Prepared: Corey Meunier Approved: Corey Meunier

Course Code: Title	IRN720: RIGGING - LEVEL 2
Program Number: Name	6171: IRONWORKER - LEVEL 2
Department:	IRONWKR APPR./WELDING RELATED
Semester/Term:	18W
Course Description:	Upon successful completion, the apprentice will be able to determine rigging equipment and procedures required to perform lifts in accordance with government safety regulations, accepted industry standards and the requirements of assigned trade related projects. This includes using the specified type of wire rope for rigging and lifting work members, and the appropriate rigging hardware to perform safe lifts. The apprentice will also be able to perform lifts using specified slings and hoisting equipment.
Total Credits:	11
Hours/Week:	11
Total Hours:	84
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail)49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty.
Evaluation Process and	**Evaluation Type** | **Evaluation Weight**

Grading System:

Practical	25%
Theory	75%

Course Outcomes and Learning Objectives:

Course Outcome 1.

Wire Rope:
Upon successful completion, the apprentice is able to use specified type of wire rope for rigging and hoisting, in accordance with accepted industry standards and the requirements of assigned trade related projects.

Learning Objectives 1.

Identify types and applications of wire rope:

- wire rope types
- wire rope grades
- wire rope constructions
- wire rope lay
- wire rope cores
- wire rope applications

Identify specified safe rigging procedures for hoisting with wire rope:

- determine the appropriate wire rope application for specified rigging requirements
- perform the calculations required to determine the required wire rope diameter
- perform the calculations required to determine the tension applied
- assemble required components
- inspect rigging assembly
- perform a safe specified lift

Describe the condition of wire rope:

- identify common defects in wire rope
- identify criteria for removal of wire rope from service
- record rope condition
- determine safety factor for the specific condition of wire rope
- outline the appropriate action for defective wire rope

Describe the maintenance procedures for wire rope:
- cleaning
- lubricating
- storage

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Course Outcome 2.

Rigging Hardware:
Upon successful completion, the apprentice is able to identify, select and apply the appropriate rigging hardware to perform safe lifts in accordance with accepted industry standards and the requirements of assigned trade related projects.

Learning Objectives 2.

Define rigging hardware terms:

- define shackle types
- define hook types
- define ring types
- define snatch block
- define sheave types
- define drum types
- define eye bolt types
- define turnbuckle types
- define swivel types
- define wedge sockets
- define basket sockets
- define swaged sockets
- define headache ball
- define block types
- define cable clamp types
- define spreader and equalizer beams

Identify and maintain rigging hardware equipment components:

- identify rigging components
- identify rigging equipment maintenance requirements

Describe the safe work practices required for use of rigging hardware:

- identify hazardous conditions
- identify PPE
- describe safe working practices
- determine required safe rigging points

Outline the sequence required to perform calculations for safe rigging operations:

- describe the equipment and material set up procedures
- calculate the mechanical advantages
- calculate velocity ratios
- calculate safe working capacities
- identify applicable safety factors
- determine safe working capacity from catalogue charts
- determine safe working capacity reduction for various rigging hardware applications

Describe the selection criteria for the appropriate rigging hardware required for rigging procedures.

Identify the steps involved in inspection and test of a rigging system:

- perform a visual inspection of rigging systems and compare to specifications
- perform a rigging system test and make necessary adjustments

Define the requirements involved in performing the assigned rigging operations and securing procedures:

- apply safe working practices for rigging
- perform a lift using the assigned rigging arrangement

Course Outcome 3.

Slings:
Upon successful completion, the apprentice is able to identify, select and apply the appropriate slings, in accordance with accepted industry standards and the requirements of assigned trade related projects

Learning Objectives 3.

Identify types and applications of slings:
- types
- chain
- wire rope
- synthetic fibre
- metal mesh
- applications

Identify safe working loads for slings:

- calculate safe working capacity using rule of thumb formula
- determine safe working capacity using catalogue charts
- identify safety factors
- identify hazardous conditions
- determine safe working capacity of sling configurations
- single vertical hitch
- basket hitches
- bridle hitches
- choker hitches
- two eyes and a bight

Outline the inspection procedures to determine the condition of slings:

- identify common sling defects
- identify and record inspection results
- determine safety for slings
- identify criteria for removal from service
- determine safety factor for the specific condition of sling
- outline the appropriate action for defective sling

Identify the maintenance procedures for slings:

- cleaning
- lubricating
- storing

Describe assembly procedures for slings:

- determine required application for slings
- calculate or determine the required sling sizes and number
- perform safe lifting procedures following accepted industry standards

Describe techniques to perform lifts with slings in accordance OHSA and accepted industry standards.

Course Outcome 4.

Hoisting Equipment:
Upon successful completion, the apprentice is able to identify, select and apply the appropriate hoisting equipment in accordance with accepted industry standards and the requirements of assigned trade related projects.

Learning Objectives 4.

Describe types and applications of hoisting equipment used for rigging activities:

- identify and define manually-operated hoisting equipment
- come-along
- chainfall
- tirfor
- genie lift
- beam clamp
- plate clamp
- identify and define power-operated hoisting equipment
- tugger
- electric chain hoist
- roustabout

Identify safe working capacities for hoisting equipment:

- determine safe working capacity
- determine safety requirements for hoisting equipment
- hazardous conditions
- identify personal protective equipment

Describe international hand signals and other forms of communication.

Outline the inspection procedures to determine the condition of hoisting equipment:

- identify common defects
- identify and record inspection results
- describe appropriate measures to take for defective hoisting equipment

Describe the sequences required to perform maintenance procedures for hoisting equipment:

- cleaning
- lubricating
- storage

Identify assembly procedures for hoisting equipment:

- determine required application for hoisting equipment
- determine the required hoisting equipment sizes
- perform safe lifting procedures following the specified criteria

Describe techniques used to perform lifts with hoisting equipment in accordance with the accepted industry standards:

- observe specified safety requirements under OHSA

Date:	Thursday, March 1, 2018

Please refer to the course outline addendum on the Learning Management System for further information.