



## Use of Full Azimuth Seismic and Microseismic for Unconventional Plays - FAMS

### COURSE

#### About the Course

For surface seismic, participants will learn to evaluate azimuthal seismic in fractured reservoirs or resource intervals needing hydro-fracturing. The course presents reflection seismic and microseismic acquisition-design, processing, interpretation, and integrating support data narrow-azimuth seismic, well logs, production tests, VSPs, and core work. For microseismic, participants will learn the strengths, weaknesses, limitations, and benefits of microseismic imaging of hydraulic fractures.

*"All young/old earth scientists in unconventional need this course. I enjoyed thinking about the more complex levels of how to model AVO, and the azimuthal cases."* - Geophysicist

*"Amazing, very knowledgeable and great instructor."* - Geophysicist

#### Target Audience

For surface seismic, experienced geoscientists working seismic to evaluate unconventional resources, and/or fractured reservoirs that require hydraulic stimulation. For microseismic, all professionals using microseismicity to plan, monitor, evaluate, and diagnose stimulations will find this course useful.

#### You Will Learn

Participants will learn how to:

- Specify what geologic and/or engineering questions need to be asked about your reservoir and your play
- Specify the geophysical data that need to be acquired; design acquisition; specify the processing sequence
- Interpret the final processed data and test different interpretations
- Identify the support data required for the successful fracture and in-situ horizontal stress characterization
- Extract engineering benefits and meaning from microseismic data
- Appraise the utilities, capabilities, and limitations of microseismic imaging
- Develop insights and fundamental questions for microseismic projects
- Identify the support data needed to give a complete picture of the results
- Weigh field deployment options
- Assess stimulation designs

## Course Content

- Fundamentals of reflection seismology; seismic anisotropy - its causes and uses
- Issues, goals, and pitfalls in seismic full-azimuth acquisition
- Seismic data processing - nonazimuthal and azimuthal
- Interpretation of azimuthal interval velocities and azimuthal amplitudes for in-situ stress and natural fractures; evaluation
- Fundamentals of seismic modeling for anisotropy, especially common assumptions in different modeling packages
- Microseismic: opening statements and discussion, historical background, Yeoman science 101
- Hydraulic fracture technology, in-situ and other studies of hydraulic fracture geometries
- Earthquake seismology and hydraulic-fracture-induced microseismology
- The means and the methods of microseismic imaging
- Examples I: results - the dots
- Examples II: interpretation and integration
- Pitfalls, benefits, FAQs
- Wrap-up discussion

## Product Details

Categories: [Upstream](#)

Disciplines: [Geophysics](#) [Unconventional Resources](#)

Levels: [Specialized](#)

Product Type: [Course](#)

Formats Available: [In-Classroom](#)

Instructors: [Heloise Lynn](#)