



Crane Operator Safety – 4 Hour (API RP 2D Sixth 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: 4 hours – Course length shall vary depending on the number of delegates. Total course time includes breaks.

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 (if applicable)



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Course Outline

Crane Requirements

- API Definitions

Types of Cranes

- Mechanical Cranes
- Non-Mechanical Cranes
- Electric Powered Cranes
- Other Crane Types

Crane Components

- Body of Crane
- Swing Circle Assembly
 - Hook Rollers
 - Ball King
 - King Post
 - Ring Gear
- Boom Types
 - Lattice
 - Box
- Boom Components
 - Jib
 - Head Sheave Assembly
 - Structural Integrity
 - Boom Bolts
 - Pin Connectors
 - Pendants
 - Limit Devices
 - Boom-hoist limit
 - Load hoist limits
 - Boom stops
 - All locking devices
 - Anti-two block devices
 - Hoist Equipment
 - Main/Auxiliary Hoist
 - Blocks/Hooks
 - Wedge sockets

Crane Inspection

- Usage categories
 - Infrequent



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- Moderate
 - Heavy
- Inspection categories
 - Initial
 - Pre-Use
 - Monthly
 - Quarterly
 - Annual
 - Recordkeeping

Crane Maintenance

- Maintenance Procedures
- Wire Rope Construction/Handling
- Loading Wire Rope on Crane Drum
- Wire Rope Inspection/Replacement Guidelines
- Sheave Inspection

Crane Operations

- Lift Capacity
- Boom Angles
- Load Radius
- Load Charts
- Load Limiting Factors
- Other Factors
- Crane Accident Review (Big Blue)
- Operator Responsibilities
- Personnel Transfer
- Before Starting the Lift
- Before Leaving Controls

Crane Safety

- Crane/Rigging Lift Plan
- Personal Protective Equipment
- Hand Signals/Communication

Practical Session

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

Practical shall verify the following:

- Conducts proper pre-use inspection of crane and rigging gear
- Selects the appropriate hardware/rigging gear to complete required lifts



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- Effectively controls the crane operations and uses operating indicators
- Accelerates, decelerates, and swings crane in a smooth safe manner
- Verifies the load is not swinging prior to landing the load
- Responds to standardized hand signals from signal person
- Verifies slings are properly connected/free before continuing operations
- Keeps the hook clear of riggers while the slings are disconnected
- Ensures overall safety of the rigging team during crane operations
- Places the hook in a bucket (verify depth position)
- Properly stores hardware/rigging gear 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 Sixth Edition