

A short-term course

on

Fundamentals of LNG Technology and Supply Chain

Offered by

Cryogenic Engineering Centre

and

Department of Ocean Engineering &

Naval Architecture

Under the aegis of

Centre for Inland and Coastal Maritime

Technology (CICMT)

IIT KHARAGPUR



January 4-5 2025

Why this course?

Natural gas is the environmentally cleanest hydrocarbon fuel. Therefore, it is finding increasing demand for use in power generation, industrial sector, transport sector, and in heating and cooling. For India, the import of LNG is expected to grow about five-fold from 22 Mt in 2023 to 105 Mt by 2050. In this scenario, it becomes imperative to generate trained human resource who can serve the natural gas industry as well as innovate newer ways of cost-effective commercial production of natural gas to boost economic growth. This course aims to fulfil this requirement.

Brief Outline of the course

The present course has been designed to give a basic understanding of the various processes to produce liquefied natural gas from the raw natural gas, the transportation and distribution of the stored LNG to the consumers, and safety issues with LNG. Thermodynamic behavior, storage, transport and distribution of natural gas, and the design, operation and maintenance of LNG plants will be covered comprehensively. It includes a moderate technical coverage of LNG production, LNG commerce and LNG Value Chain.

Date & Venue

Date: January 4-5 2025

Time: 9 AM to 5 PM

Venue: Conference Hall, Salt Lake Guest House, IIT Kharagpur Kolkata Campus

Mode: Offline

What will one learn?

- What is LNG, why it is produced, and what is the current status of the industry
- World-wide distribution of natural gas and LNG facilities
- Gas characterization (such as molecular weight, heating value, Wobbe Index, vapor pressure etc.), classification, phase equilibria.
- Processing of crude natural gas (such as dehydration, gas-liquid recovery, sulfur and nitrogen removal etc.)
- Measurements in NG industry.
- Refrigeration and liquefaction of natural gas.
- Equipment used in natural gas (such as heat exchangers, compressors, pumps, expanders etc.)
- Boiloff gas management and cold utilization.
- Fluid moving machineries
- Issues relating to technology selection, and operation.
- LNG storage and transportation
- LNG handling and safety
- LNG transfer and distribution

- IMO Gas Carrier Codes and other codes/ standards related to LNG technology
- Types of LNG carriers, marine management/ safety issues, LNG transfer/ loading, use of LNG onboard ships as fuel for main/ auxiliary engines

Course Content

1. Introduction to natural gas
2. Properties of natural gas
3. Thermodynamic phase equilibrium behavior of natural gas
4. Gas pre-treatment
5. Refrigeration and liquefaction of natural gas
6. Equipment used in natural gas and LNG systems (compressors, pumps, expanders, heat exchangers etc.)
7. Safety aspects of LNG
8. Storage, transport and distribution of LNG
9. History of LNG Shipping
10. LNG carriers: classification, design, operation, inspection, firefighting and management, rules & regulations, international codes
11. LNG in marine propulsion system
12. LNG cargo operations (loading, unloading, discharge, safety, anti-pollution measures, IMO conventions etc.)

Who can register?

- Under-graduate and post-graduate students, research scholars, faculty and scientists from academic institutes and research organizations.
- Operations and supervision staff, plant personnel and managerial executives from LNG industries and shipyards.
- Personnel working in inland waterway transport etc.

Registration

- A limited number of participants can be accommodated.
- Registration will continue on a first-come-first-serve basis until the designated number of participants is reached.
- Registration has to be done online through Continuing Education Programme portal of IIT Kharagpur.
- **Last date of registration:** January 01, 2025

Registration fees:

Students (UG, PG, RS): ₹ 1500 including GST

Faculty and scientists: ₹ 8000 including GST

Industry executives: ₹15,000 including GST

- All the applicants have to upload their official identity card.
- 50% exemption on the course fee in all the above categories is applicable to the participants from the organizations under Ministry of Ports, Shipping and Inland

Waterways. Copy of official identity card must be submitted during registration.

- Registration fee includes registration kit, snacks and lunch on both days.
- Registration fee is **non-refundable**.
- Registration fee is **transferable** to a person in the same category. In case of transfer, the information must be communicated to the organizer in advance.
- The participants have to arrange for their own accommodation.

Resource Persons

Prof. Pavitra Sandilya*
Prof. Parthasarathi Ghosh*
Prof. Vishwanath Nagarajan**
Prof. Om Prakash Sha**

*Cryogenic Engineering Centre
 **Department of Ocean Engineering & Naval Architecture
 IIT Kharagpur, Kharagpur 721302

Contact Persons

Coordinator:

Prof. Pavitra Sandilya

E-mail: pavit@cryo.iitkgp.ac.in

Co-Coordinator:

Prof. Anirban Bhattacharyya

E-mail id: ab@naval.iitkgp.ac.in