TECHNICAL EDUCATION ACADEMY

School of Engineering

COURSE PROGRAMME

000402

HEOP002 - Reservoir Engineering for Heavy Oil Resources

Unconventional resources of petroleum have benefited from technology breakthroughs in recent years, fuelling shale and oil sand revolutions in North America.



Learn from the Best in the Business!

Course overview

Intermediate level

Why take this course

Unconventional resources of petroleum have benefited from technology breakthroughs in recent years, fuelling shale and oil sand revolutions in North America. Many regions of the world are now in the process of delineating and exploiting unconventional petroleum resources, which are set to play an increasing role in oil and gas supply.

With conventional oil, the reservoir engineering aspects of the development of heavy oil and bitumen is aided by modeling of various kinds. For heavy oil and bitumen, the modeling is complicated by the high oil viscosity and the need for enhanced oil recovery techniques, usually involving heating of the reservoir to produce the oil at commercial rates.

In this three days course, reservoir management is understood as a part of reservoir engineering and includes the use of analogues and analytical modeling, as well as numerical simulation. This course also addresses the nature of these resources, the techniques to identify and categorise them and the new technologies used to exploit them commercially. It also considers the economic challenges and the environmental and community hurdles that exploitation projects need to overcome.

Who it is for and how it helps

Petroleum and reservoir engineers

What you will learn

- Select the type of modeling required to meet the aims of the study
- Design different types of modeling studies to achieve the aims of the study (feasibility, operating strategy, development plan, ultimate recovery, etc.)
- Collect and select the data for the study
- Incorporate field observations into the study (production data, pressure data, 4D seismic, observation well data)
- Set up, run, and test the model(s)
- Assess the adequacy of the history match(es)
- Create and run different development options and assess the results
- Assess the results of third party studies (in-house or external)

Curriculum

Modules 01–02

01 Heavy Oil and Heavy Oil Sampling, Phase Behavior and Flow Assurance

- Introduction to heavy oil
- Global heavy oil development
- Economics and drivers
- Industrial trends and challenges
- Overview of recovery processes
- Heavy oil workflow
- Why do we need heavy oil fluid analysis?
- Describing heavy oil
- Thermodynamic models
- Property Correlations
- Sampling
- Challenges in planning a sampling job
- Options: Sub-surface and surface sampling
- Phase behavior
- Flow Assurance
- Inorganic and organic solids – Asphaltenes
- Newtonian vs non-Newtonian Behavior
- Emulsions

02 Primary, Non-Thermal, Thermal and Newly Developed Recovery Processes

- Primary recovery processes
- Cold production
- Cold heavy oil production with sands (CHOPS)
- Non-thermal recovery processes
- Water flooding
- Chemical flooding
- Solvent-based processes
- Steam-based thermal recovery processes
- Cyclic steam stimulation (CSS) / huff-and-puff
- Steam flooding
- Steam-assisted gravity drainage (SAGD)

Curriculum

Module 02 — continued

- Non-steam-based thermal recovery processes
- Fire flooding / in-situ combustion
- Newly developed recovery processes
- Steam-solvent hybrid processes
- Toe-to-heel air injection (THAI) and THAI with catalyst (CAPRI)
- Electromagnetic heating (EM) processes

Joining the programme

Contact the Academy and quote course code 000402 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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