

Fundamentals of Pipeline Engineering Design and Construction for Geohazard Management – Course Outline

February 2025

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1.1 Course Description

This course introduces the management of geotechnical hazards as they relate to new pipeline engineering design and construction. The course includes an overview of the regulatory framework surrounding pipeline governance, a summary of the main geohazard types and the potential impact on pipelines, as well as a discussion of the main sources of geohazard risk along with associated mitigations. The fundamental concepts introduced in this course provide a strong foundation for building skills for addressing ground movement during pipeline engineering design and construction. This online course includes straightforward scenarios and self-assessments to clarify and reinforce key concepts for learners while providing individuals the flexibility to review and reinforce the material at their own pace.

1.2 Learning Objectives

By the end of the course, participants should be able to:

1. Be aware of the types of regulations and standards governing pipelines and the limited number of explicit requirements related to geohazard management, focusing on engineering design and construction.
2. Outline what geohazards are, how they are subcategorized, and their potential impacts on pipelines.
3. Identify essential elements and approaches for successfully mitigating geohazards during the engineering design and construction of new pipelines.
4. Apply course knowledge to practical case scenarios involving mitigating geohazard risks through effective pipeline engineering design and construction strategies.

1.3 Who Should Take This Course

The course is best suited for:

- Early to mid-career practitioners with engineering/technical backgrounds or those responsible for or supporting geotechnical hazard management program activities.
- Individuals with a basic familiarity with the concepts behind pipeline operation and maintenance activities.
- Individuals with a basic knowledge in the areas of civil works, geotechnical, and/or environmental domains.

1.4 Course Structure and Delivery

The course is available online in a self-paced learning format. Main topic areas include:

- Introduction to Geohazards
- Importance of Geohazard Management
- Regulatory Compliance Considerations
- Introduction to Geohazards and Potential Impacts on Pipelines
- Geohazard Mitigation
- Assessment
- Course Review