



Ironworker (Reinforcing)

Guide to Course Content

Online: www.saskapprenticeship.ca

Recognition:

To promote transparency and consistency, this document has been adapted from the 2025 Ironworker (Reinforcing) Red Seal Occupational Standard (RSOS) (Employment and Social Development Canada).

A complete version of the Occupational Standard can be found at www.red-seal.ca.

STRUCTURE OF THE **GUIDE TO COURSE** CONTENT

To facilitate understanding of the occupation, this guide to course content contains the following sections:

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard detailing the essential skills and the level of training where the content is covered. The Task Matrix is broken down into the following:

Major Work Activity: the largest division within the standard that is comprised of a distinct set of trade activities.

Task: distinct actions that describe the activities within a major work activity.

Sub-task: distinct actions that describe the activities within a task.

Training Profile Chart: a chart which outlines the model for Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training.

Technical Training Course Content for the Ironworker (Reinforcing) trade: a chart which outlines the model for SATCC technical training sequencing. For the harmonized level of training, a cross reference to the Harmonized apprenticeship technical training sequencing, at the learning outcome level, is provided.

TRAINING REQUIREMENTS FOR THE IRONWORKER (REINFORCING) TRADE

To graduate from each level of the apprenticeship program, an apprentice must successfully complete the required technical training and compile enough on-the-job experience to total at least 1800 hours each year. Total trade time required is 3600 hours and at least 2 years in the trade.

There are two levels of technical training delivered by Iron Workers Local Union 771 in Regina:

Level One: 7 weeks

Level Two: 7 weeks

The information contained in this pamphlet serves as a guide for employers and apprentices. The pamphlet briefly summarizes the training delivered at each level of apprenticeship training. An apprentice spends approximately 15% of the apprenticeship term in a technical training institute learning the technical and theoretical aspects of the trade. The hours and percentages of technical and practical training may vary according to class needs and progress.

The content of the technical training components is subject to change without notice.

Entrance Requirements for Apprenticeship Training

Your grade twelve transcripts (with no modified classes) or GED 12 is your guarantee that you meet the educational entrance requirements for apprenticeship in Saskatchewan. In fact, employers prefer and recommend apprentices who have completed high school. This ensures the individual has all of the necessary skills required to successfully complete the apprenticeship program and receive journeyman certification.

Individuals with “modified” or “general” classes in math or science do not meet our entry requirements. These individuals are required to take an entrance assessment prescribed by the SATCC.

English is the language of instruction in all apprenticeship programs and is the common language for business in Saskatchewan. Before admission, all apprentices and/or “upgraders” must be able to understand and communicate in the English language.

Designated Trade Name	Math Credit at the Indicated Grade Level❶	Science Credit at Grade Level
Ironworker (Reinforcing)	Grade 10	Grade 10
❶ - (One of the following) WA – Workplace and Apprenticeship; or F – Foundations; or P – Pre-calculus, or a Math at the indicated grade level (Modified and General Math credits are not acceptable.). *Applicants who have graduated in advance of 2015-2016, or who do not have access to the revised Science curricula will require a Science at the minimum grade level indicated by trade. For information about high school curriculum, including Math and Science course names, please see: http://www.curriculum.gov.sk.ca Individuals not meeting the entrance requirements will be subject to an assessment and any required training.		

IRONWORKER (REINFORCING) TASK MATRIX CHART

This chart outlines the major work activities, tasks, and sub-tasks from the 2025 Ironworker (Reinforcing) Red Seal Occupational Standard (RSOS). 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 – Performs Common Occupational Skills

24%

A-1 Maintains safe and healthy workplace	1.01 Maintains safe work environment 1 (2 In Context)	1.02 Uses personal protective equipment (PPE) and safety equipment 1 (2 In Context)	1.03 Participates in healthy and respectful work environment 1 (2 In Context)		
	A-2 Uses and maintains tools and equipment	2.01 Uses hand tools and measuring equipment 1 (2 In Context)	2.02 Uses power tools 1 (2 In Context)	2.03 Uses bending tools and equipment 1, 2	2.04 Uses mobile elevating work platforms (MEWP) 1 (2 In Context)
		2.05 Uses material handling equipment 1 (2 In Context)			
		2.06 Uses ladders 1 (2 In Context)	2.07 Uses scaffolding 1 (2 In Context)	2.08 Uses surveying equipment 1, 2	2.09 Uses welding equipment 1 (2 In Context)
		2.10 Uses mechanical cutting equipment 1 (2 In Context)			
		2.11 Uses thermal cutting equipment 1 (2 In Context)			
A-3 Organizes work	3.01 Organizes materials and supplies 1, 2	3.02 Performs layout 1, 2	3.03 Uses drawings and documentation 1, 2	3.04 Plans tasks 1, 2	

A-4 Maintains continuous learning	4.01 Upskills in new trade practices and procedures 2	4.02 Upskills in emerging technologies 2
A-5 Uses communication and mentoring techniques	5.01 Uses communication techniques 1 (2 In Context)	5.02 Uses mentoring techniques 2

B – Performs Rigging, Hoisting and Positioning, and Participates in Crane and Equipment Mobilization and Demobilization

24%

B-6 Plans lift	6.01 Assesses load 1, 2	6.02 Performs pre-lift analysis 1, 2	6.03 Selects rigging, hoisting and positioning equipment 1, 2	6.04 Secures lift area 1, 2	
B-7 Rigs, hoists and positions load	7.01 Inspects rigging, hoisting and positioning equipment 1, 2	7.02 Assembles rigging, hoisting and positioning equipment 1, 2	7.03 Attaches rigging equipment to load 1, 2	7.04 Performs hoisting and positioning operations 1, 2	7.05 Secures load before rigging removal 1, 2
B-8 Performs post-lift inspections	8.01 Conducts post-life inspection 1, 2	8.02 Disassembles rigging, hoisting and positioning equipment 1, 2	8.03 Maintains rigging, hoisting and positioning equipment 1, 2		
B-9 Participates in mobilization and demobilization of cranes and equipment	9.01 Participates in mobilization of cranes and equipment 1, 2	9.02 Demobilizes cranes and equipment 1, 2			

C – Fabricates and Installs Reinforcing Material

41%

C-10 Fabricates reinforcing materials on-site	10.01 Cuts reinforcing materials 1, 2	10.02 Bends reinforcing material 1, 2	
C-11 Installs reinforcing materials	11.01 Places reinforcing materials 1, 2	11.02 Ties reinforcing materials 1, 2	11.03 Splices reinforcing materials 1, 2

D – Performs Pre-Stressing/Post-Tensioning

11%

D-12 Places pre- stressed/post-tensioning systems	12.01 Lays out profile 1, 2	12.02 Places tendons and accessories 1, 2	12.03 Installs bursting steel and anchorages 1, 2	12.04 Connects tendons to anchorages 1, 2	12.05 Protects exposed tendons 1, 2
D-13 Stresses tendons	13.01 Sets up stressing equipment 1, 2	13.02 Tensions tendons 1, 2	13.03 Cuts and caps tendons 1, 2	13.04 Removes stressing equipment 1, 2	13.05 De-stresses tendons 1, 2
D-14 Grouts tendons	14.01 Sets up grouting equipment 1, 2	14.02 Installs grouts 1, 2			

TRAINING PROFILE CHART

This Training Profile Chart represents Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training at the topic level.

Level One	Transcript Code	Hours
Safety Awareness and Access Equipment	SFTY 137	14
Communication and Trade Documentation	COM 112	21
Draw Interpretations and Work Plan	BPRT 106	35
Tools and Equipment	EQPT 175	14
Rigging for Ironworkers	RIGG 122	25
Welding and Cutting	WLDR 129	30
Introduction to Cranes	EQPT 174	16
Structural Components	STRU 102	14
Reinforcing I	STRU 103	20
Forklift Training	MATE 101	7
Ironworker Mathematics (Exceeds)	MATH 137	14
		210

Level Two	Transcript Code	Hours
Drawing Interpretation and Trade Mathematics	BPRT 203	38
Reinforcing II	STRU 206	45
Pre-Stressed/Post-Tensioning Systems	STRU 207	30
Hydraulic and Tower Cranes	EQPT 205	67
Surveying	SRVY 207	10
Ironworker Mathematics (Exceeds)	MATH 202	20
		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 (RSOS) apprenticeship technical training sequencing, at the learning outcome level, is provided.

Sub-tasks listed are the minimum to be covered in a topic. Related sub-tasks not listed may be used as a reference and taught “in context” in other topics.

Level One	7 weeks	210 hours
Safety Awareness and Access Equipment		14 hours
- discuss industry and government regulatory requirements pertaining to safety - describe Personal Protective Equipment (PPE) requirements and use - describe the use of ladders, scaffolding, and aerial lifts - discuss fall protection, fall arrest, confined space, and tag out/lockout procedures		
RSOS topics covered in this section of training:		
A-1 Maintains safe and healthy workplace		
A-1.01 Maintains safe work environment		
A-1.02 Uses personal protective equipment (PPE) and safety equipment		
A-1.03 Participates in healthy and respectful work environment		
A-2 Uses and maintains tools and equipment		
A-2.04 Uses mobile elevating platforms (MEWP)		
A-2.06 Uses ladders		
A-2.07 Uses scaffolding		
Communication and Trade Documentation		21 hours
- demonstrate effective communication practices - demonstrate the procedures used to prepare and complete trade documentation - identify job site barriers and signage requirements - describe requirements of team members - demonstrate appropriate means to offer and accept criticism		
RSOS topics covered in this section of training:		
A-3 Organizes work		
A-3.01 Organizes materials and supplies		
A-3.04 Plans tasks		
A-5 Uses communication and mentoring techniques		
A-5.01 Uses communication techniques		

Drawing Interpretations and Work Plan

35 hours

- identify types of drawings and their applications
- explain the procedures used to interpret and extract information from drawings
- prepare trade related documentation
- organise work tasks to facilitate effective handling of work materials

RSOS topics covered in this section of training:

A-3 Organizes work

A-3.02 Performs layout

A-3.03 Uses drawings and documentation

A-3.04 Plans tasks

Tools and Equipment

14 hours

- identify types of hand, electric, hydraulic, pneumatic and gasoline powered tools
- describe use of levelling and aligning tools
- demonstrate use of power actuated tools
- demonstrate the care and use of tools and equipment

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment

A-2.01 Uses hand tools and measuring equipment

A-2.02 Uses power tools

A-2.03 Uses bending tools and equipment

A-2.08 Uses surveying equipment

A-2.09 Uses welding equipment

A-2.10 Uses mechanical cutting equipment

Rigging for Ironworkers

25 hours

- describe hoisting, lifting, and rigging equipment, their applications, limitations, and procedures for use
- discuss the procedures used to perform hoisting and lifting operations
- perform calculations required when hoisting and lifting
- demonstrate international crane hand signals

RSOS topics covered in this section of training:

B-6 Plans lift

B-6.01 Assesses load

B-6.02 Performs pre-lift analysis

B-6.03 Selects rigging, hoisting and positioning equipment

B-6.04 Secures lift area

B-7 Rigs, hoists and positions load

B-7.01 Inspects rigging, hoisting and positioning equipment

B-7.02 Assembles rigging, hoisting and positioning equipment

B-7.03 Attaches rigging equipment to load

B-7.04 Performs hoisting and positioning operations

B-7.05 Secures load before rigging removal

B-8 Performs post-lift activities

B-8.01 Conducts post-lift inspection

B-8.02 Disassembles rigging, hoisting and positioning equipment

B-8.03 Maintains rigging, hoisting and positioning equipment

Welding and Cutting**30 hours**

- describe oxy-fuel equipment, operation, and safety concerns.
- perform oxy-fuel cutting
- perform zip cutting
- describe SMAW equipment, operation, and safety concerns
- perform SMAW welding
- describe GMAW equipment, operation, and safety concerns
- perform GMAW welding

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment

A-2.09 Uses welding equipment

A-2.10 Uses mechanical cutting equipment

A-2.11 Uses thermal cutting equipment

Introduction to Cranes**16 hours**

- describe types of cranes, their applications, and limitations
- interpret basic load charts
- use appropriate terminology to communicate with the crane operator

RSOS topics covered in this section of training:

B-9 Participates in mobilization and demobilization of cranes and equipment

B-9.01 Participates in mobilization of cranes and equipment

B-9.02 Demobilizes cranes and equipment

Structural Components**14 hours**

- describe structural shapes and components, their characteristics and applications
- describe fastening methods relating to structural steel erection

RSOS topics covered in this section of training:

A-3 Organizes work

A-3.02 Performs layout

Reinforcing 1**20 hours**

- describe the properties of reinforcing steel and concrete
- describe the forces and stresses associated with reinforced concrete
- explain reinforcing standards and identification systems
- describe the procedures used to prepare for reinforcing concrete and joining rebar
- demonstrate use of equipment and tools related to reinforcing including material accessories

RSOS topics covered in this section of training:

C-10 Fabricates reinforcing materials on-site

C-10.01 Cuts reinforcing materials

C-10.02 Bends reinforcing materials

C-11 Installs reinforcing material

C-11.01 Places reinforcing materials

C-11.02 Ties reinforcing materials

C-11.03 Splices reinforcing materials

Forklift Training

7 hours

- identify lift truck types and capacities
- describe lift truck safety considerations
- operate lift trucks

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment

A-2.05 Uses material handling equipment

Ironworker Mathematics

14 hours

- calculate lineal dimensions and weights
- perform trade related conversions and comparisons with fractions, decimals, and percentages
- perform calculations and conversions with the metric and imperial systems
- calculate area, volume, and averages
- calculate the solutions to basic worksite problems

This section of training exceeds the minimum sequencing as set out in the Ironworker (Reinforcing) RSOS.

Level Two

7 weeks

210 hours

Drawing Interpretation and Work Planning

38 hours

- interpret complex shop drawings
- interpret drawings
- interpret trade documents
- develop work plans

RSOS topics covered in this section of training:

A-3 Organizes work

- A-3.01 Organizes materials and supplies
 - A-3.02 Performs layout
 - A-3.03 Uses drawings and documentation
 - A-3.04 Plans tasks
-

Reinforcing 2

45 hours

- discuss the principles of stresses and deflection in concrete
- prepare reinforcing components for assembly and placement
- fabricate reinforcing material
- demonstrate the ability to sort, cut, place and tie reinforcing steel

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment

- A-2.03 Uses bending tools and equipment

C-10 Fabricates reinforcing materials on-site

- C-10.01 Cuts reinforcing materials
- C-10.02 Bends reinforcing materials

C-11 Installs reinforcing materials

- C-11.01 Places reinforcing materials
 - C-11.02 Ties reinforcing materials
 - C-11.03 Splices reinforcing materials
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Pre-Stressed/Post-Tensioning Systems

30 hours

- describe the purpose and effects of pre-stressed systems for manufacturing pre-cast members
- describe placement of strands and accessories
- describe pre-stressed and post-tension operations and installations
- describe prepping, stressing, grouting and finishing equipment and materials

RSOS topics covered in this section of training:

D-12 Places pre-stressed/post-tensioning systems.

- D-12.01 Lays out profile
- D-12.02 Places tendons and accessories
- D-12.03 Installs bursting steel and anchorages
- D-12.04 Connects tendons to anchors
- D-12.05 Protects exposed tendons

D-13 Stresses Tendons

- D-13.01 Sets up stressing equipment
- D-13.02 Tensions tendons
- D-13.03 Cuts and caps tendons
- D-13.04 Removes stressing equipment
- D-13.05 De-stresses tendons

D-14 Grouts tendons

- D-14.01 Sets up grouting equipment
- D-14.02 Installs grout

Hydraulic and Tower Cranes**67 hours**

- define terminology associated with cranes and lifting operations
- describe safe work practices pertaining to cranes and crane lifting operations
- interpret codes and regulations pertaining to cranes and crane lifting operations
- interpret information pertaining to crane lifting operations
- interpret load tables and charts
- explain the principle of leverage and the application to cranes
- identify the considerations for on-site crane assembly and operation

RSOS topics covered in this section of training:**B-6 Plans lift**

- B-6.01 Assesses load
- B-6.02 Performs pre-lift analysis
- B-6.03 Selects rigging, hoisting and positioning equipment
- B-6.04 Secures lift area

B-7 Rigs, hoists and positions load

- B-7.01 Inspects rigging, hoisting and positioning equipment
- B-7.02 Assembles rigging, hoisting and positioning equipment
- B-7.03 Attaches rigging equipment to load
- B-7.04 Performs hoisting and positioning operations
- B-7.05 Secures load before rigging removal

B-8 Performs post-lift activities

- B-8.01 Conducts post-lift inspection
- B-8.02 Disassembles rigging, hoisting and positioning equipment
- B-8.03 Maintains rigging, hoisting and positioning equipment

B-9 Participates in mobilization and demobilization of cranes and equipment

- B-9.01 Participates in mobilization of cranes and equipment
- B-9.02 Demobilizes cranes and equipment

Surveying**10 hours**

- demonstrate knowledge in setting up a laser level
- describe laser level safety
- demonstrate the use of a laser level

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment

A-2.08 Uses surveying equipment

Ironworker Mathematics

20 hours

- perform conversions and comparisons using percentile, rates, ratios and proportions
- calculate angles
- apply geometric solutions to trade problems

This section of training exceeds the minimum sequencing as set out in the Ironworker (Reinforcing) RSOS.

Level Two topics from the RSOS that are taught in-context:

A-1 Maintains safe and healthy workplace

A-2 Uses and maintains tools and equipment

A-5 Uses communication and mentoring techniques

For details regarding the In-Context Topics, see page 17.

In-Context Topics

In-context means learning that has already taken place and is being applied to the applicable task. Learning outcomes for in-context topics are accomplished in other topics in that level.

A-1 Maintains safe and healthy workplace

A-1.01 Maintains safe work environment

A-1.02 Uses personal protective equipment (PPE) and safety equipment

A-1.03 Participates in healthy and respectful work environment

A-2 Uses and maintains tools and equipment

A-2.01 Uses hand tools and measuring tools

A-2.02 Uses power tools

A-2.04 Uses mobile elevating work platforms (MEWP)

A-2.05 Uses ladders

A-2.06 Uses material handling equipment

A-2.07 Uses scaffolding

A-2.09 Uses welding equipment

A-2.10 Uses mechanical cutting equipment

A-2.11 Uses thermal cutting equipment

A-5 Uses communication and mentoring techniques

A-5.01 Uses communication techniques