



## Department-Approved Course Requirements: 1-Hour Cranes, Derricks, Hoists, Elevators and Conveyors

**Course Required for:**  **Worker Training**

**Purpose:** This course is a specialized elective course that can help fulfill the requirement for an individual applying for a Site Safety Training Card. **THIS IS AN AWARENESS-LEVEL TRAINING ONLY and does not provide any other qualification or authorization outside of the Site Safety Training Card.**

**Duration:** 1 Hour of instructional time, excluding breaks

**Class Size:** **1-40 Trainees**

**NYC Requirement:** In order to continue to operate in the City of New York, the designated construction worker is required to complete a minimum number of hours of approved site safety training and to carry site safety identification cards as proof of completion of the training (As per New York City Local Law 196 of 2017 also known as 'LL196' or 'Local Law'). This course provides one hour towards the satisfaction of that requirement.

**Facility Requirements:** The Training Facility used by the Course Provider must:

- Have sufficient room to accommodate all expected attendees and the equipment needed to perform hands-on exercises where required as part of the course.
- Make provisions for the presentation of training material in all media types (computer, projectors, video/DVD players, etc.); and
- Comply with all applicable laws, rules & regulations relating to occupancy, zoning, egress, fire detection, fire suppression, light, ventilation, cleanliness, sanitary facilities, emergency notification & evacuation procedures.

Training may be held at construction sites, provided the above requirements are met.

**Instructor Requirement:** To deliver this course the instructor(s) must demonstrate that he or she is credentialed or trained in instructional methods and learning processes. The instructor(s) must also successfully demonstrate his or her ability to solve or resolve problems relating to the subject matter by possession of a recognized degree, certificate, licensure or professional standing, or by extensive knowledge, training, and experience, in the subject matter being taught. To the extent that the course instructor(s) holds, or has held, a trade license issued by the Department, it must be in good standing and not be surrendered to, suspended by or revoked by the Department.

The instructor(s) must also be authorized by the Occupational Safety and Health Administration ('OSHA') as a trainer(s) for its Construction and Outreach Program.

**Curriculum Requirement:** All **topics** listed under **Course Content Outline** must be covered using the listed **Instructional Delivery Method**. The time dedicated to each outline topic should be appropriate for the course content and can vary depending on the trade or job performed by the trainee. The **Instructional Delivery Materials** used in this course must contain all current applicable NYC Construction Code references, current rules, policies and bulletins.

**Course Curriculum  
Proposal Package  
Review:**

A comprehensive review will be performed by the **Department of Buildings** to determine compliance with these Course Curriculum Requirements.

**Instruction Delivery Method**

**Media:** Lecture/Discussion, Slide Presentation

**Handouts:** Slides, references and handbook

**Guided Learning:** Instructor will guide trainees through various logistical concerns around crane use including site safety plan descriptions and observations (swing, placement, adjoining protections).

**Course Content Outline**

1. Introduction
  - a. Instructor introduces topic and describes their qualifications and relevant experience for training this module.
  - b. Establish that all trainees can hear and fully understand you i.e. 'raise your hand if you fully understand me' or 'clap your hands if you fully understand me'
  - c. State basic classroom rules, bearings and decorum
    - i. Inform trainees of duration or training and breaks (if any)
    - ii. Remind trainees about limiting distractions (phone use, texting, sidebar conversations)
    - iii. Emergency procedures (location and means of egress, exits or other contingencies)
    - iv. Location of restrooms
  - d. Training Objectives and Expectations:
    - i. Trainees will become generally familiar components of cranes, derricks, hoists, elevators and conveying systems.
    - ii. Trainees will be able to recognize and avoid hazards associated with cranes, derricks, hoists, elevators and conveying systems. Explain that the purpose of this training help trainees recognizing, avoiding and preventing (RAP) hoisting and rigging problems and provide basic rigging information.
2. Illustrate, define and provide examples of cranes and derricks
3. Illustrate and define rigging and provide graphic examples from the field
  - a. Stress the importance of moving material safely inside and outside of construction sites.
  - b. Lessons Learned Case Study: Crane failure
4. Describe and illustrate some basic types of Cranes and Derricks.
5. Describe, illustrate and explain different types of conveying systems
6. Introduce various personnel required for crane and derrick use and their respective qualifications and responsibilities:
  - a. Lift Director
  - b. Assembly and Disassembly Director
  - c. Operator (Crane, Derrick, Hoists, Conveying Systems)
  - d. Qualified Rigger
  - e. Qualified Person
  - f. Signal Person

- g. Riggers
  - h. Competent Persons
    - i. Inspections
7. Describe and illustrate relevant logistical terms such as:
- a. Adjoining structures and public ways
  - b. Fall zones
  - c. Work Area Control
  - d. Fall Protection
    - i. 15ft Rule (Exemption to Subpart M)
  - e. Swing zones
  - f. Swing radius
  - g. Reach
  - h. Radius
  - i. Load
  - j. Rigging
8. Discuss the basic hazards (What can go wrong) and associated safety controls that we use to keep such hazards from affecting safety crane activity.
- a. Effects of Wind (including not only prohibitions but de-ratings due to lesser winds)
    - i. Explain the difference between a gust and a sustained wind
    - ii. Sail effect and shape of load
  - b. Effects of Weather and Environment
  - c. Explain the dynamics and shock loading of a wire rope
  - d. Duty Cycle Operations
  - e. Explain the adverse effects of side-loading and side pulls
  - f. Power Lines
  - g. Ground Conditions
  - h. Cribbing, Blocking & Sliding Issues
  - i. Level and Plumb
  - j. Overloading
  - k. Maintenance, Engineering and Mechanical
  - l. Boom/jib Contact
  - m. Tipping
  - n. Communications
  - o. Rigging:
    - i. Center of Gravity
    - ii. Softeners
    - iii. Sling angles
    - iv. Hitches (basket, vertical, choker) Strength reductions i.e. D/d ratio, basket, vertical, choker hitches
  - p. Wire-rope Damage and Sling Failure
  - q. Human Errors and Calculation Errors
    - i. Keeping Clear of the Load
  - r. Retaining control a load (tag lines)

9. Illustrate ANSI Hand Signals
  - a. Emphasize that only signalers can give operator signals except for an ANSI Emergency stop hand signal that any one on site can perform to stop actions of crane.
  - b. Have trainees interact and perform the emergency stop hand signal
10. Describe illustrate and explain hoists and elevators and the differ types of such mechanisms along with prohibitions and safety protocol.
11. Provide Resources:
  - a. Applicable OSHA Standards Subpart CC CFR Title 29 1926.1400
  - b. ANSI/ASME Regulations and Standards
  - c. New York City Building Code Chapter 33 Section 3319
  - d. Worker's Rights (See OSHA: <https://www.osha.gov/Publications/OSHA3146.pdf>)
  - e. OSHA Regional Map: <https://www.osha.gov/html/RAmap.html>
12. Debriefing (Informal evaluation)
  - a. Guided by instructor, trainees, in a class discussion talk about the course's content and means of delivery and provide verbal feedback to the instructor.
  - b. Instructor takes notes (either committing them to writing during discussion or ascribing them later into noted-comments).
  - c. Instructor applies lessons learned from debriefing to future trainings.
13. Written (Multiple Choice and situational questions that graphically illustrate conceptual knowledge) Assessment