

SYLLABUS :-

SYLLABUS: Components of Petroleum Production Engineering. Production from Undersaturated Reservoirs: Steady State flow, Transient flow and Pseudosteady state flow, Well Inflow performance relationship. Production from Two Phase Reservoirs: Two Phase flow in Reservoirs, Oil Inflow Performance for the Two-Phase Reservoir, Generalized Vogel Inflow Performance, Fetkovich's Approximation. Production from Natural Gas Reservoirs: Gas Well Deliverability for Non-Darcy Flow, Transient Flow of a Gas Well. Production from Horizontal Wells: Steady State Well Performance, Pseudosteady state well performance. Well Inflow Performance Relationship for Horizontal Gas Wells, Two Phase correlations for Horizontal Well Inflow. Multilateral Well Technology. Wellbore Damage: Hawkins's Formula, Skin Components for Vertical and Inclined Wells, Skin for Partial Completion and Well Deviation, Well Completion Skin Factors: Cased, Perforated Completions, Slotted or Perforated Liner Completions, Gravel Pack Completions. Formation Damage Mechanisms: Particle Plugging of Pore Spaces, Mechanical and Chemical damages, Biological damages, Damages during drilling, completion and production. Wellbore Flow Performance: Single Phase flow and Multiphase flow. Well Flow Performance: Velocity Profiles and Pressure Drop Calculations. Flow in Horizontal Wellbores: Wellheads and Surface Gathering Systems: Flow in Horizontal Pipes, Flow through chokes, Surface Gathering Systems, Flow in Horizontal Wellbores, Pressure Drop in Horizontal Wells for single phase and two phase flow. Well Deliverability: IPR (Inflow Performance Relationship) and VFP (Vertical Flow Performance). Well Production Forecast from Undersaturated oil reservoir, gas reservoir and two phase reservoir. Gas Lift: Gas Lift Design, Unloading Wells with Multiple Gas Lift Valves, Optimization of Gas-Lift Design. Pump-Assisted Lift: Sucker Rod pumping, Progressive Cavity Pumps, Electrical Submersible Pumps, Plunger Lift. Well Performance Evaluation: Open-Hole Formation Evaluation, Cased Hole Logs. Matrix Acidizing: Carbonates and Sandstones. Hydraulic Fracturing for Well Stimulation: Unified Fracture Design, Infinite and Finite Fracture Conductivity Performance. Hydraulic Fracturing Design and Execution. Sand Management: Sand Flow in Wellbore and its prevention. Textbooks: (1) Michael J. Economides, A. Daniel Hill, Christine Ehlig-Economides, Petroleum Production Systems (2) Boyun Guo, William Lyons and Ali Ghalambor, Petroleum Production Engineering: a Computer Assisted Approach.