Overview

Reservoir simulation has become a necessary tool for the petroleum engineers, geologists, and subsurface modelers to understand the recovery of hydrocarbon (or other fluids) in an efficient manner. With the advances in computing capabilities and the numerical methods, the complex geological systems and mixtures of fluids can be tracked and visualized using the scientific computations. Insights from these simulations are expected to help in managing the reservoir assets and making reliable predictions about production rates.

In this course the fundamental governing equations as well as the numerical techniques to discretize them will be covered. Simple linear algebra solvers will also be presented to enable building a simulator that can provide the hands-on implementation of ideas in reservoir management.

The course is organized in two modules that should be taken together. In the first module the fundamentals of reservoir simulation, discretization of governing equations and their solution techniques using linear algebra solvers will be presented. The single phase subsurface solver and well modeling will also be described. The second module will focus on reservoir simulation involving multiphase flow in porous media. Black oil, Compositional, non-isothermal reservoir simulations and upscaling in reservoir simulation will be taught in this module. For basic understanding of the reservoir simulation various problems will be taken up during problem solving sessions.

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<td>B: Application of Reservoir Simulation and Advanced features</td>
<td>July 25 - July 29, 2016</td>
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<td>Number of participants for the course will be limited to fifty.</td>
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You Should Attend If...

- you are an executive, engineer, researcher working in oil and gas industry and government organizations including R&D laboratories.
- you are geologist or geophysicist interested in learning the reservoir simulation methods.
- you are a student or faculty in chemical, petroleum, mechanical or civil engineering from academic institution interested in learning how to carry out reservoir simulation for better recovery of oil and gas from the underground reservoirs.

Fees

The participation fees for taking the course is as follows:

- Participants from abroad: US $500
- Industry/ Research Organizations: Rs. 30000
- Academic Institutions:
  - Students: Rs. 1000 (Refundable, subject to joining the course)
  - Faculty: Rs. 10000

The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.
The Faculty

Prof. Mayank Tyagi is designated Associate Professor at the Craft & Hawkins Department of Petroleum Engineering, Louisiana State University (LSU), Baton Rouge, USA. He also holds a joint appointment at the Center for Computation & Technology (CCT), LSU. Prof. Tyagi obtained his B.Tech. degree in mechanical engineering from IIT Kanpur and MS and PhD degrees in mechanical engineering from LSU, USA. His teaching interests are Reservoir Simulation, Numerical Methods, Well Design, Petroleum Fluid Properties, and Flow and Heat Transfer around Wellbores. His research interests include geothermal reservoir engineering, HPC applications for petroleum engineering systems, computational fluid dynamics (CFD), and quantitative risk assessment (QRA).

Prof. Anugrah Singh is a Professor at the Chemical Engineering Department of IIT Guwahati. He received B.Tech. and M.Tech. degrees in Petroleum Engineering from the Indian School of Mines, Dhanbad and PhD in Chemical Engineering from the Indian Institute of Science, Bangalore. His teaching interests are Reservoir Engineering, Fluid Mechanics and Computational Fluid Dynamics. His research interests include computational and experimental fluid dynamics of multiphase systems.

Course Venue:

Centre for Educational Technology
Indian Institute of Technology Guwahati
Guwahati 781039

Course Co-ordinator

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