Midstream Oil and Gas Operations

Course Name	**Midstream Oil and Gas Operations**
Course Name as on Certificate	**Midstream Oil and Gas Operations**
Certificate Type	Certificate of Completion by IITM Pravartak and L&T EduTech
Certificate Issued by	IIT MADRAS and L&T EduTech
Course Overview	**<u>Course Overview</u>** Midstream Oil and Gas Operations provides a comprehensive understanding of the various processes involved in the midstream Oil and Gas operations such as fundamentals of transportation and gathering stations, including pipeline specifications, flow dynamics, measurement techniques and challenges associated with heavy oil transportation, design theories of two and three phase separation systems, heater treaters, dehydrators, demulsification, desalting, crude stabilization and produced water treatment methods as well as storage and vapor recovery from field production. **<u>Course Objectives</u>** • Understand fundamentals of transportation and gathering stations, including pipeline specifications, flow dynamics, measurement techniques and challenges associated with heavy oil transportation. • Learn design theories of two and three phase separation systems and sizing of separators. • Understand various crude oil treatment methods, crude stabilization, produced water treatment methods as well as storage and vapor recovery.
Eligibility	Students pursuing Diploma / UG / PG Programs in Chemical/ Petroleum/ Oil and Gas Engineering.
Pre-Requisites	Basic Chemical/ Petroleum/ Oil and Gas Engineering
Target Segment	Students pursuing Diploma / UG / PG Programs in Chemical/ Petroleum/ Oil and Gas Engineering. Faculties / Working Professionals in the above domain & other aspiring learners
Course Content	**See Enclosed Programme details – as Annexure 1**
Pedagogy	Online Self-paced E-Learning Content

<table>
<tr><td>Assessment</td><td colspan="3">One Final Assessment</td></tr>
<tr><td>Programme Faculty</td><td colspan="3">L&T Industry Experts</td></tr>
<tr><td>Duration</td><td colspan="3">Units: 4 Hours: 8</td></tr>
<tr><td>Class Schedule</td><td colspan="3">Self-Paced</td></tr>
<tr><td>Programme Highlights/USPs</td><td colspan="3">• Gathering stations
• Pipeline specifications
• Flow dynamics
• Flow measurements
• Heavy oil transportation
• Design theories of two-phase and three phase separation systems
• Dehydration, demulsification, desalting and crude stabilization
• Produced water treatment
• Storage and vapor recovery of hydrocarbons.</td></tr>
<tr><td>Programme Mentor</td><td colspan="3">Dr Jagannathan Krishnan
Subject Matter Expert, Chemical Engineering, L&T EduTech

A Professionally motivated Chemical Engineer ,obtained both M.Tech and Ph.D from Indian Institute of Technology Madras. He has over 25 years of teaching and research experience in Chemical Engineering, serving institutions like IIT Madras, VIT University, SSN Institutions in India and Universiti Teknologi Mara (UiTM) Malaysia.</td></tr>
<tr><td rowspan="2">Total Fees</td><td></td><td>Total Fees (Rs.)</td><td></td></tr>
<tr><td>Total Programme Fee</td><td>Rs 1,900/- inclusive of tax</td><td></td></tr>
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ANNEXURE 1

Proposed Course outline / programme / plan – Unit wise syllabus details.

Unit – I : Transportation and Gathering Station
Gathering stations; Principles of flow in pipes, pipeline specification, pipeline automation and SCADA Types of measurements; Types of pumps, compressors and booster station; Fluid dynamics and flow pattern of oil and gas mixtures. Non-isothermal flow and its effect on pumping operation; Transportation of heavy oil Corrosion monitoring and control; wax deposition and prevention; Artificial lift methods.

Unit – II : Separation Systems
Separation in oil and gas production; Surface Production/Separation Facility; Factors affecting recovery in the separator; Basic equilibrium relations for complex mixtures; test separator and group separators, slug catchers; Functional components of separators, types of separators and design theories of two-phase separation systems.

Unit – III : Stage Separation and 3 phase Separators
Stage separation and its applicability, Three Phase Separation - Types of equipment, selection considerations and operating problems, design theory, Sizing of separators; Current technological trends and advances in separations.

Unit – IV : Treatment of Recovered Oil and Storage
Heat transfer principles and applications in oil and gas treatment, Heater treaters, Electrostatic heater treaters and oil dehydrators, Emulsion Treatment Methods, Oil de-salting systems and Caustic wash, Crude stabilization, Produced Water Treatment, Water injection system treatment, sand management, Onshore and Offshore Hydrocarbon Storage Facilities, Vapor recovery from field production.