

Engineering Principles for Rigging & Load Handling

Course #801 Engineering Principles for Rigging & Load Handling

Covers the foundational knowledge for those hoping to complete the full Rigging Engineering Library. Engineering principles including statics, dynamics, structural analysis, design, and hydraulics are covered. These principles are also introduced as they apply to rigging and load handling. Course duration includes lectures, reading assignments, exercises and exams. This course is accredited by LEEA and approved by ASME for Continuing Education Units (CEUs) in compliance with the IACET Standard.

Lesson 1: Statics and Dynamics

Topics

Major Considerations; Vectors & Forces; Moments; Structures; Friction; Center of Gravity

Objectives

- Become familiar with engineering terms regularly used in load handling activities and planning.
- Understand the principles behind basic rigging engineering theory.
- Identify the effect the friction coefficient on multiple surfaces.
- Understand the effects of vectors and forces in the rigging engineering space.

Lesson 2: Basic Structural Analysis & Design

Topics

Major Considerations; Stress & Strain; Shear Stress & Shear Strain; Beam Shear & Bending; Centroid, Moment of Inertia; Connections; Columns

Objectives

- Identify units of stress.
- Determine the maximum shear and bending values in a beam.
- List the modes of riveted joint failure.
- Understand the basics of a factor of safety (also known as a design factor).

Lesson 3: Introduction to Dynamics

Topics

Major Considerations; Rectilinear Kinematics; Force & Acceleration; Work & Energy; Derivatives & Integrals

Objectives

- Understand the relationship between integrals and derivatives.
- Identify how velocity effects acceleration.
- Name energy's international standard (SI) units.

Lesson 4: Load Handling Activities

Topics

Principles; Definitions; Components; Diagrams; Symbols; Power Calculations

Objectives

- Calculate force when provided with variables of area and pressure.
- List all of the factors regulated by a hydraulic motor.
- Calculate work when provided with the variables of load and distance.

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