

# FUNDAMENTALS OF INDUSTRIAL HOISTING AND RIGGING

*Learn about rigging safety and how to calculate the weight of a load, common hitch and sling types, ropes and locating the load's center of gravity.*

**Gain proper inspection disciplines, techniques and schedules. There should be periodic detailed inspection and maintenance that go beyond daily inspection to help avoid many accidents and prevent faulty equipment from going back into service.**

This course applies to you if your business is in mining, electrical facilities, transportation, construction, the military, forestry, fire fighting, lumber production, or even rope rescue. The practical knowledge gained in our Hoisting and Rigging course will deliver a tangible improvement in both safety and on-the-job performance.

## **CLASS FORMAT:**

Classroom

## **STANDARD CLASS SIZE:**

NTT recommends a class of no more than 35 participants to obtain the best results.

## **NTT PROVIDES:**

- 2-days (16 contact hours) of on-site instruction
- Textbooks
- Classroom consumables
- Completion certificates
- Shipping and instructor travel logistics

## **CLIENT PROVIDES**

- Classroom of 500 square feet or greater
- Projection screen, white board and/or flip chart(s)



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## COURSE AGENDA

### INTRODUCTION TO RIGGING SAFETY

- Fatality reports—improper rigging practices
- What causes accidents
- Personal lifting techniques
- Personal safety
- Proper clothing and gear
- Special considerations—slip, trip, hazards, explosive environments, pinch points, lockout procedures, confined space problems, low visibility, falling debris, welding blindness, cutting torch sparks, etc.

### HOW TO CALCULATE THE WEIGHT OF THE LOAD

- Load rating tables
- Effects of load angle
- Lifting odd and complex shapes
- Breaking strength versus safe working load
- How to lift the load
- Crane angle
- Communications and signals
- Dynamometers
- Shock loading

### COMMON TYPES OF SLINGS

- Wire rope
- Chain
- Synthetic webbing
- Metal mesh
- Fiber rope
- Pros and cons
- Good and bad rigging practices using slings
- Inspection and usage

### COMMON TYPES OF HITCHES

- Vertical
- Choker
- Bridle basket
- Double-wrap basket
- Adjusting hitch
- Inspection
- Purpose and use of each hitch
- Hitch limitations
- Load limitations
- Load-rating tables

### ROPES

- Types and purposes
- Handling and care

### LOCATING THE LOAD'S CENTER OF GRAVITY

- A simple method for locating the center of gravity in the field
- Locating the center of gravity with calculations
- Keeping the center of gravity below the contact points of the load

### RIGGING HARDWARE

- Pulleys
- Carabiners
- Inspection
- Proper and improper use of hardware
- Hardware limitations
- Rated-capacity tables

### HOW TO GAIN MECHANICAL ADVANTAGE

- Overhead cranes
- Mobile cranes
- Jib cranes
- Levers
- Gin poles
- A-frames
- Come-a-longs
- Chain hoists
- Force vectors
- 3/1, 5/1 and 7/1 pulley systems

### DEMO SESSION

- Knots, hitches, bends, anchors, forming taglines for large loads

### SPECIAL CONSIDERATIONS

- Temperature, chemicals, sunlight, abrasion
- Strength loss from knots, tight bends, etc.

### PRACTICE EXERCISE WITH SOLUTIONS

- Using load-rating tables
- Load-angle factor table
- Approximate weights of common materials