



Ironworker (Structural/Ornamental) Course Outline

2021

TRAINING PROFILE CHART

This Training Profile Chart represents Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training at the topic level. Implementation for harmonization took place progressively.

SATCC Level One	Transcript Code	Hours
Safety Awareness	SFTY 134	18
Tools and Equipment	EQPT 156	20
Access Equipment	EQPT 157	15
Hoisting Lifting and Rigging	RIGG 130	33
Welding 1	WLDR 133	18
Drawing Interpretation	BPRT 130	40
Cranes 1	EQPT 157	18
Structural Components	STRU 130	36
Building Erection 1	STRU 131	12
Industrial Mathematics (Exceeds)	MATH 118	30
		240

SATCC Level Two	Transcript Code	Hours
Hoisting Lifting and Rigging 2	RIGG 200	22
Drawing Interpretation	BPRT 202	48
Cranes 2	EQPT 200	60
Erection and Dismantling	STRU 204	12
Pre-engineered Structures	STRU 208	20
Building Erection	STRU 205	18
Reinforcing Rebar	MATE 200	12
Welding	WELD 217	18
Industrial Mathematics (Exceeds)	MATH 221	30
		240

SATCC Level Three	Transcript Code	Hours
Pre-engineered Structures	STRU 300	26
Welding 3	WELD 307	6
Cranes 3	EQPT 303	40
Machinery and Equipment	EQPT 304	30
Pre-cast Concrete	MATE 301	24
Building Dismantling and Storage	STRU 301	18
Miscellaneous and ornamental Ironwork	MATE 300	54
Equipment Certifications	EQPT 302	12
		210

TECHNICAL TRAINING COURSE CONTENT

This chart outlines the model for Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training sequencing. For the harmonized level of training, a cross reference to the Red Seal National Occupational Analysis (NOA) apprenticeship technical training sequencing, at the learning outcome level, is provided.

Implementation for harmonization was implemented progressively.

Level One	8 weeks	240 hours
Safety Awareness <ul style="list-style-type: none">• personal protective equipment (PPE)• safe work environment• site hazards		18 hours
Tools and Equipment <ul style="list-style-type: none">• hand tools• power tools• powder-actuated tools• welding equipment		20 hours
Access Equipment <ul style="list-style-type: none">• aerial work platforms• ladders• scaffolding		15 hours
Hoisting, Lifting, and Rigging <ul style="list-style-type: none">• hand signals• communication• load to lift capability• rigging equipment• hoisting equipment• lifting equipment• rigging to load		33 hours
Welding 1 <ul style="list-style-type: none">• welding equipment• thermal and oxy-fuel cutting equipment		18 hours
Drawing Interpretation and Work Planning <ul style="list-style-type: none">• drawings and specifications• standards, regulations and procedures• communication• hand signals• introduction to work planning		40 hours

Cranes	18 hours
<ul style="list-style-type: none"> • site hazards • crane position • base preparation • crane assembly • crane components (disassembly) • transport • hydraulic and conventional cranes • tower cranes • electric overhead travelling cranes 	
Structural Components	36 hours
<ul style="list-style-type: none"> • layout • falsework • structural members 	
Building Erection 1	12 hours
<ul style="list-style-type: none"> • surveying equipment • layout • structural members (attaching, leveling, plumbing and aligning) • structural members (completing and installing) • current condition of components • field-fabricating components • components (replacing and removing) • preventative maintenance • structure or components (decommissioning) • disassembly 	
Industrial Mathematics	30 hours
<ul style="list-style-type: none"> • whole numbers, common and decimal fractions • conversions and comparisons with fractions, decimals and per cents • calculations and conversions using the metric and imperial systems • calculations for average, perimeter, area and volume • basic problems involving common and decimal fractions 	

Level Two

8 weeks

240 hours

Hoisting Lifting and Rigging

22 hours

- hand signals
 - communication
 - load to lift capability
 - rigging equipment
 - hoisting equipment
 - lifting equipment
 - rigging to load
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Drawing Interpretation

48 hours

- materials and supplies
 - work tasks
 - drawings and specifications
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Cranes 2

60 hours

- crane and lifting operation terminology and safe work practices
 - codes and regulations for cranes and lifting operations
 - drawings, specifications; and tables and charts for crane lifting operations
 - principles of leverage and their applications to cranes
 - types, components, characteristics and applications for cranes
 - crane assembly and on-site installation
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Erection and Dismantling

12 hours

- layout
 - falsework
 - structural members
 - surveying equipment
 - layout
 - structural members (attaching, leveling, plumbing and aligning)
 - structural members (completing and installing)
 - current condition of components
 - field-fabricating components
 - components (replacing and removing)
 - preventative maintenance
 - structure or components (decommissioning)
 - disassembly
-

Pre-engineered Structures

20 hours

- surveying equipment
 - layout structural members (attaching, leveling, plumbing and aligning)
 - structural members (completing and installing)
 - current condition of components
 - field-fabricating components
 - components (replacing and removing)
 - preventative maintenance
 - structure or components (decommissioning) disassembly
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Building Erection**18 hours**

- erection of interior structural steel components using power rigging equipment
- power rigging equipment
- interpretation of drawings
- identification of structural components
- safe worksite practices
- rigging techniques

Reinforcing Rebar**12 hours**

- surveying equipment
- layout
- structural members (attaching, leveling, plumbing and aligning)
- structural members (completing and installing)
- current condition of components
- field-fabricating components
- components (replacing and removing)
- preventative maintenance
- structure or components (decommissioning)
- disassembly

Industrial Mathematics**30 hours**

- Solve basic word problems
- Perform conversions and comparisons with percents, rates, ratios and proportions
- Perform angle measurement and calculations
- Perform calculations involving circles and partial circles
- Perform basic geometry observations
- Solve basic problems involving perimeter, area and volume

Welding II**18 hours**

- welding and gouging equipment and accessories
- welding and gouging processes and procedures
- flux cored arc welding procedures

Level Three

7 weeks

210 hours

Pre-engineered Structures

26 hours

- surveying equipment
- layout
- structural members (attaching, leveling, plumbing and aligning)
- structural members (completing and installing)
- current condition of components
- field-fabricating components
- components (replacing and removing)
- preventative maintenance
- structure or components (decommissioning)
- disassembly
- interpretation of drawings specific to engineered structures
- components
- erection procedures
- hand signals
- communication
- load to lift capability
- rigging equipment
- hoisting equipment
- lifting equipment
- rigging to load
- drawings and specifications
- materials and supplies
- work tasks

Welding 3

6 hours

- welding equipment
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Cranes 3

40 hours

- terminology associated with electric overhead traveling cranes (EOT)
 - communication procedures during EOT crane operations
 - hazards and safe work practices for EOT cranes and EOT crane lifting operations
 - EOT crane components and accessories
 - EOT crane controls
 - assembly and installation procedures for EOT cranes
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Machinery and Equipment

30 hours

- surveying equipment
- layout
- curtain walls
- preventative maintenance
- structure or components (decommissioning)
- disassembly
- component (removing)

Precast Concrete**24 hours**

- surveying equipment
- layout
- structural members (attaching, leveling, plumbing and aligning)
- structural members (completing and installing)
- current condition of components
- field-fabricating components
- components (replacing and removing)
- preventative maintenance
- structure or components (decommissioning)
- disassembly

Building Dismantling and Storage**18 hours**

- dismantling of a structural steel structure using a crane
- identification of structural components
- safe worksite practices
- advanced rigging techniques
- sequence of dismantling
- sequence of component storage
- trailer loading and storage of components

Miscellaneous and Ornamental Work**54 hours**

- surveying equipment
- layout
- curtain walls
- preventative maintenance
- structure or components (decommissioning)
- disassembly
- component (removing)

Equipment Certifications**12 hours**

- aerial work platform operations
 - telefork operations
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IRONWORKER (STRUCTURAL/ORNAMENTAL)

TASK MATRIX

This chart outlines the major work activities, tasks and sub-tasks from the 2015 Ironworker (Structural/Ornamental) Red Seal National Occupational Analysis (NOA). Each sub-task details the corresponding essential skill and level of training where the content is covered. *

* Sub-tasks with numbers in the boxes is where the content will be delivered in training.

A - OCCUPATIONAL SKILLS

A-1 Performs occupational documentation	A-1.01 Interprets drawings and specifications. 1, 2, 3	A-1.02 Interprets standards, regulations, and procedures. 1 (2, 3 In Context)	A-1.03 Performs lock-out and tag-out procedures. (2, 3 In Context)		
A-2 Communicates in the workplace	A-2.01 Communicates with co-workers. 1	A-2.02 Communicates with others. 1	A-2.03 Communicates with apprentices. 1	A-2.04 Uses hand signals. 1, 2, 3	A-2.05 Communicates electronically. 1, 2, 3
A-3 Uses and maintains tools and equipment.	A-3.01 Uses hand tools and measuring equipment. 1 (2, 3 In Context)	A-3.02 Uses power tools. 1 (2, 3 In Context)	A-3.03 Uses powder-actuated tools. 1 (2, 3 In Context)	A-3.04 Uses aerial work platforms. 1 (2, 3 In Context)	A-3.05 Uses ladders 1 (2, 3 In Context)
	A-3.06 Uses scaffolding 1 (2, 3 In Context)	A-3.07 Uses Personal Protective Equipment (PPE). 1 (2, 3 In Context)	A-3.08 Uses surveying equipment. 1, 2, 3	A-3.09 Uses welding equipment. 1,3 (2 In Context)	A-3.10 Uses thermal and oxy-fuel cutting equipment. 1 (2, 3 In Context)
A-4 Organizes work.	A-4.01 Organizes materials and supplies. 1, 2, 3	A-4.02 Marks layouts. 1, 2, 3	A-4.03 Maintains safe work environment. 1 (2, 3 In Context)	A-4.04 Assesses site hazards. 1 (2, 3 In Context)	A-4.05 Plans work Tasks. 1, 2, 3

B – RIGGING AND HOISTING

B-5 Selects rigging equipment.	B-5.01 Matches load to lift capability. 1, 2 (3 In Context)	B-5.02 Inspects rigging equipment. 1, 2 (3 In Context)	B-5.03 Maintains rigging equipment. 1, 2 (3 In Context)
B-6 Uses hoisting and lifting equipment.	B-6.01 Uses hoisting equipment. 1, 2 (3 In Context)	B-6.02 Uses lifting equipment. 1, 2 (3 In Context)	B-6.03 Attaches rigging to load. 1, 2 (3 In Context)

C – CRANES

C-7 Assembles and erects cranes.	C-7.01 Assesses crane site limitations. 1, 2, 3	C-7.02 Determines crane position. 1, 2, 3	C-7.03 Prepares bases. 1, 2, 3	C-7.04 Erects cranes and components. 1, 2, 3
C-8 Disassembles Cranes.	C-8.01 Disassembles crane components. 1, 2, 3	C-8.02 Prepares crane for transport. 1, 2, 3		

D – ERECTION, ASSEMBLY, AND INSTALLATION

D-9 Installs primary and secondary structural members.	D-9.01 Erects falsework. 1, 2, 3	D-9.02 Attaches structural members 1, 2, 3	D-9.03 Levels, plumbs and aligns structural members. 1, 2, 3	D-9.04 Completes installation of structural members. 1, 2, 3
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D-10 Installs ornamental components and systems.	D-10.01 Installs curtain walls and window walls. 2, 3	D-10.02 Installs miscellaneous components. 3	
D-11 Installs conveyors, machinery and equipment.	D-11.01 Installs material handling systems. 2, 3	D-11.02 Aligns material handling systems. 2, 3	D-11.03 Places machinery and equipment. 2, 3

E – MAINTENANCE AND UPGRADING

E-12 Repairs components.	E-12.01 Assesses current condition of components. 1, 2, 3	E-12.02 Field fabricates components. 1, 2, 3	E-12.03 Replaces components. 1, 2, 3	E-12.04 Performs preventative maintenance. 1, 2, 3
E-13 Decommissions disassembles and removes structural, mechanical and miscellaneous components.	E-13.01 Ensures decommissioning of structure or components. 1, 2, 3	E-13.02 Plans sequence of disassembly. 1, 2, 3	E-13.03 Removes components. 1, 2, 3	

**The Ironworker 2015 Red Seal Occupational Analysis (NOA), describing the “full scope” of the trade, can be found at www.red-seal.ca.*

For more detailed information on course content, please refer to the Ironworker (Structural/Ornamental) Guide to Course Content at www.saskapprenticeship.ca.