fisher, A.G., 2004. Invertebrate Fossils. McGraw-Hill, New York.
6. Steven M. Stanley, 2014. Earth system History. 3rd addition.
7. Michael Foote and Arnold I. Miller, 2007. Principles of Palaeontology (3<sup>rd</sup> Ed.) Freeman & Company.
8. Michel J. Benton, 2015. When Life Nearly Died: The Greatest Mass Extinction of All Time. Thames & Hudson.

**Z-4706 Principles of Palaeontology(Lab.)**

**Cr: (1)**

**Introduction:**

The course will include an overview of important fossil groups with hands-on experience and a field trip. The laboratory course is designed to introduce students to some of the common fossils that as a palaeontologist you could encounter.

**Course Objectives:**

Students should be able to identify fossils at least to the level of phylum.  
Students should be able to identify basic rocks.

**Course Learning Outcomes:**

On completion of the course, the students will be able to;

1. **Acquire** theoretical knowledge about prehistoric life at different stages of Geological Time Scale.
2. **Compare** different osteology of vertebrate groups.
3. **Collect** the fossils from field
4. **Evaluate** the palaeoecology and palaeoenvironment associated with different faunal elements.

**Course Contents:**

Study of rocks (Igneous, sedimentary and metamorphic rocks); Identification and classification of vertebrates and invertebrate fossils; Study of molds, casts, pseudomorphs, petrified fossils, imprints, foot prints and coprolites; Study of vertebrate fossils of evolutionary importance e.g. Horses, Elephants, Primates and Camels.

**Teaching-Learning Strategies**

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

**Assignments**

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**Assessments and Examination**

Sessional Work:	25 marks
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