



Sample Training Course Agenda (4 days):  
**Oil Production and Facilities Engineering**

Date:

Location:

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**Day 1 : Production systems overview**

- introductions and course objectives
- overview of the production system from reservoir to refinery; reservoir performance fundamentals
- introduction to oil composition and fluid characterisation; pressure loss in reservoir, wellbore and flowlines
- impact on production of changing watercut, reservoir pressure, productivity index and near wellbore skin
- combining inflow and outflow (nodal analysis) to predict well performance and impact of artificial lift
- *practical workshop session*; hand calculations of well performance (natural flow)
- introduction to artificial lift methods (concepts, comparison, benefits) and candidate selection criteria
- operational advantages and disadvantages of each lift method; start up issues
- *practical workshop session*; hand calculations of well performance (effect of artificial lift)

**Day 2 : Produced fluid treatment systems**

- recap of Day 1 (production systems overview)
- review of oil and gas gathering systems (offshore and onshore)
- produced fluids measurement (oil, gas and water) for fiscal, allocation, well test and process purposes
- produced fluids specifications overview (oil sales, gas sales, gas injection, water disposal, water injection)
- oil treatment (oil and water separation, emulsions, de-salting, sweetening and storage)
- gas treatment (oil and gas separation, foaming, desulphurisation, dehydration, NGL extraction, sweetening)
- produced and injection water treatment (de-oiling, filtration, dissolved gas removal, sulphates removal)
- *practical workshop session*; hand calculations on separator equipment sizing

**Day 3 : Production chemistry and flow assurance**

- recap of Day 2 (produced fluid treatment systems)
- hydrocarbon properties measurement and calculation using equation of state and correlations
- phase envelopes for various hydrocarbon types (dry & wet gas, gas condensate, volatile oil, black oil, heavy oil)
- impact on surface equipment design and optimisation
- *practical workshop session*; hand calculations of gas and oil fluid properties
- produced fluids solids deposition (wax, asphaltene, hydrates and scale)
- solids definition, occurrence and problems caused, prevention and removal methods
- corrosion and sand control; prevention and treatment techniques
- *practical workshop session*; prediction of solids deposition and optimal mitigation methods

**Day 4 : Process equipment and fluids transportation**

- recap of Day 3 (production chemistry and flow assurance)
- oil and gas export systems; pipelines and equipment required
- review of pumping systems (concepts of operation, types and performance characteristics)
- pump design procedure, key sensitivities, effect of gas, equipment selection & specification
- *practical workshop session*; hand calculations of pump design parameters (head and rate)
- review of gas compression systems (concepts of operation, types and performance characteristics)
- compressor design procedure, key sensitivities, equipment selection & specification
- *practical workshop session*; hand calculations of compressor design parameters
- transportation of crude oil; capacity constraints and optimisation
- references and resources review, conclusions and evaluation form completion