

Geophysical Data Acquisition and Processing

Participants:

Team a:

Team b:

Team c:

Team work will consist of:

Summary/Presentation of learning points **previous** day

Formulating 3 multiple-choice quiz questions related to the **same** day.

Day1: Geophysical methods

- 08:00-09:00 Welcome
- 09:00-10:00 Introduction: Biography, Program, 52 Things, Teams, Time Schedule
- 10:00-10:30 Gravity
- 10:30-10:45 Exercises: Gravity map anomaly (paper)
- 10:45-11:15 Exercises: Gravity resolution (computer)
- 11:15-11:30 Refreshments
- 11:30-12:15 Magnetism I
- 12:15-13:00 Exercises: Finding your local magnetic field
- 13:00-14:00 Lunch
- 14:00-14:30 Introduction and scope of geophysics (3:58)
 - Gravity surveying (2:26)
 - Magnetic surveying (3:17)
 - Electrical surveying (5:44)
- 14:30-15:00 Magnetism II
- 15:00-15:15 Refreshments
- 15:15-16:00 Exercises: Grav-Mag responses
- 16:00-16:30 Electrical
- 16:30-17:00 Exercises: Resistance, Surveying, Profiles (paper)
- 16:30-17:00 Team a: Preparation Summary of day 1
Team b: Formulation of 3 multiple choice questions of day 1

Day2: Seismic Acquisition

- 08:00-08:45 Team a: Summary of day 1
- 08:45-09:15 Team b: Quiz questions of day 1
- 09:15-09:45 Electro-Magnetic Surveying
- 09:45-11:00 Exercises: EM, TEM (paper)
- 09:45-11:00 Exercises: CSEM, (computer)
- 11:00-11:15 Refreshments
- 11:15-11:45 Seismic Refraction Surveying
- 11:45-13:00 Exercises: Refraction (computer)
- 13:00-14:00 Lunch
- 14:00-14:30 The electromagnetic spectrum (5:19)
 - Airborne Geophysical Survey Mapping (2:30)
 - EMGS Introduction to CSEM (3:15)
 - Seismic Survey Methods (1:26)
 - PGS Seismic video (4:13)
 - Seismic Land survey (10:34)
- 14:30-15:30 Seismic Reflection Surveying, Seismic Workflow, Seismic 2D-3D-4D
- 15:30-15:45 Refreshments
- 15:45-16:30 Exercises: Shot ray paths, Field record(paper)
- 16:30-17:00 Wave Propagation I
- 17:00-17:30 Team b: Preparation Summary of day 2
Team c: Formulation of 3 multiple choice questions of day 2

Day3: Seismic Processing

- 08:00-08:45 Team b: Summary of day 2
- 08:45-09:15 Team c: Quiz questions of day 2
- 09:15-09:45 Wave Propagation

- 09:45-11:00 Exercises: Surface & Subsurface diagrams, Fermat, Snell (paper)
- 11:00-11:15 Refreshments
- 11:15-12:00 Exercises: Reflection & Transmission (paper)
- 12:00-12:30 Seismic Acquisition & Processing
- 12:30-13:00 Exercises: Sampling & Aliasing (paper)
- 13:00-14:00 Lunch
- 14:00-14:15 Seismic Waves: P, S, Rayleigh, Love (0:67)
- Seismic Wave Propagation: Fermat, Huygens, Snell(20:69)
- Discrete FT, Fast FT (20:38)
- 14:15-15:00 Exercises: Statics, Stacking Velocity Picking (paper)
- 15:00-15:30 Time & Frequency domain, DFT, FFT
- 15:30-15:45 Refreshments
- 15:45-16:15 Exercises: Discrete Fourier Transform (DFT) (computer)
- 16:15-17:00 Exercises: Fast Fourier Transform (FFT) (computer)
- 17:00-17:30 Team c: Preparation Summary of day 3
- Team a: Formulation of 3 multiple choice questions of day 3

Day4: Seismic Processing

- 08:00-08:45 Team c: Summary of day 3
- 08:45-09:15 Team a: Quiz questions of day 3
- 09:15-09:45 Improving Signal-to-Noise
- 09:45-10:15 Exercises: KF domain
- 10:15-11:00 Improving vertical resolution
- 11:00-11:15 Refreshments
- 11:15-12:45 Exercises: Correlation, Convolution, Deconvolution (paper)
- 12:45-13:00 Improving horizontal resolution
- 13:00-14:00 Lunch
- 14:00-15:00 Isotropic Imaging (Ian Jones) (60:00)
- 15:00-15:30 Exercises: Migration displacement, Diffraction curves, (paper)
- 15:30-15:45 Refreshments
- 15:45-16:15 Exercises: Migration using diffraction curves (paper)
- 16:15-16:30 Time-to-Depth conversion
- 16:30-17:00 Exercises: TD conversion by vertical stretch (paper)
- 17:00-17:30 Team a/b: Preparation Summary of day 4
- Team b/c: Formulation of 3 multiple choice questions of day 4

Day 5: Special Topics

- 08:00-08:45 Team a/b: Summary of day 4
- 08:45-09:15 Team b/c: Quiz questions of day 4
- 09:15-10:00 Exercises: DT conversion (paper)
- 10:00-10:30 Direct Hydrocarbon Indicators (DHI)
- 10:30-11:00 Exercises: DT conversion (paper)
- 11:00-11:15 Refreshments
- 11:30-12:30 Exercises: Amplitude Analysis (paper)
- 12:30-13:00 Spectral Decomposition
- 13:00-14:00 Lunch
- 14:00-14:45 Grey vs color scale (0:64)
- Expected Value (9:02)
- 14:45-15:15 VOI: What to spend on a new survey or study?
- 15:15-15:30 Exercises: VOI (computer)
- 15:30-15:45 Refreshments
- 15:45-16:00 Exercises: VOI (computer)