

TRAINING & CERTIFICATION GUIDE

Developed by Industry,
Globally Recognized.

From the Desks of Pam Nicoletti & Keenan Loubser

On behalf of NACE International and the NACE International Institute (NII), thank you for your interest in our education and training courses and certifications.

Our mission at NACE is to equip you with the skills and knowledge necessary to protect people, assets and the environment from the adverse effects of corrosion. Our courses, which are created by industry, are intended to strengthen your technical skills and knowledge, putting you on the path to fulfilling the NACE mission and enhancing your career.

We've created this Training & Certification Guide to provide helpful guidance on courses that are available to you as a corrosion professional. With dedicated training centers in Houston and Dubai, and partners worldwide, we are working to bring education training and certification testing to locations convenient to you.

Please don't hesitate to contact NACE *FirstService* at firstservice@nace.org or by phone at +1 800-797-6223 (U.S. and Canada) or worldwide at +1 281-228-6223 if you have any questions. We hope to see you in class soon!

Sincerely,

Pam Nicoletti
Director of Education,
NACE International

Keenan Loubser
Director of Certification and Chief Operating Officer,
NACE International Institute

NACE International is accredited by



NACE International has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, NACE International has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, NACE International is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

Venture Out-of-the-Box
with the new

CORROSION TECHNICAL SERIES (CTS)

Featuring innovative topics from in-the-know experts, the **NACE International Corrosion Technical Series** discuss hot-button corrosion issues. With new speakers and new content at each 1- to 2-day offering, these “technical think tanks” shed light - through best practices, case studies, and lessons learned - on the shared corrosion challenges faced by different industries.

Who Should Attend:

- Engineers
- Project Managers
- Mid-Upper Level Management
- Scientists
- Asset or Risk Management Strategists

To learn more and keep up-to-date with the latest topics coming to the CTS series, [visit www.nace.org/cts](http://www.nace.org/cts)

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Basic Corrosion
Basic Corrosion e-Course
Corrosion & Protection of
Concrete Structures & Buildings
Designing for Corrosion Control
Power Industry Corrosion Concepts e-Course
General Corrosion Certifications



Basic Corrosion

5-Day Classroom Course: Days 1–4: 8 a.m. to 5 p.m. • **Day 5:** 8 a.m. to 2 p.m. *(unless otherwise noted)*

3.6 CEU's

This course covers a basic but thorough review of causes of corrosion and the methods by which corrosion is identified, monitored, and controlled. Active participation is encouraged through hands-on experiments, case studies, and open discussion format.

Who Should Attend

Anyone who needs the ability to recognize corrosion and understand its devastating potential, and how to monitor and/or control corrosion, especially as it relates to his or her area of responsibility. This includes:

- Technicians
- Salespersons
- Inspectors
- Managers
- Engineers

Prerequisites

Required

No prior training or experience is required.

Recommended

A basic understanding of science and chemistry is recommended.

Learning Objectives

- Define corrosion and recognize the economic, environmental and safety impact of corrosion
- Recognize terms and definitions of basic electrochemistry, as well as define the processes and concepts of electrochemistry, oxidation and reduction reactions, thermodynamics, kinetics, and passivity
- Identify the characteristics of commonly-encountered corrosive environments such as atmospheric, water and other electrolytes, soil and high temperature environments
- Distinguish between engineering materials such as metals, non-metals, composites, concrete and ceramics and their relationship to corrosion control
- Discuss the various forms of corrosion, how to recognize each form, materials subject to each form, environments that promote each form and how to control each form
- Explain how corrosion can be controlled during the design process through construction, as well as process parameters, drainage, dissimilar metals, crevices, and corrosion allowance
- Give examples as to how and when to use the control corrosion methods of design, material selection, modification of environment, protective coatings, and cathodic and anodic protection
- Differentiate between inspection and monitoring and identify the common testing techniques for each

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the multiple-choice written exam is required to earn a certificate of completion.

*For those who meet the requirements, NACE certification options are available. See pages 11-12 for details.

Basic Corrosion e-Course

18 PDH's

This course covers a basic but thorough review of causes of corrosion and the methods by which corrosion is identified, monitored, and controlled. The multimedia-based e-Course features on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows. It also includes a downloadable course manual, interactive exercises, and knowledge checks throughout to test your comprehension of the material.

Who Should Attend

Anyone who needs the ability to recognize corrosion and understand its devastating potential, especially as it relates to his or her area of responsibility. This includes:

- Technicians
- Managers
- Salespersons
- Engineers
- Inspectors

Prerequisites

Required

No prior training or experience is required.

Recommended

A basic understanding of science and chemistry is recommended.

Learning Objectives

- Define corrosion and recognize the economic, environmental and safety impact of corrosion
- Recognize terms and definitions of basic electrochemistry, as well as define the processes and concepts of electrochemistry, oxidation and reduction reactions, thermodynamics, kinetics, and passivity
- Identify the characteristics of commonly-encountered corrosive environments such as atmospheric, water and other electrolytes, soil and high temperature environments
- Distinguish between engineering materials such as metals, non-metals, composites, concrete and ceramics and their relationship to corrosion control
- Discuss the various forms of corrosion, how to recognize each form, materials subject to each form, environments that promote each form and how to control each form
- Explain how corrosion can be controlled during the design process through construction, as well as process parameters, drainage, dissimilar metals, crevices, and corrosion allowance
- Give examples as to how and when to use the control corrosion methods of design, material selection, modification of environment, protective coatings, and cathodic and anodic protection
- Differentiate between inspection and monitoring and identify the common testing techniques for each

Exam Information

The e-Course may be taken as stand-alone training (no exam). Those wishing to earn a certificate of completion must pass a written exam taken in person with a NACE-approved proctor.

To take the exam, please email NII at niifirstservice@nace.org with your desired test date. Upon successful completion of the exam, you will receive a certificate of completion.

*For those who meet the requirements, NII certification options are available. See pages 11-12 for details.



Corrosion & Protection of Concrete Structures & Buildings

3-Day Classroom Course: Days 1–2: 8:30 a.m. – 5:30 p.m.

1.5 CEU's

Held in partnership with the Australasian Corrosion Association, this course provides valuable information on prevention and remediation of corrosion and deterioration to reinforced concrete structures and buildings. Classroom instruction is comprised of lectures, hands-on exercises and instructions.

Who Should Attend

- Architects
- Civil or structural engineers
- Specialty contractors
- Construction materials supplier
- Asset managers
- Maintenance planners

Learning Objectives

- Characteristics of cement and concrete
- Concrete deterioration mechanisms
- Corrosion of steel in concrete
- Assessment, diagnosis, repair, and protection of concrete
- Cathodic protection (CP) of reinforced concrete
- Other electrochemical methods
- Preventative measures for new concrete

Prerequisites

Required

No prior training or experience is required.

Held in Partnership with



Exam Information

A written and practical exam are administered at the end of the course and are included as part of your course registration. Credit for the course is issued jointly through NACE International and the Australasian Corrosion Association.



Designing for Corrosion Control (DCC)

5-Day Classroom Course: Days 1–4: 8 a.m. to 5 p.m. • **Day 5:** 8 a.m. to 2 p.m. *(unless otherwise noted)*

3.4 CEU's

The Designing for Corrosion Control Course covers the principles of corrosion and corrosion control and provides a systematic method for applying the technology of corrosion prevention to the design process. An overview of the steps involved in materials selection common to many industries is also provided. Corrosion control in system design and the financial principles used in evaluating alternative materials and designs are also covered.

Classroom instruction is comprised of lectures and open discussions.

Who Should Attend

Anyone who has a technical corrosion background but is new to designing corrosion control systems.

This includes:

- Civil engineers
- Mechanical engineers
- Design engineers
- Process engineers
- Consultants
- Contractors
- Architects

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Apply corrosion control methods into the design process
- Associate materials performance to service environments
- Explain the processes, methodologies, and factors influencing materials selection
- Recognize the effects of corrosion and design on materials
- Select the appropriate methods to deliver design optimization
- Apply various methods of economic analysis to find direct and indirect costs

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration.

Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See pages 11-12 for details.

Power Industry Corrosion Concepts e-Course

5 PDH's

Corrosion impacts the safety, dependability, and costs of generating, transmitting, and distributing electricity. In today's economy the power industry has a pressing need for methods to extend the life of their aging infrastructure in order to meet the increasing demand for electric energy. This e-Course provides a high-level overview of the financial, economic, and physical effects of corrosion in the power industry and the importance, need, and benefits of integrating corrosion control practices into utilities' overall asset management plan.

This 5-hour short course includes audio narration with transcripts and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

- Electric utilities and independent power producers
- Vendors and suppliers of power generation equipment
- Maintenance, engineering, and inspection service providers
- Regulators and oversight organizations
- Colleges and trade schools preparing students for jobs in the electric power industry
- Union and building trades, apprenticeship and skills training program
- Governmental, veteran, and privately funded skills re-training organizations

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

No prior training or experience is required.

Learning Objectives

- Explain the cost of corrosion and its significance including the economic, environmental, safety, financial and system reliability impact as it relates to the power industry
- Recognize various types of corrosion based on their characteristics and where they are typically found in power industry environments
- Define the major areas of transmission and distribution structures, substation apparatus and generating facilities that should be inspected, the inspection process used, and the data analysis process associated with each type of inspection
- Recognize the types of corrosion mitigation methods used in the industry, as well as material selection considerations for construction and repair, and the benefits of proactive corrosion practices
- Discuss the costs of corrosion from a business perspective and the information needed to make decisions
- Recommend strategies for implementing practical approaches for corrosion management including corrective vs. preventative costs, direct vs. indirect costs, and capital vs. operation, and maintenance costs

Exam Information

There is no exam associated with this e-Course. Completion of the e-Course is required to earn a certificate of completion.



General Corrosion Certifications: Corrosion Technician, Corrosion Technologist, and Senior Corrosion Technologist Certifications

Corrosion Technician

Option 1

REQUIREMENTS (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE Basic Corrosion Course and Exam
- Successful completion of NACE Basic Corrosion e-Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Corrosion Technician Application
- 2 years' verifiable corrosion-related work experience

Option 2

CORE EXAM REQUIREMENT

- Corrosion Technician Exam (NACE-CTn-001)

Note: This exam is available via computer-based testing at Pearson VUE. Review the Exam Preparation Guide on naceinstitute.org for details.

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Corrosion Technician Application
- 2 years' verifiable corrosion-related work experience

Corrosion Technologist

Option 1

REQUIREMENT 1 (CHOOSE ONE OF THE FOLLOWING)

- Active Corrosion Technician Certification
- Successful completion of NACE Basic Corrosion Course and Exam
- Successful completion of NACE Basic Corrosion e-Course and Exam

REQUIREMENT 2 (CHOOSE ONE OF THE FOLLOWING)

- CP Tester Certification
- CP Technologist Certification
- CP Technician Certification
- CP Specialist Certification

COURSE REQUIREMENTS (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE CIP Level 1 Course and Exam
- Successful completion of NACE PCS 1 Basic Principles Course and Exam
- Successful completion of NACE PCS 2 Advanced Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Corrosion Technologist Application
- 4 years' verifiable corrosion-related work experience

Option 2

CORE EXAM REQUIREMENT

- Corrosion Technologist Exam (NACE-CTt-001)

Note: This exam is available via computer-based testing at Pearson VUE. Review the Exam Preparation Guide on naceinstitute.org for details.

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Corrosion Technologist Application
- 4 years' verifiable corrosion-related work experience

Senior Corrosion Technologist

Option 1

REQUIREMENT 1 (CHOOSE ONE OF THE FOLLOWING)

- Active Corrosion Technician Certification
- Successful completion of NACE Basic Corrosion Course and Exam
- Successful completion of NACE Basic Corrosion e-Course and Exam

*All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.

Senior Corrosion Technologist (continued)

Option 1

REQUIREMENT 2 (CHOOSE ONE OF THE FOLLOWING)

- CP Tester Certification
- CP Technician Certification
- CP Technologist Certification
- CP Specialist Certification

REQUIREMENT 3 (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE CIP Level 1 Course and Exam
- Successful completion of NACE Coatings in Conjunction with Cathodic Protection Course and Exam
- Successful completion of NACE PCS1 Basic Principles Course and Exam
- Successful completion of NACE PCS2 Advanced Course and Exam

REQUIREMENT 4 (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE Internal Corrosion for Pipelines – Basic Course and Exam
- Active Chemical Treatment Specialist Certification

COURSE REQUIREMENT 1

- Successful completion of NACE Designing for Corrosion Control Course and Exam

COURSE REQUIREMENT 2 (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE CIP Level 1 Course and Exam
- Successful completion of NACE PCS 1 Basic Principles Course and Exam
- Successful completion of NACE PCS 2 Advanced Course and Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Senior Corrosion Technologist Application
- Bachelor's degree in a physical science or engineering
- including 4 years in responsible charge -OR- 8 years' verifiable corrosion-related work experience, including 4 years in responsible charge

Option 2

REQUIREMENT 1

- Active Corrosion Technologist Certification

REQUIREMENT 2 (CHOOSE ONE OF THE FOLLOWING)

- CP Tester Certification
- CP Technician Certification
- CP Technologist Certification
- CP Specialist Certification

REQUIREMENT 3 (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE Internal Corrosion for Pipelines – Basic Course and Exam
- Chemical Treatment Specialist Certification Exam

COURSE REQUIREMENT 1

- Successful completion of NACE Designing for Corrosion Control Course and Exam

COURSE REQUIREMENT 2 (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE CIP Level 1 Course and Exam
- Successful completion of NACE PCS 1 Basic Principles Course and Exam
- Successful completion of NACE PCS 2 Advanced Course and Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Senior Corrosion Technologist Application
- Bachelor's degree in physical sciences or engineering, with 4 years in responsible charge -OR- 8 years' verifiable corrosion-related work experience, including 4 years in responsible charge

Option 3

CORE EXAM REQUIREMENT

- Senior Corrosion Technologist Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Senior Corrosion Technologist Application
- Bachelor's degree in physical sciences or engineering
- 4 years' verifiable corrosion-related work experience, including 4 years in responsible charge

Option 4

CORE EXAM REQUIREMENT

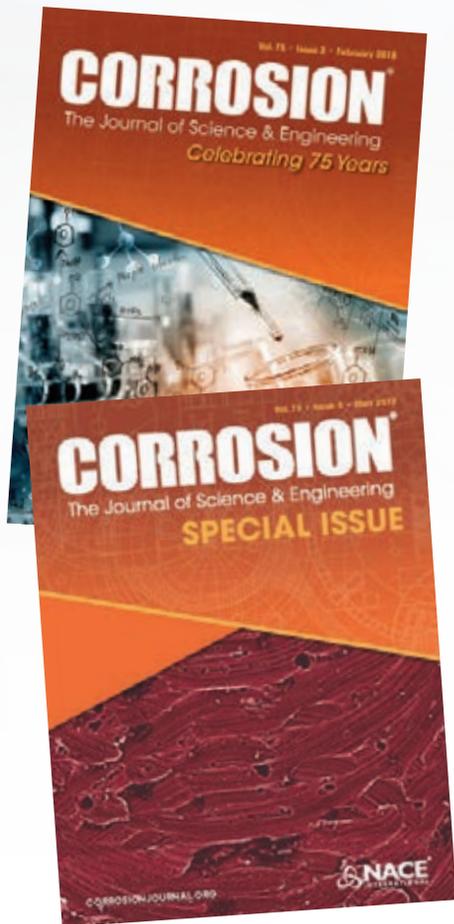
- Senior Corrosion Technologist Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Senior Corrosion Technologist Application
- 8 years' verifiable corrosion-related work experience, including 4 years in responsible charge

Don't keep your expertise to yourself, publish in *CORROSION* journal

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- Advance the knowledge of corrosion mitigation globally
- Publish your work in a journal led by esteemed UVA MSE Department Chair, John Scully, and backed by scientific peer review from other subject matter experts

Articles may fall under different corrosion-related fields

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Corrosion Prevention & Control (CPC) Management e-Course

2 PDH's

CPC planning is the most efficient method for effectively addressing and reducing the impact of corrosion at every stage of a product or facility's lifecycle. This e-Course walks through the NACE SP21412-2016/SSPC-CPC 1 standard, diving into the key aspects of CPC planning for products and facilities. It covers: attributes that impact CPC planning; considerations for material selection and design to minimize corrosion; and items that should be addressed in CPC planning which affect CPC in design, fabrication and construction, operation and use, and maintenance and sustainability.

This 2-hour short course includes audio narration with transcripts and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

Anyone who is responsible for developing corrosion prevention and control policies or plans, including:

- Public and private facility owners
- Managers
- Technicians
- Suppliers
- Inspectors
- Procurement officers
- Project managers

Learning Objectives

- Understand the mechanisms of corrosion
- Understand the costs of corrosion across industry
- Recognize the importance of corrosion prevention and control planning
- Recognize the purpose of the CPC planning standard
- Identify the different components of the standard
- Identify the items or topics that should be addressed during CPC planning
- Possess a fundamental understanding of how this standard can be utilized as an effective tool during CPC planning

Prerequisites

Required

No prior training or experience is required.

Exam Information

There is no exam associated with this e-Course. Completion of the e-Course is required to earn a certificate of completion.



Cay Strother, PMP, PE, NACE CIP Level 1, Cathodic Protection Technician, Corrosion Technician, and Corrosion Technologist Certified, Corrosion Control Section Supervisor at Kleinfelder, Denver, Colorado, USA

IMPACT PLUS®: Strategy for Corrosion Management

2 PDH's

This distance learning course serves as an introduction to the basics of implementing a Corrosion Management Strategy (CMS) into an organization to manage assets and prevent corrosion-related failures. Learn about the NACE Institute's IMPACT PLUS® program that provides a standardized CMS framework designed to be easily tailored to any industry sector. Incorporating a CMS gives organizations the tools to create consistent processes and operating procedures so employees from the top down can respond holistically and effectively when faced with corrosion-related incidents.

This course outlines how equipping employees across the organization with a process for fighting corrosion can prolong the lifecycle of critical assets by creating a consistent process and operating procedure. Students will be introduced to corrosion management and how using IMPACT PLUS® can empower organizations and their employees to consider the effects of corrosion within their business unit.

Who Should Attend

Anyone who has a technical corrosion background but is new to designing corrosion control systems.

This includes:

- Asset owners
- C-suite executives
- Senior level managers
- Corrosion management consultants
- Asset management strategists
- IMPACT Plus licensees

Prerequisites

No prerequisites or previous NACE course history required. Recommended for individuals who want to learn more about Corrosion Management, and/or as a prerequisite to attending IMPACT PLUS® Navigator training.

Learning Objectives

- Understand the mechanisms of corrosion
- Understand the costs of corrosion across industry
- Recognize the importance of corrosion prevention and control planning
- Recognize the purpose of the CPC planning standard
- Identify the different components of the standard
- Identify the items or topics that should be addressed during CPC planning
- Possess a fundamental understanding of how this standard can be utilized as an effective tool during CPC planning

Exam Information

There is no exam associated with this course.





IMPACT PLUS® Navigator

IMPACT PLUS®: Navigator Training challenges students to hone their consultancy and guidance skills on how to implement a CMS into an existing business model. Students will learn how to interpret aggregate data and translate it for clients, benchmark an organization's existing CMS against other companies, and make recommendations on how to guide entities to the next level of corrosion prevention and asset management.

Learn how to implement and maintain an asset management and corrosion prevention strategy that influences every level of an organization and empowers every employee to consider the impact of corrosion by becoming a trained Navigator.

IMPACT PLUS® Navigator Training provides role-playing scenarios, management strategies, and details on how to maximize IMPACT PLUS®'s network of tools to improve your organization's or customer's business processes and corrosion management performance. Students will be taught how to conduct corrosion management workshops, prepare surveys, and finally interpret and analyze CMMM data to advise where an organization should make investments in their corrosion management plan.

Learning Objectives

- Provide step-by-step consultation through the entire Navigation assessment process to ensure the results yield high integrity data (consistent and accurate) that allows an organization to make strategic decisions
- Evaluate and compare the organization's current asset management strategies through the Corrosion Management Maturity Model Assessment;
- Identify an organization's current asset management strategies and locate any gaps in the knowledge and approach to corrosion management across the organization.
- Interpret and analyze the Assessment results to advise where to make investments in the organization's corrosion management plan
- Consult with the organization on a path forward to take the organization's asset management strategy to the next level that focuses on critical areas of the business.

Prerequisites

Completion of IMPACT PLUS® Strategy for Corrosion Management.

Exam Information

The multiple-choice CBT exam is delivered via Pearson VUE and scheduled and paid for separately from the course.



Corrosion Control in the Refining Industry
Refining Certification



Corrosion Control in the Refining Industry

5-Day Classroom Course: Days 1–4: 8 a.m. to 5 p.m. • **Day 5:** 8 a.m. to 12 p.m. *(unless otherwise noted)*

30 PDH's

This course provides methods of corrosion control through material selection and designing a systematic method for applying the technology of corrosion prevention to the design process. Classroom instruction is comprised of lectures and open discussions.

Who Should Attend

Anyone who needs the ability to recognize corrosion and understand its devastating potential, especially as it relates to his or her area of responsibility in the refining industry.

This includes:

- Design engineers
- Process engineers
- Procurement agents
- Maintenance planners
- Service company representatives who support refineries
- Corrosion and equipment engineers
- Metallurgists
- Inspectors and inspection supervisors

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

Minimum 1-2 years of work experience and Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Identify the various forms of corrosion and the specific mechanisms that result in each form
- Define electrochemical processes and concepts
- Recognize the different types of corrosive environments that affect corrosion
- Give examples as to how and when to use control corrosion methods of design, materials selection, modification of environment, protective coatings, and cathodic and anodic protection
- Give examples of control corrosion by selection of design and engineering materials, modification of environment, cathodic and anodic protection, and protective coatings
- Discuss corrosion monitoring techniques using testing, inspection, specimen exposure, electrochemical methods, water chemistry, and analysis of deposits

Exam Information

The multiple-choice CBT exam is delivered via Pearson VUE and scheduled and paid for separately from the course.

*For complete NII certification requirements, see page 17.



Refining Certification: Refining Corrosion Technologist

Refining Corrosion Technologist Certification

COURSE REQUIREMENT

- Successful completion of NACE Corrosion Control in the Refining Industry Course or equivalent training

CORE EXAM REQUIREMENT

- Refining Corrosion Technologist Exam NACE-RCT-001

Note: This exam is available via computer-based testing at Pearson VUE. Review the Exam Preparation Guide on naceinstitute.org for details.

APPLICATION AND WORK EXPERIENCE REQUIREMENT

- Approved Refining Corrosion Technologist Application
- Bachelor's degree in a physical science or engineering, plus 2 years' verifiable corrosion work experience in the refining industry -OR- 4 years' verifiable corrosion work experience in the refining industry



*All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.

Industrial Coating Application e-Courses:

Module 1: Safety Codes, Practices & Standards

Module 2: Process Control

Module 3: Surface Preparation

Module 4: Liquid Coating Application

**Industrial Coating Application Hands-on Course
Classroom Instructor-Led**

Math for the Coatings Professional



Industrial Coating Application e-Course (ICA) – Module 1: Safety Codes, Practices, and Standards

18 PDH's

This e-Course benchmarks best practices in health and safety, surface preparation, and coatings application. It's a must-take, interactive course for coating applicators needing to meet facility owners' ever-increasing demands for consistent, quality work completed accurately, safely, and at a reasonable cost.

This 18-hour short course includes engaging slides, short quizzes, printable safety aids, downloadable checklists, audio narration with transcripts, and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

- Planning, engineering, and supervisory level personnel responsible for industrial coatings and linings who are new to the field or position
- Specifiers, maintenance, and project engineers in all industries
- Marketing representatives of coatings materials or equipment
- Unit managers involved in corrosion

Prerequisites

No prior training or experience is required.

Learning Objectives

L1: Personal Protective Equipment (PPE) & Hearing Conservation

- Identify common types of PPE
- Recognize common hazards that require the use of PPE
- Describe the relationship between decibel level, time, and hearing loss

L2: Fall Protection

- Identify components of a fall arrest system
- Explain criteria for using, inspecting, and replacing fall protection equipment

L3: Working from Scaffolds and Ladders

- Identify guidelines for selecting, inspecting, and using ladders and scaffolds

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the online exam is required to earn a certificate of completion.

Learning Objectives - Continued

L4: Aerial Lifts

- Identify the types of aerial lifts and the safety requirements for each type

L5: Confined Space and Ventilation

- Identify hazards found naturally in confined space and those created by surface preparation and coating applications

L6: Lock Out Tag Out

- Describe the purpose and procedures of lock out/tag out and recognize potential energy sources

L7: HAZCOM and Safety Data Sheets (SDS)

- Explain the purpose of Safety Data Sheets and describe each of the 16 sections within
- Recognize HAZCOM pictograms and identify the components of product labels

L8: Electrical Grounding Requirements and Working with Hand and Power Tools

- State general hazards associated with the use of tools and the safety practices which protect against them
- Explain the importance of electrical grounding and the proper use of extension cords

L9: Selection and Use of Respiratory Protection

- Recognize conditions that necessitate the use of respirators and the criteria for selection

L10: Avoiding Heat and Cold Related Injury

- Define heat stress, heat stroke, hypothermia, and frostbite and symptoms for each

L11: Surface Prep and Application Safety

- Identify potential hazards associated with abrasive blasting, high pressure lines, paint injection injury, worn lines and improperly connected equipment, and the safety practices which protect against them

L12: Heavy Metals and Environmental Waste Minimization

- Identify heavy metals that are hazardous, methods of waste minimization, and components of a containment system
- Define hazardous and non-hazardous waste streams and VOCs and the potential sources



Industrial Coating Application e-Course (ICA) – Module 2: Process Control

3.5 PDH's

Coatings must be applied in a manner that meets contractor and owner requirements as well as applicable standards. For an industrial coatings project to be successful, the first step is the planning process. This involves a set of written procedures used to maintain consistency and quality from job to job.

This 3.5-hour short course includes engaging slides, short quizzes, printable safety aids, downloadable checklists, audio narration with transcripts, and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

- Planning, engineering, and supervisory level personnel responsible for industrial coatings and linings who are new to the field or position
- Specifiers, maintenance, and project engineers in all industries
- Marketing representatives of coatings materials or equipment
- Unit managers involved in corrosion

Prerequisites

No prior training or experience is required.

Learning Objectives

L1: Work Planning

- Define a work plan and the benefits for using one throughout a project
- Describe the impact that work sequencing has on the job schedule

L2: Process Control

- List the major variables that can impact quality of a coatings project

L3: Product and Safety Data Sheets (PDS and SDS)

- Categorize and explain the information found on a PDS and a SDS
- Explain when to make a "Go" or "No-Go" decision based on information found in a PDS or a SDS

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the online exam is required to earn a certificate of completion.



Industrial Coating Application e-Course (ICA) – Module 3: Surface Preparation

13 PDH's

Before industrial coatings are applied, critical testing must be performed during surface preparation to ensure the coatings' designed lifecycle will be maximized. This e-Course reviews methods of surface preparation equipment, methods, and standards.

This short course includes engaging slides, short quizzes, printable safety aids, downloadable checklists, audio narration with transcripts, and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

- Planning, engineering, and supervisory level personnel responsible for industrial coatings and linings who are new to the field or position
- Specifiers, maintenance, and project engineers in all industries
- Marketing representatives of coatings materials or equipment
- Unit managers involved in corrosion

Learning Objectives

L1: Introduction to Surface Preparation

- List design and fabrication errors as well as steel surface defects and explain how they affect surface preparation

L2: Surface Cleanliness

- Recognize the four levels of cleanliness and identify techniques for remediation of surface cleanliness issues
- Explain common testing methods for non-visible contaminants

L3: Environmental Conditions

- Explain what and how environmental conditions affect application and coating performance
- Identify and explain the purpose and correct operation for different instruments used to measure environmental conditions

L4: Hand Tool Cleaning

- Identify tools and equipment associated with hand tool cleaning and choose the appropriate tool based on a specific surface and/or defect
- Describe the standards and the typical hazards associated with hand tool cleaning

Learning Objectives - Continued

L5: Power Tool Cleaning

- Identify tools and equipment associated with power tool cleaning and choose the appropriate tool to use with specific surfaces and/or defects
- Describe the standards and the typical hazards associated with power tool cleaning

L6: Abrasive Blasting

- Explain the different types of abrasive blasting methods and identify common uses
- Describe surface tests used to check the results of abrasive blasting

L7: Equipment Set up and Operation for Abrasive Blasting

- Identify and describe equipment used for blasting
- Define the operator controls, standoff distance, dwell time, and angle of attack as they relate to surface preparation
- Explain importance of controlling waste and dust during surface preparation

L8: Abrasive Types and Properties

- Describe the properties of blast media types
- Choose the appropriate abrasive based on desired properties and service

L9: Abrasive Media Quality Control

- Explain how to perform and document different quality control tests that verify, inspect, and test abrasive media
- Define proper storage conditions and procedures that protect the abrasive from contamination

L10: Chemical Stripping

- Describe the surface preparation method of chemical stripping and when to use it over other methods
- List different types of chemical strippers and how to select the right stripper for the job

L11: Introduction to Concrete

- List different uses and properties of concrete that make it so widely used throughout the world
- Explain the composition and curing process of concrete, types of concrete surfaces, and finishing techniques used on concrete surfaces
- Recognize different industry standards developed and used for preparing concrete surfaces

L12: Surface Preparation of Concrete

- Define the following imperfections related to concrete preparation: bug holes, honeycomb, efflorescence, laitance, fins, cracks, Alkali Silica Reaction (ASR), and Alkali-Aggregate Reaction (AAR), and suggestions for remediation
- Explain the different surface preparation methods available for preparing concrete for coating

L13: Waterjetting

- Identify the levels of cleanliness and other standards associated with waterjetting
- Explain the impact of waterjetting and the associated water pressures on surface profile

L14: Surface Preparation Quality Control

- Describe the importance of quality control tests
- Perform basic surface preparation quality control tests and document the results
- Identify key standards that relate to surface preparation quality control tests

Prerequisites

No prior training or experience is required.

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written or online exam is required to earn a certificate of completion.



Industrial Coating Application e-Course (ICA) – Module 4: Liquid Coating Application

12 PDH's

The proper application of industrial coatings is the key to any successful coatings project. This eCourse explores the use of industrial coatings, types of coatings, the most common methods of applying industrial coatings and the factors affecting application. This 12 hour course includes engaging slides, short quizzes, printable job aids, audio narration with transcripts, and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

- Coating Applicators or Coating Inspectors new to the field or position
- Planning, engineering, and supervisory level personnel responsible for industrial coatings and linings who are new to the field or position
- Specifiers, maintenance, and project engineers in all industries
- Marketing representatives of coatings materials or equipment
- Unit managers involved in corrosion

Learning Objectives

L1 – Reasons for Coating

- Define the primary function of a coating
- Give examples of how coatings are used for industrial purposes

L2 – Coating Fundamentals

- Define single and multiple component coatings and their usage
- Identify factors that impact the selection of coatings

L3 – Types of Coatings

- List the types of generic coatings and the performance characteristics of each

L4 – Curing Mechanisms

- Describe the curing mechanisms of coatings

L5 – Mixing & Thinning

- Recall mixing methods for single and multiple component coatings
- Explain how pot life, induction time, viscosity and temperature affect the mixing process
- Describe how to thin and strain and coating



Learning Objectives - Continued

L6 – Application Equipment & Set Up: Manual Methods

- Describe the advantages and disadvantages of brusher, roller, trowel, mitt and squeegee
- Explain how to set-up, operate and clean each manual application method

L7 – Application Equipment & Set Up: Spray Methods

- Describe the advantages and disadvantages of Conventional, Airless, High Volume Low Pressure and Air Assisted Spray methods
- Explain how to set-up, operate and clean each spray application method
- Describe the advantages and disadvantages of Conventional, Airless, High Volume Low Pressure and Air Assisted Spray methods

L8 – Application Considerations

- Give examples of proper spray techniques
- Describe the conditions in which stripe coats and overcoating should be applied in a coating system
- Recognize the importance of environmental and drying/ curing conditions on application

L9 – Measurement & Monitoring

- Demonstrate the proper procedure for taking a wet film measurement
- Recognize and explain the non-destructive and destructive equipment use the measure dry film thickness
- Identify and describe common coating failures and defects during and after application

L10– Storage & Receiving

- List the steps for receiving coating materials for a project
- Distinguish between proper and improper storage conditions
- Define product rotation schedules

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the online exam is required to earn a certificate of completion.



Industrial Coating Application Hands-on Course (ICA)

Classroom Instructor-Led (Licensed only)

NACE licenses authorized training providers to deliver the 6-day instructor-led Industrial Coating Application Hands-on course. Both theoretical and practical training and exams are conducted in classroom and workshop environments to ensure the student gains a thorough comprehension and application of the processes involved in surface preparation and coating application of industrial projects. The program follows the knowledge and skills requirements outlined in the NACE No. 13 / SSPC ACS 1 Joint Standard.

Course Licensing:

An Instructor guide, lab forms, grade sheet, student manual, job aids, PPT slides as well as a list of all required lab materials is included with the program. Pricing is subscription-based and is dependent on the number of student licenses required.

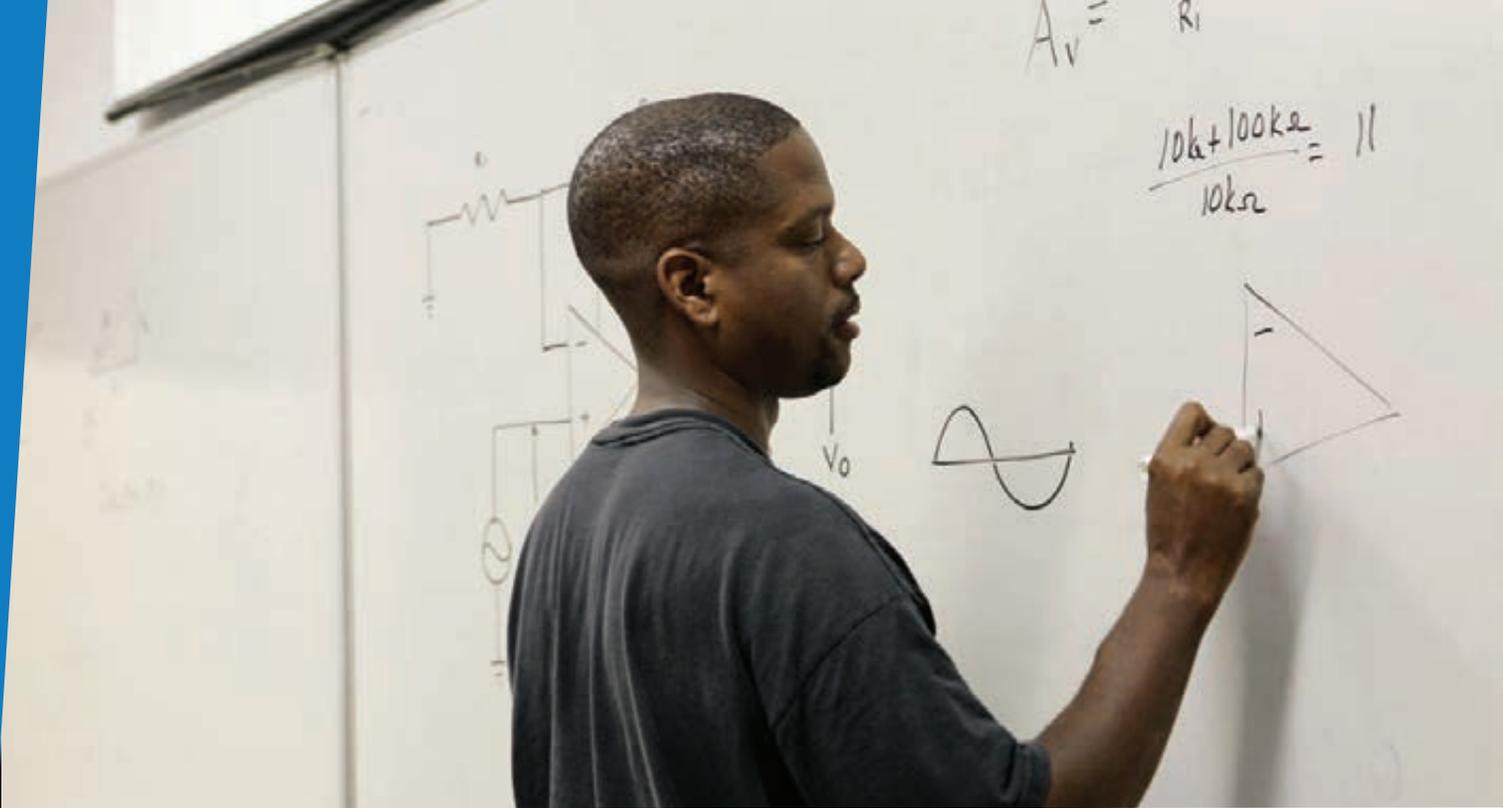
To learn more about customized pricing options, please contact the Senior Manager of Education Business Development at melanie.diaz@nace.org.

Safety Best Practices	Surface Preparation	Coating Application
L1: PPE	L1: Surface Prep Fundamentals	L1: Reasons for Coating
L2: Working from Heights	L2: Examining the Substrate & Lab	L2: Coating Fundamentals
L3: Power Sources	L3: Ambient Conditions & Lab	L3: Curing Mechanisms
L4: Lock Out Tag Out	L4: Hand & Power Tools & Lab	L4: Mixing & Thinning & Lab
L5: Confined Spaces	L5: Abrasive Media	L5: Application Considerations
L6: Heat & Cold Related Injury	L6: Abrasive Media QC	L6: Coating Application & Lab
L7: Waste Management	L7: Abrasive Blasting & Lab	L7: Measurement & Monitoring & Lab
L8: Work Planning & Process Control		
L9: HAZCOM, PDS & SDS		

The course is available in two formats:

- Option A covers all three modules (Safety, Surface Preparation and Coating Application) over a 5 day period. The written and practical exams are conducted on Day 6.
- Option B focuses only on the Surface Preparation and Coating Application modules and is conducted over a 4 day period. The written and practical exams are conducted on Day 5.

Upon successful completion of both the written and practical exam students will earn a Certificate of Completion.



Math for the Coatings Professional e-Course

5 PDH's

Choose between imperial and metric versions to brush up on critical math skills needed to succeed in the coatings industry. The course presents a review of basic math principles, then progresses to more complex calculations used in the coatings industry through step-by-step examples, self-study practice problems, and downloadable job-aids. Available in both imperial and metric versions.

This 5-hour short course includes audio narration with transcripts and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

Anyone in the coatings industry who needs to understand the calculations involved when working with coatings.

Prerequisites

No prior training or experience is required.

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written or online exam is required to earn a certificate of completion.

Learning Objectives

Math Principles

- Add and subtract fractions; calculate exponents; convert fractions to decimals and decimals to fractions; convert decimals to percentages and percentages to decimals; calculate equations using the order of operations rule

Basic Coating Calculations

- Calculate linear feet, square footage, cubic feet, cubic volume, surface area and volume of a cylinder, area of an i-beam

Advanced Coating Calculations

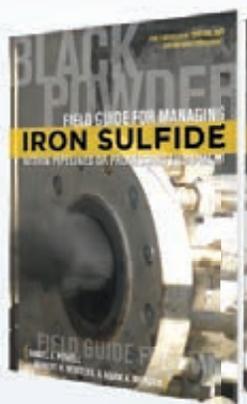
- Calculate WFT to DFT and DFT to WFT, practical coverage and theoretical coverage including loss, and adding thinner

On the Job Calculations

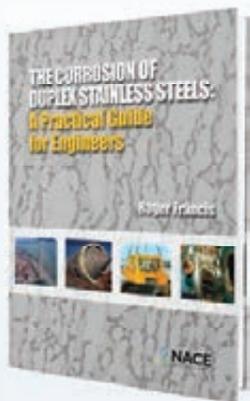
- Identify and describe the types of corrosion mitigation methods used in the industry as well as material selection considerations for construction and repair as well as the benefits of proactive corrosion practices

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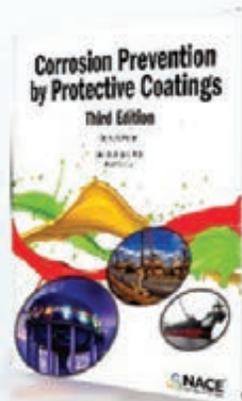
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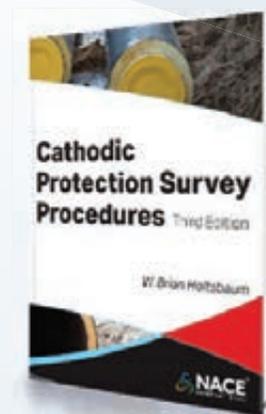
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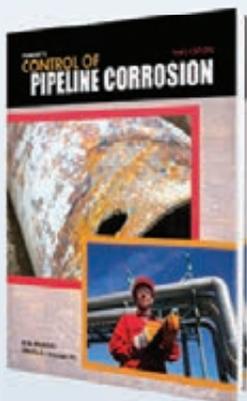
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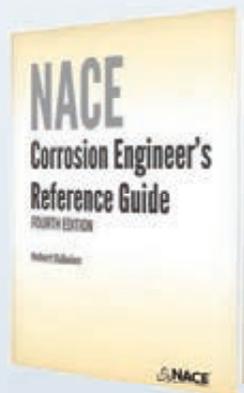
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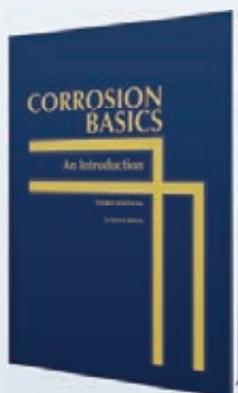
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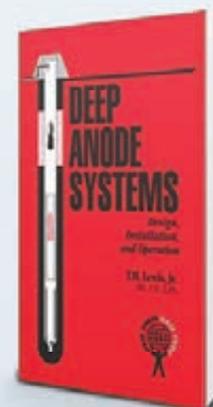
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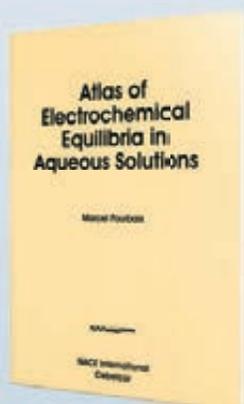
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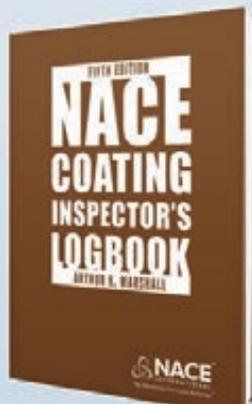
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Item No 37502



Item No 37602

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Introduction to Coating Inspection e-Course

Coating Inspector Program (CIP) Level 1

Coating Inspector Program (CIP) Level 2

Coating Inspector Program (CIP) Level 3

Peer Review

Coating Inspector Program (CIP)

Bridge e-Course

Marine Coating Technology

Math for the Coatings Professional e-Course

* see page 26 for more information

Nuclear Power Plant Training
for Coating Inspectors

Coating Inspector Program (CIP)
Certifications

Introduction to Coating Inspection e-Course (ICI)

4 PDH's upon completion of all eight modules

ICI is an online, self-paced course that consists of eight, 30-minute modules introducing the fundamentals of coatings, as well as the purpose and role of a coating inspector on a coatings project. Students may either choose to complete the modules in sequential order or those with more experience or with interests, may select the modules that would most benefit them in their career.

This 4-hour short course includes audio narration with transcripts and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

This course is geared toward those new to the protective coating and coating inspection industry or those looking to learn more about coating inspection prior to enrolling in the CIP Level 1 course.

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

No prior training or experience is necessary.

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the online exam is required to earn a certificate of completion.

Learning Objectives

Module 1: Role of the Inspector

- Describe the role and responsibilities of an inspector and the value they bring to a coatings project

Module 2: Test Instrumentation

- Explain the basic instruments used to monitor environmental conditions, evaluate the level of surface preparation, and measure the thickness of the installed coating film

Module 3: Coating Specification

- Identify the basic information that needs to be included in specifications, so the coating inspector has the tools to ensure that the coatings are installed as specified

Module 4: Coating Fundamentals

- Define the components of a typical coating and how coatings are applied to better understand the importance and role of the coating inspector in coatings application

Module 5: Surface Preparation and Standards

- Summarize the various methods of surface preparation and the critical aspects required for a successful coating project

Module 6: Application Procedures

- Describe the equipment (brush and roller, conventional and airless and plural component system) and processes for coatings application

Module 7: Coating Defects

- Identify the types of defects that may occur when the specification is not followed or when problems occur during the coatings installation and how to identify them

Module 8: Pre-Job Conference

- Explain the benefits of a pre-job conference, where all involved parties meet to ensure complete understanding of the project requirements and clarify any potential issues or ambiguities before it starts

Coating Inspector Program Level 1 (CIP 1)

6-Day Classroom Course: Days 1–5: 8 a.m. to 6 p.m. • **Day 6:** 8 a.m. to 3:30 p.m. *(unless otherwise noted)*
5 CEU's

CIP Level 1 covers the technical and practical fundamentals of coating inspection work. Students will be prepared to perform basic coating inspections using non-destructive techniques and instrumentation. This course provides students with knowledge and application of coating materials, along with techniques for surface preparation.

Classroom instruction is comprised of lectures, discussions, group exercises and hands-on practical labs.

Who Should Attend

Although specifically designed for coating inspector trainees, this course benefits anyone interested in gaining a better understanding of coatings application and inspection. This includes:

- Program/project managers and engineers
- Quality assurance/control managers
- Contractors and specification writers
- Coating manufacturers and technical sales representatives
- Fabricators
- Paint applicators and blasters
- Maintenance personnel

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

- Introduction to Coating Inspection (ICI) e-Course
- Industrial Coating Application - Instructor Led
- Industrial Coating Application e-Course (ICA)
- Math for the Coatings Professional e-Course
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Describe the properties of a coating, coating classification and modes of protection
- Recognize coating types and curing mechanisms
- Recall coating specifications including service environments and coating life cycle
- Differentiate surface preparation equipment, methods, and standards for abrasive blasting, solvent cleaning, and power and manual tool cleaning
- Differentiate coating application by type, including brush, roller, mitt, and conventional and airless spray
- Demonstrate inspection procedures
- Describe the role of the inspector as it applies to safety, ethics, conflict prevention, and decision-making
- Test for environmental or ambient conditions and nonvisible contaminants
- Utilize non-destructive test instruments such as wet-film and dry-film thickness gauges and low and high voltage holiday detectors
- Measure surface profile using replica tape and anvil micrometers, surface profile comparators, and digital surface profile gauges
- Identify quality control issues, recognizing design and fabrication defects and coating failure modes
- Utilize Safety Data Sheets (SDS) and product technical data sheets
- Demonstrate the purpose and content of Logbook and report documentation

Exam Information

A practical exam is administered at the end of the course. Successful completion of the exam is required to earn a certificate of completion.

NII certification requirements* include the practical exam administered at the end of course, along with an exam delivered via computer-based testing (CBT).

The multiple-choice CBT exam is scheduled separately from the course and delivered via Pearson VUE. A voucher is needed to schedule the CBT exam, and is included as part of your initial course registration.

*For complete certification options and requirements, see page 36.

Coating Inspector Program Level 2 (CIP 2)

6-Day Classroom Course: Days 1–5: 8 a.m. to 6 p.m. • **Day 6:** 8 a.m. to 3:30 p.m. *(unless otherwise noted)*

5 CEU's

CIP Level 2 focuses on advanced inspection techniques and specialized application methods for both steel and non-steel substrates, including concrete using both nondestructive and destructive techniques. Surface preparation, coating types, inspection criteria, lab testing, and failure modes for various coatings, including specialized coatings and linings are also covered.

Classroom instruction is comprised of lectures, discussions, group exercises, and hands-on labs. Students will also participate in case studies based on real-life situations and practices of a coatings inspector.

Who Should Attend

CIP Level 1 inspectors seeking CIP Level 2 knowledge or certification who are/or will be responsible for performing and documenting non-destructive/destructive inspections of liquid and non-liquid coatings to any substrate in a shop or field setting, under the supervision of a CIP Level 3 inspector.

Prerequisites

Required

Successful completion of CIP Level 1 course is required.

Recommended

- Math for the Coatings Professional e-Course
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Explain advanced corrosion theory as it applies to the role of cathodic protection when used with coatings
- Identify types of environmental controls and inspection concerns associated with the use of digital electronic hygrometers, data loggers, and wind speed monitors
- Identify standards, methods of use, and inspection concerns for centrifugal blast cleaning and water-jetting equipment
- Recognize the importance of surface preparation, application, and inspection of liquid-applied and thick barrier linings
- Utilize destructive coating inspection equipment, such as adhesion and hardness testers, pH meters and ultrasonic thickness and eddy-current dry film thickness gauges
- Recognize the methods of use, standards, and inspection concerns for specialized application equipment including plural-component, electrostatic and centrifugal, and hot spray systems
- Recall concrete coating techniques, concerns and test instruments used for inspection
- Identify specialized coating techniques and application of non-liquid coatings including powdered coatings, spray metalizing, hot-dip galvanizing and automated coatings application
- Distinguish between different coating survey techniques, procedures, and common coating failure modes
- Describe maintenance coating operations, as well as health and safety concerns in relations to the inspector's work conditions

Exam Information

A practical exam is administered at the end of the course and is included as part of your course registration. Successful completion of the exam is required to earn a certificate of completion.

NII certification requirements* include the practical exam administered at the end of course, along with an exam delivered via computer-based testing (CBT).

The multiple-choice CBT exam is scheduled separately from the course and delivered via Pearson VUE. A voucher is needed to schedule the CBT exam is included as part of your initial course registration.

*For complete certification options and requirements, see page 36.

Coating Inspector Program Level 3

Peer Review

The Coating Inspector Level 3 oral exam is designed to assess whether a candidate has the requisite knowledge and skills that a minimally qualified Level 3 Coating Inspector must possess. The CIP Level 3 Peer Review is an intensive, detailed oral examination that is given in front of a three-member review board and is based on the Coating Inspector body of knowledge. A candidate should have "expert knowledge" of all corrosion, surface preparation, cleanliness, environmental conditions, test instruments, coating mixtures, and safety. They should also be able to perform unsupervised non-destructive inspections of liquid and non-liquid coatings to any substrate and demonstrate technical knowledge, problem solving ability regarding issues that may arise on site and is capable of supervising basic (CIP level 1) and intermediate (CIP level 2) coating inspectors.

Who Should Attend

Anyone interested in completing his or her CIP training to receive recognition as a NACE Certified Coating Inspector – Level 3.

Prerequisites

Required

- Successful completion of NACE CIP Level 1 and CIP Level 2 courses
- Active NACE CIP Level 2 Certification



Riyana Bazuri, NACE CIP Level 3 Certified, QA Manager at Blastech Abrasives Pte Ltd., Singapore, Singapore

CIP Bridge e-Course

8 PDH's

This course provides specialized training related to coating inspection of bridges. The course focuses on how to inspect surface preparation and coating application of bridges, as well as the role of the inspector in the quality control process.

This 8-hour short course includes audio narration with transcripts and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

CIP participants seeking to expand their knowledge of bridge coating inspection. Other candidates for this course may include:

- Quality assurance and program/project managers
- DOT bridge engineers and inspectors
- Fabrication shop and coating contractor inspectors
- Bridge material and equipment suppliers
- Asset maintenance managers
- Coatings contractors
- Inspection companies
- Surface preparers
- Applicators

Prerequisites

Recommended

- NACE CIP Level 1 Certification
- Basic Corrosion or Basic Corrosion e-Course
- Industrial Coating Application (ICA) e-Course

Learning Objectives

- Discuss the duties and responsibilities of a bridge inspector and define inspection concepts including personal and public safety issues associated with bridge inspections
- List the inspection equipment needs for various types of bridges and site conditions
- Describe, identify, evaluate, and document the various components and deficiencies that can exist on bridge components and elements
- List design characteristics and describe inspection methods and locations for common concrete and steel structures
- Identify what preparation the inspector must make prior to the start of work in order to conduct effective inspections
- Describe nondestructive evaluation methods for basic bridge materials
- Demonstrate how to field inspect and evaluate common concrete, steel, and timber bridges
- Create inspection documentation, including a basic inspection plan

Exam Information

The online exam is administered at the end of the course and is included as part of your course registration. Successful completion of the exam is required to earn a certificate of completion.

NII certification requirements* include successful completion of the e-Course, along with an exam delivered via computer-based testing (CBT).

The CBT exam is delivered via Pearson VUE and is scheduled and paid for separately AFTER earning the e-Course's certificate of completion.

*For complete NII certification requirements, see page 36.

Marine Coating Technology

4-Day Classroom Course: Days 1–4: 8 a.m. to 5 p.m. *(unless otherwise noted)*
3.1 CEU's

This course covers the fundamental issues that are specific to coatings in the marine industry. After a description of the most common types of ships, the course describes the corrosion types affecting the ships' areas, the types of coatings and linings that are effective in the marine environment, the shipbuilding process, the surface preparation, application and inspection techniques, the IMO PSPC for Ballast Tanks, Cargo Tanks and Voids, as well as in-service survey and inspection, inspection records and procedures.

Classroom instruction is comprised of lectures and discussions.

Who Should Attend

Although specifically designed for coating inspector trainees, this course benefits anyone interested in gaining a better understanding of coatings application and inspection. This includes:

- Project engineers
- Quality assurance managers
- Contractors
- Technical sales representatives
- Blasters
- Paint applicators
- Maintenance personnel
- Management or staff involved in maritime or shipbuilding with a required knowledge of coatings

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- NACE CIP Level 1 or Level 2 Certification
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Describe the types and uses of protective coatings, their application, and associated quality control on vessels
- Recognize salient safety issues associated with performing inspection in marine industry
- Identify and use instruments mainly used in marine coating inspection
- Recognize various IMO Resolutions related to protective coatings (PSPC for ballast tanks, cargo tanks and voids, antifouling, etc.)

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See page 36 for details.

Nuclear Power Plant (NPP) Training for Coating Inspectors

5-Day Classroom Course: Days 1–5: 8 a.m. to 5 p.m. *(unless otherwise noted)*

3.8 CEU's

This course is designed specifically to train coating inspectors to conduct inspections in nuclear power plants (NPPs), and is also used as a primer to familiarize non CIP-certified personnel with NPP coating requirements. The training focuses on the unique challenges presented by a nuclear facility's restrictive and safety-critical environment, as well as the verbatim compliance compulsory in NPPs. The course also delves deeply into government, industry, and plant-specific regulations, technical specifications, and procedures.

Classroom instruction is comprised of lectures, case studies and discussions.

Who Should Attend

- NPP quality assurance managers
- Qualified coating inspectors
- Inspection firms – qualified inspectors and managers
- Coating manufacturers sales and technical representatives
- Coating inspection and evaluation personnel at architectural engineering firms
- Coating contractors
- Coating evaluation personnel from the Nuclear Regulatory Commission (U.S.)
- Paint supervisors at nuclear power plants

Learning Objectives

- Describe NPP operations, work procedures, and familiarity with industry terms
- Recognize all industry regulatory organizations worldwide (including the U.S. Nuclear Regulatory Commission (NRC))
- Perform inspections in various areas of a NPP
- Recall the purpose, criteria, and types of qualified NPP Coatings
- Develop and manage a safety-related coatings program
- Classify surface preparation and coating application of different Coating Service Level (CSL) areas
- Match coating system type and DBA qualification requirements
- Determine and apply required qualifications to meet industry and plant-specific ANSI and ASTM standards

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

- NACE CIP Level 1 Certification
- Basic Corrosion or Basic Corrosion e-Course

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See page 36 for details.



Coating Inspection Certifications

CIP Level 1 Certification

COURSE REQUIREMENT

- Successful completion of NACE CIP Level 1 Course

CORE EXAM REQUIREMENT 1

- CIP Level 1 Practical Exam

Note: This exam is delivered as part of the NACE CIP Level 1 course

CORE EXAM REQUIREMENT 2

- CIP Level 1 Exam (NACE-CIP1-001)

Note: Review the Exam Preparation Guide on naceinstitute.org for details. This exam is available via computer-based testing at Pearson VUE.

CIP Level 2 Certification

REQUIREMENT

- Active CIP Level 1 Certification

COURSE REQUIREMENT

- Successful completion of NACE CIP Level 2 Course

CORE EXAM REQUIREMENT 1

- CIP Level 2 Practical Exam

Note: This exam is delivered as part of the NACE CIP Level 2 course

CORE EXAM REQUIREMENT 2

- CIP Level 2 Exam (NACE-CIP2-001)

Note: Review the Exam Preparation Guide on naceinstitute.org for details. This exam is available via computer-based testing at Pearson VUE.

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved CIP Level 2 Application
- 2 years' verifiable coatings-related work experience

Note: Please review the Accepted Work Experience Requirements on naceinstitute.org

CIP Level 3 Certification

REQUIREMENT

- Active CIP Level 2 Certification

CORE EXAM REQUIREMENT

- CIP Level 3 Oral Exam (NACE-CIP3-001)

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved CIP Level 3 Application

Note: Application must be submitted at least 60 days prior to oral exam.

- 5 years' verifiable coatings-related work experience

Note: Please review the Accepted Work Experience Requirements on naceinstitute.org

Available Specialties

CIP Levels 1, 2, or 3 with Bridge Specialty

REQUIREMENT

- Active CIP Level 1, 2, or 3 Certification

COURSE REQUIREMENT

- Successful completion of NACE CIP Bridge e-Course and end-of-course assessment

CORE EXAM REQUIREMENT

- CIP Bridge Exam

Note: Review the Exam Preparation Guide on naceinstitute.org for details. This exam is available via computer-based testing and must be scheduled and paid for separately AFTER passing the end-of-course assessment.

CIP Levels 1, 2, or 3 with Marine Specialty

REQUIREMENT

- Active CIP Level 1, 2, or 3 Certification

COURSE REQUIREMENT

- Successful completion of NACE Marine Coating Technology Course and Exam

CIP Levels 1, 2, or 3 with Nuclear Specialty

REQUIREMENT

- Active CIP Level 1, 2, or 3 Certification

COURSE REQUIREMENT

- Successful completion of NACE Nuclear Power Plant Training for Coatings Inspectors Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Nuclear Specialty Application
- Approved Work Experience Form

Note: Please review the Accepted Work Experience Requirements on naceinstitute.org

* All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.



- Corrosion Under Insulation (CUI)
- Marine Coating Technology
- Math for the Coatings Professional e-Course
- Offshore Corrosion Assessment Training (O-CAT)
- Shipboard Corrosion Assessment Training (S-CAT)
- Pipeline Coating Applicator Training
- Protective Coating Specialist 1 Basic Principles
- Protective Coating Specialist 2 Advanced
- General Coatings Certifications

Corrosion Under Insulation (CUI)

4-Day Classroom Course: Days 1–3: 8 a.m. to 6 p.m., **Day 4:** 8 a.m. to 2 p.m. *(unless otherwise noted)*

3.1 CEU's

Corrosion Under Insulation (CUI) is one of the most well-known phenomena and major problems in the process industries. This course introduces the theoretical and practical aspects of preventing, managing and inspecting CUI.

Who Should Attend

The course was designed to be applicable for anyone working within an industry affected by CUI. Job titles may include but are not limited to:

- Specifiers and Designers
- Metals, Coatings and Risk Based Inspectors
- Coating Contractors
- Maintenance personnel and project engineers
- Manufacturers of insulation materials and equipment
- Unit managers involved in CUI

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

- Basic Corrosion or Basic Corrosion -eCourse
- CIP Level 1

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written exam is required to earn a certificate of completion.

Learning Objectives

- Explain what CUI is, including the components of a typical CUI system and why it is required in a range of industrial settings
- Explain the importance of lab testing on the selection of CUI system components
- Define the role protective coatings play in the prevention of CUI and outline the factors that need to be considered when selecting a coating for application under insulation
- Identify common coating types applied under insulation and describe their advantages and disadvantages
- Outline the factors that need to be considered when selecting insulation and recognize and describe the types of insulation commonly used within CUI Protective Systems
- Describe the jacketing and recognize the types of jacketing commonly used within CUI Protective Systems
- Describe what spray-on insulation and its common applications and advantages and disadvantages of different types of spray-on insulation
- Identify when passive fire protection is required and outline the steps to minimize the likelihood of corrosion under fireproofing occurring
- Summarize the differences between intumescent coatings, high density concrete coatings and cementitious coatings.
- Explain common design practices used to minimize CUI and recognize common design flaws
- Outline the common steps involved in installing a CUI Protective System
- Recognize common mistakes made during the application of insulation, jacketing, banding, vapor barriers and when sealing entry/exit points
- Identify the key components of risk-based inspection programs and describe their benefits within a CUI context.
- Discuss the inspection methods that can be utilized with and without the removal of the CUI Protective System
- Explain the process of referring a vessel/pipeline for repair or replacement

Offshore Corrosion Assessment Training (O-CAT)

5-Day Classroom Course: Days 1–4: 8 a.m. to 5 p.m. • **Day 5:** 8 a.m. to 1 p.m. *(unless otherwise noted)*

3.5 CEU's

This course addresses the elements of in-service inspection and maintenance planning for fixed offshore structures. Also covered in this course are the Minerals Management Services (MMS) A-B-C facility evaluation grading system requirements for Level 1 Inspection Reporting.

Who Should Attend

Anyone involved in corrosion control and integrity management of fixed offshore structures. The curriculum benefits varied levels of professionals including:

- Management and planning personnel
- Field inspectors conducting in-service inspections of the facility
- Offshore platform operations personnel

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

- A basic understanding of science and chemistry is recommended to gain the most value from this course.
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Perform an evaluation of an offshore platform corrosion system
- Describe the various testing methods used during the evaluation
- Identify safety hazards and critical areas of concern
- Describe the systems and their requirements used to collect information about offshore platforms
- Recognize the various types of oil platforms/rigs and equipment
- Identify and define the primary corrosion protection systems used in offshore:
 - Protective coatings
 - Splash zone systems
 - Cathodic protection
- Describe the role of the Bureau of Safety & Environmental Enforcement (BSEE) and the A-B-C facility evaluation grading system requirements for Level 1 Inspection Reporting

Exam Information

A practical exam is administered at the end of the course and is included as part of your course registration. Successful completion of the practical exam is required to earn a certificate of completion.

All certification requirements* include the practical exam administered at the end of course, along with an exam delivered via computer-based testing (CBT).

The multiple-choice CBT exam is scheduled separately from the course and delivered via Pearson VUE. A voucher needed to schedule the CBT exam is included as part of your initial course registration.

*For complete certification options and requirements, see page 44.

Shipboard Corrosion Assessment Training (S-CAT)

5-Day Classroom Course: Days 1–4: 8 a.m. to 5 p.m. • **Day 5:** 8 a.m. to 12 p.m. *(unless otherwise noted)*
3.4 CEU's

The Shipboard Corrosion Assessment Training course provides a foundation of coatings, corrosion, and corrosion control knowledge for assessing the condition of tanks and other military ship structures, while determining the required actions necessary to effectively maintain fully operational status. The course equips the naval assessor with practical guidelines for surveying and evaluating the condition of the protective coating system on specific areas of U.S. Navy vessels.

Classroom instruction is comprised of lectures, discussions, and assessments.

Who Should Attend

- Coating inspectors
- Shipyard planners
- Design engineers
- Type commander representatives
- Port engineers

Prerequisites

Required

There are no required prerequisites for this course.

Recommended

- It is highly recommended that students possess a high school diploma or GED and have a minimum of 3 months' work experience in the evaluation of corrosion or coatings breakdown on marine vessels.
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Perform visual assessments for all ship areas
- Determine corrosion control methods:
 - Design
 - Inhibitors
 - Protective coatings
 - Cathodic protection
 - Corrosion resistant materials
 - Alteration of environment
- Utilize evaluation tools and equipment, such as a pit gauge and DFT gauge
- Evaluate a corrosion protection system
- Plan maintenance and manage inspection results in a Corrosion Control Information Management System (CCIMS)
- Conduct a tank inspection using the Corrosion Control Assessment Maintenance Manual (CCAM)
- Perform total tank scoring
- Perform adhesion testing

Exam Information

A practical exam is administered at the end of the course and is included as part of your course registration. Successful completion of the practical exam is required to earn a certificate of completion."

NII certification requirements* include the practical exam administered at the end of course, along with an exam delivered via computer-based testing (CBT).

The multiple-choice CBT exam is scheduled separately from the course and delivered via Pearson VUE. A voucher needed to schedule the CBT exam is included as part of your initial course registration.

*For complete certification options and requirements, see page 44.



Pipeline Coating Applicator (PCA) Training

5-Day Classroom Course: Days 1–5: 8 a.m. to 5 p.m. *(unless otherwise noted)*

3.8 CEU's

The Pipeline Coating Applicator course covers the proper coating application procedures including understanding specifications, surface preparation, application techniques, dealing with changing ambient conditions, and quality control measures, for the most common coating materials to which contractors and inspectors are exposed on pipeline projects.

Classroom instruction is comprised of lectures, discussions, and hands-on demonstrations in field conditions.

Who Should Attend

Targeted to pipeline coating applicators, but will also benefit:

- Pipeline inspectors
- Foremen and supervisors
- Engineers-in-charge
- Manufacturer representatives
- Experienced coatings personnel

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- High school diploma or GED
- Ability to lift 40 lbs.
- Ability to perform basic math calculations (simple algebra, fractions, conversions)
- Industrial Coating Application e-Course (ICA)

Learning Objectives

- Recognize the impact of external corrosion and the consequences of failure
- Describe the importance of surface preparation, including sand blast cleaning
- Explain how to avoid or control surface contamination and account for weather conditions
- Perform a proper heating of the substrate
- Perform the proper application of:
 - 2- and 3-layer heat shrink sleeves
 - 2-part epoxy
 - Pre-insulated/thermally insulated pipe coatings
 - Cold and hot applied tapes
 - Petroleum/wax brand tapes
- Utilize inspection equipment typically used during coating inspection
- Inspect quality of coatings in the field
- Describe repair methods and products for 2LPE, 3LPE, FBE, and pre-insulated pipe coatings

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written exam is required to earn a certificate of completion.

Protective Coating Specialist - Basic Principles (PCS 1)

3-Day Classroom Course: Days 1–3: 8 a.m. to 5 p.m. *(unless otherwise noted)*

2.3 CEU's

The PCS 1 Basic Principles introduces both the theoretical and practical aspects of using coatings to control corrosion and the economic benefits of managing them. Common corrosion control coatings are defined and when, how, and where they should be used.

Classroom instruction is comprised of lectures and open discussions.

Who Should Attend

- Planning, engineering, and supervisory level personnel responsible for industrial coatings and linings who are new to the field or position
- Specifiers, maintenance, and project engineers in all industries
- Marketing representatives of coatings materials or equipment
- Unit managers involved in corrosion

Prerequisites

Required

There are no prerequisites for this course.

Recommended

Math for the Coatings Professional e-Course

Learning Objectives

- Define control corrosion and the purpose of coatings and linings
- Identify the types of coating systems and select the appropriate one based on factoring considerations
- Recognize the purpose of surface preparation and identify errors/omissions
- Explain the methods of application and the standards associated with those methods
- Produce desired results by understanding the importance of coating specification and pre-job conference
- Conduct inspection and quality control and understand the instruments and tools required
- Utilize instruments and tests to conduct inspection and quality control
- Document and report data, recognize the importance of the data and how it assists with maintenance planning

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See page 44 for details.





Protective Coating Specialist - Advanced (PCS 2)

3-Day Classroom Course: Days 1–3: 8 a.m. to 5 p.m. *(unless otherwise noted)*

2.3 CEU's

The PCS 2 Advanced course provides advanced level technology topics related to protective coatings. Highlights include an in-depth discussion of coatings, their basic chemical properties, and any unique considerations for their surface preparation, application and inspection. Testing coating properties and performance, common coating defects, substrates, selecting coating systems, the specification, and surveys and maintenance planning are also covered.

Classroom instruction is comprised of lectures and open discussions.

Who Should Attend

This course is recommended for technical personnel who work with protective coatings on a regular basis including:

- Planners
- Engineers
- Supervisors

Prerequisites

Required

There are no prerequisites for this course.

Recommended

PCS 1 Basic Principles

Exam Information

A written exam is administered at the end of the course and is included as part of your course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See page 44 for details.

Learning Objectives

- Recognize uses of coatings and linings, best practices, and external factors that influence their use
- Differentiate between organic and inorganic coatings
- Recognize the uses and benefits of convertible coatings
- Describe specialty coating types, advantages/disadvantages, and standards that govern them
- Discuss coating characteristics including the basic chemistry and unique characteristics that affect surface preparation and application needs
- Perform common test and qualification methods for liquid-applied coatings
- Recognize the chemistry of non-liquid and liquid applied coatings
- Describe the various types of tests performed on coatings and identify coating defects
- Recognize substrate surface preparation issues and industry standards, configuration types, and factors affecting their coating application
- Develop a complete and unambiguous coating specification
- Determine coating system selection goals, objectives, performance requirements, design engineered properties and trade-offs
- Select the appropriate test to determine the condition of the substrate
- Select the appropriate test to determine the condition of the existing protective coating system

General Coatings Certifications

Certified Coating Applicator

CORE EXAM REQUIREMENT 1

- Certified Coating Applicator Exam (NACE-CA-001)

Note: Review the Exam Preparation Guide on naceinstitute.org for details. This exam is available via computer-based testing at Pearson VUE

CORE EXAM REQUIREMENT 2

- Certified Coating Applicator Practical Exam

Note: The candidate must pass the written exam prior to taking the practical exam.

CERTIFICATION REQUIREMENTS

- Candidates must accept the liability agreement during the exam purchase process.
- Candidates must complete the Coating Applicator-Code of Professional Conduct/Attestation form.

O-CAT Technician Certification

COURSE REQUIREMENT

- Successful completion of NACE Offshore Corrosion Assessment Training (O-CAT) Course and Exams

CORE EXAM REQUIREMENT 1

- O-CAT Technician Practical Exam

Note: This exam is delivered as part of the NACE O-CAT course.

CORE EXAM REQUIREMENT 2

- O-CAT Technician Exam (NACE-OCAT-001)

Note: This exam is available via computer-based testing at Pearson Vue.

S-CAT Technician Certification

COURSE REQUIREMENT

- Successful completion of NACE Shipboard Corrosion Assessment Training (S-CAT) Course and Exams

CORE EXAM REQUIREMENT 1

- S-CAT Technician Practical Exam

Note: This exam is delivered as part of the NACE S-CAT course.

CORE EXAM REQUIREMENT 2

- S-CAT Technician Exam (NACE-SCAT-001)

Note: This exam is available via computer-based testing at Pearson Vue.

Protective Coating Technician Certification

Option 1

COURSE REQUIREMENTS

- Successful completion of NACE PCS 1 Basic Principles Course and Exam -OR- equivalent training
- Successful completion of NACE Basic Corrosion Course and Exam or NACE Basic Corrosion e-Course and Exam -OR- equivalent training

CORE EXAM REQUIREMENT

- Protective Coatings Technician Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Protective Coating Technician Application
- 2 years' verifiable protective coatings-related work experience

Option 2

COURSE REQUIREMENTS

- Successful completion of NACE PCS 1 Basic Principles Course and Exam -OR- equivalent training
- Successful completion of NACE Basic Corrosion Course and Exam or NACE Basic Corrosion e-Course and Exam -OR- equivalent training

CORE EXAM REQUIREMENT

- Protective Coatings Technician Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Protective Coating Technician Application
- Bachelor's degree in physical sciences or engineering
- 1 year of verifiable protective coatings-related work experience

Option 3

COURSE REQUIREMENTS

- Successful completion of NACE PCS 1 Basic Principles Course and Exam
- Successful completion of NACE Basic Corrosion Course and Exam or NACE Basic Corrosion e-Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Protective Coating Technician Application
- 2 years' verifiable protective coatings-related work experience

Option 4

COURSE REQUIREMENTS

- Successful completion of NACE PCS 1 Basic Principles Course and Exam
- Successful completion of NACE Basic Corrosion Course and Exam or NACE Basic Corrosion e-Course and Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Protective Coating Technician Application
- Bachelor's degree in physical sciences or engineering
- 1 year of verifiable protective coatings-related work experience

* All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.



Cathodic Protection Fundamentals:
Math & Electricity e-Course

Cathodic Protection 1 – Tester (CP1)

Cathodic Protection 2 – Technician (CP2)

Cathodic Protection 3 – Technologist (CP3)

Cathodic Protection 4 – Specialist (CP4)

Cathodic Protection Virtual Training Simulator

Cathodic Protection Technician – Maritime

Coatings in Conjunction with
Cathodic Protection

Cathodic Protection Interference

Cathodic Protection Certifications



Cathodic Protection Fundamentals: Math & Electricity e-Course

5 PDH's

Walk into the cathodic protection classroom or field with a strong math, electricity, and chemistry foundation gained from this course. This course provides a thorough review of basic math, chemistry, and electrical fundamentals through step-by-step examples, self-study practice problems, and downloadable job-aids.

This 5-hour short course includes audio narration with transcripts and on-demand viewing and bookmarking capabilities that enable you to complete the course as your schedule allows.

Who Should Attend

Anyone in the cathodic protection industry who needs to understand the calculations and electrical functions involved when working in cathodic protection. This course also serves as a solid prep for CP1 or a great review before CP2.

Prerequisites

No prior training or experience is required, however the ability to perform math calculations using a scientific calculator (algebra, fractions, exponents, and conversions) is recommended.

Exam Information

There is no exam associated with this e-Course. Completion of the e-Course is required to earn a certificate of completion.

Students will earn a certificate of completion upon successful completion of the e-Learning course.

Learning Objectives

Math Principles

- Add and subtract fractions
- Calculate exponents
- Convert fractions to decimals and decimals to fractions
- Convert decimals to percentages and percentages to decimals
- Use the order of operation rule when completing equations

Basic Electricity & Electrical Fundamentals

- Define electricity
- Define current, resistance, voltage, and power
- Understand the relationship amongst current, resistance, voltage, and power
- Comprehend basic electrical diagrams
- Apply Ohm's Law to calculate current, resistance, and voltage
- Convert electrical units of measurement
- Contrast and compare series and parallel circuits
- Solve basic problems and calculations for series and parallel circuits

Cathodic Protection 1 - Tester (CP1)

5-Day Classroom Course: Days 1–5: 8 a.m. to 6:30 p.m. (unless otherwise noted)

4.5 CEU's

The CP1 – Cathodic Protection Tester course provides both theoretical knowledge and practical techniques for testing and evaluating data to determine the effectiveness of both galvanic and impressed current CP systems and to gather design data.

Classroom instruction is comprised of lectures and hands-on training, including using equipment and instruments for CP testing.

Who Should Attend

This program benefits anyone responsible for supervising CP systems, measuring the effectiveness of CP systems, and/or recording this data, including:

- CP field personnel
- Technicians

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- High school diploma or GED
- 6 months CP work experience
- Ability to perform basic math calculations (simple algebra, fractions, and conversions)
- Basic Corrosion or Basic Corrosion e-Course
- Cathodic Protection Fundamentals: Math & Electricity e-Course
- Cathodic Protection Virtual Training Simulator (VTS)

Learning Objectives

- Recall the basics of electricity, electrical laws, electrochemistry, corrosion, and CP theory
- Define how polarity is related to current flow and metal corrosion activity
- Conduct tests to identify shorts and continuity tests in CP systems
- Use test instruments to perform a variety of field tests such as structure-to-soil potentials, voltage and current measurements, soil resistivity, pipe/cable locating, and rectifier readings
- Define CP components including impressed current systems, galvanic anodes, and test stations
- Read shunts and recognize their use in rectifiers, bonds, and anodes
- Perform periodic surveys to confirm the effectiveness of a CP system
- Recall the use, maintenance, and precautions for reference cells
- Utilize basic location mapping, report preparation, and recordkeeping
- Recognize safety issues specific to CP
- Recall code requirements related to CP

Exam Information

A practical exam is administered at the end of the course and is included as part of your course registration. Successful completion of the exam is required to earn a certificate of course completion.

NII certification requirements* include the practical exam administered at the end of course, along with an exam delivered via computer-based testing (CBT).

The multiple-choice CBT exam is scheduled separately from the course and delivered via Pearson VUE. A voucher needed to schedule the CBT exam is included as part of your initial full course registration.

*For complete certification options and requirements, see page 55.

Cathodic Protection 2 - Technician (CP2)

5-Day Classroom Course: Days 1–5: 8 a.m. to 6:30 p.m. *(unless otherwise noted)*

4.5 CEU's

The CP2 – Cathodic Protection Technician course provides intermediate-level training in both theoretical knowledge and practical techniques for testing and evaluating data to determine the effectiveness of both galvanic and impressed current CP systems and to gather design data.

Classroom instruction is comprised of lectures and hands-on training, including using equipment and instruments for CP testing.

Who Should Attend

This program benefits anyone responsible for supervising CP systems, measuring the effectiveness of CP systems, and/or recording this data, including:

- CP field personnel
- Technicians

Prerequisites

Required

A comprehensive knowledge of electrochemistry, electricity, electrical laws, series and parallel circuits, meter operation, and CP fundamentals are necessary for understanding the material in this course.

Recommended

- In-depth high school chemistry and mathematics courses
- Basic Corrosion or Basic Corrosion e-Course
- Cathodic Protection 1 Tester or equivalent training
- Cathodic Protection Fundamentals: Math & Electricity e-Course
- Cathodic Protection Virtual Training Simulator (VTS)

Learning Objectives

- Perform advanced field tests (including current requirement test, shorted casing test, IR drop test, soil resistivity, and interference tests) and evaluate the results
- Perform tests to verify the presence of stray current interference and recommend method(s) to mitigate the interference
- Conduct and understand the importance of periodic surveys, including IR-Free readings, polarization decay tests, and current measurements
- Maintain documentation and records, including data plotting and analysis
- Describe AC voltage and the methods of mitigation
- Test and troubleshoot rectifier component parts
- Define the purpose and uses of corrosion coupon test stations
- Recall the code requirements related to CP

Exam Information

A practical exam is administered at the end of the course and is included as part of your course registration. Successful completion of the exam is required to earn a certificate of course completion.

NII certification requirements* include the practical exam administered at the end of course, along with an exam delivered via computer-based testing (CBT).

The multiple-choice CBT exam is scheduled separately from the course and delivered via Pearson VUE. A voucher needed to schedule the CBT exam is included as part of your initial full course registration.

*For complete certification options and requirements, see page 55.

Cathodic Protection 3 - Technologist (CP3)

5-Day Classroom Course: Days 1-5: 8 a.m. to 6:30 p.m. (unless otherwise noted)

4.5 CEU's

The CP3 – Cathodic Protection Technologist course builds on the technology presented in the CP2 course with a strong focus on interpretation of CP data, trouble shooting and migration of problems that arise in both galvanic and impressed current systems, including design calculations for these systems.

Classroom instruction is comprised of lectures and hands-on training, including using equipment and instruments for CP testing.

Who Should Attend

Individuals with extensive CP field experience and a strong technical background in cathodic protection.

Prerequisites

Required

A comprehensive knowledge of electrochemistry, electricity, electrical laws, series and parallel circuits, meter operation, and CP fundamentals are necessary for understanding the material in this course.

Recommended

- Cathodic Protection 2 – Technician or equivalent training
- A basic understanding of trigonometry and geometry is recommended.

Learning Objectives

- Define activation, concentration, and resistance polarization, and the mathematical expressions of these concepts
- Recall the factors that affect polarization (area, temperature, relative movement, ion concentration, oxygen concentration)
- Apply the NACE criteria for CP and make necessary adjustments
- Identify errors in data collection/CP measurements including contact resistance errors, voltage drop errors, and reference electrode errors where the technologist is employed
- Determine ideal current distribution for a CP system taking into account the factors affecting current distribution
- Perform advanced cathodic protection testing using correct measurement techniques to monitor CP system performance, accurately interpret the data collected to ensure optimum CP system performance and determine the correction action to the system if necessary
- Conduct and document interference tests to determine if interference exists, and identify the source of the interference and implement a method of control to mitigate the effects of stray current
- Design and install simplistic forms of galvanic and impressed current cathodic protection facilities and perform the necessary mathematical calculations

Exam Information

There is no end-of-course exam. The theory-based and case-based exams are delivered via computer-based testing, which is scheduled separately from the course. A voucher for the computer-based tests are included as part of your initial full course registration.

In addition to the Cathodic Protection 3 Technologist course, other industry preparation materials exist that would assist in student preparation for the CP3 certification requirements.

*For those who meet the requirements, NII certification options are available. See page 57 for details.

Cathodic Protection 4 - Specialist (CP4)

5-Day Classroom Course: Day 1: 1p.m. to 7:30 p.m. **Days 2-5:** 8 a.m. to 7:30 p.m. *(unless otherwise noted)*

4.5 CEU's

The CP4 – Cathodic Protection Specialist course focuses on the principles and procedures for CP design on a variety of structures for both galvanic and impressed current systems. The course discusses theoretical design concepts, considerations that influence the design (environment, structure type/materials of construction, coatings), design factors, and calculations (including attenuation).

Classroom instruction is comprised of lecture, in-class discussion, and practice with design calculations on various structures (i.e., pipelines, tanks and well casings, offshore applications, and steel reinforcing in concrete structures).

Who Should Attend

Individuals with experience in CP systems including:

- Design
- Installation
- Maintenance

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- Cathodic Protection 3 – Technologist or equivalent training
- To be successful in this course, it is strongly recommended that students have completed college or university-level courses in algebra, geometry, and trigonometry, and have significant practical experience in CP design.

Learning Objectives

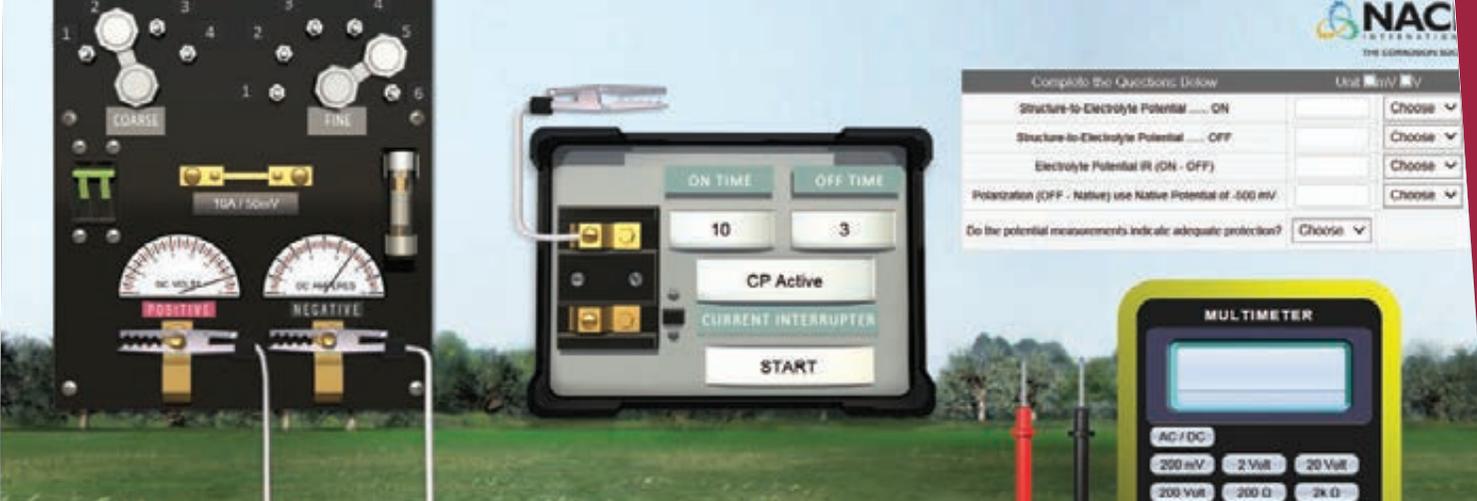
- Design complete CP systems in a variety of industry applications including water tanks, aboveground and underground storage tanks, and pipelines
- Demonstrate knowledge of rectifier and ground bed installation, along with source code calculations and protective coatings
- Perform corrosion analysis on the job site
- Manage and direct field tests
- Apply new technologies to existing CP programs
- Provide formal training to understudies on basic and advanced CP concepts
- Recall and comply with codes, regulations, reporting procedures, and standard practices

Exam Information

There is no end-of-course exam. The theory-based and case-based exams are delivered via computer-based testing, which is scheduled separately from the course. A voucher for the computer-based tests are included as part of your initial full course registration.

In addition to the Cathodic Protection 4 - Specialist course, other industry preparation materials exist that would assist in student preparation for the CP4 certification requirements.

*For those who meet the requirements, NII certification options are available. See page 58 for details.



Cathodic Protection Virtual Training Simulator

This 12-station virtual training simulator allows students to refresh their CP skills, keep up with current practical techniques, and prepare for their CP classes and exams by working through step-by-step, real-life testing scenarios.

Who Should Attend

Anyone looking for a computer simulation to practice their cathodic protection field (practical) skills.

Prerequisites

Required

No prior training required.

Recommended

Cathodic Protection 1 – Tester

Learning Objectives

Station 1: Measuring Structure-to-Electrolyte Potential

- Identify each of the test wires (structures) by obtaining structure-to-electrolyte potential measurements using a multi-meter and reference electrode.

Station 2: Casing and Carrier Pipe-to-Electrolyte Potential

- Identify each of the test wires (structures) by obtaining structure-to-electrolyte potential measurements using a multi-meter and reference electrode.

Station 3: Soil Resistivity Measurements

- Use the equipment provided, obtain soil resistivity measurements using the Wenner 4-pin method, the Soil Box method, and the Collins Rod.

Station 4: Metallic Submersion Board

- Use metals identified as the reference, measure and record the structure-to-reference potential and build a practical galvanic series.

Station 5: Electrical Isolation Testing

- Determine the location of the isolating flange short(s) and determine the effectiveness of underground isolating unions.

Station 6: Current Shunt Measurements

- Use shunts to measure a millivolt (mV) drop across the shunt pins and calculate the current by utilizing ratio, Ohm's Law or shunt factor.

Station 7: Electrical Circuits

- Measure the resistance of resistors, connect resistors in parallel with the voltage source, and measure the course voltage.

Station 8: Current Interrupter

- Determine if your structure is adequately cathodically protected by using a current interrupter to obtain "on" and "interrupted" structure to soil potential measurements.

Station 9: Rectifier Measurements

- Record information from the rectifier data provided and perform a diode check.

Station 10: Polarity Board

- Measure and record the potential differences between each pair of banana jacks and use the data gathered to order the banana jacks from the most negative to the least negative polarity.

Station 11: UST Test Station

- Estimate which of the structures provided may be electrically continuous or shorted, by taking potentials to a single cell position (fixed cell) and measure the structure-to-electrolyte potential of each structure provided.

Station 12: Calculation Station

- Convert potential measurements and apply electrical theory.

Cathodic Protection Technician (CP2) Maritime

6-Day Classroom Course: Day 1: 1 p.m. to 6:30 p.m. **Days 2-5:** 8 a.m. to 6:30 p.m. **Day 6:** 8 a.m. to 3 p.m. *(unless otherwise noted)*
4.5 CEU's

This course presents cathodic protection technology with specific shipboard cathodic protection information. Developed for NAVSEA (part of the U.S. Navy), this intensive course presents both theoretical knowledge and practical techniques for testing and evaluating data to determine the effectiveness of both galvanic and impressed current CP systems pertaining to shipboard cathodic protection.

Classroom instruction is comprised of lectures and using equipment and instruments for CP testing.

Who Should Attend

Individuals who work in the maritime industry, have a working knowledge of shipboard cathodic protection, or have extensive years of CP field experience with a technical background.

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- NACE CP Tester Certification or equivalent training
- Comprehensive knowledge of electrochemistry, electricity, electrical laws and series and parallel circuits, meter operation, and CP fundamentals
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Perform advanced field tests, including: current requirement test, shorted casing test, IR drop test, soil resistivity, and interference tests, and evaluate the results
- Perform tests to verify the presence of stray current interference and recommend method(s) to mitigate the interference
- Conduct and understand the importance of periodic surveys, including IR-Free readings, polarization decay tests, and current measurements
- Maintain documentation and records, including data plotting and analysis
- Describe AC voltage and the methods for mitigation
- Test and troubleshoot rectifier component parts
- Recognize the purpose and use of corrosion coupon test stations
- Recall code requirements related to CP

Exam Information

A written exam and practical exam are administered at the end of the course and are included as part of your course registration. Successful completion of the exam is required to earn a certificate of course completion.

*For those who meet the requirements, NII certification options are available. See page 56 for details.





Coatings in Conjunction with Cathodic Protection (CCCP)

6-Day Classroom Course: Day 1: 1 p.m. to 5 p.m. **Days 2-5:** 8 a.m. to 5 p.m. **Day 6:** 8 a.m. to noon *(unless otherwise noted)*
3.8 CEU's

The Coatings in Conjunction with Cathodic Protection (CCCP) course focuses on the control of metallic corrosion by protective coatings and cathodic protection, with coatings as the primary method of control supplemented by cathodic protection. The course will cover the selection, specification, application, testing, and inspection of coatings when used with CP. CCCP provides students with the skills and knowledge to implement and monitor a corrosion control program that utilizes both methods.

Classroom instruction is comprised of lectures and open discussions.

Who Should Attend

Personnel who design, test, inspect, apply, and monitor various structures that are both coated and cathodically protected including:

- Managers
- Engineers
- Field personnel
- Technicians

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- CP1 - Cathodic Protection Tester or equivalent training
- Comprehensive knowledge of electrochemistry, electricity, electrical laws and series and parallel circuits, meter operation, and CP fundamentals
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Recall basic corrosion theory and CP fundamentals
- Identify types of structures protected by coatings and CP
- Describe the synergistic relationship of coatings used in conjunction with CP
- Determine the advantages and disadvantages of coating types used with CP
- Perform selection criteria, application, inspection, and testing of various coatings
- Identify the failure modes of the various coatings in relationship to CP
- Recognize failure modes of the various coatings in relationship to CP
- Identify disbanded coatings as related to external corrosion and stress corrosion cracking
- Define CP shielding and non-shielding coatings
- Examine and evaluate in-service coatings used with CP

Exam Information

A written exam is administered at the end of the course and is included as part of your full course registration.

Successful completion of the exam is required to earn a certificate of course completion.

Cathodic Protection Interference

6-Day Classroom Course: Day 1: 1 p.m. to 6:30 p.m. **Days 2-5:** 8 a.m. to 6:30 p.m. **Day 6:** 8 a.m. to 3 p.m. *(unless otherwise noted)*
4.8 CEU's

The Cathodic Protection Interference course focuses on AC, DC, and telluric interference. The course provides in-depth coverage of both concepts and practical application of identifying interference and interference mitigation techniques. Students will learn to identify the causes and effects of interference, conduct tests to determine if an interference condition exists, and perform calculations required to predict AC interference.

Classroom instruction is comprised of lecture and discussion, in-class experiments, case studies, and group exercises.

Who Should Attend

Individuals with extensive CP field experience, graduate level mathematics, and a strong technical background in cathodic protection.

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- NACE CP Technologist Certification or equivalent training
- Basic Corrosion or Basic Corrosion e-Course
- 3 years' exposure to CP field or design level work experience
- Thorough understanding of units conversions, scientific notation, advanced algebra, DC circuits with previous exposure to basic AC circuits, complex numbers, interference testing

Learning Objectives

- Describe the effects of stray current, AC voltage, and telluric currents on metallic structures
- Detect stray current, AC interference, and telluric current
- Recognize deleterious effects of AC and DC interference
- Mitigate and monitor AC and DC interference
- Predict AC interference

Exam Information

A written exam is administered at the end of the course and is included as part of your full course registration.

Successful completion of the exam is required to earn a certificate of course completion.



Cathodic Protection Certifications

CP1 – Cathodic Protection Tester

REQUIREMENT

- 6 months' CP-related work experience

RECOMMENDED COURSE

- Successful completion of NACE Cathodic Protection 1 – Tester Course

CORE EXAM REQUIREMENT 1

- CP Tester Practical Exam

Note: This exam is delivered as part of the NACE Cathodic Protection 1 – Tester Course

CORE EXAM REQUIREMENT 2

- CP Tester Exam NACE-CP1-001

Note: This exam is available via computer-based testing at Pearson VUE.

CP2 – Cathodic Protection Technician

Option 1

REQUIREMENT

- Active CP Tester Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- Successful completion of NACE Cathodic Protection 2 – Technician Course

CORE EXAM REQUIREMENT 1

- CP Technician Practical Exam

Note: This exam is delivered as part of the NACE Cathodic Protection 2 – Technician Course

CORE EXAM REQUIREMENT 2

- CP Technician Exam NACE-CP2-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technician Application
- 3 years' verifiable cathodic protection work experience

Option 2

REQUIREMENT

- Active CP Tester Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- Successful completion of NACE Cathodic Protection 2 – Technician Course

CORE EXAM REQUIREMENT 1

- CP Technician Practical Exam

Note: This exam is delivered as part of the NACE CP2 – Cathodic Protection Technician Course

CORE EXAM REQUIREMENT 2

- CP Technician Exam NACE-CP2-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technician Application
- Bachelor's degree in physical sciences or engineering
- 1 year of verifiable cathodic protection work experience

Option 3

REQUIREMENT

- Active CP Tester Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- Successful completion of NACE Cathodic Protection 2 – Technician Course

CORE EXAM REQUIREMENT 1

- CP Technician Practical Exam

Note: This exam is delivered as part of the NACE CP2 – Cathodic Protection Technician Course

CORE EXAM REQUIREMENT 2

- CP Technician Exam NACE-CP2-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technician Application
- 2 years' post-high school training from approved math or science technical/trade school
- 2 years' verifiable cathodic protection work experience

*All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions; please refer to naceinstitute.org for the most current certification information.

Cathodic Protection Certifications

CP Technician – Maritime

Option 1

REQUIREMENT

- Active CP Tester Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- NACE Cathodic Protection Technician (CP2) Maritime

CORE EXAM REQUIREMENT 1

- CP Technician – Maritime Practical Exam

Note: This exam is delivered as part of the NACE Cathodic Protection Technician (CP2) Maritime Course

CORE EXAM REQUIREMENT 2

- CP Technician – Maritime Written Exam

Note: This exam is delivered as part of the NACE Cathodic Protection Technician (CP2) Maritime Course

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technician – Maritime Application
- Algebra and logarithm training
- 3 years' verifiable cathodic protection work experience, including 1 year in maritime industry

Option 2

REQUIREMENT

- Active CP Tester Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- NACE Cathodic Protection Technician (CP2) Maritime

CORE EXAM REQUIREMENT 1

- CP Technician – Maritime Practical Exam

Note: This exam is delivered as part of the NACE Cathodic Protection Technician (CP2) Maritime Course

CORE EXAM REQUIREMENT 2

- CP Technician – Maritime Written Exam

Note: This exam is delivered as part of the NACE Cathodic Protection Technician (CP2) Maritime Course

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technician – Maritime Application
- 2 years' post-high school training from approved math or science technical/trade school
- 2 years' verifiable cathodic protection work experience, including 1 year in maritime industry

Option 3

REQUIREMENT

- Active CP Tester Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- NACE Cathodic Protection Technician (CP2) Maritime

CORE EXAM REQUIREMENT 1

- CP Technician – Maritime Practical Exam

Note: This exam is delivered as part of the NACE Cathodic Protection Technician (CP2) Maritime Course

CORE EXAM REQUIREMENT 2

- CP Technician – Maritime Written Exam

Note: This exam is delivered as part of the NACE Cathodic Protection Technician (CP2) Maritime Course

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technician – Maritime Application
- Bachelor's degree in physical science or engineering
- 1 year of verifiable cathodic protection work experience in maritime industry

In addition to the Cathodic Protection Technologist (CP3) and Specialists (CP4) courses, other industry preparation resources exist that would assist in student preparation for the relevant certification requirements.

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Cathodic Protection Certifications

CP Technologist

Option 1

REQUIREMENT

- Active CP Technician Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- NACE Cathodic Protection 3 – Technologist Course

CORE EXAM REQUIREMENT 1

- Certification Exam – CP Technologist Essay Exam

Note: This exam is available at the end of the NACE Cathodic Protection 3 – Technologist Course

CORE EXAM REQUIREMENT 2

- Certification Exam – CP Technologist Exam NACE-CP3-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technologist Application
- Algebra and logarithm training
- 8 years' verifiable cathodic protection work experience

Option 2

REQUIREMENT

- Active CP Technician Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- NACE Cathodic Protection 3 – Technologist Course

CORE EXAM REQUIREMENT 1

- CP Technologist Essay Exam

Note: This exam is available at the end of the NACE Cathodic Protection 3 – Technologist Course

CORE EXAM REQUIREMENT 2

- CP Technologist Exam NACE-CP3-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technologist Application
- 2 years' post-high school training from approved math or science technical/trade school
- 6 years' verifiable cathodic protection work experience

Option 3

REQUIREMENT

- Active CP Technician Certification or equivalent training (highly recommended)

RECOMMENDED COURSE

- NACE Cathodic Protection 3 – Technologist Course

CORE EXAM REQUIREMENT 1

- Certification Exam – CP Technologist Essay Exam

Note: This exam is available at the end of the NACE Cathodic Protection 3 – Technologist Course

CORE EXAM REQUIREMENT 2

- Certification Exam – CP Technologist Exam NACE-CP3-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Technologist Application
- Bachelor's degree in physical sciences or engineering
- 3 years' verifiable cathodic protection work experience

In addition to the Cathodic Protection Technologist (CP3) and Specialists (CP4) courses, other industry preparation resources exist that would assist in student preparation for the relevant certification requirements.

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Cathodic Protection Certifications

CP Specialist

Option 1

PREREQUISITE

- Active CP Technologist Certification or equivalent training

RECOMMENDED COURSE

- NACE Cathodic Protection 4 – Specialist Course

CORE EXAM REQUIREMENT 1

- CP Specialist Essay Exam

Note: This exam is available at the end of the NACE Cathodic Protection 4 – Specialist Course

CORE EXAM REQUIREMENT 2

- CP Specialist Exam NACE-CP4-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Specialist Application
- 2 years' post-high school training from approved math or science technical/trade school
- 12 years' verifiable advanced cathodic protection work experience, including 4 years in responsible charge

Option 2

PREREQUISITE

- Active CP Technologist Certification or equivalent training

RECOMMENDED COURSE

- NACE Cathodic Protection 4 – Specialist Course

CORE EXAM REQUIREMENT 1

- CP Specialist Essay Exam

Note: This exam is available at the end of the NACE Cathodic Protection 4 – Specialist Course

CORE EXAM REQUIREMENT 2

- CP Specialist Exam NACE-CP4-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Specialist Application
- Bachelor's degree in physical sciences or engineering
- 6 years' verifiable advanced cathodic protection work experience, including 4 years in responsible charge

Option 3

PREREQUISITE

- Active CP Technologist Certification or equivalent training

RECOMMENDED COURSE

- NACE Cathodic Protection 4 – Specialist Course

CORE EXAM REQUIREMENT 1

- CP Specialist Essay Exam

Note: This exam is available at the end of the NACE Cathodic Protection 4 – Specialist Course

CORE EXAM REQUIREMENT 2

- CP Specialist Exam NACE-CP4-001

Note: This exam is available via computer-based testing at Pearson VUE.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved CP Specialist Application
- Choose one of the following:
 - Bachelor's degree in physical science or engineering, plus advanced degree in physical sciences or engineering that required an exam
 - Engineering-In-Training registration
 - Professional Engineer's License
- 4 years' verifiable advanced cathodic protection work experience, including 4 years in responsible charge

In addition to the Cathodic Protection Technologist (CP3) and Specialists (CP4) courses, other industry preparation resources exist that would assist in student preparation for the relevant certification requirements.

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Internal Corrosion for Pipelines – Basic
Internal Corrosion for Pipelines – Advanced
Pipeline Corrosion Assessment Field Techniques (P-CAFT)
In-Line Inspection (ILI)
Direct Assessment (DA)
Pipeline Corrosion Integrity Management (PCIM)
Pipeline Certifications

Internal Corrosion for Pipelines – Basic

5-Day Classroom Course: Days 1-5: 8 a.m. to 5 p.m. *(unless otherwise noted)*
3.8 CEU's

The Internal Corrosion for Pipelines – Basic course introduces the fundamentals of implementing, monitoring, and maintaining an internal corrosion control program as part of an overall pipeline integrity management program. It is an introductory level course focusing on internal corrosion of liquid and natural gas pipelines used for transmissions, storage, and gathering systems.

Classroom instruction consists of lecture, group exercises, cases studies, and hands-on field testing using different instruments and techniques utilized to identify and monitor internal corrosion.

Who Should Attend

Individuals at the technologist level who have some background in corrosion and are familiar with pipeline operations.

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- High school diploma, GED, or equivalent
- 4 years of internal corrosion work
- Basic Corrosion or Basic Corrosion e-Course

Exam Information

Practical and written exams are administered at the end of the course and are included as part of the course registration.

Successful completion of the written and practical exams is required to earn a certificate of completion.

Learning Objectives

- Identify the types of corrosion, influencing key environmental variables, and methods to control corrosion
- Monitor corrosion through devices and tests, including analysis of gas, liquid and sludge/solid samples, coupons, and electrical probes
- Examine exposed surfaces and be able to determine the root cause of corrosion
- Proper selection of mitigation methods such as:
 - Chemical treatment by biocides and corrosion inhibitors
 - Facilities maintenance including use of pigs, clearing drips, and clearing valves
 - Internal coatings
 - Cathodic protection only for internal protection of tanks
 - Facility design considerations
- Perform integrity assessment methods including internal corrosion direct assessment, in-line inspection, and hydrostatic testing

Internal Corrosion for Pipelines – Advanced

5-Day Classroom Course: Days 1-4: 8 a.m. to 5 p.m. *(unless otherwise noted)*

3.0 CEU's

This course focuses on the monitoring techniques and mitigation strategies required to assess internal corrosion and develop and manage internal corrosion control programs. Data interpretation, analysis, and integration, as well as criteria for determining corrective action for high-level internal corrosion problems within a pipeline system, will be covered in detail.

Classroom instruction consists of lecture, group exercises, and cases studies.

Who Should Attend

Individuals responsible for management of internal corrosion control program for pipeline systems including:

- Implementation
- Maintenance
- Engineering

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- High school diploma
- 4 years of internal corrosion work
- Internal Corrosion for Pipelines – Basic
- Basic Corrosion or Basic Corrosion e-Course

Learning Objectives

- Determine if internal corrosion exists by evaluating a set of criteria to identify and apply monitoring techniques such as:
 - Corrosion coupons
 - Electrical field mapping
 - Ultrasonic testing
 - Linear polarization and electrical resistance probes
 - Hydrogen and microbiological monitoring
- Minimize internal corrosion during the design stage through modification of equipment, system configuration, and operating parameters
- Properly select inspection techniques including:
 - Visual Inspection
 - Automated Ultrasonic Testing (AUT)
 - Magnetic Flux Leakage
 - Guided Wave Ultrasonic Testing (GWUT)
 - Manual Ultrasonic Testing
 - Eddy Current (EC)
 - Ultrasonic Testing (UT)
 - Radiographic Testing (RT)
- Determine when mitigation is required and the appropriate mitigation methods to utilize including maintenance pigging, physical design changes, and operational modifications

Exam Information

There is no end-of-course exam. The written exam is delivered via computer-based testing, which is scheduled separately from the course. A voucher for the computer-based test is included as part of the initial full course registration.

*For those who meet the requirements, NII certifications options are available. See pages 66-67 for details.





Pipeline Corrosion Assessment Field Techniques (P-CAFT)

5-Day Classroom Course: Days 1-4: 8 a.m. to 5 p.m. **Day 5:** 8 a.m. to noon *(unless otherwise noted)*

3.4 CEU's

The Pipeline Corrosion Assessment Field Techniques course covers corrosion basic principles and theory, field techniques, direct assessment, in-line inspection and hydro testing techniques, indirect inspections, direct examination, safety and data documentation.

The course is presented in a format of lecture, discussion, and group exercises. No hands-on training will be provided in this course.

Who Should Attend

Field personnel responsible for the implementation and reporting of pipeline inspection activities including:

- Maintenance
- Service
- Technical

Prerequisites

Required

There are no prerequisites for this course.

Recommended

- Cathodic Protection 1 – Tester
- Coatings in Conjunction with Cathodic Protection
- CIP Level 2
- Knowledge of the corrosion cell

Learning Objectives

- Collect data for used in the evaluation and monitoring of a pipeline corrosion integrity plan
- Recognize pipeline anomalies
- Recommend solutions for resolving technical issues “in the ditch”
- Evaluate a pipeline in-service using ECDA and ICDA methods and techniques
- Recognize problems “in the ditch” and be able to collect the data necessary for further engineering evaluation

Exam Information

The written exam is administered at the end of the course and is included as part of the course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See pages 66-67 for details.

In-Line Inspection (ILI)

5-Day Classroom Course: Days 1-4: 8 a.m. to 5 p.m. **Day 5:** 8 a.m. to noon (*unless otherwise noted*)

3.4 CEU's

The In-Line Inspection course covers the benefits of utilizing In-Line Inspection, selection of technologies related to operational parameters, operational issues, and evaluating data relevant to assessing fitness for service.

The course is presented in a format of lecture, discussion, and group exercises.

Who Should Attend

Individuals responsible for implementation and/or management of an integrity program for a pipeline system with an emphasis on integrity verification and maintenance optimization.

Prerequisites

Recommended

2 years of pipeline inspection or integrity management experience

Learning Objectives

- Describe ILI and its relationship to overall integrity assessment
- Recall relevant industry standards, regulations and best practices
- Recognize the types of ILI technologies and the benefits and limitations of each
- Select an appropriate ILI technology for a given situation
- Define the responsibilities of the operator and/or service provider
- Be aware of safety and operations associated with running an ILI tool
- Describe the basics of ILI data analysis
- Respond to and use ILI findings for run verification, remediation and/or repair

Exam Information

The written exam is administered at the end of the course and is included as part of the course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See pages 66-67 for details.





Direct Assessment (DA)

5-Day Classroom Course: Days 1-4: 8 a.m. to 5 p.m. **Day 5:** 8 a.m. to noon *(unless otherwise noted)*
3.4 CEU's

The Direct Assessment course concentrates on internal, external, and stress corrosion cracking direct assessment, along with pre- and post-assessment, quality assurance, data analysis and integration, and remediation and mitigation activities. The course will also cover the benefits and limitations of Direct Assessment, its relationship to an overall integrity assessment program and industry standards, regulations, and best practices.

The course is presented in a format of lecture, discussion, and group exercises.

Who Should Attend

Individuals responsible for implementation and/or management of an integrity program for a pipeline system with an emphasis on integrity and maintenance optimization.

Prerequisites

Required

There are no prerequisites for this course.

Exam Information

The written exam is administered at the end of the course and is included as part of the course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See pages 66-67 for details.

Learning Objectives

- Describe DA and the relationship to an overall pipeline corrosion integrity management program
- Recognize the benefits and limitations of DA
- Recall standards related to DA
- Differentiate DA from other pipeline integrity methods
- Perform quality assurance
- Establish corrosion rates
- Explain responsibilities of the operator and/or service provider
- Categorize the DA Phases:
 - Pre-assessment
 - Indirect inspections
 - Direct examinations
 - Post-assessment
- Recognize the different types of DA:
 - External Corrosion Direct Assessment (ECDA)
 - Internal Corrosion Direct Assessment (ICDA)
 - Stress Corrosion Cracking Direct Assessment (SCCDA)
 - Confirmatory Direct Assessment (DA)

Pipeline Corrosion Integrity Management (PCIM)

5-Day Classroom Course: Days 1-4: 8 a.m. to 5 p.m. **Day 5:** 8 a.m. to 1 p.m. *(unless otherwise noted)*

3.5 CEU's

The PCIM course serves as the key training track for the PCIM professional who focuses on the implementation and management of an integrity program for a pipeline system. The course provides a comprehensive up-to-date coverage of the various aspects of time-dependent deterioration threats to liquid and gas pipeline systems and will focus on interpreting integrity related data, performing an overall integrity assessment on a pipeline system, calculating and quantifying risk, and making recommendations to company management on risk management issues.

Classroom instruction is comprised of lectures and discussions.

Who Should Attend

Individuals responsible for implementation and/or management of an integrity program for a pipeline system with an emphasis on integrity verification and maintenance optimization.

Prerequisites

Required

There are no prerequisites for this course.

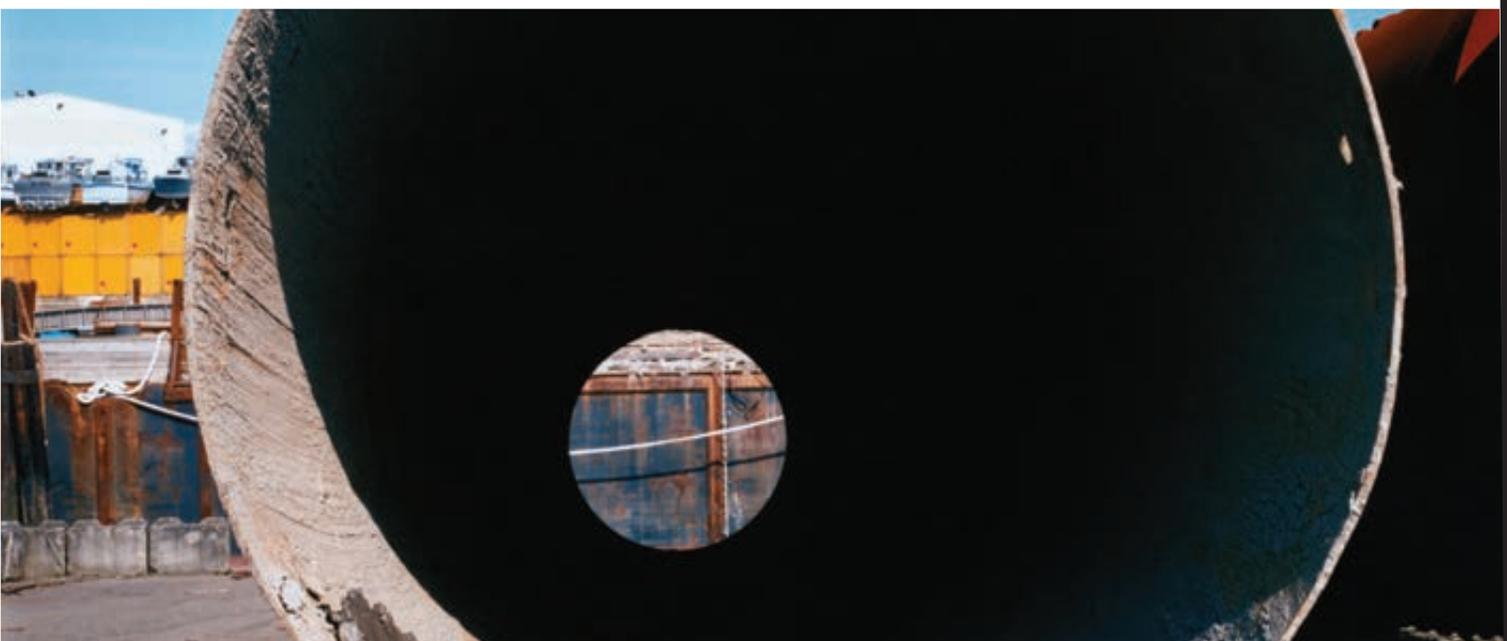
Learning Objectives

- Interpret integrity-related data
- Select and perform an overall integrity assessment on a pipeline system
- Describe remediation activities and repair methods
- Perform threat identification and assessment
- Recall CFR 49 and integrity requirements
- Perform post integrity assessment risk analysis
- Calculate and quantify risk
- Recommend solutions to company management on risk management issues
- Perform integrity management planning

Exam Information

The written exam is administered at the end of the course and is included as part of the course registration. Successful completion of the written exam is required to earn a certificate of completion.

*For those who meet the requirements, NII certifications options are available. See pages 66-67 for details.



Pipeline Certifications

Internal Corrosion Technologist

Option 1

COURSE REQUIREMENT

- Successful completion of NACE Internal Corrosion for Pipelines – Basic Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Internal Corrosion Technologist Application
- 4 years' verifiable internal corrosion-related work experience in a pipeline environment

Option 2

REQUIREMENT (CHOOSE ONE OF THE FOLLOWING)

- Successful completion of NACE Internal Corrosion for Pipelines – Basic Course and Exam
- Internal Corrosion Technologist Certification Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Internal Corrosion Technologist Application
- Bachelor's degree in: biology, chemical engineering, chemistry, metallurgical engineering, or microbiology
- 2 years' verifiable internal corrosion-related work experience in a pipeline environment

Senior Internal Corrosion Technologist

Option 1

COURSE REQUIREMENT

- Successful completion of NACE Internal Corrosion for Pipelines – Advanced Course and Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Senior Internal Corrosion Technologist Application
- Bachelor's degree in physical sciences or engineering
- 4 years' verifiable internal corrosion-related work experience

Option 2

REQUIREMENT

- Active Internal Corrosion Technologist Certification

COURSE REQUIREMENT

- Successful completion of NACE Internal Corrosion for Pipelines – Advanced Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved Senior Internal Corrosion Technologist Application
- 8 years' verifiable internal corrosion-related work experience

PCIM Technician

COURSE REQUIREMENT 1

- Successful completion of NACE Internal Corrosion for Pipelines – Basic Course and Exams

COURSE REQUIREMENT 2

- Successful completion of NACE Pipeline Corrosion Assessment Field Techniques (P-CAFT) Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved PCIM Technician Application
- 2 years' verifiable work experience in a pipeline environment

* All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.

Pipeline Certifications

PCIM Technologist

Option 1

COURSE REQUIREMENT 1

- Successful completion of NACE Direct Assessment Course and Exam

COURSE REQUIREMENT 2

- Successful completion of NACE In-Line Inspection Course and Exam

COURSE REQUIREMENT 3

- Successful completion of NACE Pipeline Corrosion Integrity Management Course and Exam

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved PCIM Technologist Application
- Bachelor's degree in physical sciences or engineering
- 4 years' verifiable work experience in a pipeline environment

Option 2

COURSE REQUIREMENT 1

- Successful completion of NACE Direct Assessment Course and Exam

COURSE REQUIREMENT 2

- Successful completion of NACE Course: In-Line Inspection Course and Exam

COURSE REQUIREMENT 3

- Successful completion of NACE Pipeline Corrosion Integrity Management Course and Exam

APPLICATION AND WORK EXPERIENCE REQUIREMENTS

- Approved PCIM Technologist Application
- 8 years' verifiable work experience in a pipeline environment

Option 3

REQUIREMENT

- Active PCIM Technician Certification

COURSE REQUIREMENT 1

- Successful completion of NACE Direct Assessment Course and Exam

COURSE REQUIREMENT 2

- Successful completion of NACE In-Line Inspection Course and Exam

COURSE REQUIREMENT 3

- Successful completion of NACE Pipeline Corrosion Integrity Management Course and Exam

APPLICATION REQUIREMENT

- Approved PCIM Technologist Application

Option 4

REQUIREMENT

- Active Senior Corrosion Technologist Certification

COURSE REQUIREMENT 1

- Successful completion of NACE Direct Assessment Course and Exam

COURSE REQUIREMENT 2

- Successful completion of NACE In-Line Inspection Course and Exam

COURSE REQUIREMENT 3

- Successful completion of NACE Pipeline Corrosion Integrity Management Course and Exam

APPLICATION REQUIREMENT

- Approved PCIM Technologist Application

*All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.

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Research Materials Engineer

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Chemical Treatment Specialist
Corrosion Specialist
Protective Coating Specialist
MR0175 Certifications
MR0175 Certified User
Corrosion Resistant Alloy (CRA)
MR0175 Certified User Carbon Steel (CS)

Corrosion Specialist

Who Should Apply:

Individuals who have broad and extensive expertise in the theory and practice of corrosion and corrosion control.

Option 1

REQUIREMENT (CHOOSE ONE OF THE FOLLOWING)

- Active Chemical Treatment Specialist Certification
- Active CP Specialist Certification
- Active Internal Corrosion Specialist Certification
- Active Materials Selection/Design Specialist Certification
- Active Protective Coatings Specialist Certification

CORE EXAM REQUIREMENT

- Corrosion Specialist Exam

APPLICATION REQUIREMENT

- Approved Corrosion Specialist Application

Option 2

REQUIREMENT

- ICOR Application Senior Corrosion Technologist Application

NOTE: Please contact the NACE International Institute at certificationnew@nace.org.

Protective Coating Specialist

Who Should Apply:

Individuals who are experienced, knowledgeable, and capable of performing advanced work in the theory and practice of corrosion prevention and control in the protective coatings field.

Option 1

CORE EXAM REQUIREMENT

- Protective Coating Specialist Exam (NACE-PCS-001)

Note: This exam is available via computer-based testing at Pearson VUE. Review the Exam Preparation Guide on naceinstitute.org for details.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Protective Coating Specialist Application
- 12 years' verifiable protective coatings-related work experience

Option 2

PREREQUISITE (CHOOSE ONE OF THE FOLLOWING)

- Active NACE CIP Level 3 Certification
- Frosio Coating Inspector Level 3
- Protective Coating Technician Certification
- SSPC Protective Coating Specialist
- Bachelor's degree in physical sciences or engineering

CORE EXAM REQUIREMENT

- Protective Coating Specialist Exam (NACE-PCS-001)

Note: This exam is available via computer-based testing at Pearson VUE. Review the Exam Preparation Guide on naceinstitute.org for details.

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved Protective Coating Specialist Application
- 8 years' verifiable protective coatings-related work experience

** All certifications are administered by the NACE International Institute, the independent certification affiliate of NACE International. Certifications are subject to periodic reviews and revisions, please refer to naceinstitute.org for the most current certification information.*

MR0175 Certifications

Who Should Apply:

Individuals with a working knowledge of the MR0175 Standard, as well as and including:

- Basic technical understanding of corrosion mechanisms caused by sour corrosion, corrosion of metals, and galvanic corrosion
- Work experience necessary to understand the implications of various environmental conditions on materials selection
- Technical understanding of Standard NACE-ANSI MR0175/ISO 15156 "Petroleum and natural gas industries-Materials for use in H₂S-containing environments in oil and gas production," its published interpretations, circulars, etc., and demonstrated competency in its application
- Advanced knowledge and understanding of the basis for "shall" requirements in the standard
- Knowledge and work experience needed to lead discussion of testing, evaluations, and judgments of materials that may be allowed but are not listed in the standard

MR0175 Certified User Corrosion Resistant Alloy (CRA) Certification

CORE EXAM REQUIREMENT

- MR0175 Certified User Corrosion Resistant Alloy (CRA) Exam (NACE-MR0175-CRA)

Note: Review the Exam Preparation Guide on naceinstitute.org for details. This exam is available via computer-based testing at Pearson VUE

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved MR0175 Certified User Corrosion Resistant Alloy (CRA) Certification Application

Note: Application must be submitted before taking exam.

- Bachelor's degree in: applied chemistry, chemical engineering, corrosion, material science, mechanical engineering, metallurgy, plus 2 years' verifiable relevant work experience -OR- 5 years' verifiable relevant work experience, including 2 years in responsible charge

MR0175 Certified User Carbon Steel (CS) Certification

CORE EXAM REQUIREMENT

- MR0175 Certified User Carbon Steel (CS) Exam (NACE-MR0175-CS)

Note: Review the Exam Preparation Guide on naceinstitute.org for details. This exam is available via computer-based testing at Pearson VUE

APPLICATION, EDUCATION, AND WORK EXPERIENCE REQUIREMENTS

- Approved MR0175 Certified User Carbon Steel (CS) Certification Application

Note: Application must be submitted before taking exam.

- Bachelor's degree in: applied chemistry, chemical engineering, corrosion, material science, mechanical engineering, metallurgy, plus 2 years' verifiable relevant work experience -OR- 5 years' verifiable relevant work experience, including 2 years in responsible charge

TWO WAYS to register for a NACE COURSE

1. Go online to www.nace.org/eduschedule and select the course you wish to take. Search for your preferred course, date and location and click on the **Register** link.

Step 1: Select the course you wish to take

Step 2: Choose your preferred location if known (not required)

Step 3: Choose the month in which you would like to take the course in (not required)

Step 4: Click on Search

Step 5: Click on the Register link

– OR –

2. Contact the **NACE FirstService Department** by calling toll free at **+1 800 797 6223** (U.S. and Canada) or worldwide at **+1 281 228 6223**.

FirstService Hours of Operation

Monday – Thursday: 7 a.m. to 6:30 p.m. CST

Friday: 7 a.m. to 5 p.m. CST

Some NACE courses are offered through NACE’s Education Partners or Licensees. In that case, you will be given the contact information to reach out to that partner directly when clicking on the “Register” or Pricing & Details button.

Payment is due in full at the time of registration. Please have your credit card number, expiration date, security code, and name as it appears on the card available to register over the telephone or on the NACE website at nace.org. If you wish to pay by wire transfer or EFT, please contact our **FirstService** team for banking information.

An e-mail, phone and a physical mailing address is required **in order to** contact you with advanced training requirements, to schedule a computer-based test and to receive your materials post course.

NACE regrets that it cannot be responsible for any loss or damage incurred **as a result of** cancellation of a course for any reason. This includes, but is not limited to, airfare penalties and/or hotel penalties. Please contact **FirstService** to check the status of a course before making any nonrefundable travel arrangements.

Disclaimer: Course fees, dates, and locations are subject to change without notice. For the most up-to-date course schedule and information, visit www.nace.org/eduschedule.

CERTIFICATION REQUIREMENTS

Certification Application

Certification candidates must apply for certification by submitting an online application, where applicable. The online application is subject to approval.

Applications include work experience, academic/education background, and 2 or 3 qualification references.

Responsible charge refers to work experience that is at a level of responsibility requiring initiative, technical ability, and independent judgement.

Certification candidates have 4 years to complete all requirements towards certification, including an approved application.

Recertification Requirements

All NACE certifications must be renewed every 3 years and include:

- Recertification application
- Professional Development Hours (PDHs) when applicable
- Work experience requirements
- Renewal fee
 - Members - \$265 USD
 - Non-Members - \$475 USD

Visit naceinstitute.org for the most up-to-date information.



IMPORTANT INFORMATION

Class Registration

To qualify for Advance Member or Advance Nonmember fees, a completed registration form with payment must be received at **NACE 35 days prior to the class date**. Class registration fees include: student manual, course materials, refreshment breaks, and reference books where indicated. Attendees are responsible for their own expenses, including, but not limited to: hotel, airfare, and meals. Participants are responsible for making their own accommodation arrangements. **NACE regrets that it cannot be responsible for any loss or damages incurred as a result of cancellation of a course by NACE for any reason.**

Fee Payments**

All class and exam registration fees must be paid in U.S. dollars (USD). For classes outside of North America, fees in local currencies may apply. Contact NACE Headquarters or the stated local contact before making final plans. For class or exam registrations, registration accompanied by full fee payment is required to guarantee a seat. Payment in full is due at the time of enrollment. If a pro-forma invoice is required, NACE can assist with that. Please reach out to our First Service team. A confirmation letter will be emailed when payment is received with completed registration forms.

Program fees are subject to change without advance notice.

Cancellation and Refund Policy

Paid or guaranteed registrations cancelled in writing at least 35 calendar days in advance of a class will receive a full refund, less a \$100 service fee. Paid or guaranteed registrations cancelled in writing 34 to 7 days before a class will receive a refund of 50% of the registration fee. No refund or credit will be issued on cancellation requests received less than seven days before a class begins. Transfer to another class is permitted with a \$200 fee. Transfers may not be made less than three business days before a class begins (no telephone requests will be accepted). Transfer request must be submitted in writing. Exam Only fees and Exam Only Retake fees (if applicable) are nonrefundable.* All cancellation and transfer fees are subject to change at any time.

IMPORTANT NOTES FOR EXAM ONLY CANDIDATES: Exam only candidates will be permitted into the classroom for review, one day prior to exam day, after 1:00 pm. Exam only candidates should arrive on exam day, prepared to begin the exam at 8 am. Note that there WILL NOT be time allowed for additional study or practice with test stations on exam day. Exam only and Exam Retake fees are nonrefundable.

Online Returns

All online courses are licensed per user (except in corporate licensing agreements) and all sales are final. Transfers of online course licenses are not allowed. All of our online courses are tested with all major browsers. We recommend Chrome or Internet Explorer, both of which are available for all major platforms at no or minimal cost. No returns are accepted on online courses. NACE cannot and does not accept responsibility for troubleshooting or supporting local computer issues.

Equal Opportunity

It is the policy and practice of NACE to assure that no person will be discriminated against or be denied the benefits of any activity or program on the basis of the individual's race, color, religious creed, sex, marital status, national origin, ancestry, sexual orientation, or disability.

Continuing Education Units (CEUs)

NACE International is accredited by IACET to offer CEUs. Refer to the description of each course on the NACE website (nace.org/education) for information on CEU credits.

Membership

A one-year membership (valued at \$150 USD, not deductible) is included as part of a 4-day or more course registration fee, if registered at the nonmember rate. NACE International will appropriate \$1 of the \$150 membership to the NACE International Institute. The membership will not be included if you registered for the course at the discounted member rate. Please note membership will be processed upon completion of the course and includes an online subscription to *Materials Performance* magazine (valued at \$12 USD, not deductible).

****NOTE: (1) NACE-approved courses held outside of the U.S. may have fees that vary, based upon regional economics and fees for similar technical courses in their respective regions. (2) Registration fees for Canadian courses have been adjusted to include GST/HST where applicable. (3) Registrations for courses in the Arab Gulf region include 5% VAT tax.**



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