



**NATIONAL COMPETENCY STANDARDS  
FOR  
MOBILE CRANE OPERATOR  
(CERTIFICATE 2)**

**CONSTRUCTION SECTOR**

**TECHNICAL & VOCATIONAL EDUCATION AND TRAINING QUALITY COUNCIL  
BHUTAN QUALIFICATIONS AND PROFESSIONALS CERTIFICATION AUTHORITY  
THIMPHU, BHUTAN  
MARCH 2025**



## **FOREWORD**

The TVET Quality Council, BQPCA, is pleased to present the National Competency Standards (NCS) for Mobile Cane Operator, Certificate 2, developed in collaboration with industry experts and trainers. These standards establish a nationally recognized qualification aligned with international best practices, setting a benchmark for TVET qualifications in Bhutan.

The NCS ensures that trainees acquire the necessary skills, knowledge, and attitude required by industries. Developed through close consultation with experts, it enhances the relevance of training to labor market needs, equipping graduates to meet industry expectations and improving their employability. A strong and responsive TVET system will also make vocational education more attractive to youth.

The Council acknowledges the valuable contributions of industry experts and trainers in the development of these standards. We urge employers and training providers to continue their support in implementing the NCS, fostering a skilled and productive workforce that contributes to national socio-economic development. Moving forward, we look forward to enhanced industry engagement and collaborative efforts in building a quality-assured, demand-driven TVET system.

Director  
BQPCA

## ACKNOWLEDGEMENT

The TVET Quality Council, Bhutan Qualifications and Professionals Certification Authority would like to express our deepest appreciation to the following industry and subject matter experts who have participated in development of the National Competency Standards for Mobile Crane Operator:

**Date of Endorsement** :26<sup>th</sup> March 2025  
**Next date of Revision** :25<sup>th</sup> March 2030

Experts involved in development of NCS for Mobile Crane Operator			
SN	Name	Designation	Organization
1	Dhan Bdr Chettri	Operator	Druk Ferro Alloys Pvt. Ltd.
2	Surja Man Mongar	Operator	Ugyen Ferro Alloys
3	Ashik Rai	Operator	Druk Wang Ferro Alloys Ltd.
4	Sonam	Instructor	TTI Samthang
5	Tandin Wangchuk	Instructor	TTI Samthang
6	Karma Loday	Specialist	TVETQC, BQPCA

## PACKAGING OF QUALIFICATIONS

**CERTIFICATE 2**



**Carryout Productive Operations of Mobile Crane  
(8343-U3-L2)**

**Carryout Pre and Post Operations Checks  
(8343-U2-L2)**

**Carryout Maintenance of Mobile Crane  
(8343-U1-L2)**



**ENTRY**

## OVERVIEW OF THE NCS FOR MOBILE CRANE OPERATOR

Unit Title	Element of Competence
1. Carryout Maintenance of Mobile Crane	<ol style="list-style-type: none"><li>1. Perform periodic maintenance</li><li>2. Perform basic maintenance</li></ol>
2. Carryout pre and post operations checks	<ol style="list-style-type: none"><li>1. Perform pre operations checks</li><li>2. Perform post operations checks</li></ol>
3. Carryout Productive operations of Mobile Crane	<ol style="list-style-type: none"><li>1. Perform machine operation checks</li><li>2. Perform productive operations</li><li>3. Transport the Mobile Crane</li></ol>

UNIT TITLE	Carryout Maintenance of Mobile Crane
DESCRIPTOR	This unit covers the competencies required to perform maintenance of the Mobile Crane following standard procedure.
CODE	8343-U1-L2
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform periodic maintenance	1.1 Use <b>PPEs</b> as per the job requirement 1.2 Identify <b>tools and equipment</b> as per the job requirement 1.3 Identify <b>materials</b> as per the job requirement 1.4 Check <b>Gauges</b> for proper functioning following the manufacturers service manual 1.5 Change Fluids and Lubricants following manufacturers service manual 1.6 Maintain record of periodic maintenance
2. Perform basic maintenance	2.1 Use PPEs as per the job requirement 2.2 Perform <b>basic maintenance</b> following Manufacturers service manual 2.3 Perform basic electrical maintenance works as per the job requirement 2.4 Change Crane attachments as per the job requirement

RANGE STATEMENT	
<b>PPEs</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Helmet</li> <li>• Gloves</li> <li>• Reflective Jacket</li> </ul>	<ul style="list-style-type: none"> <li>• Safety Boots</li> <li>• Face Mask</li> <li>• Goggles</li> </ul>
<b>Tools and Equipment</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Hand tool Set</li> <li>• Plier</li> </ul>	<ul style="list-style-type: none"> <li>• Screw Driver set</li> <li>• Power tools</li> </ul>
<b>Gauges</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Temperature</li> <li>• Air Pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Oil Pressure</li> </ul>
<b>Materials</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Engine Oil</li> <li>• Brake Fluid</li> <li>• Distilled Water</li> <li>• Grease</li> </ul>	<ul style="list-style-type: none"> <li>• Hydraulic Oil</li> <li>• Coolant</li> <li>• Gear Oil</li> <li>• Transmission Oil</li> </ul>
<b>Basic maintenance</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Greasing</li> <li>• Change Hydraulic Hose</li> <li>• Tighten Battery Clamp</li> </ul>	<ul style="list-style-type: none"> <li>• Tighten Nuts and Bolts</li> <li>• Clean Air Filter</li> <li>• Tighten Belts</li> </ul>



<b>Critical Aspects</b>
<ul style="list-style-type: none"> <li>• Practice safety at workplace</li> <li>• Follow standard procedure for all the tasks</li> <li>• Check Gauges for proper functioning.</li> </ul>

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• OHS Regulations</li> <li>• Basic first Aid</li> <li>• 5S Pillars</li> <li>• Interpret Manufacturers service manual</li> <li>• Basic hydraulic system</li> <li>• Basic auto electrical system</li> <li>• Types of fluids &amp; lubricants and their viscosity</li> </ul>	<ul style="list-style-type: none"> <li>• Team Work</li> <li>• Communication</li> <li>• Problem Solving</li> <li>• Interpersonal Relationship</li> <li>• Innovation</li> <li>• Time Management</li> </ul>

UNIT TITLE	Carryout Pre and Post Operation checks of Mobile Crane
DESCRIPTOR	This unit covers the competencies required to carryout Pre and Post Operation checks of Mobile Crane following standard procedure.
CODE	8343-U2-L2
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform Pre-Operation checks	<p>1.1 Use <b>PPE</b> following standard procedures</p> <p>1.2 Conduct walk-around exterior checks to detect <b>defects</b> and take remedial actions as per the job requirement</p> <p>1.3 Check <b>safety devices</b> for normal functioning as per the manufacturer's manual.</p> <p>1.4 Check the levels of oils &amp; lubricants and top up as per the job requirement following standard procedures</p>
2. Perform Post-Operation procedures	<p>2.1 Use <b>PPE</b> following standard procedures</p> <p>2.2 Park and turnoff the engine</p> <p>2.3 Engage parking brake and safety locks as per the manufacturer's manual</p> <p>2.4 Conduct walk-around visual inspection to detect defects and take remedial actions as per the job requirement</p>

	2.5 Maintain daily logbook following standard procedures
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RANGE STATEMENT	
<b>PPEs</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Safety Helmet</li> <li>• Safety Boot</li> <li>• Goggles</li> </ul>	<ul style="list-style-type: none"> <li>• Work dress</li> <li>• Mask</li> <li>• Reflective jackets</li> </ul>
<b>Defects</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Damages</li> <li>• Any abnormal conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Leakages</li> </ul>
<b>Safety Devices</b> may include but not limited to:	
<ul style="list-style-type: none"> <li>• Horn</li> <li>• Blinkers</li> <li>• Parking Brake</li> </ul>	<ul style="list-style-type: none"> <li>• Lights</li> <li>• Seat Belt</li> </ul>
<b>Critical Aspects</b>	
<ul style="list-style-type: none"> <li>• Practice Safety at workplace</li> <li>• Follow standard procedure for all the tasks</li> <li>• Maintain level of fluids and lubricants</li> </ul>	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Occupational Health and Safety regulations</li> <li>• Basic first Aid</li> <li>• Types of maintenances</li> <li>• Grades of fluids and lubricants</li> <li>• Importance of maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Team Work</li> <li>• Communication</li> <li>• Problem Solving</li> <li>• Interpersonal Relationship</li> <li>• Time Management</li> <li>• Innovation</li> </ul>

UNIT TITLE	Carryout Productive Operations of Mobile Crane
DESCRIPTOR	This unit covers the competencies required to carryout Productive Operations of Mobile Crane following standard procedure.
CODE	8343-U3-L2
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform Machine Operation checks	1.1 Use <b>PPEs</b> following standard procedures 1.2 Start the machine and check for normal performance as per the manufacturer's manual 1.3 Check for leakages of fluids and lubricant and take remedial actions 1.4 Check the functionality of Crane controls and <b>safety devices</b>
2. Perform Productive Machine Operations	2.1 Use PPE following standard procedures 2.2 Receive work instruction from the site supervisor and inspect worksite 2.3 Interpret load chart and lifting capacity of the Crane as per the manufacturer's manual. 2.4 Identify the type of load and special requirements as per the job requirement 2.5 Use Rigging techniques and lifting tools & equipment

	<p>2.6 Operate and maneuver the Crane following safety rules</p> <p>2.7 Follow hand signals or radio communications during the operation following</p> <p>2.8 Perform lifting, transferring and placing of loads as per the job requirement</p> <p>2.9 Monitor hazards and risks and ensure safety during the Crane Operation</p>
3. Transport the Mobile Crane	<p>3.1 Prepare for loading the Mobile Crane</p> <p>3.2 Load the Mobile Crane on the Truck</p> <p>3.3 Unload the Mobile Crane from the Truck</p>

## RANGE STATEMENT

**PPEs** may include but not limited to:

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Safety Helmet</li> <li>• Safety Boot</li> <li>• Goggles</li> </ul> | <ul style="list-style-type: none"> <li>• Work dress</li> <li>• Mask</li> <li>• Reflective jackets</li> </ul> |
|---|--|

**Safety Devices** may include but not limited to:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Horn</li> <li>• Beacon</li> <li>• Parking Brake</li> </ul> | <ul style="list-style-type: none"> <li>• Lights</li> <li>• Seat Belt</li> </ul> |
|---|---|

## Critical Aspects

- Practice Safety at workplace
- Follow standard procedure for all the tasks
- Perform lifting, transferring and placing of loads as per the job requirement

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Occupational Health and Safety regulations</li> <li>• Basic first Aid</li> <li>• Lifting tools and equipment</li> <li>• Load chart</li> <li>• Knots and hitches</li> <li>• Types of hazards and risks</li> <li>• Traffic Rules and Regulations</li> <li>• Hand signals</li> </ul>	<ul style="list-style-type: none"> <li>• Team Work</li> <li>• Communication</li> <li>• Problem Solving</li> <li>• Interpersonal Relationship</li> <li>• Time Management</li> <li>• Innovation</li> </ul>

## **ANNEXURE**

### **National Competency Standards (NCS)**

The National Competency Standards specify the skill, knowledge and attitudes applied to a particular occupation. Standards also specify the standards or criteria of performance of a competent worker and the various contexts in which work may take place. Standards provide explicit advice to assessors regarding the skill and knowledge to be demonstrated by candidates seeking formal recognition either following training or through work experience.

### **Purpose of National Competency Standards**

National Competency Standards serve a number of purposes including:

- Providing advice to curriculum developers about the competencies to be included in the curriculum.
- Providing specifications to assessment resource developers about the competencies within an occupation to be demonstrated by candidates.
- Providing advice to industry/employers about job functions, which in turn can be used for the development of job descriptions, performance appraisal systems and work flow analysis.

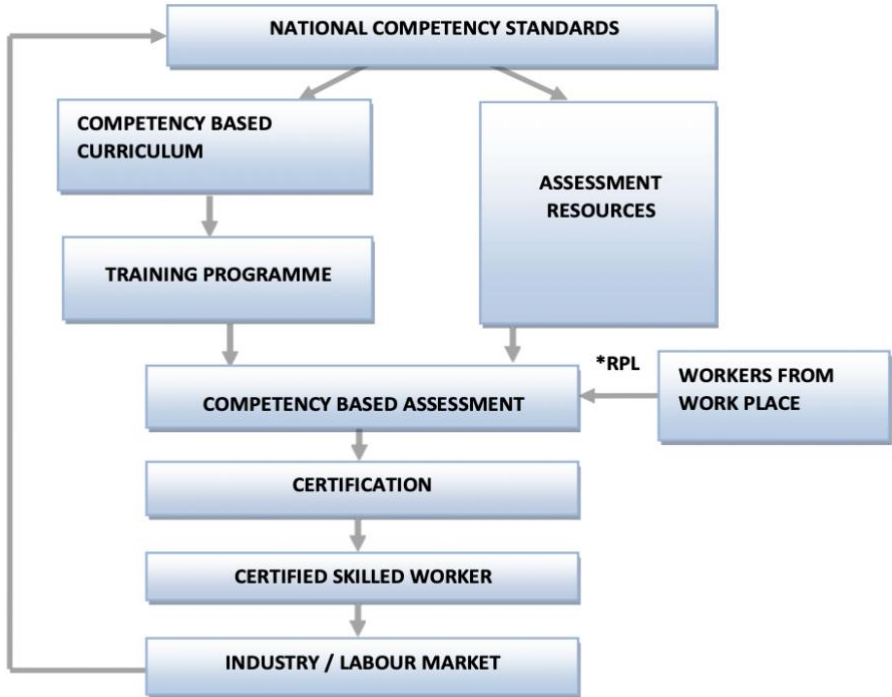
### **Bhutan Qualifications Framework (BQF)**

Bhutan Qualifications Framework is an integrated national framework that outlines all types of qualification in Bhutan. As an established and nationally accepted instrument, the BQF has been benchmarked against international practices in terms of standards. The BQF aims to recognize all forms of learning systems, including formal, non-formal, and informal learning. It acknowledges technological advancements and recognizes contemporary



modes of delivery. It covers a broad range of education systems including the TVET education.

### Implementation of TVET Qualifications



**\* RPL = Recognition of Prior Learning**

## TVET Qualifications Levels

TVET Qualifications have seven levels as per the BQF as follows:

*Bhutan Qualifications Framework 2023*

*Table 2: Qualification Types and Levels Based on Education Sector.*

BQF Level	Community Education	School Education	TVET	Higher Education	Monastic Education
8				Doctoral Degree	<i>Khewang</i> མཁས་དབང་།
7			Master's Degree Postgraduate Diploma Postgraduate Certificate	Master's Degree Postgraduate Diploma Postgraduate Certificate	<i>Tsugla Gongma</i> གཞུག་ལག་གོང་མ།
6			Applied Degree	Bachelor's Degree Bachelor's Degree (Honours) Graduate Diploma Graduate Certificate	<i>Tsugla Wogma</i> གཞུག་ལག་འོག་མ།
5			Advanced Diploma	Advanced Diploma	
4			Diploma	Diploma	
3		Bhutan Higher Secondary Education Certificate	Certificate 3		<i>Dringrim Gongma</i> འབྲིང་རིམ་གོང་མ།
2		Bhutan Certificate for Secondary Education	Certificate 2		<i>Dringrim Barma</i> འབྲིང་རིམ་བར་མ།
1	ALC		Certificate 1		

## Level Descriptors

The TVET Qualification levels are set based on the level descriptors, as defined in the BQF. The detail of the qualification level descriptor is as follow:

<b>Level</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Values</b>	<b>Application</b>
	<b>Knowledge that is:</b>	<b>Demonstrate skills that involve:</b>	<b>Demonstrate values that involve:</b>	<b>Applied in contexts that involve:</b>
4	Broad theoretical, technical and operational	<p>Selecting and applying a range of standard processes relevant to varied and sometimes unpredictable tasks</p> <p>Selecting and applying a range of solutions involving formulation of solutions to resolve complex issues</p> <p>Demonstrating a high level of proficiency in English and Dzongkha</p>	<p>Strong level of awareness of self and others; and an appreciation of belief system, role of social norms, and the importance of relationship building</p> <p>Application of ethical norms and legal rules in decision-making; and comprehending the correlation between values and behavior</p> <p>Commitment to own profession and quality of work</p>	<p>Stable tasks with predictable changes</p> <p>Broad guidance with some self-direction that requires sound judgement</p> <p>Taking some responsibility for planning and coordination with others</p>
3	Theoretical with some technical and operational processes	<p>Applying a range of standard processes to known but varied tasks</p> <p>Selecting and applying a range of solutions to familiar</p>	<p>Sound level of self-awareness and beliefs; and ability to apply social norms and</p>	<p>Stable tasks with some aspects of change</p> <p>General guidance and supervision</p>

		<p>and unfamiliar problems</p> <p>Communicating effectively and clearly, both oral and written, in both English and Dzongkha</p>	<p>build relationships</p> <p>Application of a set of ethical norms</p> <p>Commitment to own field of interest and apply self-management of learning and performance</p>	<p>that require discretion and judgement</p> <p>Adapting to own behaviour to work with others</p>
2	Basic, factual and conceptual	<p>Applying standard processes relevant to carry out known tasks</p> <p>Applying a set of known solutions to solve simple and straightforward issues</p> <p>Using simple and direct exchange of information on familiar and routine matters</p> <p>Developing basic proficiency in Dzongkha and English</p>	<p>Some level of self-awareness and beliefs, and appreciation of social norms; and significance of relationships</p> <p>Awareness of ethical norms, and openness to different activities</p> <p>Developing own knowledge and skills</p>	<p>Structured and stable tasks</p> <p>General support and Supervision that require some discretion and judgement</p> <p>Collaboration with others to achieve goals</p>
1	Foundational, every day and general	<p>Applying operational literacy, numeracy skills required to carry out simple tasks</p> <p>Applying simple solutions to solve simple and</p>	<p>Basic awareness of self, beliefs, and social norms; and understand the significance of relationships</p>	<p>Highly structured tasks with close support and supervision</p> <p>Minimal Discretion and judgement</p>

		straightforward everyday issues  Communicating using everyday expressions and simple phrases in Dzongkha and English	Basic awareness of fundamental ethical norms, basic civil rights, and responsibilities  Willingness to understand tasks and motivated to implement them successfully	Readiness to work together and share knowledge with others
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## **CODING USED FOR NATIONAL COMPETENCY STANDARDS**

The coding and classification system developed in Bhutan is logical, easy to use, and also aligned with international best practices. The Bhutanese coding and classification system is based on the International Standard Classification of Occupations, 2008 (ISCO-08) developed by the International Labour Organisation (ILO). The coding of the National competency standards forms the basis of the identification code for the Technical & Vocational Education and Training Management Information System (TVET – MIS) both in terms of economic sector identification and that of the individual standard.

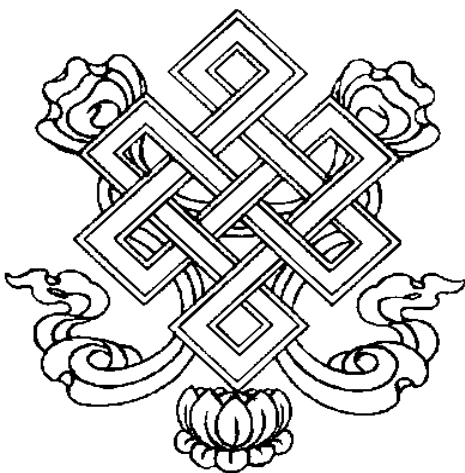
### **Coding the individual national competency standards**

Coding the individual skills standard has a multiple purpose:

- to identify the level,
- to identify to which module the standard belongs,
- to identify in which order the standard is clustered within that module.

A job can include a number of competencies described in the national competency standards.

However, in order to follow a logical order, only national competency standards related to each other and following a logical sequence in terms of training delivery, from the simple to the complex, are clustered into a module. Some standards are so complex that they need to stand alone.



TVET Quality Council  
Bhutan Qualifications and Professionals Certification Authority  
Chang Gidaphu  
P.O. Box 1956, Thimphu  
[www.bqpca.gov.bt](http://www.bqpca.gov.bt)