

## DISCIPLINE SPECIFIC CORE COURSE– DSC – 15: Geological Mapping (L2, P2)

### 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		
<b>DSC – 15:</b> Geological Mapping (L2, P2)	<b>4</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>12<sup>th</sup> Pass with science</b>	<b>Studied Earth System Science, Structural Geology, and Mineralogy or Equivalent</b>

#### Learning Objectives

This course on geological mapping to provide basic skills to carry out geological fieldwork in different terrains and prepare a geological map with all aspects related to lithology, structures, deformation patterns. Which is essential for basic understanding of geoscience and any detailed exploration activity.

#### Learning Outcomes

After going through this course, students will develop the following skills and knowledge about: How to identify a rock and broadly define its composition? How to identify and measure lithological and/or structural details of rocks at the outcrop/hand-specimen scale? How to plot the data on a base map/toposheet to create a lithological and/or structural map of the terrain? How to appreciate the possible origin of the rock and their genetic process. How to reconstruct the geological history of the terrain?

#### SYLLABUS OF DSC-15

##### Theory (30 hours)

##### UNIT – I (6 hours)

**Introduction to toposheets and maps:** Concepts of scale, contour density, numbering system. Global Positioning Systems, their types and uses. Choosing a suitable geological traverse.

##### UNIT – II (6 hours)

**Outcrop geology:** Pattern of beds in a undulating topography – rule of V. Identification of rock types, and their classification based on field criteria. Textural features of different rocks through field study and microscopy. Preparation of lithologs.

##### UNIT – III (6 hours)

**Basic concept of structural measurements:** Measurement of Strike, dip, trend, plunge, pitch etc. at the outcrop in the field. Distinguishing characters of planar and linear structures in the outcrop scale. Overprinting nature of folds/ metamorphic foliations etc.

##### UNIT – IV (6 hours)

**Folds:** Identification and structural measurement of a fold in the field. Geometric classification of a fold based on field data. Understanding the outcrop pattern of a fold in non-ideal sections

##### UNIT – V (6 Hours)

**Faults:** Distinguishing criteria of a fault in the field. Understanding the slip pattern of faults in an outcrop. Measuring the orientation of different planar and linear structures associated with a fault.

**Practical Component- (60 Hours)**

In the practical class, all the aforesaid techniques of measurement and identification 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

**Essential/recommended readings**

Lahee F. H. (1962): Field Geology. McGraw Hill

Billings, M. P. (1987). Structural Geology, 4th edition, Prentice-Hall.

Lisle, R.J., Brabham, P., Branes, J. 2011. Basic Geological mapping, Wiley

**Suggestive readings**

Davis, G. R. (1984) Structural Geology of Rocks and Region. John Wiley

Park, R. G. (2004) Foundations of Structural Geology. Chapman & Hall.