

# ILLINOIS VALLEY COMMUNITY COLLEGE



## COURSE OUTLINE

**DIVISION: Workforce Development**

**COURSE: IMT 1220; Rigging Systems**

Date: Spring 2014

Credit Hours: 3

Prerequisite(s): None

Delivery Method:  **Lecture**                      **1.5 Contact Hours (1 contact = 1 credit hour)**  
 **Seminar**                              **0 Contact Hours (1 contact = 1 credit hour)**  
 **Lab**                                        **3 Contact Hours (2 contact = 1 credit hour)**  
 **Clinical**                                **0 Contact Hours (3 contact = 1 credit hour)**  
 **Online**  
 **Blended**

Offered:  **Fall**       **Spring**       **Summer**

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>.

### **CATALOG DESCRIPTION:**

The course will introduce the student to the discipline known as rigging as applied to maintenance work. The student will participate in a lecture/lab setting, featuring a series of written and performance tests. Safety, rigging math, rigging principles, slings, chains, cranes, rigging hardware, and forklifts will be covered.

## GENERAL EDUCATION GOALS ADDRESSED

*[See the last page of this form for more information.]*

### Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

- To apply analytical and problem solving skills to personal, social and professional issues and situations.
- To communicate orally and in writing, socially and interpersonally.
- To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- To work and study effectively both individually and in collaboration with others.
- To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- To appreciate the ongoing values of learning, self-improvement, and career planning.

### EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

*[Outcomes related to course specific goals.]*

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

- 1.0 Describe the history of rigging
  - 1.1 Understand modern rigging practices
  - 1.2 Explain lifting terms and definitions
- 2.0 Mathematically determine weights and centers of gravity
  - 2.1 Understand and apply the five types of forces
  - 2.2 Explain horizontal and vertical forces
  - 2.3 Calculate safety factors, sling angles, lengths and effects
- 3.0 Properly use "Personal Protective Equipment" (PPE)
  - 3.1 Describe and demonstrate best practices, safe practices and methods
  - 3.2 Properly plan a job
  - 3.3 Demonstrate Load Control
  - 3.4 Explain and understand weather issues applied to rigging
- 4.0 Describe and identify construction, classification, and strength of fiber ropes
  - 4.1 Inspect a rope for defects
  - 4.2 Perform cutting/whipping and splicing exercises
  - 4.3 Demonstrate real life applications for fiber ropes
- 5.0 Describe and identify construction, classification, and strength of wire ropes
  - 5.1 Inspect a wire rope for defects
  - 5.2 Perform cutting/whipping and splicing exercises
  - 5.3 Demonstrate real life applications for wire ropes
- 6.0 Identify and describe chain/hook grades and strength
  - 6.1 Perform a chain/hook inspection
  - 6.2 Demonstrate/ use chains in various real world applications

- 7.0 Explain the materials metal mesh chains are made of
  - 7.1 Demonstrate the applications of metal mesh chains
- 8.0 Describe and identify construction, classification, and strength of web slings
  - 8.1 Inspect a web sling for defects
  - 8.2 Demonstrate applications/use/care of web slings
- 9.0 Describe the applications and construction of overhead cranes, gantries, and jib cranes
  - 9.1 Explain and describe necessary safety measures around cranes
- 10.0 Describe the universal hand signals used with rigging
  - 10.1 Demonstrate the universal hand signals
- 11.0 Understand/demonstrate crane operating procedures including setting, turning, and pulling a load
- 12.0 Identify/Explain the safety, operation, types, and applications of forklifts
  - 12.1 Explain how terrain/environment affects forklift use and safety
  - 12.2 Demonstrate how to pick and move various pieces
- 13.0 Identify, explain, and apply the use of eye bolts, eye bolt alternatives, ratchets, chain falls, and shackles.
- 14.0 Perform a ladder inspection
  - 14.1 Explain ladder safety procedures and best practices

**COURSE TOPICS AND CONTENT REQUIREMENTS:**

- 1. Introduction to rigging:
- 2. Rigging Math
- 3. Rigging Safety
- 4. Fiber Ropes
- 5. Wire Rope and Wire Rope Slings
- 6. Chains
- 7. Metal Mesh Slings
- 8. Webbing Slings
- 9. Hoists/Winches and Cranes
- 10. Hand Signals
- 11. Crane operating procedures
- 12. Forklifts
- 13. Miscellaneous Equipment/Procedures
- 14. Ladders

**INSTRUCTIONAL METHODS:**

Lecture/discussion  
 Group projects  
 Individual projects  
 Hands-on activities

**INSTRUCTIONAL MATERIALS:**

Rigging trainer

Misc. slings

Chains

Eyes

Forklift

Amatrol Rigging Systems Handouts

**STUDENT REQUIREMENTS AND METHODS OF EVALUATION:**

Lab reports

Written quizzes and exams

Weekly assignments

Performance/skills tests

**OTHER REFERENCES**

Rigging Handbook ISBN 1-888724-00-5

Millwrights and Mechanics Guide ISBN 0-764-54171-4

## Course Competency/Assessment Methods Matrix

IMT 1220; Rigging Systems		Assessment Options																																	
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment			
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D									
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																			
1.0 Describe the history of rigging								X																											
1.1 Understand modern rigging practices				X																															
1.2 Explain lifting terms and definitions								X	X																										
2.0 Mathematically determine weights and centers of gravity								X	X																										
2.1 Understand and apply the five types of forces								X																											
2.2 Explain horizontal and vertical forces								X							X																				
2.3 Calculate safety factors, sling angles, lengths and effects															X																				
3.0 Properly use "Personal Protective Equipment" (PPE)					X	X																													
3.1 Describe and demonstrate best practices, safe practices and methods		X	X					X							X																				
3.2 Properly plan a job					X			X																											
3.3 Demonstrate Load Control					X																														
3.4 Explain and understand weather issues applied to rigging					X			X																											

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	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D							
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																		
4.0 Describe and identify construction, classification, and strength of fiber ropes					X			X																										
4.1 Inspect a rope for defects					X										X					X														
4.2 Perform cutting/whipping and splicing exercises					X										X					X														
4.3 Demonstrate real life applications for fiber ropes				X	X															X														
5.0 Describe and identify construction, classification, and strength of wire ropes					X			X												X														
5.1 Inspect a wire rope for defects					X										X					X														
5.2 Perform cutting/whipping and splicing exercises					X										X					X														
5.3 Demonstrate real life applications for wire ropes				X	X															X														
6.0 Identify and describe chain/hook grades and strength					X			X												X														
6.1 Perform a chain/hook inspection					X										X					X														
6.2 Demonstrate/use chains in various real world applications				X	X										X					X														

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Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																
7.0 Explain the materials metal mesh chains are made of						X																										
7.1 Demonstrate the applications of metal mesh chains			X	X											X					X												
8.0 Describe and identify construction, classification, and strength of web slings							X		X						X																	
8.1 Inspect a web sling for defects				X											X					X												
8.2 Demonstrate applications/use/care of web slings			X	X			X								X					X												
9.0 Describe the applications and construction of overhead cranes, gantries, and jib cranes			X		X										X																	
9.1 Explain and describe necessary safety measures around cranes		X			X										X																	
10.0 Describe the universal hand signals used with rigging			X	X				X							X					X												
10.1 Demonstrate the universal hand signals			X	X	X			X							X					X												
11.0 Understand/demonstrate crane operating procedures including setting, turning, and pulling a load			X	X		X									X					X												

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Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																			
12.0 Identify/explain the safety, operation, types, and applications of forklifts		X	X	X	X	X		X	X				X	X						X	X														
12.1 Explain how terrain/environment affects forklift use and safety				X		X															X														
12.2 Demonstrate how to pick and move various pieces				X	X															X															
13.0 Identify, explain, and apply the use of eye bolts, eye bolt alternatives, ratchets, chain falls, and shackles.					X			X												X															
14.0 Perform a ladder inspection								X												X															
14.1 Explain ladder safety procedures and best practices			X		X																														