

**Seismic Interpretation and Reservoir Characterization  
For Oil & Gas exploration**

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<b>Meeting</b>	<b>Date</b>	<b>Subject</b>	<b>Details</b>
1		<b>Introduction to seismic exploration methods</b>	<b>Seismic surveys, basic seismic data processing and signal processing, the CMP method</b>
2		<b>Hands on: Introduction to the seismic interpretation system</b>	<b>Introduction the Paradigm's software system. Loading seismic data, basic visualization and interpretation tools</b>
3		<b>Basic seismic processing</b>	<b>Overview of the basic procedures required to create seismic images</b>
4		<b>Hands on: Interpretation of a 3D seismic survey</b>	<b>Major horizon interpretation and mapping</b>
5		<b>Prestack data and seismic velocity</b>	<b>Why velocity? How do we estimate the seismic/subsurface velocity? Prestack data analysis</b>
6		<b>Hands on</b>	<b>Time to depth conversion</b>
7		<b>Seismic Migration</b>	<b>What is seismic migration and how it affects seismic interpretation</b>
8		<b>Hands on</b>	<b>Stratigraphic interpretation and attributes.</b>
9		<b>Reservoir Characterization: AVO and amplitude inversion theory</b>	<b>Inversion of seismic data to rock and fluid properties</b>
10		<b>Hands on</b>	<b>Interpretation of AVO and impedance attributes. Amplitude mapping</b>
11		<b>Seismic-well calibration</b>	<b>Principles of seismic-to-well tie</b>
12		<b>Hands on</b>	<b>Synthetic seismograms and seismic to well calibration</b>
13		<b>Quantitative Interpretation</b>	<b>Principles of Quantitative Interpretation for reservoir characterization.</b>

**Rules of the game:**

1. Two formal assignment will be submitted for grading
2. Final exam : Multiple choice style
3. Final grade: 30% exam & 70% assignments
4. Participation in "hand on" sessions is mandatory

**Reference books:**

- **Interpretation of 3D Seismic Data, Allister Brown, AAPG memoirs 42, SEG Investigations in Geophysics, No. 9.**
- **Seismic Data Analysis, Volume I, Oz Yilmaz, Investigations in Geophysics No. 10**
- **Papers for background reading will be distributed in class.**