Geoengineering Practices

1.1. Course Number: GE101

1.2. Contact Hours: 1-0-2 Credits: 5

1.3. Semester Offered: 1st Year-Even

1.4. Prerequisite: None

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

2. **Objective:** To import knowledge about origin of primitive earth, plate tectonics, and various rocks and minerals.
3. **Course Content:** Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topics	Lectures
1	Earth	Earth, The primitive Earth, Origin of life and major geological events, Geological divisions of India, Rocks and Minerals.	4
2	Plate tectonics	Plate Tectonics, Mountain building, Earthquakes, and Volcanoes.	4
3	Natural Resources	Natural resources like groundwater, minerals, hydrocarbons, and coal.	2
		Total	**10**

List of Experiments:

- Hand specimen identification of various rocks like granite, rhyolite, gabbro, basalts, granodiorite, sandstone, limestone, dolomite schist, Mylonite, Quartzite etc.
- Hand specimen Identification of various minerals like Quartz, Feldspar, Olivine, pyroxene, Tourmaline etc.
- Macroscopic rock identification based on physical properties.
- Observation of various geological and geophysical instruments.

4. **Readings:**

4.1. Textbook:

- Jain, S. (2014): Fundamentals of Physical Geology, Springer
- Press F. and Siever R., "Understanding the Earth", W.H. Freeman & Co.
- Lowrie W. (2007) "Fundamentals of Geophysics", Cambridge University Press

4.2. Reference Books:

- Moore J. S. and Wicander R. (2001) “Physical Geology”, Brooks/Cole Pacific Grove, CA.
- Marshak S., “Essentials of Geology”, W.W. Norton & Company

5. Outcome of the course:

At the end of this course, the student will be able to understand:

- The origin of primitive earth, geological divisions of India, and various rocks and minerals.
- The plate movements, plate boundaries and effect of plate tectonics in mountain buildings, earthquakes, and volcanism