

Advanced Structural Geology (3 credit hours): The primary objective is to explain structural geology concepts and tools that aid in developing an internally consistent 3-D picture of the crustal structure, and evaluating specific reservoir characteristics such as top seal integrity and fault seal. Together, the instructors and students will develop a structural analysis "best practices" workflow. The class is structured according to tectonic setting (e.g. passive margins, transform margins, fold-thrust belts, continental rift systems). Within each tectonic setting, we cover regional geology, fault system geometry, kinematics, trap evolution, and the tools a practicing geologist would use to constrain a 3-D picture of the crustal structure.

Course Outline

1. Geologic map interpretation
2. Fault and fold system classification based on tectonic setting
3. Geometric analysis of faults and folds
4. Visualization techniques. (Geoviz, VoxelGeo)
5. Fault system geometry and evolution with case studies local and regional.
6. Fault system evolution based on case studies
7. Cross-section reconstruction
8. Fault Seal/Stratigraphic Juxtaposition Analysis
9. Rift history analysis
10. Fractured reservoir analysis