

Paleontology

1.1. Course Number: GE412

1.2. Contact Hours: 2-0-0

Credits: 6

1.3. Semester Offered: 4th Year-Odd

1.4. Prerequisite: Basic knowledge of Geology and Biology

1.5. Syllabus Committee Members: Dr. Alok Kumar Singh & Dr. Hemant Kumar Singh

2. Objective: The course aims introduce the students with the utility of fossils

3. Course Content: Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topics	Lectures
1	Introduction and basic concepts	Introduction, an elementary idea about origin of life; fossil record and Fossilization; Fossilization process and modes of preservation, types and uses of fossils, Living and derived fossils. Collection and preparation of fossils, Study of fossils in Museum.	6
2	Taxonomy & Species	Species concept with special reference to paleontology, Taxonomic hierarchy Theory of organic evolution interpreted from fossil record.	3
3	Invertebrates	Study of morphological characters and geological distribution of the following invertebrate groups; Brachiopoda, Bivalvia (Lamellibranchia), Gastropoda, Cephalopoda, Echinoidea and Trilobite.	10
4	Vertebrates & Gondwana flora	Origin of vertebrates and major steps in vertebrate evolution. Evolution of horse and intercontinental migrations. Human evolution, Gondwana flora, Introduction to Ichnology.	5
5	Microfossils	Elementary idea of Micropaleontology and Paleobotany. Basic ideas about Micropaleontology. Uses of Microfossils, Foraminifera, Radiolaria, and palynomorphs and their wall composition, and morphology.	6
Total			30

4. Readings:

4.1. Textbook:

- H. Woods (1963) Paleontology Invertebrate CBS Pub. & Dist., (Low Price Ed.) New Delhi. 477p.

- M. Rhona Black (1989) Elements of paleontology Cambridge University Press; 2nd Ed.
- P. K. Kathal (2012) Applied Geological Micropaleontology Scientific Publ., New Delhi, Jodhpur 230p.
- Raup, D. M., Stanley, S. M., Freeman, W. H. (1971) Principles of Paleontology, Cambridge University Press.

4.2. Reference Books:

- P. K. Kathal (1989) Applications of Microfossils CBS Publishers & Distributors, New Delhi, 198p.
- P.C. Jain and M.S. Anant Raman (2000) an introduction to Invertebrate Paleontology, Vishal Pub. Jalandhar, 346P.

5. Outcome of the course:

The students will develop capability to visualize the 'evolution of life' and its applications in interpreting of sedimentation and ancient environment. Following outcomes of this course are:

- Detailed identifying character of different Invertebrate, vertebrate, plant and Microfossils.
- Understandings of Paleobiogeography, Evolution, Taxonomy etc.
- Application of different fossils.