Rigging and Conveying Systems (HYDR 1301)

Credit: 3 semester credit hours (2 hours lecture, 2 hours lab)

Course Description

Preparation to safely direct and move heavy objects selecting the appropriate media, such as fiber rope, wire rope, or chain, in conjunction with the correct hardware and lifting devices, such as hoists and cranes. Emphasis on inspection, care, and maintenance of rigging equipment used in maintenance or production systems.

Required Textbook and Materials

1. *NCCER Basic Rigger Trainee Guide Contren Learning Series 2011*

   ISBN number: -978-0-13-215456-7

2. Equipment to be furnished by students:
   a. Hard Hat (red)
   b. Hearing protection (Ear plugs or Muffs 29 NRR +)
   c. Fire retardant clothing (Nomex or equal)
   d. Safety Glasses (Z87+)
   e. Gloves (leather or equal)
   f. Shoes or Boots (substantial leather or equal w/heels-no open toes)

Course Objectives

Upon completion of this course, the student will be able to:

1. Estimate load weight, determine load center of gravity, and apply principles to rigging.
2. Maintain, inspect, select, and properly use lifting rope devices for securing loads.
3. Use standard hand signals for directing operation of overhead and mobile type cranes while observing safety precautions.
4. Move loads horizontally in a safe manner using jacks, rollers, and skids.
5. Identify construction and maintenance of the four basic types of conveyor used in material handling activities as well as the slider bed and overhead chain system.

Course Outline

A. Discuss the requirements of work permits
   a. Discuss the need for permits
   b. Discuss the required authorizations

B. Discuss the required tools for job
   a. Is a crane required
   b. Are Web or Steel slings required

C. Discuss the Proper Protective Equipment (PPE) for job
   a. Special safety requirements
   b. Special training

D. Discuss layout plot plan
   a. How will workers setup
   b. How will crane setup

E. Perform field layout for location of machinery

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a. Do a rough layout on paper
b. Transfer figures to foundation

F. Install machinery on foundation which includes leveling and securing
   a. Set machinery
   b. Assist in leveling

G. Discuss the need for job site cleanup
   a. Clean-up is part of Job
   b. Housekeeping promotes safety

H. Discuss the entry of equipment into records file
   a. Whose Job is it to enter work in work file
   b. When to enter work

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

Major test	75%
Class participation	25%

Course Requirements

1. Student must attain NCCER Rigging Fundamentals certification to pass course.
2. Select and inspect appropriate slings for a lift.
3. Given various loads, determine the proper hitch to be used.
4. Select and inspect appropriate hardware and /or lifting equipment.
5. Demonstrate and / or simulate the proper techniques for connecting hitches.
6. Demonstrate the proper use of all hand signals according to ANSI B30.2 and B30.5
7. Demonstrate pre-lift safety checks.
8. Demonstrate and/ or simulate how to lift the load level.
9. Demonstrate loading and disconnecting safety precautions.

Attendance Policy

1. Students in a 2 day class are allowed 2 unexcused absences.
2. An absence, excused or unexcused is counted 6 pts. off final grade.
3. More than 2 unexcused absences can result in an “F” in the course.
4. Being tardy 3 times equals 1 absence. (2 pts. each)

Course Policies

1. **Students must possess and present LIT ID to attend class.**
2. Students are required to show Student ID to enter and remain in class.
3. No food, drinks, or use of tobacco products in class or lab.
4. No foul or harsh language will be tolerated in class or lab.
5. Turn off all Cell Phones during lectures.
6. Headphones may be worn only upon Instructor approval.
7. Do not bring children to class.
8. No Cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result in expulsion from LIT.
9. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.
10. Proper Dress. Any intentional display of undergarments will not be tolerated and can result in the student being removed from the class. Pants will be worn belted at the waist as to allow the student to walk, climb, stoop and bend as required. It is the student's responsibility to dress for work as if in an industrial environment, long pants, shirts with sleeves, substantial footwear (full leather shoes or boots with heels, composition oil resistant soles, no sandals, flip flops, cloth shoes). Safety glasses and hard hats will be necessary as the class requires.
11. Internet Usage
    a. Classroom computers have access to the internet.
    b. Student usage of the internet will be monitored.
    c. Proper usage of the internet will be allowed. Used for classroom research or as directed.
    d. Any unauthorized use of the internet will not be tolerated.
    e. Improper usage of the internet, such as profanity, pornography, gambling, etc… will result in disciplinary action not limited to expulsion from LIT.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the LIT Catalog and Student Handbook. The LIT Catalog and Student Handbook may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office.

Course Schedule

Week	Topic	Reference
1/2	Slings • Lecture • Lab: Synthetic Slings Practice	Session 1
3/4	Slings • Lecture • Lab: Wire Rope Slings • Performance Testing (Task 1)	Session 2
5/6	Hitches • Lecture • Lab: Vertical Hitch • Lab Choker Hitch • Lab Basket Hitch • Performance Testing (Task 2)	Session 3
7/8	Rigging Hardware, Part one • Lecture • Lab: Shackles • Lab: Eyebolts	Session 4
9/10	Rigging Hardware, Part Two • Lecture • Lab: Lifting Clamps • Lab: Rigging Hooks • Performance Testing (Task 3)	Session 5
11/12	Sling Stress and Hoists • Lecture • Lab: Sling Stress • Lab Chain Hoists	Session 6
13/14	Rigging Operations and Practice, Part One • Lecture • Lab: Rated Capacity • Lab Sling Attachment • Hardware Attachment • Performance Testing (Task 4)	Session 7
15/16	Rigging Operations and Practice, Part Two • Lecture	Session 8

	• Lab: Load Control • Hand Signals • Review • Module Examination • Trainees must score 70% or higher to receive recognition from NCCER