

# Pipeline Engineering Programme

## Module MC01: Basics of Pipeline Engineering & Design Fundamentals



### Key Facts

- ✓ **Duration:** 1 week (5 teaching days)
- ✓ **Format:** In-person & online (Leoben, Austria)
- ✓ **Language:** English
- ✓ **Certificate:** Micro-Credential (ECTS transferable)
- ✓ **Prerequisites:** Technical background in fluid mechanics or engineering recommended; none required

### Key Learning Outcomes

1. Understand pipeline development and key technological advances.
2. Identify pipeline types, components, and corresponding design requirements.
3. Compare the economic and strategic roles of pipelines with other transport modes.
4. Assess fluid properties to determine suitable designs and materials.
5. Apply the basics of system design, routing principles, and optimisation.
6. Demonstrate ethical, safe, and sustainable engineering practices.

### Module Overview

An intensive introduction to the design, construction, and operation of modern pipeline systems, covering their historical development, technological innovations, and international standards. The module explores pipeline classifications (transmission, distribution, flow lines), principal design considerations, including all major aspects, and the transport of diverse fluids such as oil, natural gas, water, hydrogen, and CO<sub>2</sub>. Economic and strategic roles of pipelines within global energy infrastructure are compared with alternative transport methods. Ethics, sustainability, and safety are emphasized throughout.

### Schedule

Day	Morning Session	Afternoon Session
1	Introduction to Pipeline Systems	Design Fundamentals Workshop
2	Materials & Structural Basics	Fluid Flow & System Design
3	Route Design principles and Construction Methods	Operational, Safety & Environmental Considerations
4	Design Optimisation Engineer's Ethics & Responsibilities	Group Case Study
5	Review & Assessment	Certificate Presentation

### Instructor: Bernhard Lässer – Member of Supervisory Board ILF Group

Bernhard Lässer has >25 years professional experience related to the pipeline industry. He has held engineering and management positions associated with design, project management and construction of major projects across Europe, the Middle East and the Americas. He also has lectured pipeline engineering at Technical University of Leoben for over 15 years.

