

*Sample Lesson Plan  
Construction Training Program (10-hour)*

**Topic: Cranes**

**Overview of OSHA Standard**

Cranes pose significant safety issues to be considered, both for the operators of the diverse “lifting” devices, and for workers in proximity to them. Moving large, heavy loads is crucial to today’s manufacturing and construction industries, and much technology has been developed for these operations. Unfortunately, OSHA’s standards do not address many of the advancements in hoisting technology or equipment used in construction today since they have not been updated since 1971 and rely heavily on outdated 1968 American National Standards Institute (ANSI) consensus standards.

The American National Standards Institute (ANSI) and the American Society of Mechanical Engineers (ASME), through consensus procedures, continually update standards for crane manufacturing, operational procedures, inspection requirements, and operator qualifications. Many construction employers adopt these standards. In addition, the Specialized Carriers and Riggers Associate (SC&RA), which represents most of the construction crane owners and users, have developed a set of requirements for crane operator qualifications and certification.

**Step 1: Planning the Lesson**

• **Instructional Materials.**

1. PowerPoint presentation.
2. Instructor notes.
3. Other materials.

• **Instructional Objectives.**

1. Complete the required topics for the OSHA 10-hour course.
2. Complete the following optional topics:
  - a.
  - b.
  - c.
3. Present *Cranes* to [number] participants.
4. Incorporate active participation in each lesson.
5. Provide a quiz or short evaluation at the end of the course.
6. Ensure feedback from participants at various points in the training.

• **Guest Speakers/Presenters and Topics/Responsibilities.**

**Step 2: Presenting the Lesson**

• **Lesson Introduction.**

Introductory remarks or transition from previous lesson.

- **Learning Objectives/Outcomes.**

Upon completion of the lesson, participants will be able to:

1. List the four major causes of crane accidents.

*Possible responses.*

- Contact with power lines
- Overturns
- Falls
- Mechanical failures

2. Describe the pre-planning that is required before putting a crane in use.

*Possible responses.*

- Ensure the crane is on a firm, supported surface, and is level within 1%
- Determine the location of overhead power lines
- Know the job site conditions (e.g. unstable soil or high winds)
- Make other personnel on the job site aware of hoisting activities
- Barricade access within the swing radius
- Ensure a competent person inspects all machinery and equipment prior to each use
- Consider the load limiting factors
- Consider lifting principles

3. State the two main precautions that apply to working with cranes near power lines.

*Possible responses.*

- Stay clear of all power lines. Clearance distance should be at least 10 feet, and at least 16 feet for 750 kV or higher.
- Have an observer or “spotter” who has a clear view of the power lines and the working crane at all times. The crane operator and observer must be able to see each other and communicate.

- **Planned Activities, Discussion, or Participant Interaction**

**Step 3: Evaluating Student Learning and Instruction**

- **Lesson Evaluation and Comments.**

## References

**OSHA Standard:** 29 CFR 1926 Subpart N (1926.550 to 1926.556)

- [www.osha-slc.gov/OshStd\\_toc/OSHA\\_Std\\_toc\\_1926\\_SUBPART\\_N.html](http://www.osha-slc.gov/OshStd_toc/OSHA_Std_toc_1926_SUBPART_N.html)

### **OSHA Publications**

- <http://www.osha-slc.gov/OshDoc/Additional.html>
- 3100 Crane or Derrick Suspended Personal Platforms

### **OSHA References/Resources**

- Electronic Library of Construction Occupational Safety and Health  
Safety Hazards - Cranes and Hoists
  - <http://www.cdc.gov/niosh/elcosh/docs/hazard/safety.html>
- OSHA Technical Links - Crane, Derrick and Hoist Safety
  - <http://www.osha-slc.gov/SLTC/cranehoistsafety/index.html>
- OSHA Technical Links - Construction - Crane, Derrick and Hoist Safety
  - <http://www.osha-slc.gov/SLTC/constructioncrane/index.html>
- Video - Crane Safety for the Site Superintendent
  - <http://www.osha-slc.gov/SLTC/multimedia.html>
  - <http://www.osha-slc.gov/SLTC/video/cranesafety/video.html>