

PGE 365 – Reservoir Engineering Laboratory

Spring Semester 2016-17

Description:

Part One: Core Lab

Determination of physical properties of reservoir rocks, such as porosity, fluid saturation, gas and liquid permeability, electrical properties, wettability, capillary pressure etc.

Part Two: PVT Lab

Measurement of Fluid Properties-PVT Component, this would involve some weeks of studies in the PVT Laboratory looking at fluid properties like saturation pressure, viscosity, and formation volume factor.

Prerequisite(s):

PGE 361 and PGE 362 (co-requisite)

Assignment(s):

Use of MS-Word, MS-Excel and Power Point required for assignments

Textbooks and References:

- Djebbar Tiab and Erle C. Donaldson, “Petrophysics, Theory and Practice of Measuring Reservoir Rock and Fluid Transport Properties”, Second Edition, Elsevier, 2004
- Amyx JW, Bass DM Jr., Whiting RL, “Petroleum Reservoir Engineering”, McGraw-Hill Classic Textbook Reissue Series, 1960
- Laboratory and Equipment Manuals
- Any Standard Reservoir Engineering Textbook

Class Times:

Sundays: 1.00-3.50 PM; Room 1B-30

Objectives:

To have Petroleum engineering students see, experience and physically measure properties of rocks and fluids. This knowledge will serve as a fundamental and foundational premise for subsequent courses in reservoir engineering, production and formation evaluation. Also, ability to write and communicate laboratory technical reports will be honed and evaluated on a weekly basis.

Topics:

Laboratory Environment, Safety, Reports Writing Formats, Graph Plotting etc.
Core Cutting and Lithology Identification
Core Cleaning and Fluid Saturation Experiments
Porosity Experiments
Liquid Permeability
Gas Permeability
Electrical Resistivity
Saturation by Retort Method
Wettability and Interfacial Tension (IFT)
Capillary Pressure
PVT Laboratory Experiments

Course Learning Outcomes (CLOs):

1. Measure reservoir rock properties using routine testing methods.
2. Measure reservoir fluid properties using routine methods.
3. Work with a team and strictly follow experimental safety guidelines.
4. Communicate experimental results using standard technical writing framework.
5. Appreciate how scientific principles and technology are applied in rock and fluid properties measurement.