Structural Geology

SWAYAM Prabha Course Code – C13

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COURSE OUTLINE	The subject STRUCTURAL GEOLOGY deals with the shape (geometry), Displacements (kinematics/strain) and forces (dynamics/stress) in Earth and Planetary bodies. In other words, the subject deals with the deformation of rocks and their architecture and development through geological time scales. Deformed rocks and structures conceal a series of tales, decoding of which is the challenge of a structural geologist in presenting the evolution of our planet earth. The knowledge of structural geology is applied in may practical fields e.g., Hydrocarbon, Mineral and groundwater explorations, Construction industries, natural hazard analysis, landscape evolution etc. This course will primarily focus upon the basics and introductory level understanding of the subject.

COURSE DETAILS

S. No	Module ID/ Lecture ID	Lecture Title/Topic
1	M1L1	Introduction-I
2	M1L2	Introduction-II
3	M2L1	Structural Elements and Measurements
4	M2L2	How to measure strike-dip-pitch/rake-plunge
5	M2L3	Stereographic Projection in Structural Geology
6	M3L1	Concept of Strain and Deformation (Part-I)
7	M3L2	Concept of Strain and Deformation (Part-II)
8	M3L3	Strain Measurement
9	M4L1	Stress (Part- I)
10	M4L2	Stress (Part- II)
11	M5L1	Basics of Rheology (Part-I)

12	M5L2	Basics of Rheology (Part-II)
13	M5L3	Basics of Rheology (Part-III)
14	M5L4	Complex Rheology
15	M5L5	Role of External Parameters
16	M6L1	Crystal Defects and associated structures
17	M6L2	Cataclastic Deformation
18	M6L3	Intracrystalline Deformation
19	M6L4	Diffusive Mass Transfer
20	M7L1	Planar Fabrics (Foliation/ Cleavage/ Schistosity)- I
21	M7L2	Planar Fabrics (Foliation/ Cleavage/ Schistosity)- II
22	M7L3	Linear Fabrics (Lineation)
23	M8L1	Folds and Folding: Basic Concepts
24	M8L2	Folds and Folding: Classifications
25	M8L3	Folds and Folding: Dip Isogons and Mechanisms
26	M8L4	Folds and Folding: Superposed Folding
27	M9L1	Porphyroblasts
28	M9L2	Boudinage & Pinch-and-Swell Structures-I
29	M9L3	Boudinage & Pinch-and-Swell Structures-II
30	M9L4	Stereonet Problem I: True dip from two apparent dips
31	M9L5	Stereonet Problem II: True dip from strike and one apparent dip
32	M9L6	Stereonet Problem III: Pole to the Plane
33	M9L7	Stereonet Problem IV: Fold axis and Axial plane
34	M9L8	Stereonet Problem V: Fold geometry from pole data of two limbs
35	M10L1	Fractures and Joints I

36	M10L2	Fractures and Joints II
37	M10L3	Faults and Faulting I
38	M10L4	Stereonet Problem VI: Fold geometry from interlimb angle and fold axes
39	M10L5	Stereonet Problem VII: Fold geometry from pitch of the limbs on another plane
40	M11L1	Faults and Faulting II
41	M11L2	Ductile Shear Zones I
42	M11L3	Ductile Shear Zones II
43	M12L1	Basic of Litho-Structural Mapping
44	M12L2	Paleostress analysis
45	M12L3	Graphical Problem
46	M12L4	Three point problem
47	M12L5	Construction of topographic profile
48	M12L6	Construction of Geological Cross-section