Structural Geology

Course # EAES 3256

Credits 6

Pre-requisites and Co-requisites: Introduction to Earth and Environmental Sciences, Introduction to Geological Materials and Resources, Sedimentary Geology and Stratigraphy

Course Description

Welcome to Structural Geology, the study of the physical evidence and mechanisms of rock deformation, such as jointing, faulting, folding, and flow. These structures provide information on the Earth's crust's history, geologic hazards (such as earthquakes, volcanoes, and landslides), and the distribution of natural resources and contaminants. This course provides an introduction to the theoretical principles, observational methodologies, and analytical methods utilized in contemporary structural geology. Geologic formations are investigated in the field and via the analysis of published data sets in order to comprehend basic processes. Structural geology requires understanding of geological maps and basic knowledge of geological mapping. Therefore, in this course you will be introduced to the basic techniques of geological mapping and field observations to collect structural data for geological mapping. The goal of this course is to help you better appreciate the relevance of structural geology to a wide range of problems in the Earth and environmental sciences and to apply the knowledge and skills you acquire to whatever field of study you choose by putting your own observations within the context of addressing these problems.

Course Learning Outcomes

Upon completion of the course students will be able to:

- Observe geological structures in an outcrop and collect data for structural analyses
- Synthesize your observations from hand samples, outcrops, and geological maps of geological structures
- Analyze collected structural data and interpret the results of your structural analysis in the context of the geological evolution of a study area
- Formulate hypotheses to explain the genesis of the observed structures, and test these hypotheses using physical or numerical models
- Assess the relevance of an unknown geological structure to a problem be it in volcanology, hydrology, energy resources, earthquake risks, or planetary science

Course Assignments and Grading

Item	Weight

Active attendance	5%
Practical activities	30%
Quiz	10%
Final fieldtrip report	10%
Midterm exam	15%
Final Exam	30%