<별첨2> 강의 계획서

RPS

2.5. Course Content

The plate tectonic processes generating sedimentary basins, the structural development and the geometry of each basin type are outlined and the development of depositional systems within basins are described. Emphasis will be placed on the processes that profoundly influence the temporal and spatial structural variability of structural styles, their influence on sediment transport pathways and hence, trap geometry and reservoir predictions. This will lead to an appreciation of why it is often difficult to distinguish the effects of tectonic controls from those of other factors (e.g. sea-level changes). The resultant tectonic and stratigraphic evolution is illustrated by means of strategic basin case studies taken from various prospective hydrocarbon provinces to emphasize the impact of this tectono-stratigraphic evolution on the development of petroleum systems.

Attention is focused on integrating sedimentation with stratigraphical architecture and basin dynamics using modern and ancient examples in evolving and mature rift basins and passive margins, foreland basins, convergent margins, structurally inverted basins, salt-prone settings and strike-slip systems.

Exercises will incorporate regional seismic lines from a diverse range of sedimentary basins.

Introduction

- The ingredients of a successful petroleum system
- Classification of sedimentary basins and subsidence mechanisms
- Use of seismic stratigraphic methods in structural analysis and petroleum systems

Rift Basins and Passive Margins

- Plate tectonic setting
- Rift Classification (Geometric, kinematic and dynamic)
- Basic features of rifts
- Normal fault geometry
- Fault segmentation, growth and linkage
- Role of relay ramps and the concept of transfer zones
- Slopes within extensional basins (hangingwall and footwalls)
- Rift basin drainage patterns
- Sediment derivation, distribution and facies patterns
- Tectono-sedimentary facies models for rift basins
- Sequence stratigraphy in active extensional basins
- Rift-drift transition and the development of passive margins
- Break-up unconformity
- Sediment starved passive margins
- Sediment nourished passive margins
- Post-rift thermal subsidence
- The North Sea Case History

Foreland Basins

- Plate tectonic setting
- General characteristics of foreland basins
- Subsidence and erosional history
- Sediment sources and sediment fill
- Underfilled and overfilled conditions
- Stratigraphic sequences developed in foreland basins

Subduction and Arc-Related Basins

- Plate tectonic setting
- General characteristics of arc-trench systems
- Continental growth in extensional arcs
- Effects of oblique convergence on convergent margin basins
- Trenches
- Trench-slope basins
- Forearc basins
- Intra-Arc basins
- Backarc basins

Structural Inversion

- Plate tectonic setting
- What is structural inversion
- Positive and Negative Inversion
- Structural Styles and Fault Geometries
- The importance of Plan view and Cross-sectional geometries
- Timing of deformation and role of fault reactivation: Implications for prospectivity
- The Wessex Basin Case History

Basins Developed in Strike-Slip Settings

- Plate tectonic setting
- General characteristics of strike-slip systems
- Classification of strike-slip faults and basins
- Structural framework
- Fault patterns and basin geometry
- The importance of Plan view and Cross-sectional geometries
- Extension, subsidence and thermal history
- Transtensional and transpressional basins
- Depositional framework of and characteristic fill of strike-slip basins
- The importance of distinguishing structural inversion from strike-slip – how to do it

Tectonic Styles in Salt Prone Settings

- The important modifying effects of salt
- Typical geometries
- Feedback for Trapping Styles
- Influence on Sedimentation Patterns – minibasins
- Significance for petroleum systems

2.6. Daily Lesson Plan

Day 1	Day 2
09:30~13:00	09:30~13:00
Introduction Rift Basins and Passive Margins	Foreland Basins
13:00~14:00 - Lunch	13:00~14:00 - Lunch
14:00~17:30	14:00~17:30
Rift Basins and Passive Margins cont.	Foreland Basins cont.
Day 3	**Day 4**
09:30~13:00	09:30~13:00
Subduction and Arc-Related Basins	Structural Inversion
13:00~14:00 - Lunch	13:00~14:00 - Lunch
14:00~17:30	14:00~17:30
Subduction and Arc-Related Basins cont.	Structural Inversion cont. The Wessex Basin Case History
Day 5	
09:30~13:00	
Basins Developed in Strike-Slip Settings	
13:00~14:00 - Lunch	
14:00~17:30	
Tectonic Styles in Salt Prone Settings Course wrap-up	