



TRAINING PROGRAMME ON

SIMULATORS FOR NUCLEAR POWER PLANTS

Organised by IIT Bombay Research Hub for
Green Energy & Sustainability (GESH IITB)

In person at IIT Bombay
Hands on Facility

COURSE OVERVIEW

This short-term programme provides a comprehensive introduction to nuclear power plant simulators, combining foundational concepts of nuclear power generation with advanced simulation methodologies. Participants will develop an understanding of reactor systems, plant operations, and safety principles, followed by exposure to simulator technologies, architectures, and industrial practices. The programme integrates theoretical learning with real-world perspectives and concludes with hands-on training using a nuclear power plant simulator, enabling participants to gain practical experience in plant operation, transient scenarios, and safety response.

COURSE OUTLINE

DAY 1

Fundamentals of Nuclear Power and Core Engineering

- Introduction to nuclear power generation and reactor systems (PWR, BWR, PHWR)
- Basics of reactor physics, isotopes, fission, and neutron interactions
- Safety philosophy and defense-in-depth concept
- Reactor design space: fuel, moderator, coolant, and geometry combinations
- Materials science of reactor core: fuel, cladding, and structural materials
- Fuel design, control rods, and reactivity control mechanisms
- Nuclear fuel cycle and integration of safety barriers

DAY 2

Session 1: Economics and Decarbonization Aspects of Nuclear Power

- Role of nuclear power in decarbonization and clean energy transition
- Comparative economics of nuclear vs other energy sources
- Cost structure of nuclear power plants: capital, O&M, and fuel cycle

Session 2: Introduction to Simulator Technologies

- Introduction to nuclear power plant simulators and their applications.
- Overview of GET Rosatom Simulators & Digital Twin.
- Types of simulators: full-scope, compact, analytical, and their users
- Fundamentals of modelling, numerical methods, and real-time simulation

DAY 3

Hands-On Simulator Training

- Introduction to simulator platform and control interface
- Startup and shutdown procedures in a simulated environment
- Steady-state operation of nuclear power plants
- Simulation of transients and accident scenarios
- Reactor control strategies and safety system response
- Performance evaluation and discussion of operational insights

KEY BENEFITS FOR PARTICIPANTS

- Develop strong fundamentals in nuclear power plant operation and safety
- Gain in-depth understanding of reactor core physics and materials
- Understand simulator design, architecture, and industrial applications
- Learn from real-world nuclear industry practices
- Experience hands-on operation of a nuclear power plant simulator
- Enhance skills in transient analysis and safety response
- Bridge theoretical knowledge with practical plant behavior

TARGET AUDIENCE

- Potential new nuclear power plant operators from private and public sectors
- Those engineers planning to shift their career to nuclear power plant engineering and operations
- Startups developing SMRs/ MMRs
- Faculty members and researchers from academic and research institutions.
- Engineers and scientists from nuclear and energy sectors.
- Professionals from industry and regulatory organizations.
- Postgraduate students interested in nuclear power plant systems, simulation, and reactor technology.

INSTRUCTORS

IIT BOMBAY FACULTY

- Prof. Suneet Singh, *Department of Energy Science and Engineering*
- Prof. Venkatasailanathan Ramadesigan, *Department of Energy Science and Engineering*

INDUSTRY EXPERTS

- Dr. Alexander Volgin, *Rosatom Group*
- Mr. Sergey Bukreev, *(JSC Engineering and Technical Center, GET ROSATOM Group)*
- Dr. Shamasundar, *(MD, ProSIM R&D Pvt. Ltd.)*

IMPORTANT DATES

DURATION

15th -17th April 2026

REGISTRATION DEADLINE

5th April 2026

COURSE FEE

CATEGORY

FEE (INR)+ GST APPLICABLE

PG STUDENTS

20000

ACADEMIA

28000

GOVERNMENT / INDUSTRY

35000

FOREIGN PARTICIPANTS

65000

REGISTRATION PROCESS



Scan here to register

Step 1 - Scan the QR code or click on the [registration link](#).

Step 2 - Register with your email ID.

Step 3 - Click on the activation link received in your email.

Step 4 - Fill in the required details to complete the registration.

Step 5 - Go to the [home page](#) and log in with your email ID and password.

Step 6 - Select or click on CEP/GIAN Courses.

Step 7 - Search for the course name "Simulators for nuclear power plants" and enter your personal, other required information and fee details.

Step 8 - Submit the application.

Programme fee includes in-person sessions, post-session PPTs and reading materials, and on-campus refreshments.

Travel and accommodation are not included.

CONTACT US

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