



# Fundamentals of Industrial Hoisting and Rigging

1 day

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**Protect Yourself and the Materials You Handle.  
Learn the Science of Hoisting and Rigging.**

**A timely opportunity for you to learn:**

- Rigging safety.
- Proper load weights.
- Load balancing.
- Lifting odd shapes.
- Rigging hardware.
- Sling materials.
- Hitches.
- Different ropes.
- Environmental factors.
- Safe crane usage.
- Alternative lifting devices.

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# Fundamentals of Hoisting and Rigging

# 1 day

## Introduction to Rigging Safety

- Review of fatality reports resulting from improper rigging practices
- What causes accidents?
- Personal lifting techniques
- Personal safety: goggles, muffs, hardhats, steel-toed boots, etc.
- Proper clothing and gear
- Special considerations: slip, trip, and fall hazards, electrical 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
- Breaking strength vs. safe working load
- How to lift the load
- Communications and signals
- Dynamometers

## Rigging Hardware

- Types

## 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

## Common Types of Slings

- Usages for different types of slings, pros and cons
- Good and bad rigging practices using slings
- Inspection and usage

## Common Types of Hitches

- Inspection
- Purpose and use of each hitch
- Pros and cons 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
- Inspection
- Proper and improper use of hardware
- Hardware limitations
- Rated-capacity tables

## 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

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- **Call** 800-922-2820
- **Visit** [www.nttinc.com](http://www.nttinc.com)
- **Fax** 866-274-5589
- **Mail** National Technology Transfer, Inc.  
P.O. Box 4558  
Englewood, CO 80155-4558
- **E-Mail** [sales@nttinc.com](mailto:sales@nttinc.com)

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