Lesson 1: Introduction to Industrial Rigging

Topics
Tools of Industrial Rigging; the Rigging System; Determining the Weight of a Load; Calculating an Allowable Load; Determining Center of Gravity; Vertical and Horizontal Force; Types of Slings; Hooks; Hoist Hooks; Special-Purpose Rigging Hooks; Hook Operating Practices

Objectives
• Identify the tools used in rigging and explain the purpose of each.
• Give examples of three methods of calculating the weight of a load.
• Explain center of gravity and its importance in rigging a load.
• Describe four common sling arrangements and the relation between sling angle and horizontal force.
• Name five types of hooks frequently used in rigging and explain the purpose of each.
• Discuss proper hook use and cite four reasons for removing a hook from service.

Lesson 2: Wire Rope and Wire-Rope Slings

Topics
Wire Rope; Wire-Rope Construction; Wire-Rope Classification; Wire-Rope Strength; Factors Affecting Wire-Rope Strength; Seizing, Cutting, and Splicing; Wire-Rope Slings; Inspecting Wire-Rope Slings

Objectives
• Identify the component parts of wire rope and describe its construction and classification.
• Identify and discuss the factors that affect wire rope strength.
• Describe the basic single-leg and multiple-leg slings and the calculation of their allowable loads.
• Enumerate the signs of damage that would probably cause a wire rope to be removed from service.

Lesson 3: Chain and Metal-Mesh Slings

Topics
Welded-Link Chain; Chain Grades; Chain Strength; Factors Affecting Chain Strength; Chain Slings; Inspecting Chain Slings; Metal-Mesh; Metal-Mesh Slings; Metal-Mesh Sling Materials; Factors Affecting Metal-Mesh Sling Strength; Inspecting Metal-Mesh Slings

Objectives
• Identify the different grades of chain and name some of their applications.
• Define the terms working load limit, proof test, and minimum breaking force.
• List and discuss four factors that affect the strength of chain slings.
• Describe three types of damage you might see in a daily inspection of chain slings that would lead you to set the sling aside for more thorough examination.
• Describe the two standard types of end fittings for metal mesh slings and the hitches for which each can be used.
• Name several advantages of, and applications for, metal mesh slings.
• List the visible signs of damage that would cause you to recommend a sling's removal from service.

Lesson 4: Fiber Rope and Webbing Slings

Topics
Fiber Rope; Natural-Fiber Rope; Synthetic-Fiber Rope; Fiber-Rope Strength; Factors Affecting Fiber-Rope Strength; Whipping Rope Ends; Splicing Fiber Rope; Inspecting Fiber-Rope Slings; Encased Polyester-Fiber Slings; Synthetic Webbing; Synthetic-Web Slings; Factors Affecting Web-Sling Strength; Inspecting Synthetic-Web Slings

Objectives
• Identify the grades of manila rope that can be used for overhead lifting.
• Name the three commonly used synthetic-fiber ropes and list three of their advantages over manila.
• Discuss the factors that affect the strength of fiber rope.
• Name the signs of wear or damage that would warrant setting a fiber-rope sling aside for more detailed inspection.
• Describe an encased polyester fiber sling.
• Explain the construction of synthetic-web slings and name four of the basic types.
• List examples of visible damage that should cause a synthetic-web sling to be removed from service.
Lesson 5: Industrial Hoists and Cranes

Topics
- Industrial Hoists and Cranes; Overhead Manual Chain Hoists; Overhead Power Hoists; Overhead Wire-Rope Hoists; Types of Wire-Rope Hoists; Operating a Wire-Rope Hoist; Side Pull; Overload Limit Device; Underhung and Top-Running Cranes; Jib Cranes; Hoist and Crane Inspection; Inspecting Hooks, Wire Rope, and Chain

Objectives
- Describe the characteristics of the various kinds of overhead hoists.
- Explain the differences between single and double reeving.
- Explain the proper function and operation of an upper limit switch and an overload limit device.
- Describe and contrast the construction of top-running and underhung cranes.
- Identify the three basic types of jib cranes.
- Describe what the rigger’s daily visual inspection should include.
- List examples, from the additional criteria given in this lesson, of conditions that should warrant removal of wire rope or hoist load chain from service.

Lesson 6: Operating Practices

Topics
- General Practices; Sling Operating Practices; Hoist and Crane Operation; Special Heavy Lifts; Pulling a Load; Setting a Load; Turning a Load; Eyebolts; The Thought Process of Rigging

Objectives
- Enumerate the general operating practices that apply to all tools of rigging.
- Explain the 11 operating practices that apply to slings.
- Discuss nine operating practices that should be observed when using a hoist or crane.
- Detail the special circumstances under which a hoist or crane may be used to pull a load or lift a load heavier than the equipment’s rated capacity.
- Describe three methods of turning a load.
- Discuss the eight questions that a rigger must answer in the thought process that should precede any lift.

Lesson 7: Scaffolds and Ladders

Topics
- Scaffolds; Scaffold Planking; Types of Scaffolding; Workmen’s Lift Platforms; Suspension Scaffolds; Guy Lines; Scaffolding Accessories; Ladders; How to Raise a Ladder; Inspecting Ladders; Life Belts; Scaffold Safety; Ladder Safety

Objectives
- Explain the construction of pole and suspension scaffolds and lift platforms, and the safety measures that apply to them.
- Name several scaffolding accessories and explain their use.
- Discuss recommended usage and inspection of the three common types of ladders.