

## N422 – Reservoir Engineering for Non-Reservoir Engineers

### Duration

Four classroom days providing 3.2 CEU (Continuing Education Credits) or 32 PDH (Professional Development Hours)

### Summary and Content

The course presents the fundamentals of reservoir engineering and examines the tasks of the reservoir engineer, with an emphasis on interaction with other disciplines. Principle topics are description of the components of the static reservoir model, development of the dynamic reservoir model and reservoir management through the life of a field.

The course provides an understanding of the underlying value and limitations of the analyses provided by reservoir engineers, as well as a better understanding of the required data and assumptions involved in the practice of reservoir engineering. Participants will obtain an understanding of routine reservoir engineering calculations, the data required to perform these calculations, the primary tools and techniques used by reservoir engineers, and the information gained by the application of those techniques. The limitations of the extrapolation of the results to the decision making process will also be covered. Throughout the course, the impact of the data, assumptions and technical limitations are related to the economic impact they have on reservoir management.

### Who Should Attend

This course is designed for professionals who work with, or rely on, analyses provided by reservoir engineers, or who otherwise need to understand and communicate with them on a technical or commercial basis. Participants should have some familiarity with the concepts of reservoir engineering and field development, but require a greater understanding of the data used and the techniques employed by the reservoir engineer in day-to-day work. It is suitable for exploration, development and production geoscientists as well as petrophysicists, facility and operations engineers, drilling and production engineers, pipeline engineers, and business analysts.

### Participants will learn to

1. Communicate and work effectively with a reservoir engineer.
2. Determine the key parameters of reservoir fluids and how the fluids are sampled, measured and described.
3. Determine fluid distribution in a reservoir, including contacts and pressure relationships.
4. Determine reserve and resource volumes and describe tools such as decline curve analysis and material balance that can influence the estimates.
5. Perform simple interpretations of well test data and demonstrate what can be learned from the data.
6. Analyze reservoir drive mechanisms.
7. Determine the benefits and limitations of reservoir simulation in a variety of settings.
8. Determine appropriate reservoir surveillance practices to implement during the life of a field.
9. Question which enhanced oil recovery techniques might be suitable for a particular field.

**Course Agenda****Day One**

1. Reservoir geological description and Rock Properties
2. Hydrocarbon phase behaviour
  - a. Example PVT Studies.

**Day Two**

1. Fluid and Pressures Distributions including Pressure vs. Depth and Capillary Pressure.
2. Volumetric reserve estimates
  - a. Reserve classifications,
  - b. Probabilistic reserve estimates.
3. Fluid Flow
  - a. Darcy's Law
  - b. Well Inflow

**Day Three**

1. Well testing,
  - a. pressure transient analysis methods
  - b. build-up curve examples.
2. Gas well testing and AOF analysis.
3. Vertical Lift (Tubing) Performance and Artificial Lift
4. Reservoir Drive Mechanisms
  - a. material balance and fluid displacement.
  - b. Gas reservoirs
  - c. p/Z diagrams.

**Day Four**

1. Reservoir Monitoring
2. Simulation
3. Production Forecasting
4. Enhanced Oil Recovery

**Instructor**

Jerry Hadwin has over 30 years of upstream experience, and able to operate at all levels both technically and commercially. He enjoys new challenges, providing innovative solutions to complex problems and enabling optimum business decisions. Jerry has worked in a number of locations world-wide, with core expertise in reservoir engineering, in a variety of roles and projects; exploration prospect evaluation, field development planning and management, corporate business planning and drilling operations, as well as business management. He has completed many petroleum engineering projects throughout his career, from reservoir modelling through to reserves audit for a range of companies internationally, and has led many PE study teams to successful conclusions. Jerry also conducted reservoir engineering and commercial training for both national and international oil companies.



## COURSE SYLLABUS

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### **Course Dates**

Please visit the [course details webpage](#) for currently scheduled course dates.

### **Available for In-House Group Delivery**

This course is available for In-House Training and the content can be customized to suit the needs of your organization. For more information or to request a proposal, please email [inhourequests@peice.com](mailto:inhourequests@peice.com) or call 713-482-3858 (USA), 403-284-1250 (Canada).

