



Integrated Field Development Analysis, Optimisation and Forecasting

Target Audience:

This course is intended for those that have (i) recently started working in the production domain and need to become familiar with production tools/analysis, (ii) attended the course already some time ago, and require a refresher, or (iii) unrelated disciplines trying to understand the production context (e.g. accountants, project managers, etc..).

Overall Objectives:

- 1/ Developing dexterity in using the **IPM** suite
- 2/ Basic understanding of the physics
- 3/ Understanding the limitation of the methods and techniques used

Course Agenda

- Day 1** Introduction to integrated production system and why an overall approach is necessary
Introduction to PROSPER - philosophy and methodology
Pressure loss in the wellbore - gravity and friction terms, slip, holdup
Importance of PVT
VLP flow correlations theory. Important parameters
Inflow performance models – introduction
Workshop - building a wellbore model, matching PVT and flow correlations, running sensitivities, generation of lift curves for output to **GAP** or simulator
- Day 2** Inflow performance models - Vogel, Darcy, multi-layer, horizontal, fractured etc.
Special topics: skin calculation, gravel pack design
Gas lift introduction – design and diagnostics using “Quicklook” for gas lifted wells
Introduction to ESP modelling – design and analysis
Workshop - inflow performance, gravel pack and skin modelling, running sensitivities
Practice in building and analysing well problems. Artificial lift design
- Day 3** Introduction to **MBAL** - theory and capabilities
Aquifer models, history matching techniques (numerical and graphical), simulation
Running a prediction - importing VLPs and IPRs from PROSPER, adding constraints
Introduction to multi-tank and multi-PVT MBAL
Workshop - Building a tank model, history matching, integration with **PROSPER** for predictions. Field development example
- Day 4** Introduction to **GAP** - theory and capabilities
Building a surface network model - linking to PROSPER well models
Generation of surface performance curves
Production monitoring with well tests. Pipeline modelling and matching
Adding constraints at well, manifold, pipeline and separator level
Linking PROSPER and MBAL to GAP for full field optimisation and forecasting
Batch generation of lift curves and IPRs. Production allocation Field optimisation - gas lift gas allocation. Full field forecasting with linked reservoir model(s)
- Day 5** Integrated modelling
Workshop - Full field development example. Well development schedule to meet target production profile. Effect of artificial lift.