



**NATIONAL COMPETENCY STANDARDS  
FOR  
METAL ART AND FABRICATION TECHNICIAN  
(NC2 & NC3)**

**Department of Occupational Standards  
Ministry of Labour and Human Resources  
Thimphu Bhutan  
(August 2021)**



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## **FOREWORD**

The Department of Occupational Standards of the Ministry of Labour and Human Resources is pleased to present National Competency Standards (NCSs) for Metal Art and Fabrication Technician. The standards represent the fruits of hard work and invaluable experiences gained by the department since its establishment in the latter half of 2003. The main aim of developing NCS is to set up a well-defined nationally recognized Vocational Qualifications System that will help set a benchmark for the Technical Vocational Education and Training (TVET) System in our country aligned to international best practices.

NCS is one of the base pillars in the Bhutan Vocational Qualifications Framework (BVQF) and is the first step in its implementation. The NCS are developed and revised to ensure that employees or vocational graduates possess and acquire the desired competencies required by industries and employers. In order to ensure this close match in supply and demand of competencies, NCS have been developed and revised in close consultation and partnership with industry experts and validated by the Technical Advisory Committees of the concerned economic sectors.

A vocational education and training system based on NCS shall ensure that delivered training is of a high quality and relevant to the needs of the labour market. As a result, future TVET graduates will be better equipped to meet the need and expectations of industries and employers. This positive impact on the employability of TVET graduates will enhance the reputation of vocational education and training and make it attractive to school leavers.

I gratefully acknowledge collaboration and the valuable contributions made by experts from industries during the consultation and validation processes of the standards. I look forward for continued engagement and participation of the industry and employers in the development of a quality assured demand driven TVET system and to build competent and productive national workforce that will contribute to the continued socio-economic progress of our country.

Director  
Department of Occupational Standards  
Ministry of Labour and Human Resource

## **Acknowledgement**

### **NATIONAL COMPETENCY STANDARDS FOR METAL ART & FABRICATION TECHNICIAN**

**Validation date** : 27/08/2021

**Date of Review** : 27/08/2023 (Max. 3 years)

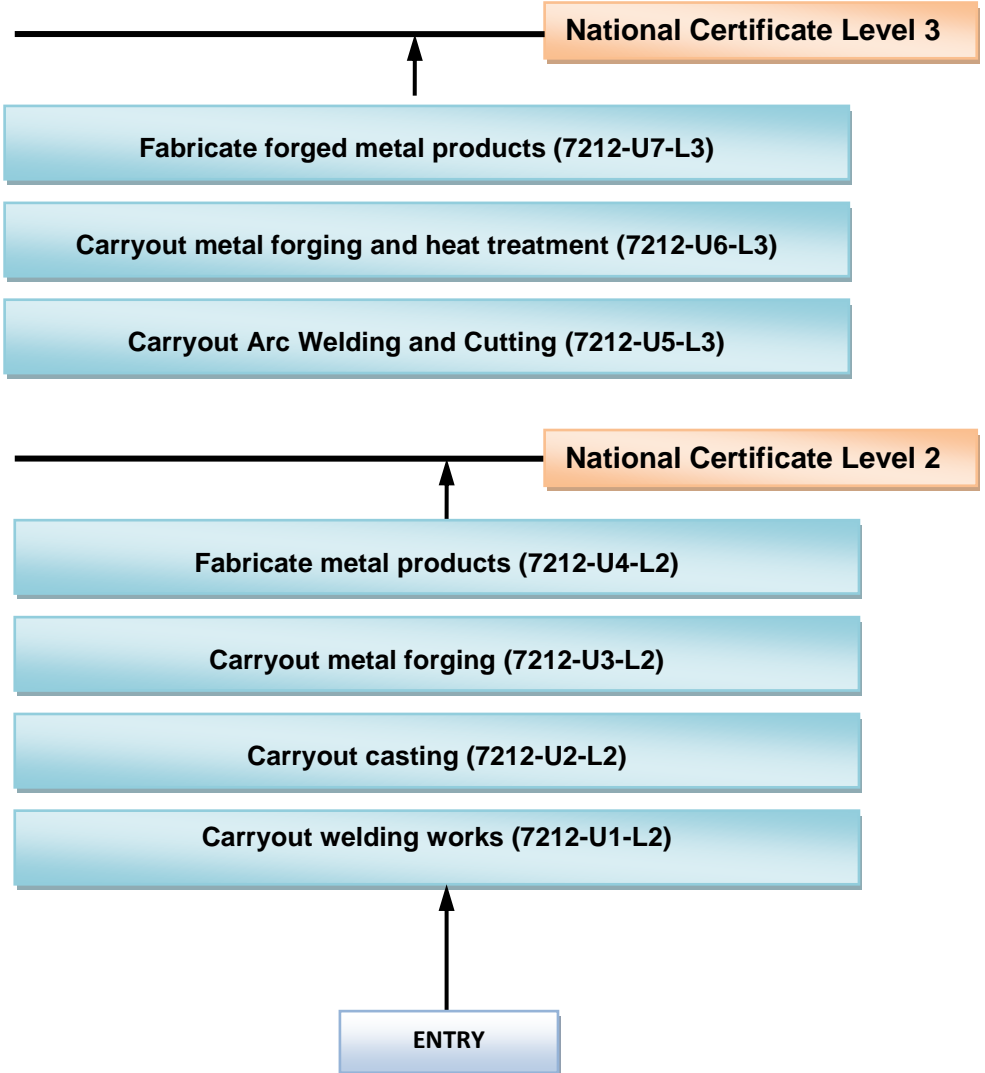
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## Packaging of Qualifications



### Overview of the National Competency Standards

UNIT TITLE	ELEMENTS OF COMPETENCE
1. Carryout welding works	<ol style="list-style-type: none"> <li>1. Perform metal cutting, shaping and fitting</li> <li>2. Perform shielded metal arc welding</li> <li>3. Perform oxy-acetylene welding</li> </ol>
2. Carryout casting	<ol style="list-style-type: none"> <li>1. Perform sand casting</li> <li>2. Perform post casting works</li> </ol>
3. Carryout metal forging	<ol style="list-style-type: none"> <li>1. Perform metal forging</li> <li>2. Perform heat treatment</li> </ol>
4. Fabricate metal products	<ol style="list-style-type: none"> <li>1. Fabricate metal structure</li> <li>2. Produce metal art Product</li> <li>3. Install steel structure</li> </ol>
5. Carryout arc welding and cutting	<ol style="list-style-type: none"> <li>1. Perform Gas Metal Arc welding (GMAW)</li> <li>2. Perform Gas Tungsten Arc Welding (GTAW)</li> <li>3. Perform plasma arc cutting</li> </ol>
6. Carryout metal forging and heat treatment	<ol style="list-style-type: none"> <li>1. Perform metal forging</li> <li>2. Perform heat treatment</li> </ol>
7. Fabricate forged metal products	<ol style="list-style-type: none"> <li>1. Fabricate metal structure</li> <li>2. Perform surface coating</li> </ol>



<b>UNIT TITLE:</b>	Carryout welding works
<b>DESCRIPTOR :</b>	This unit covers the competencies required to perform metal cutting, shaping, fitting, arc welding and oxyacetylene welding following safety at all times.
<b>CODE :</b>	7212-U1-L2
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform metal cutting, shaping and fitting	<p>1.1 Use <b>personal protective equipment (PPE)</b> following standard procedures</p> <p>1.2 Select <b>tools and equipment</b> as per the job requirement following standard procedures</p> <p>1.3 Perform <b>metal cutting</b> as per the job requirement following standard procedures</p> <p>1.4 Perform <b>metal shaping</b> as per the job requirement following standard procedures</p> <p>1.5 Perform <b>metal joining works</b> as per the job requirement following standard procedures</p>
2. Perform shielded metal arc welding	<p>2.1 <b>Prepare to perform SMAW</b> following standard procedures</p> <p>2.2 Perform stringer bead weld following standard procedures</p> <p>2.3 Perform weaving bead weld following standard procedures</p> <p>2.4 Perform fillet weld following standard procedures</p> <p>2.5 Perform groove weld following standard procedures</p> <p>2.6 Perform post welding works following standard procedures</p>
3. Perform oxy-acetylene welding	<p>3.1 <b>Prepare to perform oxyacetylene welding</b> following standard procedures</p> <p>3.2 Perform straight line bead weld without filler rod following standard procedures</p>

	<p>3.3 Perform straight line bead weld with filler rod following standard procedures</p> <p>3.4 Perform fillet weld following standard procedures</p> <p>3.5 Perform butt weld following standard procedures</p> <p>3.6 Perform gas cutting following standing procedures</p> <p>3.7 Perform brazing following standard procedures</p> <p>3.8 Perform post welding works following standard procedures</p>
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<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tools set</li> <li>• High speed cutter</li> <li>• Bench vice</li> <li>• Angle grinder</li> <li>• File</li> <li>• Gas welding set</li> </ul>	<ul style="list-style-type: none"> <li>• Hack saw</li> <li>• Anvil</li> <li>• Hammer</li> <li>• Arc Welding machine</li> <li>• Hand Drilling machine</li> </ul>
<b>Metal cutting may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Cutting</li> <li>• Shearing</li> <li>• Filing</li> <li>• Grinding</li> </ul>	<ul style="list-style-type: none"> <li>• Drilling</li> <li>• Threading</li> <li>• Punching</li> </ul>

<b>PPE may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Respiratory Mask</li> <li>• Hand gloves</li> <li>• Safety shoes</li> </ul>	<ul style="list-style-type: none"> <li>• Working dress</li> <li>• Goggles</li> <li>• Cap</li> </ul>
<b>Metal Shaping may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Rolling</li> </ul>	<ul style="list-style-type: none"> <li>• Bending</li> <li>• Twisting</li> </ul>
<b>Metal joining works may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Riveting</li> <li>• Bolting</li> </ul>	<ul style="list-style-type: none"> <li>• Soldering</li> </ul>
<b>Prepare to perform SMAW may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Base metal</li> </ul>	<ul style="list-style-type: none"> <li>• Machine set up</li> </ul>
<b>Prepare to perform Oxyacetylene welding may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Base metal</li> </ul>	<ul style="list-style-type: none"> <li>• Machine set up</li> </ul>
<b>Critical Aspects:</b>	
<ul style="list-style-type: none"> <li>• Follow occupational health and safety procedures</li> <li>• Perform welding without defects</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>• Estimation and costing</li> <li>• Working principle of welding machine</li> <li>• Types of welding</li> <li>• Types of base metal</li> <li>• Types of welding defects</li> <li>• Nomenclature of welding</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>

<b>UNIT TITLE:</b>	<b>Carryout casting</b>
<b>DESCRIPTOR :</b>	This unit covers the competencies required to perform sand casting and post casting works following safety procedures at all times.
<b>CODE :</b>	7212-U2-L2
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform sand casting	1.1 Prepare for <b>sand casting</b> as per the job requirement following standard procedures 1.2 Select <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Prepare molten metal as per the job requirement following standard procedures 1.4 Perform <b>casting works</b> following standard procedures
2 Perform post casting works	2.1 Inspect casting product for defects as per the job requirement following standard procedures 2.2 Perform <b>finishing works</b> following standard procedures

<b>RANGE STATEMEN</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Casting sand</li> <li>• Furnace set</li> </ul>	<ul style="list-style-type: none"> <li>• Pattern</li> <li>• Mold</li> <li>• Tong</li> </ul>

<ul style="list-style-type: none"> <li>• Hand grinding machine</li> </ul>	<ul style="list-style-type: none"> <li>• Hammer</li> </ul>
<b>Sand casting may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Mold</li> </ul>	<ul style="list-style-type: none"> <li>• Workplace</li> </ul>
<b>Casting works may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Filling</li> </ul>	<ul style="list-style-type: none"> <li>• Removing core</li> </ul>
<b>Finishing works may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Grinding</li> <li>• Filling</li> </ul>	<ul style="list-style-type: none"> <li>• Polishing</li> </ul>
<b>Critical Aspects:</b>	
<ul style="list-style-type: none"> <li>• Follow occupational health and safety procedures</li> <li>• Perform casting without defects</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>• Estimation and costing</li> <li>• Basic principle of casting</li> <li>• Casting defects</li> <li>• Limitation of castings</li> <li>• Types of furnaces</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>

<b>UNIT TITLE:</b>	<b>Carryout metal forging</b>
<b>DESCRIPTOR :</b>	This unit covers the competence required to perform metal forging and heat treatment following safety at all times
<b>CODE :</b>	7212-U3-L2
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform metal forging	1.1 <b>Prepare for forging works</b> as per the job requirement following standard procedures 1.2 Use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Perform <b>metal forging works</b> following standard procedures
2 Perform heat treatment	2.1 Perform annealing as per the job requirement following standard procedures 2.2 Perform quenching as per the job requirement following standard procedures 2.3 Perform tempering as per the job requirement following standard procedures

<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Tong</li> <li>• Die</li> <li>• Swage block</li> <li>• Clamping device</li> </ul>	<ul style="list-style-type: none"> <li>• Chisel</li> <li>• Hammer</li> <li>• Furnace</li> </ul>



<b>Prepare forging works may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Workplace</li> <li>• Equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Work piece</li> </ul>
<b>Metal forging works may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hammering,</li> <li>• Tapering</li> <li>• Fullering</li> <li>• Swaging</li> <li>• Upsetting</li> <li>• Hot cutting</li> </ul>	<ul style="list-style-type: none"> <li>• Twisting</li> <li>• Bending</li> <li>• Fire welding</li> <li>• Chiseling</li> <li>• Collaring &amp; wrapping</li> <li>• Manual punching</li> </ul>
<b>Critical Aspects:</b>	
<ul style="list-style-type: none"> <li>• Follow occupational health and safety procedures.</li> <li>• Perform metal forging to produce products as per the design and drawing</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>• Estimation and costing</li> <li>• Types of forging</li> <li>• Types of heat treatment</li> <li>• Advantages of forging</li> <li>• Basic metallurgy</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>

<b>UNIT TITLE:</b>	<b>Fabricate metal products</b>
<b>DESCRIPTOR :</b>	This unit covers the competencies required to fabricate metal products following safety procedures at all times.
<b>CODE :</b>	7212-U4-L2
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Fabricate metal structure	<p>1.1 <b>Prepare for metal product fabrication</b> as per the job requirement following standard procedures</p> <p>1.2 Fabricate eight lucky signs as per the job requirement following standard procedures</p> <p>1.3 Fabricate grills and railings as per the job requirement following standard procedures</p> <p>1.4 Fabricate steel staircase as per the job requirement following standard procedures</p> <p>1.5 Perform painting on fabricated products as per the job requirement following standard procedures</p>
2 Produce metal art Product	<p>2.1 Prepare for producing metal art products as per the job requirement</p> <p>2.2 Forge <b>decorative items</b> as per the job requirement following standard procedures</p> <p>2.3 Cast <b>metal objects</b> as per the job requirement following standard procedures</p>
3 Install steel structure	<p>3.1 Install window grills as per the job requirement following standard procedures</p> <p>3.2 Install railings as per the job requirement following standard procedures</p> <p>3.3 Install gate as per the job requirement following standard procedures</p> <p>3.4 Install metal fence as per the job requirement following standard procedures</p>

<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Grinding machine</li> <li>• Cut off saw</li> <li>• Drilling machine</li> <li>• Try square</li> <li>• Spirit level</li> </ul>	<ul style="list-style-type: none"> <li>• Welding machine set</li> <li>• Bench vice</li> <li>• Anvil</li> <li>• Measuring tape</li> </ul>
<b>Prepare for metal product fabrication may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Fabrication design and drawing</li> </ul>	<ul style="list-style-type: none"> <li>• Estimation and costing</li> </ul>
<b>Decorative items may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Reldri</li> <li>• Khorlo</li> </ul>	<ul style="list-style-type: none"> <li>• Eight lucky signs</li> </ul>
<b>Metal Objects may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Norbu tog</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Critical Aspects:</b>	

- Follow occupational health and safety procedures.
- Fabricate metal products as per the design and drawing

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Occupational Health and safety regulations</li> <li>• Basic first aid</li> <li>• Estimation and costing</li> <li>• Eight lucky signs</li> <li>• Different fabrication products</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>

<b>UNIT TITLE:</b>	Carryout arc welding and cutting
<b>DESCRIPTOR :</b>	This unit covers the competencies required to perform arc welding and cutting following safety procedures at all times.
<b>CODE :</b>	7212-U5-L3
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform Gas Metal Arc welding (GMAW)	1.1 <b>Prepare to perform GMAW</b> following standard procedures 1.2 Perform stringer bead weld following standard procedures 1.3 Perform weaving bead weld following standard procedures 1.4 Perform fillet weld following standard procedures 1.5 Perform groove weld following standard procedures 1.6 Perform post welding works following standard procedures
2 Perform Gas Tungsten Arc Welding (GTAW)	2.1 Prepare to <b>perform GTAW</b> following standard procedures 2.2 Perform straight line bead weld without filler rod following standard procedures 2.3 Perform straight line bead weld with filler rod following standard procedures 2.4 Perform fillet weld following standard procedures 2.5 Perform groove weld following standard procedures 2.6 Perform post welding works following standard procedures

3 Perform plasma arc cutting	3.1 <b>Prepare for plasma arc cutting</b> following standard procedures 3.2 Perform plasma cutting as per the job requirement following standard procedures 3.3 Perform finishing works following standard procedures
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<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• GTAW set</li> <li>• Welding shield</li> </ul>	<ul style="list-style-type: none"> <li>• GMAW set</li> <li>• Plasma Arc cutting set</li> <li>• Measuring instrument</li> </ul>
<b>Prepare to perform GMAW and GTAW may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Base metal,</li> </ul>	<ul style="list-style-type: none"> <li>• Machine set up</li> </ul>
<b>Prepare for plasma cutting may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Workplace</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment set up</li> </ul>
<b>Critical Aspects:</b>	
<ul style="list-style-type: none"> <li>• Follow occupational health and safety procedures</li> <li>• Perform welding and cutting operations</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>• Estimation and costing</li> <li>• Basic principle of GTAW</li> <li>• Basic principle of GMAW</li> <li>• Basic principle of Plasma Arc cutting machine</li> <li>• Types of finishing works</li> <li>• Types of weld bead</li> <li>• Types of weld joints</li> <li>• Types of defects</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>



<b>UNIT TITLE:</b>	Carryout metal forging and heat treatment
<b>DESCRIPTOR :</b>	This unit covers the competencies required to perform metal forging and heat treatment following safety at all times
<b>CODE :</b>	7212-U6-L3
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform metal forging	<ul style="list-style-type: none"> <li>1.1 Prepare for forging work as per the job requirement following standard procedures</li> <li>1.2 Use <b>tools and equipment</b> as per the job requirement following standard procedures</li> <li>1.3 Perform drop forging following standard procedures</li> <li>1.4 Perform metal drawing following standard procedures</li> <li>1.5 Perform edging following standard procedures</li> </ul>
2. Perform heat treatment	<ul style="list-style-type: none"> <li>2.1 Perform normalizing as per the job requirement following standard procedures</li> <li>2.2 Perform hardening as per the job requirement following standard procedures</li> <li>2.3 Perform carburization as per the job requirement following standard procedures</li> </ul>

RANGE STATEMENT	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Forging tools and equipment set</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring instruments</li> </ul>
<b>Critical Aspects:</b>	
<ul style="list-style-type: none"> <li>• Follow occupational health and safety procedures.</li> <li>• Perform metal forging and heat treatment as per the design and drawing</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>• Estimation and costing</li> <li>• Types of heat treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>

<b>UNIT TITLE:</b>	Fabricate forged metal products
<b>DESCRIPTOR :</b>	This unit covers the competencies required to fabricate forged metal products following safety at all times.
<b>CODE :</b>	7212-U7-L3
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Fabricate metal structure	<ul style="list-style-type: none"> <li>1.1 Prepare for metal product fabrication following standard procedures</li> <li>1.2 Use <b>tools and equipment</b> as per the job requirement following standard procedures</li> <li>1.3 Fabricate forged grills and railings as per the job requirement following standard procedures</li> <li>1.4 Fabricate forged gate and fence as per the job requirement following standard procedures</li> </ul>
2. Perform surface coating	<ul style="list-style-type: none"> <li>2.1 Prepare for surface coating as per the job requirement following standard procedures</li> <li>2.2 Perform hot-dip galvanizing following standard procedures</li> <li>2.3 Perform zinc spraying following standard procedures</li> <li>2.4 Perform waxing and lacquering following standard procedures</li> </ul>

<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Forging tools and equipment set</li> <li>• Welding machine set</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring instrument</li> <li>• Galvanizing set</li> </ul>
<b>Critical Aspects:</b>	
<ul style="list-style-type: none"> <li>• Follow occupational health and safety procedures.</li> <li>• Fabricate forged metal products as per the design and drawing</li> </ul>	

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Occupational Health and safety regulations</li> <li>• Basic first aid</li> <li>• Estimation and costing</li> <li>• Basic design and drawings</li> <li>• Types of surface coating</li> <li>• Basic entrepreneurship</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Negotiation</li> <li>• Time management</li> <li>• Critical thinking</li> <li>• Innovative thinking</li> </ul>



## **Annexure**

### **1.1 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.

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

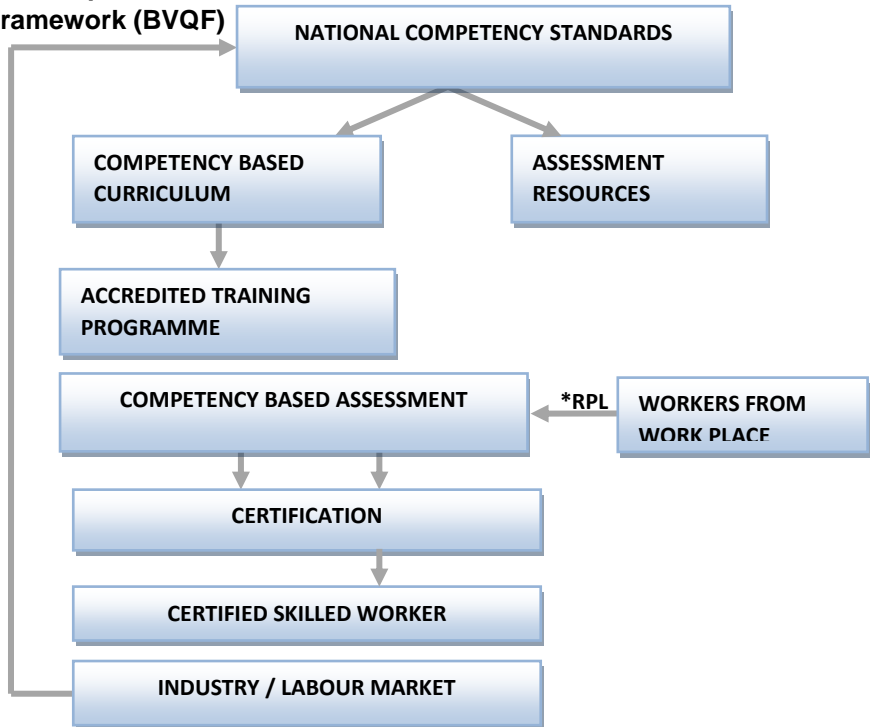
National Competency Standards serve a number of purposes including:

- Providing advice to curriculum developers about the competencies to be included in 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.

### 1.3 Bhutan Vocational Qualifications Framework (BVQF)

Bhutan Vocational Qualifications Framework is an agreed system of Assessing, Certifying and Monitoring nationally recognized qualifications for all learning in the TVET sector against national competency standards, in training institutions, in the workplace, in schools or anywhere where learning takes place.

### 1.4 Components of the Bhutan Vocational Qualifications Framework (BVQF)



\* RPL = Recognition of Prior Learning

## 1.5 BVQF Levels

The Bhutan Vocational Qualifications Framework has three levels classified based on the competency of the skilled workers. The three levels are:

- National Certificate Level 3 (NC III)
- National Certificate Level 2 (NC II)
- National Certificate Level 1 (NC I)

### BVQF Level Descriptors

The qualification levels are decided based on level descriptors. The detail of the qualification level descriptor is as follows:

#### National Certificate Level 1

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"><li>• Are narrow in range.</li><li>• Are established and familiar.</li><li>• Offer a clear choice of routine responses.</li><li>• Involve some prioritizing of tasks from known solutions.</li></ul>	<ul style="list-style-type: none"><li>• Basic operational knowledge and skill.</li><li>• Utilization of basic available information.</li><li>• Known solutions to familiar problems.</li><li>• Little generation of new ideas.</li></ul>	<ul style="list-style-type: none"><li>• In directed activity.</li><li>• Under general supervision and quality control.</li><li>• With some responsibility for quantity and quality.</li><li>• With no responsibility for guiding others.</li></ul>



## National Certificate Level 2

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Require a range of well-developed skills.</li> <li>• Offer a significant choice of procedures requiring prioritization.</li> <li>• Are employed within a range of familiar context.</li> </ul>	<ul style="list-style-type: none"> <li>• Some relevant theoretical knowledge.</li> <li>• Interpretation of available information.</li> <li>• Discretion and judgments.</li> <li>• A range of known responses to familiar problems</li> </ul>	<ul style="list-style-type: none"> <li>• In directed activity with some autonomy.</li> <li>• Under general supervision and quality checking.</li> <li>• With significant responsibility for the quantity and quality of output.</li> <li>• With some possible responsibility for the output of others.</li> </ul>

## National Certificate Level 3

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Requires a wide range of technical or scholastic skills.</li> <li>• Offer a considerable choice of</li> </ul>	<ul style="list-style-type: none"> <li>• A broad knowledge base which incorporates some theoretical concepts.</li> <li>• Analytical</li> </ul>	<ul style="list-style-type: none"> <li>• In self-directed activity.</li> <li>• Under broad guidance and evaluation.</li> <li>• With complete responsibility for quantity and</li> </ul>

<p>procedures requiring prioritization to achieve optimum outcomes.</p> <ul style="list-style-type: none"> <li>• Are employed in a variety of familiar and unfamiliar contexts.</li> </ul>	<p>interpretation of information.</p> <ul style="list-style-type: none"> <li>• Informed judgment.</li> <li>• A range of sometimes innovative responses to concrete but often unfamiliar problems.</li> </ul>	<p>quality of output.</p> <ul style="list-style-type: none"> <li>• With possible responsibility for the output of others.</li> </ul>
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## 1.7 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 practises. 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 Vocational Education and Training Management Information System (VET – MIS) both in terms of economic sector identification and that of the individual standard.

### Coding the individual national competency standards

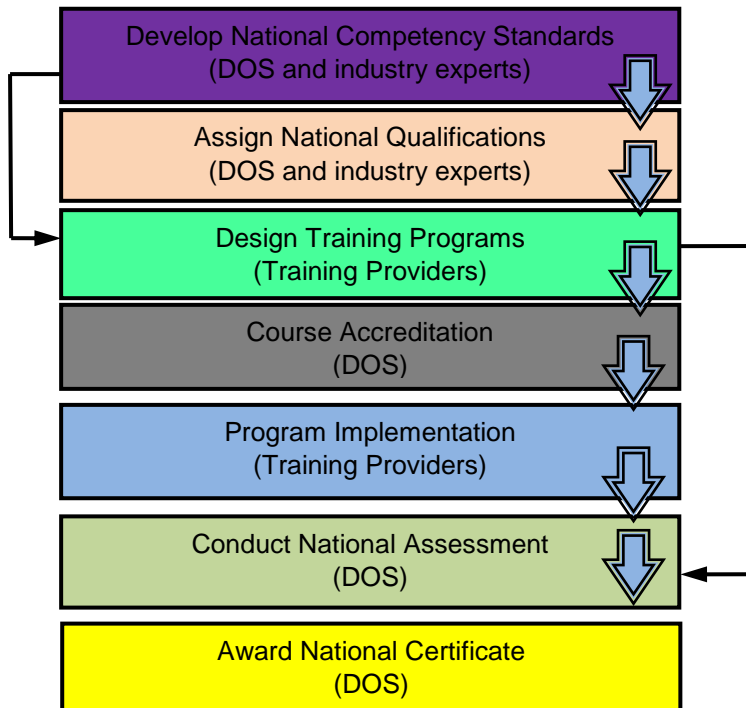
Coding the individual skills standard has a multiple purpose:

- 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.

## Implementation and operational procedures for National Competency Standards (NCS)



MoLHR – Ministry of Labour and Human Resources  
DOS – Department of Occupational Standards

## **1.8 ASSESSMENT GUIDE**

### **Form of assessments**

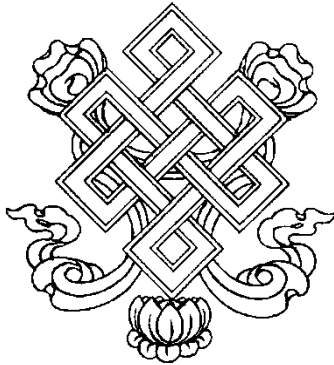
- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through diagrams, in writing or orally (viva-voce).

### **Assessment context**

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### **Assessment condition**

- The candidate shall have access to all required tools, equipments, materials and documents.
- Candidate must complete the assessment in industry accepted time frame.



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