



AICTE
SPONSORED



QIP SHORT TERM COURSE
ON
**RESERVOIR SIMULATION:
CHALLENGES
and
CURRENT TRENDS**
(13th to 17th DECEMBER, 2021)

Course Coordinator:
Dr. Amit Kumar
Assistant Professor
RGIPT, Jais
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Course Co-coordinator:
Dr. Vishnu C Nair
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**ORGANIZED BY
DEPARTMENT OF
PETROLEUM ENGINEERING AND
GEOENGINEERING
RAJIV GANDHI INSTITUTE OF
PETROLEUM TECHNOLOGY
JAIS, AMETHI – 229304, UP**

About the Institute:

Rajiv Gandhi Institute of Petroleum Technology was setup by the Government of India, through the Act of Parliament, and is governed by Ministry of Petroleum and Natural Gas (MoPNG). The Institute is co-promoted as an energy domain specific institute by six leading oil public sector units (ONGC, IOCL, OIL, GAIL, BPCL, and HPCL) in association with the Oil Industry Development Board (OIDB). The Institute is associating with leading International Universities/Institutions specializing in the domain of Petroleum Technology and Energy.

The prime objective of the Institute is to provide excellent education, training, and research to roll out efficient human resources, and to meet the growing requirements of the Petroleum and Energy sector. The Institute offer a number of Bachelor's and Master's degree programs, Postgraduate diploma courses and Doctoral programs in Science, Engineering and Management. The institute provides excellent research facilities to carry out research in the energy domain, facilitating the faculty members to continue their research growth.

About the Department:

The Department of Petroleum Engineering and Geoengineering is focused in facilitating the flow of knowledge in the domain through its advanced pedagogy and state-of-the-art research facilities to the students. It enables them to understand, develop and apply the knowledge gained in the fields of Geoscience, Reservoir, Drilling, and Production Operations required in the Petroleum Industry.

About the Course:

Reservoir simulation is an area of reservoir engineering in which computer-based models are used to predict the flow of fluids (typically, oil, water, and gas) through porous media. These models predict the flow of fluids by using numerical techniques to solve the governing equations of fluid flow and energy transfer, and their interactions occurring in the porous media.

On completion of the course, the participants will be able to design reservoir model from their fundamental understanding and perform simulation of complex processes occurring in the reservoir.

Topic to be covered:

1. Reservoir Simulation Fundamentals
2. Numerical Formulation
3. Black oil and Compositional Model
4. Challenges in Reservoir Simulation
5. Streamline simulation
6. Simulation of unconventional reservoirs
7. Modeling of EOR processes
8. Prediction and optimization of reservoir performance

Resource Persons:

Lectures will be delivered by experts working with different Indian institutions, Research organizations, and Government organizations.

Targeted Participants:

Faculty members from AICTE/Non-AICTE approved engineering college, scientists, research scholars, and engineers/professionals from industry can participate in the course.

Important Dates:

Last date of online registration:
4th December, 2021

Intimation of participation:
8th December, 2021

Course duration:
13th to 17th December, 2021

Information to Participants:

- Endorsement from Head of Institute/Department or Supervisor is required while registering for the STC.
- The confirmation of the registration and other relevant communications will be done via e-mail.
- The STC will be conducted in online mode. Link will be shared with participants only.
- Participants are required to arrange for the laptop/desktop/smartphone with adequate internet connectivity.
- Participants need to have at least 80% attendance to obtain the certificate.

Registration fee:

Faculty from AICTE approved Engineering Colleges and Research Scholar

NO FEES

Faculty from Non AICTE approved Engineering College, Scientist

Rs 1000 + 18% GST

Engineers/Professionals from Industry

Rs 10000 + 18% GST

Registration:

The registration for the STC will be done via the link:

<https://rgipt.ac.in/qip/reservoir-simulation/>

Or scan the QR Code:



Payment:

Can be done via *ONLINE PORTAL* or through NEFT/RTGS using following:

A/C Holder: Rajiv Gandhi Institute of Petroleum Technology

Bank: Bank of baroda

Branch: RGIPT, Jais Campus

A/C No.: 59480100000382

IFCS Code: BARB0JAICAM

MICR Code: 227012204

SWIFT Code: BARBINBBHRB

For further information contact:

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Resource persons:

Dr. G. Suresh Kumar

Professor
Department of Ocean
Engineering, IIT Madras



Dr. G. Suresh Kumar heads Reservoir Simulation Laboratory and his broad research area focuses on Multi-Phase Fluid Flow through Fractured and Unconventional Oil/Gas Reservoirs.

Dr. Rajendra Vithal Marathe

Ex-Head, ED
Institute of Reservoir Studies
ONGC



Dr. R V Marathe has worked towards the application of EOR techniques and oilfield development. He also has expertise in the application of streamline simulation.

Dr. Sumit Mukhopadhyay

Principal Engineer
Modelling and Simulation
Lawrence Livermore National Lab



Dr. Sumit Mukhopadhyay is an accomplished scientist with more than 20 years' experience in developing computational methods for multiphase fluid flow, heat and chemical transport

Gopal Krishna Panigrahy

Head
Operations (North-East Region)
HOEC



Mr. Gopal Krishna Panigrahy Gopal has extensive overseas operational experience with exposure to best in class HSE practices, and application of production technology and tools.

Dr. Ajitabh Kumar

Founder, CEO
Visage Technology
Dr. Ajitabh Kumar founded Visage Technology to develop a computational modelling tool for reservoir simulation study and provide a cutting edge solution for the oil and gas industry.



Dr. Vikram Vishal

Associate Professor
Department of Earth Science
IIT Bombay



Dr. Vikram Vishal's research interest is in the field of Reservoir Geomechanics, Unconventional Petrophysics, Carbon Sequestration, and Engineering Geology.

Dr. Sumit Kumar

Assistant Professor
Department of Chemical
Engineering, IIT Guwahati



Dr. Sumit Kumar's research areas are Flow through porous media, modeling and simulation, adsorption, pyrolysis, shale gas research and EOR.

Dr. Satish Kumar Sinha

Head, Associate Professor
Department of Petroleum
Engineering and Geoengineering
RGIPT, Jais



Dr. Satish Kumar Sinha's research interests include geomechanics, seismic data analysis, and reservoir characterization.

Dr. Manoj Kumar Rajpoot

Assistant Professor
Department of Mathematical
Sciences, RGIPT, Jais



Dr. Manoj Kumar Rajpoot's research interests include numerical analysis of partial differential equations, hyperbolic conservation laws, and scientific computing.

Dr. Vishnu C. Nair

Assistant Professor
Department of Petroleum
Engineering and Geoengineering
RGIPT, Jais



Dr. Vishnu C. Nair's research interests include gas hydrates, carbon capture and sequestration, and flow assurance.

Dr. Shailesh Kumar

Assistant Professor
Department of Petroleum
Engineering and Geoengineering
RGIPT, Jais



Dr. Shailesh Kumar's research interests are flow assurance, drilling fluid design and analysis, and application of CFD.

Dr. Amit Kumar

Assistant Professor
Department of Petroleum
Engineering and Geoengineering
RGIPT, Jais



Dr. Amit Kumar's research interests include enhanced oil recovery, reservoir simulation, and application of surfactants.

Mr. Satyajit Chowdhury

Lecturer
Assam Energy Institute
RGIPT, Sivasagar Centre



Mr. Satyajit Chowdhury's research interests include application of CFD, rheology of complex fluids, and nanotechnology. He is currently pursuing PhD from IIT Madras.

SCHEDULE FOR THE COURSE

| | 09:30 AM – 10:30 AM | | 10:40 AM – 11:40 AM | | 11:50 AM – 12:50 PM | | 02:00 PM – 03:00 PM | | 03:10 PM – 04:10 PM | | 04:20 PM – 05:20 PM |
|-------------------------------|---|--------------|--|--------------|--|--------------------|--|--------------|--|--------------|---|
| 13 December 2021 Monday | Introduction to reservoir simulation (Dr. Sumit Mukhopadhyay, Lawrence Livermore National Laboratory) | Break | Introduction to challenges and current trends in reservoir simulation (Dr. Sumit Mukhopadhyay, LLNL) | Break | Building a geological model (Theory + Tutorial) (Dr. Satish Kumar Sinha, RGIPT) | Lunch Break | Building a geological model (Theory + Tutorial) (Dr. Satish Kumar Sinha, RGIPT) – contd. | Break | Simulation Tutorial: Basic reservoir simulation studies (Dr. Shailesh Kumar, RGIPT) | Break | Simulation Tutorial: Basic reservoir simulation studies (Dr. Shailesh Kumar, RGIPT) – contd. |
| 14 December 2021 Tuesday | Fundamentals of reservoir simulation (Dr. G Suresh Kumar, IIT Madras) | | Fundamentals of reservoir simulation (Dr. G Suresh Kumar, IIT Madras) – contd. | | Fluid flow equations of reservoir simulation (Mr. Satyajit Chowdhury, RGIPT) | | Fluid flow equations of reservoir simulation (Mr. Satyajit Chowdhury, RGIPT) | | Numerical formulation of governing equations of reservoir simulation (Dr. Sumit Kumar, IIT Guwahati) | | Numerical formulation of governing equations of reservoir simulation (Dr. Sumit Kumar, IIT Guwahati) |
| 15 December 2021 Wednesday | Solution methods of equations of reservoir simulation (Dr. Manoj Kumar Rajpoot, RGIPT) | | Solution methods of equations of reservoir simulation (Dr. Manoj Kumar Rajpoot, RGIPT) – contd. | | Simulation Tutorial: Reservoir fluid modelling using WinProp (Dr. Vishnu Nair, RGIPT) | | Simulation Tutorial: Reservoir fluid modelling using WinProp (Dr. Vishnu Nair, RGIPT) | | Reservoir fluid PVT modelling (Mr. Gopal Krishna Panigrahy, HOEC) | | Reservoir fluid PVT modelling (Mr. Gopal Krishna Panigrahy, HOEC) |
| 16 December 2021 Thursday | Waterflooding in 2-D: Basic principles of Streamline Model and its working (Dr. Rajendra Vithal Marathe, Ex-ONGC) | | Waterflooding in 2-D: Basic principles of Streamline Model and its working (Dr. Rajendra Vithal Marathe, Ex-ONGC) – contd. | | Applying Streamline models for Front tracking and Areal sweep Assessment (Dr. Rajendra Vithal Marathe, Ex-ONGC) – contd. | | Applying Streamline models for Front tracking and Areal sweep Assessment (Dr. Rajendra Vithal Marathe, Ex-ONGC) – contd. | | Simulation Tutorial: Simulation of chemical flooding processes (Dr. Amit Kumar, RGIPT) | | Simulation Tutorial: Simulation of chemical flooding processes (Dr. Amit Kumar, RGIPT) – contd. |
| 17 December 2021 Friday | Simulation of unconventional reservoirs (Dr. Vikram Vishal, IIT Bombay) | | Simulation of unconventional reservoirs (Dr. Vikram Vishal, IIT Bombay) – contd. | | Waterflood Management using Streamline Models Producer injector connectivity (Dr. Rajendra Vithal Marathe, Ex-ONGC) | | Waterflood Management using Streamline Models Producer injector connectivity (Dr. Rajendra Vithal Marathe, Ex-ONGC) – contd. | | Compositional simulation and its application in geologic carbon sequestration modelling (Dr. Ajitabh Kumar, Visage Technology) | | Compositional simulation and its application in geologic carbon sequestration modelling (Dr. Ajitabh Kumar, Visage Technology) – contd. |