

# Mobile Crane Operator Course Outline

**2021-22**



# TRAINING PROFILE CHART

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

Mobile Crane Operator technical training for levels 1 and 2 are provided in alternative delivery. This method uses a combination of in-class training and at-home course work between training sessions. As a result, hours are listed below for a specific training level, but not for individual courses.

Technical training for levels 1 and 2 are both equivalent to 8 weeks in length, while level 3 is a 2 week in-class session.

<b>Level One</b>	<b>Hours</b>
Safety/Tools and Equipment	
Rigging	
Mobile Crane Operations	
Load Charts I	
Load Weight Calculations	
	240

<b>Level Two</b>	<b>Hours</b>
Rigging	
Load Weight Calculations II	
Load Charts II	
Mobile Crane Setup	
Mobile Crane Operations	
Pre-operational Checks, Inspections and Maintenance	
	240

<b>Level Three</b>	<b>Hours</b>
Mobile Crane Operations	
Safety/Tools and Equipment	
Load Weight Calculations	
Preoperational Checks, Inspections and Maintenance	
Mobile Crane Setup	
	80

# TECHNICAL TRAINING COURSE OUTLINE

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.

<b>Level One</b>	<b>8 weeks</b>	<b>240 hours</b>
<b>Safety/Tools and Equipment</b>		
<ul style="list-style-type: none"><li>• safety</li><li>• communications for hoisting</li><li>• high voltage electrical fundamentals</li><li>• trade related documents</li><li>• tools and equipment</li><li>• fasteners and retaining devices</li></ul>		
<b>Rigging</b>		
<ul style="list-style-type: none"><li>• wire rope</li><li>• rigging hardware</li><li>• introduction to rigging and hoisting</li><li>• sling configurations</li></ul>		
<b>Load Weight Calculations</b>		
<ul style="list-style-type: none"><li>• load weight calculations I</li></ul>		
<b>Load Charts</b>		
<ul style="list-style-type: none"><li>• load charts I</li></ul>		
<b>Mobile Crane Operations</b>		
<ul style="list-style-type: none"><li>• lifting theory and forces</li><li>• introduction to crane operations</li><li>• introduction to computerized operational aids</li><li>• job planning</li><li>• introduction to mobile cranes</li></ul>		
<b>Level Two</b>	<b>8 weeks</b>	<b>240 hours</b>
<b>Rigging</b>		
<ul style="list-style-type: none"><li>• advanced rigging and hoisting</li><li>• reeving operations</li><li>• multi-crane lifts</li></ul>		
<b>Load Weight Calculations</b>		
<ul style="list-style-type: none"><li>• load weight calculations</li></ul>		
<b>Load Charts</b>		
<ul style="list-style-type: none"><li>• load charts ii</li></ul>		

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**Pre-operational Checks, Inspections and Maintenance**

- engines and drive systems
  - mechanical systems
  - hydraulic systems
  - continual checks
- 

**Mobile Crane Set-up**

- crane setup
  - assembly and disassembly (lattice boom crane)
  - assembly and disassembly (telescopic boom crane)
  - transportation
  - pre-lift planning
  - worksite preparation
- 

**Mobile Crane Operations**

- hydraulic telescopic boom operation
  - hydraulic drive lattice boom operation
  - friction drive lattice boom operation
  - specialty crane operations
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**Level Three****2 weeks****80 hours**

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**Safety/Tools and Equipment**

- safety
  - communications for hoisting
  - high voltage electrical fundamentals
  - trade related documents
  - tools and equipment
- 

**Load Weight Calculations**

- load weight calculations I
  - load weight calculations II
- 

**Load Charts**

- load charts I
  - load charts II
- 

**Pre-operational Checks, Inspections and Maintenance**

- engines and drive systems
  - mechanical systems
  - hydraulic systems
  - continual checks
- 

**Mobile Crane Setup**

- crane setup
  - assembly and disassembly (lattice boom crane)
  - assembly and disassembly (telescopic boom crane)
  - transportation
  - pre-lift planning
  - worksite preparation
-

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### Mobile Crane Operations

- lifting theory and forces
  - introduction to crane operations
  - introduction to computerized operational aids
  - job planning
  - introduction to mobile cranes
  - hydraulic telescopic boom operation
  - hydraulic drive lattice boom operation
  - friction drive lattice boom operation
  - specialty crane operations
- 

# MOBILE CRANE OPERATOR TASK MATRIX CHART

This chart outlines the major work activities, tasks and sub-tasks from the 2013 Mobile Crane Operator National Occupational Analysis. 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. Harmonization for the Mobile Crane Operator trade has been fully implemented for each level of technical training.

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## A – COMMON OCCUPATIONAL SKILLS

<b>A-1 Performs safety-related functions</b>	<b>1.01 Maintains safe work environment</b>  <b>1,2,3</b>	<b>1.02 Uses personal protective equipment (PPE) and safety equipment</b>  <b>1,2,3</b>
<b>A-2 Organizes work</b>	<b>2.01 Communicates with others</b>  <b>1,2,3</b>	<b>2.02 Uses documentation</b>  <b>1,2,3</b>

## B – HOISTING CALCULATIONS

<b>B-3 Determines load weights</b>	<b>3.01 Identifies the weight</b>  1,2,3	<b>3.02 Calculates weight</b>  1,2,3
<b>B-4 Calculates crane capacity</b>	<b>4.01 Determines radius and crane configuration</b>  1,2,3	<b>4.02 Interprets load charts</b>  1,2,3
<b>B-5 Performs rigging calculations</b>	<b>5.01 Performs sling angle calculations</b>  1,2,3	<b>5.02 Performs working load limit (WLL) calculations</b>  1,2,3

## C – CRANE INSPECTION AND MAINTENANCE

<b>C-6 Performs pre-operational checks and regular inspections</b>	<b>6.01 Inspects engine systems</b>  1,2,3	<b>6.02 Inspects air systems</b>  1,2,3	<b>6.03 Inspects electrical systems</b>  1,2,3	<b>6.04 Inspects hydraulic systems</b>  1,2,3	<b>6.05 Inspects chassis/car body and running gear components</b>  1,2,3
	<b>6.06 Inspects outriggers and counterweights</b>  1,2,3	<b>6.07 Inspects boom components and attachments</b>  1,2,3	<b>6.08 Inspects hoisting systems</b>  1,2,3		
	<b>C-7 Performs operational and continual checks</b>	<b>7.01 Checks operating controls</b>  1,2,3	<b>7.02 Inspects monitoring and warning systems</b>  1,2,3	<b>7.03 Monitors running lines, hoist lines and standing ropes</b>  1,2,3	<b>7.04 Monitors gauges and warning systems</b>  1,2,3
<b>C-8 Performs minor crane maintenance</b>	<b>8.01 Changes oil and filters</b>  1	<b>8.02 Greases crane</b>  1,2,3	<b>8.03 Lubricates wire ropes</b>  1,2,3	<b>8.04 Makes minor adjustments and replacements</b>  1,2,3	

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## D – RIGGING

<b>D-9 Inspects, maintains and stores slings and hardware</b>	<b>9.01 Lubricates slings and hardware</b>  1,2,3	<b>9.02 Identifies deficiencies in slings and hardware</b>  1,2,3	<b>9.03 Disposes of damaged slings and hardware</b>  1,2,3	<b>9.04 Stores slings and hardware</b>  1,2,3
<b>D-10 Follows rigging procedures</b>	<b>10.01 Selects required rigging</b>  1,2,3	<b>10.02 Rigs load</b>  1,2,3	<b>10.03 Monitors rigging</b>  1,2,3	

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## E – LIFT PLANNING, SITE PREPARATION AND CRANE SETUP

<b>E-11 Performs pre-lift planning</b>	<b>11.01 Participates in routine, engineered and specialty lift planning</b>  1,2,3	<b>11.02 Evaluates risks and hazards</b>  1,2,3	
<b>E-12 Sets up crane</b>	<b>12.01 Performs final site inspection</b>  1,2,3	<b>12.02 Positions crane</b>  1,2,3	<b>12.03 Completes setup</b>  1,2,3

## F – CRANE ASSEMBLY, DISASSEMBLY, AND TRANSPORT

<b>F-13 Loads and unloads components for transport</b>	<b>13.01 Loads crane and components</b>  3	<b>13.02 Unloads and crane and components</b>  3			
<b>F-14 Drives cranes on public roadways</b>	<b>14.01 Performs pre-trip planning</b>  1	<b>14.02 Prepares crane for transport</b>  1	<b>14.03 Drives cranes</b>  1		
<b>F-15 Assembles and disassembles lattice boom cranes</b>	<b>15.01 Installs tracks on car body (lattice boom)</b>  1	<b>15.02 Installs house (lattice boom)</b>  1	<b>15.03 Installs outrigger boxes (lattice boom)</b>  1	<b>15.04 Installs boom base (lattice boom)</b>  1	<b>15.05 Assembles boom and jib (lattice boom)</b>  1,2,3
	<b>15.06 Installs counterweights (lattice boom)</b>  1	<b>15.07 Installs hoist lines, hook blocks and overhaul ball (lattice boom)</b>  1,2,3	<b>15.08 Removes hoist lines, hook blocks and overhaul ball (lattice boom)</b>  1,2	<b>15.09 Disassembles boom and jib (lattice boom)</b>  1,2,3	<b>15.10 Removes counterweights (lattice boom)</b>  1
	<b>15.11 Removes boom base (lattice boom)</b>  1	<b>15.12 Removes house (lattice boom)</b>  1	<b>15.13 Removes tracks from car body (lattice boom)</b>  1	<b>15.14 Removes outrigger boxes (lattice boom)</b>  1	
<b>F-16 Assembles and disassembles telescopic boom cranes</b>	<b>16.01 Installs outrigger boxes (telescopic boom)</b>  1	<b>16.02 Installs main boom (telescopic boom)</b>  1	<b>16.03 Installs hoist lines, hook blocks and overhaul ball (telescopic boom)</b>  1,2,3	<b>16.04 Installs counterweights (telescopic boom)</b>  1	<b>16.05 Installs swing-away jibs and inserts (telescopic boom)</b>  1,2,3
	<b>16.06 Removes swing-away jibs and inserts (telescopic boom)</b>  1,2,3	<b>16.07 Removes counterweights (telescopic boom)</b>  1	<b>16.08 Removes hoist lines, hook blocks and overhaul ball (telescopic boom)</b>  1,2,3	<b>16.09 Removes main boom (telescopic boom)</b>  1	<b>16.10 Removes outrigger boxes (telescopic boom)</b>  1



<b>F-17 Assembles and disassembles specialty equipment and attachments</b>	<b>17.01 Assembles specialty equipment and attachments</b>  3	<b>17.02 Disassembles specialty equipment and attachments</b>  3
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## G – CRANE OPERATIONS

<b>G-18 Performs common craning operations</b>	<b>18.01 Configures load moment indicator (LMI)</b>  1,2	<b>18.02 Mobilizes crane on jobsite</b>  1,2			
<b>G-19 Operates friction drive lattice boom cranes</b>	<b>19.01 Operates friction drive crawler-mounted lattice boom cranes</b>  1	<b>19.02 Operates friction drive truck-mounted lattice boom cranes</b>  1			
<b>G-20 Operates hydraulic drive lattice boom cranes</b>	<b>20.01 Operates hydraulic drive crawler-mounted lattice boom cranes</b>  1,2,3	<b>20.02 Operates hydraulic drive truck-mounted lattice boom cranes</b>  1,2,3			
<b>G-21 Operates telescopic boom cranes</b>	<b>21.01 Operates crawler-mounted telescopic cranes</b>  1,2,3	<b>21.02 Operates rubber-mounted telescopic cranes</b>  1,2,3			
<b>G-22 Performs specialty craning operations</b>	<b>22.01 Operates piledriver</b>  2,3	<b>22.02 Performs duty cycle operations</b>  2,3	<b>22.03 Operates cranes on barges</b>  3	<b>22.04 Performs multi-crane lifts</b>  2	<b>22.05 Uses personnel hoisting equipment</b>  3
<b>G-23 Secures cranes</b>	<b>23.01 Secures crane for short-term</b>  1,2,3	<b>23.02 Secures crane for long-term</b>  1,2,3			

***\*The Mobile Crane Operator National Occupational Analysis describing the “full scope” of the trade, can be found at [www.red-seal.ca](http://www.red-seal.ca)***

***For more detailed information on course content, please refer to the Mobile Crane Operator Guide to Course Content at [www.saskapprenticeship.ca](http://www.saskapprenticeship.ca)***