



External Training Course

Plant and Equipment Integrity

From 19 Oct. To 23 Oct. 2025

From 16 Nov. To 20 Nov. 2025

From 07 Dec. To 11 Dec. 2025

**InterContinental Cairo Semiramis by
IHG Hotel, Cairo, Egypt**

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External Training Course:

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Fees: 1650 KD

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Course Overview:

This comprehensive 5-day course is designed to provide participants with practical knowledge and advanced techniques for maintaining the integrity of plant systems and industrial equipment. The course emphasizes asset reliability, risk-based inspection, fitness-for-service assessments, and compliance with international standards to prevent failures and improve operational safety in oil & gas, petrochemical, power generation, and processing facilities.

Why Attend This Course?

Learn from real-world failure cases and mitigation strategies.

Gain knowledge aligned with global integrity standards.

Improve operational safety and reduce unplanned outages.

Develop actionable integrity management plans for your facility.

Course Objectives:

By the end of this training, participants will be able to:

- Understand the principles of asset integrity management (AIM).
- Implement effective inspection, monitoring, and evaluation programs.
- Apply international codes and standards (API, ASME, ISO, etc.).
- Identify common degradation mechanisms (corrosion, fatigue, creep).
- Conduct Fitness-for-Service (FFS) evaluations and Risk-Based Inspection (RBI).
- Integrate integrity management into operational and safety practices.
- Enhance plant reliability, reduce downtime, and improve compliance.

Course Methodology:

Expert-led interactive lectures.

Real case studies & failure investigations.

Hands-on group exercises and simulations.

Standards and code reviews.

Open forum discussions and Q&A.

Course Outline:

Day 1: Introduction to Plant & Equipment Integrity

- Fundamentals of Asset Integrity Management (AIM).
- Lifecycle integrity and reliability of plant assets.
- Roles and responsibilities in AIM programs.
- Key failures in plant systems and lessons learned.
- Overview of relevant international standards (API 580/581, API 579, ASME VIII).
- Integrating AIM with HSSE and operational excellence.

Day 2: Risk-Based Inspection (RBI) & Condition Monitoring

- Risk assessment principles and methodologies.
- Developing and implementing RBI programs.
- Identifying damage mechanisms and failure modes.
- Risk ranking and prioritization.
- Condition monitoring techniques (Vibration analysis, ultrasonic testing, thermography)
- Predictive vs preventive maintenance strategies.

Day 3: Corrosion Management & Degradation Mechanisms

- Types of corrosion and material degradation (General, localized, galvanic, MIC, etc.).
- Corrosion Under Insulation (CUI).
- Coating and cathodic protection systems.
- Material selection and compatibility.
- Corrosion loop and circuit development.
- Data management and trend analysis.

Day 4: Fitness-for-Service (FFS) & Remaining Life Assessment

- API 579 Fitness-for-Service methodology.
- Assessment levels (1, 2, and 3) explained.
- Evaluating flaws: cracks, dents, corrosion.
- Remaining life prediction and retirement criteria.
- Finite element analysis (FEA) overview.
- Case studies in pressure vessel and pipeline FFS.

Day 5: Integrity Management Planning & Practical Case Studies

- Integrity operating windows (IOWs).
- Integrity Management System (IMS) components.
- Documentation, audits, and performance indicators.
- Digital tools and software in integrity management.
- Interactive group case study and workshop.
- Wrap-up, knowledge test, and certificate distribution.

Course Agenda:

(1st Day) Agenda

8.30	9.00	Opening Remarks (30 Min.).
9.00	11.30	<u>DISCUSS COURSE OBJECTIVES:</u> <ul style="list-style-type: none"> • Introduction to Plant & Equipment Integrity. • Risk-Based Inspection (RBI) & Condition Monitoring. • Corrosion Management & Degradation Mechanisms. • Fitness-for-Service (FFS) & Remaining Life Assessment. • Integrity Management Planning & Practical Case Studies.
11.30	12.00	Coffee Break
12.00	14.00	<u>Introduction to Plant & Equipment Integrity:</u> <ul style="list-style-type: none"> • Fundamentals of Asset Integrity Management (AIM). • Lifecycle integrity and reliability of plant assets. • Roles and responsibilities in AIM programs. • Key failures in plant systems and lessons learned. • Overview of relevant international standards (API 580/581, API 579, ASME VIII). • Integrating AIM with HSSE and operational excellence.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(2nd Day) Agenda

9.00	11.30	<u>Risk-Based Inspection (RBI) & Condition Monitoring:</u> <ul style="list-style-type: none"> • Risk assessment principles and methodologies. • Developing and implementing RBI programs. • Identifying damage mechanisms and failure modes.
11.30	12.00	Coffee Break
12.00	14.00	<u>Risk-Based Inspection (RBI) & Condition Monitoring:</u> <ul style="list-style-type: none"> • Risk ranking and prioritization. • Condition monitoring techniques (Vibration analysis, ultrasonic testing, thermography) • Predictive vs preventive maintenance strategies.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(3rd Day) Agenda

9.00	11.30	<u>Corrosion Management & Degradation Mechanisms:</u> <ul style="list-style-type: none"> • Types of corrosion and material degradation (General, localized, galvanic, MIC, etc.). • Corrosion Under Insulation (CUI). • Coating and cathodic protection systems.
11.30	12.00	Coffee Break
12.00	14.00	<u>Corrosion Management & Degradation Mechanisms:</u> <ul style="list-style-type: none"> • Material selection and compatibility. • Corrosion loop and circuit development. • Data management and trend analysis.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(4th Day) Agenda

9.00	11.30	<u>Fitness-for-Service (FFS) & Remaining Life Assessment:</u> <ul style="list-style-type: none"> • API 579 Fitness-for-Service methodology. • Assessment levels (1, 2, and 3) explained. • Evaluating flaws: cracks, dents, corrosion.
11.30	12.00	Coffee Break
12.00	14.00	<u>Fitness-for-Service (FFS) & Remaining Life Assessment:</u> <ul style="list-style-type: none"> • Remaining life prediction and retirement criteria. • Finite element analysis (FEA) overview. • Case studies in pressure vessel and pipeline FFS.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(5th Day) Agenda

9.00	11.30	<u>Integrity Management Planning & Practical Case Studies:</u> <ul style="list-style-type: none"> • Integrity operating windows (IOWs). • Integrity Management System (IMS) components. • Documentation, audits, and performance indicators.
11.30	12.00	Coffee Break
12.00	14.00	<u>Integrity Management Planning & Practical Case Studies:</u> <ul style="list-style-type: none"> • Digital tools and software in integrity management. • Interactive group case study and workshop. • Wrap-up, knowledge test, and certificate distribution.
14.00	14.30	Questions, Discussion & Conclusion Training Course.
14.30		Buffet Lunch