# Course code and Title: PE-415 Reservoir Simulation

## **Course Contents:**

#### **Introduction**

Basic theory and practice in reservoir simulation. Introduction to the finite difference methods and solution techniques. Time stepping, analysis of accuracy, convergence and stability and discretization.

#### Numerical Simulation

Numerical schemes for solving sparse matrix equation. Flow simulation using field data. Reservoir model; up-scaling. Treatment of wells in reservoir flow simulation.

#### **Computer Modeling**

Interpreting flow simulation results and history matching. Various techniques for developing black-oil, compositional, thermal and dual-porosity models. Fracture reservoir simulation.

## Text book

1. Turgay Ertekin, J.H. Abou-Kassem and G.R. King, "Basic Applied Reservoir Simulation", Volume 7, Society of Petroleum Engineers, 2009.

# **Reference Book**

1. M. Rafiqul Islam, J.H. Abou-Kassem, S.M. Farouq-Ali, "Petroleum Reservoir Simulation: The Engineering Approach", 2nd Edition, Gulf Professional Publishing, 2020.