



Crane Operator Safety – 16 Hour (API RP 2D 7th Edition) Course Outline



Prerequisites: The delegate should have previously completed a rigging course. The individual should have no history of a disabling medical condition, which may be sufficient reason for disqualification.

Course Length: 16 hours – Course length shall vary depending on the number of delegates. Total course time include breaks and meals.

Class Size: The maximum number of delegates that may be trained and tested per instructor shall be twenty-four (24) in the classroom session and twenty (20) in the practical session. A second instructor shall be added for the practical session once the participation exceeds twenty (20) and exercises will be divided into groups.

Course Objective

- Provide delegates assigned to crane and rigging duties the necessary skills to safely perform their jobs.
- Provide delegates with recommended practices and guidelines to perform safely while working with cranes.
- Delegates should be able to demonstrate the necessary skills during practical examination and demonstrate knowledge during written examination.

Course Design

- Power Point© / Lecture / Audio Video / Visual Aids
- Demonstrations
- Practical Exercises

Successful Course Completion

- Requires a minimum score of 75% or better.
- Grades shall be calculated by dividing the number of questions answered correctly by the total number of exam questions.
- Delegates will have no more than thirty (30) minutes to complete the exam.
- Successful completion of practical session is mandatory.

Course Content Summary

- Classroom
- Practicals

Breaks: 10 minutes (approximately every hour)

Lunch: 1 Hour



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Course Outline

Crane Safety

- Scope
- Definitions
 - Lifting Authority
 - Qualified
 - Qualified Crane Operator
 - Qualified Crane Inspector
- Qualified Crane Operator Qualifications
- Physical Requirements
- Operating Practices
- Hook Inspection
- Handling the Load
- Moving the Load
- Hand Signals
- Personnel Transfer
- Refueling
- Fire Extinguishers
- Conditions Requiring Load Testing
- Load Testing Requirements
 - Pull Test
- Usage and Inspection
- Crane Usage Categories
 - Infrequent Usage Production Duty Cycle
 - Moderate Usage Intermittent Duty Cycle
 - Heavy Usage
- Inspection Categories
 - Initial Inspection
 - Pre-Use Inspection
 - Monthly Inspection
 - Quarterly Inspection
 - Annual Inspection
- Inspection and Load Test Records
- Preventative Maintenance
- Maintenance Procedures
 - Repairs and Replacement
 - Lubrication
- Crane Rating & Derating
- Wire Rope and Sling Inspection, Maintenance, and Replacement
 - Wire Rope



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- Inspections
- Replacement
- Maintenance
- Testing
- Pendant Lines

Crane Lift Planning

- General
- Lift Team
 - Responsibilities
 - Before Operations
 - During Operations
 - Post Operations
 - Members
 - Person in Charge
 - Lifting Authority
 - Rigger
 - Crane Operator
 - Vessel Captain
 - Technical Support
- Planning the Lift
- Lift Categorization
- Risk Assessment
- Personnel Transfer
- Qualifications
- Documentation
- Summary Questions for a Safe Lift

Annex A

- Crane Operation
 - Operational Considerations
 - Moving the Load

Annex B

- Usage, Inspection, Testing, and Maintenance
 - Determining Crane Usage
 - Crane Inspection
 - Pre-Use Inspection
 - Monthly Inspection
 - Quarterly Inspection
 - Annual Inspection
 - Crane Components



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- Hoist Assemblies
- Foundation
- Swing Circle Assembly
- Hook Roller Assemblies
 - Ring Gear
 - Hook Rollers
 - Brackets, Bracket Pads, and Bolts
 - King Post
 - Ball/Roller Bearing
 - Bearing Wear
 - Depression Measurement Method
 - Rotation Method
 - Crane/Bearing Connection Integrity
 - Operating Characteristics
- Anti-two Block
 - Testing
 - Proximity Warning Device
 - Stalling of the Hoist Drum
 - Control Override Device
 - No Override Two-blocking Systems

Annex C

- Crane-assisted Personnel Transfer
 - Purpose
 - General Information
 - Facility Personnel Transfer Procedures
 - Vessel Personnel Transfer Procedures
 - Personnel Transfer Device Operations
 - Personnel Transfer Device Procedures

Annex D

- Load Testing

Annex E

- Crane Maintenance
 - Maintenance Procedure
 - Repairs and Replacement

Annex F

- Wire Rope and Sling Inspection, Maintenance, and Replacement
 - Wire Rope Sling Selection Consideration
 - Rope Lay

- Wire Rope Inspection
- Sheave Inspection
 - Sheave Gauge
- Wire Rope Rejection Criteria
- Wire Rope Replacement Selection Criteria
- Recommended Storage and Handling Procedures
- Installation Guidelines
- Wedge-type Socket Installation Guidelines
- Recommended Methods of Lubrication
- Wire Rope Operational Considerations
- Types of Slings
- Use of Slings
- Sling Inspection
- Guides for Fabrication and Lifting Procedures

Annex G

- Lift Categories
 - General
 - Routine Lifts
 - Non-routine Lifts
 - Simple Lifts
 - Complicated Lifts
 - Complex/Critical Lifts

Annex I

- Loading and Unloading Offshore Support Vessels
 - Lifting Operations – General
 - Load Chart Examples
 - Communications
 - Lift Planning
 - Toolbox Talk
 - Safety
 - Cranes – Fitness-for-Service

Practical Session

Practical training shall utilize a hydraulic crane, various slings, loads & rigging techniques.

Practical shall verify that the delegate is able to complete the following:

- Select and wear appropriate PPE during practical training
- Conduct proper pre-use inspection of crane and rigging gear
- Select the appropriate hardware/rigging gear to complete required lifts
- Effectively control the crane operations and uses operating indicators
- Accelerate, decelerate, and swing crane in a smooth safe manner
- Verify the load is not swinging prior to landing the load



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- Respond to standardized hand signals from signal person
- Verify slings are properly connected/free before continuing operations
- Keep the hook clear of riggers while the slings are disconnected
- Ensure overall safety of the rigging team during crane operations
- Place the hook in a bucket (verify depth position)
- Stores hardware/rigging gear properly following its use

Training Center Provided Material

- PPE
- Crane with Operator
- Rigging Material

Delegate Requirements

- Must possess good physical health as the practical training is physical demanding.

Reference Material / Documents

API RP 2D Seventh Edition