STRUCTURAL GEOLOGY

TYPE OF COURSE: Rerun | Core | UG
COURSE DURATION: 12 weeks (18 Jan’21 - 9 Apr’21)
EXAM DATE: 25 Apr 2021

PRE-REQUISITES: Basic Math/Physics and some knowledge of Geological/Earth Sciences
INTENDED AUDIENCE: BE - Civil Engineering
INDUSTRIES APPLICABLE TO: Construction Industry / Hydrocarbon Exploration and Mining Industries

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.

ABOUT INSTRUCTOR:
Santanu Misra is a Professor of Structural Geology in the Department of Earth Sciences of Indian Institute of Technology, Kanpur. He is also a DST Swarnajayanti Fellow, PK Kelkar Research Fellow and INSA Young Scientist. Santanu teaches Structural Geology and leads the Experimental Rock Deformation Laboratory in IIT Kanpur. His main research focus is to understand the mechanical response of composite rock systems at various deformation conditions.

COURSE PLAN:
Week 1: Introduction, Basic Concepts
Week 2: Structural Elements, Measurements, Stereographic Projection
Week 3: Stereographic Projections of linear and planer features
Week 4: Concept of Stress
Week 5: Concept of Strain
Week 6: Rheology of Rocks
Week 7: Deformation Mechanism of Rocks
Week 8: Folds and mechanisms
Week 9: Superposed folds
Week 10: Foliation and Lineation
Week 11: Boudinage and related structures
Week 12: Faults and Joints, Ductile Shear Zone, Structural Mapping, Summary and Final Discussion