Course Information Form (CIF)

Course Code: IRW 117
Course Title: Rigging

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 48.0506
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-3-4
Credit Hour Distribution:

Lecture: 3	Lab: 3	Clinical: 0	**Total: 4**

General Course Information

Catalog Description

History of rigging, fiber line, wire rope, splicing wire rope, chains, hardware, reeving, and slings. Safety rules and information for operation of rigging equipment; operation and assembly of cranes; examples of rigging jobs; use of helicopters in construction; miscellaneous rigging equipment; skids and rollers, and access structures.

General Course Objectives

Students will be able to safely set up and use appropriate types of rigging.

Minimum Placement Levels

English	Reading	Math
None	None	None

Prerequisites

Credit in IRW 116

Methods of Evaluation

The minimum number of methods of evaluation include 4 written and 3 practical exams.

Instructional Materials and Additional Supplies

Rigging, International Association of Ironworkers, latest edition
IPT Crane and Rigging, IPT Publishing, latest edition
Handbook for Rigging, W.G. Newberry Publishers, latest edition

Course Content

General Learning Outcomes (GLOs)

- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Rigging: a) History, and b) Machine Principles	1. Describe the history and machine principles of rigging as applied to iron work.	3	3	0
Fiber Rope: a) Parts, b) Construction, c) Types, d) Core, e) Rope and Line Configurations, f) Manila Rope Grades, g) Maintenance, h) Synthetic Rope, i) Condition Effects, j) Calculating Load, k) Manipulation and Maintenance, l) Thimbles, m) Connecting, and n) Blocks	1. Identify the parts, types, and grades of fiber rope. 2. Describe the effects of load and temperature on fiber rope. 3. Manipulate and maintain fiber rope in a safe condition. 4. Demonstrate the ability to tie knots, bends, and hitches. 5. Splice fiber rope. 6. Describe the types of blocks and their applications in rigging systems.	3	3	0
Wire Rope: a) Selection, b) Parts, c) Description, d) Grades, e) Strand Classification, f) Rope Lay and Length, g) Performing, h) Cores, i) Diameter, j) Factor, k) Safe Working Loads, l) Non-rotating Wire Rope, m) Manipulations, n) Spool Capacity, o) Sheaving, p) Groove Angle, q) Fleet Angle, r) Idlers, s) Reverse Bending, t) Inspection and Maintenance, and u) Sockets	1. Identify the parts, types, grades, lay, and length of wire rope. 2. Describe the effects of fatigue and abrasion on the safety of wire rope. 3. Inspect, maintain, and manipulate wire rope safely. 4. Calculate the maximum safe working load for wire rope configurations. 5. Select the appropriate sheave for a wire rope, and inspect the alignment. 6. Identify and attach swaged sockets, cappel sockets, and wedge sockets.	3	3	0
Splicing Wire Rope: a) Tools, b) Preparation, and c) Splicing	1. Properly perform a Flemish eye-splice, nash splice, and logger's splice.	3	3	0
Steel Chain: a) Application, b) Safe Working Load, c) Inspection, and d) Care and Use	1. Given a safety table, calculate the maximum safe working load for steel chain. 2. Inspect, maintain, and use steel chain properly.	3	3	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Rigging Hardware: a) Drums, b) Sheaves, c) Hooks, d) Shackles, e) Eye Bolts and Ring Bolts, f) Spreaders, g) Equalizer Beams, and h) Blocks	1. Identify the various types of hardware used in rigging. 2. Use and maintain rigging hardware properly.	3	3	0
Reeving: a) Line Requirements and b) Load	1. Determine the line requirements and the maximum working load for a given reeving arrangement. 2. Rig 2- through 13-part reeve systems correctly. 3. Determine the number of persons required to hoist a load with a vertical or horizontal pull line.	3	3	0
Slings: a) Configurations, b) Sling Angles, c) Safe Working Load, d) Measurement, e) Selection, f) Synthetic Webbing Slings, g) Chain Mesh Slings, h) Wire Rope Sling, and i) Storage	1. Calculate the estimated safe working load for specific sling configurations. 2. Select the appropriate rope sling or web sling configuration for a job application. 3. List procedures to store all types of slings properly.	3	3	0
Rigging Safety: a) Procedures and Precautions, b) Operating Near Power Lines, c) Magnets, d) Crane Boom Safety, e) Centrifugal Force, f) Lifting Capacities, g) Travelling with Suspended Load, h) Multiple Cranes, i) Working Area Charts, j) Demolition Work, k) Carrier Operation, l) Crawler Operation, m) Hydraulic Machine Operation, n) Identification Tags, o) Determining Center of Gravity, and p) Signaling	1. Describe the safety procedures and precautions to observe when working with rigged loads and when moving loads.	4	3	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Cranes: a) Tower Cranes, b) Tower Configurations, c) Job Configurations, d) Mounting Configurations, e) Identification Plates, f) Overhead Cranes, g) Wire Rope Lubrication, h) Gantry Cranes, i) Types of Mountings, j) Mobile Cranes, k) Outriggers, l) Attachment, m) Carrier Mounted Cranes, n) Hydraulic Cranes, o) Booms, p) Load Capacities, q) Crawler Cranes, r) Locomotive Cranes, and s) Derricks	1. Identify and describe the job applications of various types of cranes used in iron work. 2. Determine the load capacity of specific types of cranes. 3. Maintain crane ropes and cables properly. 4. Operate crane equipment properly. 5. Given the radius and length of a boom, determine the safe working loads with and without outriggers. 6. Identify the attachments used with cranes, and describe their uses in construction.	3	3	0
Helicopters: a) Safety Around Helicopters, b) Ground to Air Signal Codes, c) Hand Signals, d) Regulations, e) Loading Procedures, f) Protective Equipment, g) External Loads, and h) Helicopter Job Examples	1. Describe the safety regulations for use of helicopters in construction. 2. Demonstrate proper hand signals for directing helicopters at a construction site. 3. Identify the appropriate protective equipment worn when working in helicopter operations.	3	3	0
Miscellaneous Rigging Equipment: a) Gin Pole, b) Basket Gin Pole, c) Tripod, d) Shears, e) Derricks, f) Chain Hoists, g) Light Hoisting Equipment, h) Aerial Transportation Installations, i) Forklift Trucks, and j) Pallet Trucks	1. Identify and describe the applications of miscellaneous equipment used in rigging.	3	3	0
Skids and Rollers: a) Rigging Fundamentals, b) Skids and Rollers, c) Jacks, d) Blocking and Cribbing, e) Inclined Plane, and f) Jobs Requiring Skids and Rollers	1. Describe the applications of skids, rollers, and jacks used in rigging; identify when they are required for a job.	3	3	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Access Structures: a) Ladders - 1) Types, 2) Use, and 3) Maintenance; b) Ramps, Runways, Platforms, and Temporary Stairs; c) Scaffolds - 1) Components, 2) Assembly, and 3) Maintenance; d) Boatswain's Chain; and e) Weight and Counterweight	1. Identify and describe the applications of ladders, ramps, scaffolds, and the boatswain's chain in construction jobs.	3	3	0
Exams	1. Complete all required examinations.	2	3	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0