

# 1 Integrated Pipeline Mechanical Damage Management – A Practical Approach

## 1.1 Course Description

This course offers an integrated approach to mechanical damage management throughout the pipeline lifecycle. Students will explore key topics including formation, detection and characterization, assessment, management, and repair/remediation, with concepts aligned to the PRCI Report: *Systematize 20 Years of Mechanical Damage Research*. An industry-leading Subject Matter Expert Instructor will guide learners through lectures and learning activities aimed at bridging theory and real-world application of an integrated approach to mechanical damage management. Learners will gain a lifecycle-integrated, cross-functional perspective rooted in over two decades of industry-backed research.

The course will provide learners with a foundational understanding and an integrated approach to mechanical damage management concepts, transitioning beyond theory to practical applications through:

- Introducing relevant industry reference documents and their application in mechanical damage management.
- Using idealized situations to integrate foundational concepts before applying them to more complex situations.
- Providing practical application of concepts through interactive learning activities.

**Format:** In-Person

**Duration:** 3 days

**Recommended Prerequisite Courses:**

- N/A

**Required Materials:**

- N/A

## 1.2 Learning Objectives

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

1. Identify and describe the common types and causes of mechanical damage and their impact to pipeline integrity.
2. Articulate patterns and trends in pipeline mechanical damage based on real industry data.
3. Understand the evolution of the regulations, codes, and standards that create requirements for or offer guidance in the management of mechanical damage.
4. Visually identify different mechanical damage types based on pipe samples.
5. Identify and understand the methods used for detecting mechanical damage and their practical application/limitations.
6. Devise options for addressing mechanical damage threats (e.g., prevention, monitoring, identifying, mitigating) in real-world scenarios.
7. Identify emerging industry trends that are shaping the future of mechanical damage prevention, detection, and management

## 1.3 Who Should Take This Course

The course is best suited for:

- Early-to-mid-career practitioners with an engineering/technical background (e.g., technicians, technologists, engineers).
- Individuals who are actively involved in the topic area, already have a basic understanding of concepts, and are looking to extend their skills through application.
- Individuals with a basic understanding of pipeline design, construction, and operation principles and activities.

### 1.4 Course Topics

Main topic areas covered in this course include:

- Day 1
  - Background
  - Introduction to Pipeline Mechanical Damage
  - Formation and Behaviour of Pipeline Mechanical Damage
  - Integrated Management of Pipeline Mechanical Damage
- Day 2
  - Detection and Characterization of Pipeline Mechanical Damage
  - Assessment of Pipeline Mechanical Damage
- Day 3
  - Repair and Remediation of Pipeline Mechanical Damage
  - Emerging Issues – Opportunity to Improve the Detection, Assessment, and Repair of Pipeline Mechanical Damage