PE Limited

Engineering & Geological Software Development

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 top meet target production profile. Effect of artificial lift.

Petex House, 10 Logie Mill, Edinburgh, Scotland, EH7 4HG, UK
Tel: +44 131 474 7030 **Fax:** +44 131 474 7031 **Email:** edinburgh@petex.com **Website:** www.petex.com