



Technical University
of Leoben

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DEPARTMENT
GEO ENERGY

Pipeline Engineering Programme

Module MC04: Pipeline Routing and Civil Design



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. Design Pipeline Routes using international recognised routing and alignment principles
2. Evaluate safety, environmental, socio-economic constraints in route selection
3. Use GIS tools for routing, interdisciplinary coordination and drawing output
4. Design of crossings and application of construction methodologies
5. Assessment of soil and rock behaviour, geohazards and mitigation measures
6. Civil design for pipeline infrastructure, regulatory compliance and stakeholder management

Module Overview

This module provides an overview of pipeline routing and civil infrastructure design for onshore and offshore systems. It covers alignment planning, GIS-based route selection, and essential geotechnical principles to support safe and compliant routing. Practical challenges such as terrain, environmental constraints, and infrastructure interaction are addressed. Participants also learn key civil and geotechnical concepts, including soil and rock behaviour, foundation systems, and the design of stations, crossings, and marine facilities. The module highlights how routing, civil, and geotechnical factors shape pipeline design, construction, and long-term performance.

Schedule

| Day | Morning Session | Afternoon Session |
|-----|--|---|
| 1 | Introduction to Pipeline Routing and Alignment | Route Selection Criteria - Safety, Environment, Socioeconomic |
| 2 | GIS Application and Route Optimisation | Crossing Design and Construction Methods |
| 3 | Soil and Rock Mechanics Geotechnical Investigation | Geohazards - Risk Assessment and Mitigation Measures |
| 4 | Civil Design for Pipeline and Related Infrastructure | Foundations and Facility Design |
| 5 | Regulatory Compliance, Stakeholder Management | Review, Assessment and Certificate Presentation |

Instructor: Werner Kainz – Consultant for ILF Group

Werner Kainz is a pipeline engineering specialist with extensive experience in the design and execution of major international oil and gas projects. He has served as engineering manager and project manager on landmark pipelines including TAG, BTC, ADCOP, IP, TANAP and TAP, covering routing, FEED, detailed engineering and PMC oversight across Europe, the Middle East and Asia. His work spans pipeline systems, pump and compressor stations, terminals and loading facilities, ensuring technically robust and operable infrastructure throughout all project phases.

