

Hydrocarbon Sedimentary Basins

Calendar: 5th day semester

Contact Hours: TP 45h; OT 15,0 h

Scientific Area: Geotechnics

Intended learning outcomes (knowledge, skills and competences to be developed by the students):

Provide major understanding in sedimentary environments where hydrocarbons can form.

Understand the sedimentary basins dynamics and associated geologic heterogeneities.

Describe sedimentary processes that occur in sedimentary basins.

Syllabus:

Review of Sedimentary Basins and Sedimentary rocks: Anatomy of a sedimentary basin; Sedimentation Processes. Classification, Lateral variations. Bedform generation. Texture and Structures of sedimentary rocks (Porosity and Permeability).

Post-depositional changes. Carbonate and Clastic Depositional System. Geological Heterogeneities. Examples of sedimentary environments and facies (Continental and Marine) related to petroleum occurrence.

Burial Histories; Burial and diagenesis. Catagenesis and metamorphism, thermal markers.

Paleohydrology in sedimentary basins.

Seismic and sequence stratigraphy, use of modelling in hydrocarbon generation and exploration.

Evidence of the syllabus coherence with the curricular unit's intended learning outcomes:

The contents of this unit will increase the student skills in sedimentary basins geologic processes forming hydrocarbons.

References:

Selley, R. (1997). Elements of Petroleum Geology, Academic Press.

Bjørlykke, Knut (2010). Petroleum Geoscience: From Sedimentary Environments to Rock Physics, Springer