Exploration for Unconventional Oil & Gas
Available to EGI Corporate Associate Members

Overview
This three-to-five day short course is intended for geologists, geophysicists, and engineers who desire a basic but comprehensive overview of current and emerging concepts, technologies, and processes related to shale gas and shale oil resource development. Examples are primarily taken from North American shale development, from the Barnett shale gas play to the Eagle Ford, Niobrara, and other liquids-rich shale plays. General learnings and concepts are applicable worldwide.

Fundamentals of Exploration – topics include:

1. Overview of the Oilfield Life Cycle
2. The nature of petroleum and other reservoir fluids:
   • Groundwater, “formation water,” chemistry, and salinity
   • Crude oil, oil gravity, pour point
   • Natural gas, other gases, condensate
3. Reservoir rocks (primarily sedimentary):
   • Clastic rocks: sandstones and shales
   • Carbonate rocks: limestones and dolomites
   • Porosity and permeability, burial and compaction, diagenesis
4. Structure and petroleum traps:
   • Anticlines and domes
   • Fault traps and salt domes
   • Unconformities and pinch-outs
   • Hydrodynamic traps
5. Petroleum exploration:
   • Geology: surface mapping, subsurface interpretation, knowing the rocks
   • Geophysics: seismic acquisition and interpretation, potential fields methods
   • Scale and scope: reconnaissance, basin modeling, prospect generation, limitations of data and methods, 2D versus 3D
6. Well evaluation:
   • Mudlogging: ROP, cuttings lithology interpretation, gas detection, shows
   • Wireline logging, types of well logs, what they measure
   • Coring and core analysis
   • Well testing, drillstem tests, wireline formation testing

**FOCUS ON UNCONVENTIONALS – TOPICS INCLUDE:**
1. Shale depositional environments and sedimentology
2. Critical influence of specific mineralogy present in the shales (calcareous and siliceous)
3. Source rock geochemistry, organic content, kerogen type, and thermal maturity
4. Petrophysical interpretation in shales
5. Importance and genesis of natural fractures
6. Micro-imaging technologies of nano-porosity and pore throat morphology
7. Key differences between shale gas and liquids-producing unconventional reservoirs
8. North American shale plays as reference types for international exploration