Common Pool of Discipline Specific Electives

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 **Introduction to Field Geology (L2, P2)**	**4**	**2**	**0**	**2**	**12th pass with science**	**Studied Earth System Science and Structural Geology or Equivalent**

Learning Objectives

This course on Introduction to Field Geology is intended to provide students of geology about the basic techniques of observation and description of various primary and secondary rock structures and landforms during geological fieldwork. They will learn and develop skills to extract information about an area through the investigation of topographic maps and techniques of field geology.

Learning outcomes

After completion of this course, students will develop the technique of carrying out the field work in different geological terrains. Specifically, they will be able to locate themselves in field Identify sedimentary structures in field, measure grain size in the field, prepare lithologs, identify structures in the field, and prepare and interpret profiles from the topographic maps and how to prepare a field report.

SYLLABUS OF DSE-2

Theory (30 hours)

UNIT – I (6 Hours)

Detailed Content

Rock Particles and Fragments: characters of larger rock fragments, pebbles etc.; Shape and surface markings; Dimensions of Particles and fragments; composition; shape; angular particles; subangular particles; rounded particles;

UNIT – II (6 Hours)

Detailed Content

Sedimentary Structures: process of formation and their interpretation; laminae, bed, ripple marks, wave marks, rill marks, mud cracks, slump marks, cross-stratifications etc. Importance of litholog (theory)

UNIT – III (6 Hours)

Detailed Content

Deformed rocks: Tilted and folded strata; Principal kinds of folds or flexures; Types of folds; Strike, dip, plunge and pitch; Classification of faults; kinds of displacement; principal evidences of faulting; relation of folds and faults; Topographic expression of folds and faults.

UNIT – IV (6 Hours)

Detailed Content

Landforms in various environment: Fluvial landforms, coastal landforms, aeolian landforms, and glacial landforms.

UNIT – V (6 Hours)

Detailed Content

Topographic maps and profile sections: Contours; spacing of contours; scale; direction; requisite data on a completed contour map. Techniques used in examination of outcrops.

Practical Component- (60 Hours)

In the practical class, all components of the field geology and measurement techniques will be demonstrated and practised in the field. The practical classes of this course will be conducted at a go through field visit (10 days) in a suitable geological terrain in India. This will cover- Measuring large grain sizes in the field (Grid method), Identification of sedimentary structures, Preparation of litholog, Identification of landforms (glacial/fluvial/coastal/aeolian), Identification of folds and faults; evidences of faulting, Construction of a profile section; Enlargement of profile section, Measurement of slope from the topographic map, Location in the toposheet thorough GPS/bearing, Measurement of dip, strike, trend, plunge, pitch, Identification of bedding, flow banding, metamorphic foliation.

Essential

Field Geology by F.H. Lahee, CBS Publishers
Basic geological mapping, R. Lisle, Wiley-Blackwell, 2014

Recommended readings

Sedimentary Rocks in the field, M. Tucker, Wiley-Blackwell, 2011