Summary
The course is aimed at seismic interpreters working in deepwater depositional systems and will focus on seismic stratigraphic interpretation. The emphasis is on utilising practical workflows for mapping, predicting and quantifying deepwater reservoirs.

Learning Outcomes
Participants will learn to:

1. Develop a systematic approach to mapping, and interpreting deepwater depositional systems at scales from basin to individual reservoirs.
2. Evaluate seismic facies to create depositional models and predict reservoir presence, distribution, and quality.
3. Assess implications of interpretations on lithology, net-to-gross, and reservoir properties.

Duration and Training Method
A three-day classroom course comprised of a mixture of lectures, workshop, exercises and case studies.

Who Should Attend
Geoscientists working on deepwater sediments, whether in exploration, appraisal, development or production.

Prerequisites and Linking Courses
Participants will benefit if they have some knowledge of deepwater sedimentology but this will be covered to a fundamental level on the course. There are a wide range of linking Nautilus Training Alliance field courses that explore deepwater clastic systems worldwide, including N009 (Sedimentology, Stratigraphy and Reservoir Geology of Deepwater Clastic Systems (County Clare, Ireland)), N033 (Characterisation, Modelling, Simulation and Development Planning in Deepwater Clastic Reservoirs (Tabernas, Spain)) and N485 (Advanced Seismic Interpretation).

Course Content
Lectures will provide a summary of the fundamentals of deepwater depositional systems. The principal goal of the course is to provide subsurface seismic interpreters with practical workflows for interpretation and hands-on experience in seismic stratigraphic interpretation.

Day 1:
Deepwater depositional systems – fundamentals
A brief overview and reminder so we are all using similar language
- Depositional processes and facies
- Sequence stratigraphic setting
- Submarine Fan types and controls

Slope types and Key depositional elements (Channels, MTC’s, Sheets)

An overview of slope types based on degree of structuration and confinement of depositional systems. Identification of the key facies elements common to all deep-water deposits. This will form the basis for the rest of the course.

Application of workflow for channel systems

Channels are major reservoir systems on slopes. We will investigate the downdip changes in channel style across a slope and the associated internal stratigraphic and facies architecture. Channels are very variable and the key is to recognise elements which are common to each as a basis for initial mapping. This allows us to develop a simple but highly effective workflow for systematic analysis of channel systems.
- Mapping methodologies
- Stratigraphic architecture
- Facies prediction and reservoir quality

Day 2:

Application of workflow for sheet systems

Sheet sands occur in a wide variety of setting including ponded basis, stepped slopes and basin floors. However we can generate an analytical approach and workflow which is applicable in all of these settings. The key is in understanding the development of slope topography. This can often be subtle and requires careful observations and frequently careful depth conversion of the data.
- Mapping methodologies
- Stratigraphic architecture
- Controls of slope topography
- Facies prediction and reservoir quality

Application of workflow for Mass Transport Complexes

Mass Transport Complexes only very rarely form reservoirs with sustainable production rates in deep water. However we can recognise seven ways in which they can be critical in controlling the distribution and character of reservoirs and as potential seals. We will investigate the following:
- Mapping methodologies
- Stratigraphic architecture
- Impact on reservoir distribution
Stratigraphic traps

Stratigraphic traps can be important throughout a basin history from early exploration to new plays in a mature basin. Without strong, calibrated DHI’s they will always be relatively high risk plays. The key is how we can keep them in our prospect portfolio to a point at which we might consider drilling one. We will discuss the significant factors that help us focus on areas with the greatest stratigraphic trapping potential:
- Significance
- Definition

Application of analogues - maximising the value of using analogues

At all stage of the E&P cycle, data is always less than we would really like so we turn to the concept of ‘Analogues’. With C&C reservoirs we have identified at least twelve ways in which the concept is used in the industry. This can lead to confusion and reduce impact. We will provide some clarity around the concept and thereby start to maximise the value of Analogues.

Day 3:

Workshop using seismic data