

# AMDE19 RESERVOIR CHARACTERIZATION AND MODELING

## UNIT-1 OVERVIEW OF RESERVOIR CHARACTERIZATION AND MODELING PROBLEMS

- 1.1 Reservoir mapping. 3D modeling.
- 1.2 Univariate, bivariate and multivariate statistics for geological data analysis.

## UNIT-2 PATTERN RECOGNITION TECHNIQUES

- 2.1 Petrophysical predictions from well logs.
- 2.2 Introduction to petroleum geostatistics. Variograms.
- 2.3 Kriging.
- 2.4 Uncertainty quantification.

## UNIT-3 STOCHASTIC RESERVOIR MODELING

- 3.1 Sequential simulation. Gaussian simulation.
- 3.2 Indicator simulation.
- 3.3 Integrating seismic attributes, well tests and production data.
- 3.4 Constraining reservoir models with various sources of information.
- 3.5 Reservoir up gridding and upscaling.

## UNIT-4 RESERVOIR SIMULATION

- 4.1 Investigation of petroleum reservoir characteristics and behavior, including: pore volume, fluid distribution and movement, and recovery.
- 4.2 The result of simulation studies include optimized field development and management plans which maximize the value and/or reserves of producing properties.
- 4.3 Finite difference approximations to the diffusivity equation and the application of those approximations for reservoir simulations.
- 4.4 Practical use of reservoir simulation.

## UNIT-5 PRESSURE TRANSIENT INTERPRETATION.

- 5.1 Seismic reservoir characterisation.
- 5.2 Log management, correlation and petrophysical analysis.
- 5.3 Geology correlator probe – AVO Reservoir Characterization.
- 5.4 Software used in reservoir characterization and modeling.

### References Book:

1. Standard Hand Book of Petroleum & Natural Gas Engineering” – 2nd Edition 2005-William C.Lyons & Gary J.Plisga-Gulf professional publishing comp (Elsevier).