



**Government of the People's Republic of Bangladesh  
Skills Development Project**

# **National Competency Standards for Sewing Machine Operation**

Qualification Title: **National Skills Certificate-II in Sewing Machine Operation  
(RMG Sector)**

Qualification Code: **RMGSMO30212**



**Bangladesh Technical Education Board**

JUNE-2013

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The National Competency Standard for **Sewing Machine Operation Level -II** (NSC-II) is a referral document for the development of curricula, teaching and learning materials, and assessment tools. It also serves as the base document for providing trainings consistent with existing quality assurance systems.

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### Approval Sheet

The National Competency Standards for **National Skills Certificate-II in Sewing Machine Operation (Ready-Made Garments)** Qualification is a document developed by the Technical sub Committee for Sewing Machine Operation under the Skills Development Project ADB Loan 2425 – BAN (SF).

It was approved by the Bangladesh Technical Education Board (BTEB) upon the endorsement of the Sector Working Committee at a meeting held on 08 April 2012 at the office of the Industry Skills Council .

The Standard was also approved by Standard and Curriculum Development Committee (SCDC ) on 16.06.2013 at BTEB - CBT Cell.

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## Preface

The TVET system has a large role to play in economic growth and social development as workforce provider to the labor market and as provider of skills to those who are looking for employment. In the case of Bangladesh, the TVET sector needs major reforms to ensure that issues of quality and capacity, relevance, and access are properly addressed.

The Directorate of Technical Education (DTE) with funding from the Asian Development Bank (ADB), Swiss Agency Development for Cooperation SDC and the Government of Bangladesh (GoB) is implementing a project known as Skills Development Project (SDP). The main target of the Skills Development Project (SDP) is to improve the relevance of TVET in labor market by introducing competency-based training system: a system that proceeds from the development of a qualifications framework, competency standards, curriculum, training delivery, assessment, and quality assurance mechanisms in order to develop a competitive workforce.

The development of competency standards is regarded as the heart of a competency-based training regime. Each standard defines sets of knowledge, skills and attitudes (KSAs) that a Bangladeshi trainee should be able to demonstrate at a recognized level of competence. It provides a common framework of outcomes between the labor and education sectors, as well as among workers, trainers and trainees.

In the process of development, *Industry Skills Council* (ISC) was organized to determine competencies expected of an occupation in Bangladesh. The ISC whose membership come from “top performers” in the industry, performed occupational, competency and unit analyses based on their rich experiences in the field, existing documents, and on the advice of national and international experts. Competency standards of Sri Lanka, Philippines, Australia, Korea, Malaysia, Maldives and other countries were examined.

A series of workshops – development, review and finalization - were conducted to ensure a workable National Competency Standards for the occupation. Further, a validation instrument was developed and administered to other top industry performers to verify and confirm the draft being developed.

It is hoped that this document reflects the real needs of the industry thereby providing a concrete basis for the curriculum development and assessment. In such a way, the development of relevant and competent workforce is not farfetched.

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## Acronyms

ADB	Asian Development Bank
ANTA	Australian National Training Authority
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BMET	Bureau of Manpower Employment and Training
BTEB	Bangladesh Technical Education Board
CBLM	Competency based learning Materials
CBT	Competency Based Training
CS	Competency Standard
DACUM	Development of a Curriculum
DG	Director General
DTE	Directorate of Technical Education
GOB	Government of Bangladesh
HSC (Voc)	Higher Secondary Certificate (Vocational)
KSA	Knowledge, Skills, Attitude
MoE	Ministry of Education
MoLE	Ministry of Labor and Employment
NTVQ	National Technical Vocational Qualification
NTVQ	National Technical Vocational Qualification
NTVQF	National Technical Vocational Qualification Framework
NTVQF	National Technical Vocational Qualification Framework
OHS	Occupational Health and Safety
PD	Project Director
PIU	Project Implementation Unit
PSC	Project Steering Committee
RMG	Ready Made Garments
RPL	Recognition of Prior Learning
SC	Swiss contact
SDP	Skills Development Project
SMO	Sewing Machine Operator
SSC (Voc)	Secondary School Certificate (Vocational)
STEP	Skills and Training Enhancement project (WB)
SWC	Sector Working Committee
TESDA	Technical Education and Skills Development Authority
TL	Team Leader
TSC	Technical Sub Committee
TVET	Technical and Vocational Education and Training
WB	World Bank

**Ssection1. The Qualification**

<b>1. Title of Qualification:</b> National Skills Certificate-II in Sewing Machine Operation (RMG Sector)	
<b>1. Qualification code:</b> <b>RMGSMO30212</b>	<b>2. Endorsement date:</b> 08 April 2012
<b>3. Purpose of the qualification</b>	<p>The NSC-II in Sewing Machine Operation Qualification consists of a set Sewing Machine Operation of competencies that a person must achieve in order to work competently in the Informal Sector as a Sewing Machine Operator.</p> <p>In particular, he/she should be able to:</p> <ol style="list-style-type: none"> <li>1. Operate Four Thread Over Lock Machine</li> <li>2. Operate Five Thread Over Lock Machine</li> <li>3. Operate Bottom Covering Chain Stitch Machine</li> <li>4. Operate Top and Bottom Covering Chain Stitch Machine</li> <li>5. Operate Kansai Special Machine</li> </ol>
<b>4. Regulatory Arrangements</b>	The holder of this qualification should have been assessed by a BTEB certified assessor and found to be competent in the units listed in Section 2.
<b>5. Accreditation requirements</b>	The qualifications shall be offered in compliance with the accreditation requirements set by BTEB.
<b>6. Transition arrangements</b>	In the absence of certified assessors, the BTEB shall appoint trainers who have undergone assessment trainings.
<b>7. Contact for comments</b>	Chairperson Bangladesh Technical Education Board (BTEB) Agargoan, Sher-E-Bangla Nagar

## Course Structure for National Skills Certificate in Sewing Machine Operation For Level -11

The units of competencies this qualification are summarized as follows:

### Sector Specific Competencies

Code	Unit of Competency	Level	No. of Hrs
RMG200312A	Interpret drawing and specifications in manuals for RMG sector	2	30
RMG200412A	Perform measurement and calculation (RMG)	2	48
<b>Total</b>			78

### Occupation Specific Competencies

Code	Unit of Competency	Level	No. of Hrs
RMGSMO200512A	Operate Four Thread Over Lock Machine	2	39
RMGSMO200612A	Operate Five Thread Over Lock Machine	2	39
RMGSMO200712A	Operate Bottom Covering Chain Stitch Machine	2	36
RMGSMO200812A	Operate Top and Bottom Covering Chain Stitch Machine	2	39
RMGSMO200912A	Operate Kansai Special Machine	2	39
<b>Total</b>			192
<b>Grand Total</b>			270 hrs.

**Sector Specific Competencies;**

<b>Unit of Competency:</b>	<b>Interpret Drawings and Specifications in Manuals for the RMG Sector</b>
Unit Code:	RMG200312A
Unit Descriptor:	This unit covers the knowledge, skill and attitude required in interpreting drawings and specifications in RMG manuals. It includes the following steps: identify information, identify drawings and specifications, interpret drawings and specifications, and apply occupational health and safety procedures.
Nominal Hours:	30 hours

<b>Elements of Competency</b>	<b>Performance Criteria</b>
	Bold italicized words are detailed in the Range of Variables
1. Identify information from manuals	1.1 Appropriate <b><i>manuals</i></b> are identified. 1.2 Version and date of manual are checked to ensure up-to-date specifications of tools, equipment, materials and procedures.
2. Identify drawings and specifications	2.1 Relevant <b><i>drawings</i></b> and specifications are identified. 2.2 <b><i>Terms</i></b> and <b><i>abbreviations</i></b> are identified. 2.3 <b><i>Signs</i></b> and <b><i>symbols</i></b> are identified
3. Interpret drawings and specifications	3.1 Drawings and specifications are interpreted. 3.2 Schedules, dimensions and specifications contained in drawings are interpreted.
4. Store manuals	4.1 <b><i>Documents</i></b> are stored appropriately to prevent damage, ready access and updating of information when required

## Range of Variables:

Variable	Range (Include but not limited to):
Documents	1.1 Manufacturer's Specification Manual 1.2 Repair Manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual 1.5. Quality Manual 1.6. Manual of Instruction
Drawings	2.1 Technical Drawings 2.2 Sketch
Specifications	3.1 Product specifications

	3.2 Performance specifications 3.3 Method specifications
Instructions	4.1 Orders 4.2 Special Orders
Terms and abbreviations	Refers to all terms and abbreviations associated with the construction sector
Signs and symbols	Include all signs and symbols associated with the construction sector

## Evidence Guide:

1. Critical aspects of competency	Assessment requires evidence that the candidate : 1.1. Interpreted drawings and specifications in construction documents 1.2. Satisfied the requirements mentioned in the Performance Criteria and Range of Variables
2. Underpinning knowledge	2.1 Types of RMG Manuals 2.2 Identification of Signs and Symbols 2.3 Identification of Units of Measurement 2.4 Identification of Units of Conversion 2.5. Drawings and Specifications 2.6. Terms and Abbreviations Used
3. Underpinning skills	3.1. Identifying appropriate manuals 3.2. Identifying drawings and specifications 3.3. Interpreting drawings and specifications 3.4. Storing manuals
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace
5. Resource implications	The following resources must be provided 5.1 Availability of all manuals. 5.2 Accessibility of storage area
6. Methods of assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Written Exam. 6. 4 Oral Questioning 6.5 Portfolio

7.Context of assessment	For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.
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**Accreditation Requirements**

Training providers must be accredited by Bangladesh Technical Education Board(BTEB) , the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit of Competency:	<b>Perform Measurement and Calculations (RMG Sector)</b>
Unit Code:	RMG 200412A
Unit Descriptor:	This unit covers the knowledge skills and attitudes required in performing measurements and calculations relating to activities in the garment sector. It includes the following steps: select measuring devices, obtain measurements, perform simple calculations, and clean-up.
Nominal Hours:	48 hours

<b>Elements of Competency</b>	<b>Performance criteria</b> Bold italicized words are detailed in the Range of Variables
1. Select measuring devices	1.1 Work instructions are confirmed and applied. 1.2 Materials to be measured are identified and classified. 1.3 Appropriate <b>measuring devices</b> are selected based on materials to be measured 1.4 Specifications are obtained from relevant <b>documents</b> . 1.5 Specified <b>machines</b> are used as necessary. 1.6 Tolerance and clearance limits are identified and adjusted according to job requirements. 1.7 <b>PPE</b> and other safety devices are selected and used as per safety regulations.
2. Obtain measurements	2.1 Accurate measurements are obtained in accordance with job requirements. 2.2 Systems of measurements are identified and converted . 2.3 Results are confirmed and recorded.
3. Perform simple calculations	3.1 Simple calculations involving <b>four basic operations</b> are carried out. 3.2 <b>Other operations</b> are used to complete tasks. 3.3 Appropriate formulas for calculating quantities of materials are selected. 3.4 <b>Calculations</b> are performed and verified. 3.5 Material quantities are accurately calculated. 3.6 Results are interpreted and communicated to authority.
4. Clean up	4.1 Cleaning equipment and materials are collected. 4.2 Measuring devices are cleaned, maintained and stored.

**Range of Variables:**

<b>Variable</b>	<b>Range</b> (Include but not limited to):
2. Measuring devices	2.1 Steel tape measure 2.2 Triangle 2.3 Steel rule 2.4 Calculator 2.5 Measuring tape
3. PPE	3.1 Dust mask 3.2 Gloves 3.3 Aprons 3.3 Finger protector 3.4 Cap 3.5 Insulated pad
4. Documents	4.1 Technical Manuals 4.2 Specifications 4.3 Sketches 4.4 Drawings
5. Machines	5.1 Sewing Machine Operation 5.1.1 Four thread over lock machine 5.1.2 Five thread overlook machine 5.1.3 Bottom covering chain stitch machine 5.1.4 Top and Bottom covering chain stitch machine 5.1.5 Kansai special machine
6. Measurements	6.1 Length 6.2 Width 6.3 Weight 6.4 Tolerance
7. Four basic operations	7.1 Addition 7.2 Subtraction 7.3 Multiplication 7.4 Division
8. Other operations	8.1 Fractions 8.2 Percentages 8.3 Mixed numbers 8.4 Conversions 8.5 Scales
9. Calculations	9.1 Area 9.2 Volume 9.3 Circumference

	9.4 Clearance
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**Evidence Guide:**

1. Critical aspects of competency	<p>1.1 Demonstrated knowledge in performing measurement and calculation according to job requirements.</p> <p>1.2 Satisfying the requirements mentioned in the Performance Criteria and Range of Variables</p>
2. Underpinning knowledge	<p>2.1 Types of Measuring Devices</p> <p>2.2 Measurement and Calculation</p> <p>2.3 Recording</p> <p>2.4 Collection and storing materials.</p> <p>2.5 Fraction and Decimals</p> <p>2.6 Linear Measurement</p> <p>2.7 Unit Of Conversion</p> <p>2.8 Dimension</p> <p>2.9 Ratio And Proportion</p> <p>2.10 Allowances And Tolerances</p> <p>2.11 Presentation Of Data and Information</p> <p>2.12 Tolerances</p> <p>2.13 Care in the Use of Measuring Devices</p>
3. Underpinning Skills	<p>3.1 Selecting measuring devices</p> <p>3.2 Obtaining measurements</p> <p>3.3 Performing calculations</p> <p>3.4 Cleaning up</p>
4. Underpinning Attitudes	<p>4.1 Commitment to occupational health and safety</p> <p>4.2 Environmental concerns</p> <p>4.3 Eagerness to learn</p> <p>4.4 Tidiness and timeliness</p> <p>4.5 Respect for rights of peers and seniors in workplace</p>
5. Resource Implications	<p>The following resources must be provided</p> <p>5.1 Suitable ventilated work area/shop with facilities and accessories</p> <p>5.2 Easy access and scope of measurement</p> <p>5.3 Availability of quality measuring and calculating devices</p>

	5.4 Information on construction materials appropriate to the relevant construction field
6. Method of Assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Written Exam. 6. 4 Oral Questioning 6.5 Portfolio
7. Context of Assessment	For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.
<p><b>Accreditation Requirements</b></p> <p>Training providers must be accredited by Bangladesh Technical Education Board(BTEB) , the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.</p> <p>Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.</p>	

**Section 4: Occupation Specific Competencies**

Unit of Competency	<b>Operate Four Thread Over lock Machine</b>
Unit Code	RMGSMO200512A
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to operate four threads over lock machine. It includes setting machine, sewing, and transferring components.
Nominal Hours	39 hours

<b>Elements of Competency</b>	<b>Performance Criteria</b> Bold italicized words are detailed in the Range of Variables
1. Collect tools and materials	1.1 <b>Tools</b> and <b>materials</b> are selected and collected. 1.2 Materials are arranged.
2. Set Machine	2.1 <b>PPE</b> are collected and used 2.2 Machine is cleaned. 2.3 Lubricant is checked. 2.4 Motor guard, eye guard, belt guard and needle guard are checked and used as <b>safety guard</b> . 2.5 <b>Machine parts</b> are checked and adjusted. 2.6 Types of needle are selected according to materials, sewing manuals. 2.7 Tension of the stitches and blade sharpness are checked and set. 2.8 Machine is checked to ensure the width of the stitch and folder and tools are in place.
3. Perform sewing	3.1 <b>Components</b> are assembling in accordance to the instruction sheet. 3.2 Components are sewed according to the specific quality and quantity. 3.3 Quality and <b>faults</b> are checked. 3.4 Quality is maintained by checking and trimming excess thread and neatening. 3.5 <b>Sewing</b> components stacked in a sequential order to facilitate next operation.
4. Transfer the Sewn Components for next operation	4.1 Components are tied in a bundle. 4.2 Components are placed in transport 4.2 Components are transferred for next operation.

5. Close down and clean the machine at the end of work	4.1 <b>Components</b> are tied in a bundle. 4.2 Components are placed in transport 4.3 Components are transferred for next operation. 4.4 Machine and works place are cleaned
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**Range of Variable:**

Variable	Range (Include but not limited to):
1. Tools	1.1 Trimmers 1.2 Scissors 1.3 Cutters 1.4 Screw drivers 1.5 Tweezers/Forceps 1.6 Allen key 1.7 Combination Pliers 1.8 Flat nose pliers 1.9 Hammers/Plastic Hammer 1.10 Mallet 1.11 Brass 1.12 Hand Blower/Air gun 1.13 Stitch opener
2. Materials	2.1 Fabric <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> </ul> 2.2 Thread <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Polyester</li> </ul>
3. Sewing	3.1 Sewing slow run 3.2 Sewing straight Line 3.2 Sewing curve Line 3.3 Sewing different types of angle
4. PPE	4.1 Mask 4.2 Apron 4.3 Insulated pad 4.4 cap
5. Safety Guard	5.1 Motor guard 5.2 Eye guard

	5.3 Belt guard 5.4 Needle guard
6. Machine Parts	6.1 Loopier (Upper and Lower) 6.2 Knife (Upper and Lower) 6.3 Knife guide 6.4 Feed dog 6.5 Needle 6.6 Tension post assembly 6.7 Thread guide 6.8 Lever 6.9 Hand Wheel 6.12 Pressure foot
7. Components	7.1 Attaching 7.2 Side seams and inseams 7.3 Over lock inner side patch pockets 7.4 Over lock pocket hem 7.5 Sleeve attaching 7.6 Over lock hem
8. Faults	8.1 Puckering 8.2 Uneven Stitch 8.3 Floating Stitch 8.4 Wrinkles

**Evidence Guide:**

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Checked and adjusted machine parts properly 1.2 Checked the tension of stitches and sharpness of blades. 1.3 Sewed Components according to the specific quality and quantity. 1.4 Maintained the quality of trimming excess tread and neatening 1.5 Finished seam edge
2. Underpinning Knowledge	2.1 Identification and use of parts of Four Thread Over Lock Machine 2.2 Components of a garments 2.3 Characteristics of fabric, threads and other materials 2.4 Safety procedures to be followed with Four thread Over lock sewing machine.

	2.5 Needle setting, suitability of setting operation and stitches per inch (SPI)
3. Underpinning Skills	3.1 Four thread over lock machine Operation 3.2 Threading procedure 3.3 Sewing techniques 3.4 Fixing Needle 3.5 Machine speed controlling 3.6 First aid and fire fighting skills. 3.7 Reading basic instructions in specification sheet 3.8 Using safety guard and following safety procedure
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace
5. Resource Implications	The following resources should be provided: 5.1 Four Thread Over lock Machine 5.2 Fabrics 5.3 Threads 5.4 Sewing materials
6. Methods of Assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Written Exam. 6.4 Oral questioning 6.5 Portfolio 6.6 Practical Project 6.7 Assignment
7. Context for Assessment	For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.

**Accreditation Requirements**

Training providers must be accredited by Bangladesh Technical Education Board(BTEB) , the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit of Competency:	<b>Operate Five Threads Over lock Machine</b>
Unit Code:	RMGSMO200612A
Unit Descriptor:	This unit covers the knowledge, skills and attitudes required to operate Five threads over lock machine. It includes setting machine, sewing, and transferring components.
Nominal Hours:	39 hours

<b>Elements of Competency</b>	<b>Performance Criteria</b> Bold italicized words are detailed in the Range of Variables
1. Collect tools and materials	1.1 <b>Tools</b> and materials are selected and collected. 1.2 <b>Materials</b> are arranged.
2. Set Machine	2.1 <b>PPE</b> are collected and used. 2.2 Machine is cleaned. 2.3 Lubricant is checked. 2.4 Motor guard, eye guard, belt guard and Needle guard are checked and used as <b>safety guard</b> . 2.5 <b>Machine parts</b> are checked and adjusted. 2.6 Types of needle are selected according to materials, sewing manuals. 2.6 Tension of the stitches and blade sharpness are checked and set. 2.7 Machine is checked to ensure the width of the stitch and folder and tools are in place.
3 .Perform Sewing	3.1 <b>Components</b> are assembled in accordance to the instruction sheet. 3.2 Components are sewed according to the specific quality and quantity. 3.3 Quality of trimming is checked. 3.4 <b>Faults</b> are checked and rectified. 3.5 <b>Sewing</b> components are stacked in a sequential order to facilitate next operation.
4. Transfer the Sewn Components for next operation	4.1 Components are tied in a bundle. 4.2 Components are placed in transport 4.2 <b>Components</b> are transferred for next operation.
5. Close down and clean the machine at the	5.1 Machine is switched off the power. . 5.2 Waste materials are shifted to proper place.

end of work	5.2 Machines and workplace are cleaned.
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**Range of Variable:**

<b>Variable</b>	<b>Range (Include but not limited to):</b>
1. Tools	1.1 Trimmers 1.2 Scissors 1.3 Cutters 1.4 Screw drivers (Star, Flat) 1.5 Tweezers/Forceps 1.6 Allen key 1.7 Combination Pliers 1.8 Flat nose pliers 1.9 Hammers/Plastic Hammer 1.10 Mallet 1.11 Brass 1.12 Hand Blower/Air gun
2. Materials	2.1 Fabric <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> <li>• Denim</li> </ul> 2.2 Thread <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> </ul>
3. Sewing	3.2 Sewing slow run 3.2 Sewing straight Line 3.4 Sewing curve Line 3.5 Sewing different types of angle
4. PPE	4.1 Mask 4.2 Apron 4.3 Insulated pad 4.4 Cap
5. Safety Guard	5.1 Motor guard 5.2 Eye guard 5.3 Belt guard 5.4 Needle guard
6. Machine	6.1 Loopier (Upper and Lower)

Parts	6.2 Knife (Upper and Lower) 6.3 Knife guide 6.4 Feed dog 6.5 Needle 6.6 Tension post assembly 6.7 Thread guide 6.8 Lever 6.11 Wheel 6.12 Pressure foot
7. Components	7.1 Attaching 7.2 Side seams and in seams 7.3 Over lock inner side patch pockets 7.4 Over lock pocket hem 7.5 Sleeve attaching/ arm hole 7.6 Over lock hem
8. Faults	8.1 Puckering 8.2 Uneven Stitch 8.3 Floating Stitch 8.4 Wrinkles

**Evidence Guide:**

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Set up and adjusted machine in accordance of work specified. 1.2 Sewed Components according to the specific quality and quantity and seam without faults accordance with measurement. 1.3 Assembled sewn garments in accordance with standard procedures and companies Time frame. 1.4 Completed garments without alterations.
2. Underpinning Knowledge	2.1 Parts of Five Thread Over Lock Machine 2.2 Components of garments 2.3 Characteristics of fabric, threads and other Materials 2.4 Analysis of Fault 2.5 Safety procedures to be followed. 2.6 Principles of quality, assurance in Garment manufacture. 2.7 Needle setting, suitability of setting operation and stitches per inch (SPI)
3. Underpinning Skills	3.1 Five thread over lock machine Operation 3.2 Threading procedure 3.3 Sewing techniques 3.4 Setting Needle 3.5 Machine speed controlling

	3.6 First aid and fire fighting skills. 3.7 Reading basic instructions in specification sheet 3.8 Using Safety guard and following safety procedure
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.6 Communication with peers and seniors in workplace
5. Resource Implications	The following resources should be provided: 5.1 Five Thread Over lock Machine 5.2 Various types of Fabrics 5.3 Threads 5.4 Sewing materials
6. Methods of Assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Written Exam. 6.4 Oral questioning 6.5 Portfolio 6.6 Practical Project 6.7 Assignment
7. Context for Assessment	For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.

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Unit of Competency:	<b>Operate Bottom Covering Chain Stitch Machine</b>
Unit Code:	RMGSMO200712A
Unit Descriptor:	This unit covers the knowledge, skills and attitudes required to operate Bottom Covering Chain Stitch Machine. It includes setting machine, sewing, and transferring components.
Nominal Hours:	36 hours

Elements of Competency	Performance Criteria
	Bold italicized words are detailed in the Range of Variables
1. Collect tools and materials	1.1 <b>Tools</b> and materials are selected and collected. . 1.2 <b>Materials</b> are arranged.
2. Set Machine	2.1 <b>PPE</b> are collected and used. 2.2 Machine is cleaned. 2.3 Lubricant is checked. 2.4 Motor guard, eye guard, belt guard and needle guard are checked and used as <b>safety guard</b> . 2.5 <b>Machine parts</b> are checked and adjusted. 2.6 Types of needle are selected according to materials, sewing manuals. 2.7 Tension of the stitches and blade sharpness are checked and set.. 2.8 Machine is checked to ensure the width of the stitch and folder and tools are in place.
3. Perform Sewing	3.1 <b>Components</b> are assembled in accordance to the instruction sheet. 3.2 Components are sewed . 3.3 Quality of trimming is checked. 3.4 <b>Faults</b> are checked and rectified. 3.5 <b>Sewing</b> components are stacked in a sequential order to facilitate next operation.
4. Transfer the sewn components for next operation	4.1 Components are tied in a bundle. 4.2 Components are placed in transport 4.2 Components are transferred for next operation.
5. Close down & clean the machine at the end of work	5.1 Machine is switched off the power. 5.2 Waste materials are shifted to proper place. 5.2 Machines and work place are cleaned.

**Range of Variable:**

<b>Variable</b>	<b>Range (Include but not limited to):</b>
1. Tools	1. Trimmers 2. Scissors 3. Cutters 4. Screw drivers 5. Tweezers/Forceps 6. Required fabrics used in garment manufacture 7. Allen key 8. Combination Pliers 9. Flat nose pliers 10. Hammers/Plastic Hammer 11. Mallet 12. Brass 13. Hand Blower/Air gun
2. Materials	2.1 Knit Fabric 2.2 Thread
3. Sewing	3.3 Sewing slow run 3.2 Sewing straight Line 3.6 Sewing curve Line 3.7 Sewing different types of angle
4. PPE	4.1 Mask 4.2 Apron 4.3 Insulated pad 4.4 Cap
5. Safety Guard	5.1 Motor guard 5.2 Eye guard 5.3 Belt guard 5.4 Needle guard
6. Machine Parts	6.1 Loopier (Upper and Lower) 6.2 Knife (Upper and Lower) 6.3 Knife guide 6.4 Feed dog 6.5 Needles

	6.6 Tension post assembly 6.7 Thread guide 6.8 Lever 6.9 Wheel 6.12 Pressure foot
7. Components	7.1 Hemming 7.2 Attaching 7.3 Armhole / Sleeve attaching
8. Faults	8.1 Puckering 8.2 Uneven Stitch 8.3 Floating Stitch 8.4 Wrinkles

**Evidence Guide:**

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> <li>1.1 Checked and adjusted machine parts properly</li> <li>1.2 Checked the tension of stitches and sharpness of blades.</li> <li>1.3 Sewed Components according to the specific quality and quantity.</li> <li>1.4 Maintained the quality of trimming excess thread and neatening</li> <li>1.5 Finished seam edge</li> </ul>
2. Underpinning Knowledge	<ul style="list-style-type: none"> <li>2.1 Identification and use of parts of Bottom Covering Chain Stitch Machine.</li> <li>2.2 Ideas about components of a garments</li> <li>2.3 Characteristics of fabric, threads and required materials</li> <li>2.4 Safety procedures to be followed with Bottom Covering Chain Stitch stitch machine.</li> <li>2.5 Needle setting, suitability of setting operation and stitches per inch (SPI)</li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1 3. Operating single needle lock stitch machine</li> <li>3.2 Threading procedure</li> <li>3.3 Sewing techniques</li> <li>3.4 Setting Needle and stitches per inch (SPI)</li> <li>3.5 Controlling Machine speed</li> <li>3.6 Trimming.</li> </ul>

4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace
5. Resource Implications	The following resources should be provided: 5.1 Bottom Covering Chain Stitch Machine 5.2 Thread 5.3 Fabric 5.4 Instruction sheet
6. Methods of Assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Written Exam. 6.4 Oral questioning 6.5 Portfolio 6.6 Practical Project 6.7 Assignment
7. Context for Assessment	For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.

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<b>Unit of Competency:</b>	<b>Operate Top and Bottom Covering Chain Stitch Machine</b>
Unit Code:	RMGSMO200812A
Unit Descriptor:	This unit covers the knowledge, skills and attitudes required to operate top and bottom covering chain stitch machine.  It includes Collect tools and equipment, setting machine, sewing, and transferring components.
Nominal Hours:	39 hours

<b>Elements of Competency</b>	<b>Performance Criteria</b>
	Bold italicized words are detailed in the Range of Variables
1. Collect tools and materials	1.1 <b><i>Tools</i></b> and materials are selected and collected. 1.2 <b><i>Materials</i></b> are arranged.
2. Set Machine	2.1 <b><i>PPE are</i></b> collected and used. 2.2 Machine is cleaned. 2.3 Lubricant is checked. 2.4 Motor guard, eye guard, belt guard and needle guard are checked and used as <b><i>safety guard</i></b> . 2.5 <b><i>Machine parts</i></b> are checked and adjusted. . 2.6 Types of needle are selected according to materials, sewing manuals. 2.7 Tension of the stitches and blade sharpness are checked and set. . 2.8 Machine is checked to ensure the width of the stitch and folder and tools are in place.
3. Perform Sewing	3.1 <b><i>Components</i></b> are assembled in accordance to the instruction sheet. 3.2 Components are sewed. 3.3 Quality of trimming is checked. 3.4 <b><i>Faults</i></b> are checked and rectified. 3.5 <b><i>Sewing</i></b> components are stacked in a sequential order to facilitate next operation.

4. Transfer the sewn components for next operation	4.1 Components are tied in a bundle. 4.2 Components are placed in transport 4.2 Components are transferred for next operation.
5. Close down and clean the machine at the end of work	5.1 <b>Machine</b> is switched off the power. 5.2 Waste materials are shifted to proper place. 5.2 Machines and place are cleaned.

**Range of Variable:**

<b>Variable</b>	<b>Range (Include but not limited to):</b>
1. Tools	<ol style="list-style-type: none"> <li>1. Trimmers</li> <li>2. Scissors</li> <li>3. Cutters</li> <li>4. Screw drivers (Star, Flat)</li> <li>5. Tweezers/Forceps</li> <li>6. Required fabrics used in garment manufacture</li> <li>7. Allen key</li> <li>8. Combination Pliers</li> <li>9. Flat nose pliers</li> <li>10. Hammers/Plastic Hammer</li> <li>11. Mallet</li> <li>12. Brass</li> <li>13. Hand Blower/Air gun</li> </ol>
2. Materials	<ol style="list-style-type: none"> <li>2.1 Fabric <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> </ul> </li> <li>2.2 Thread <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> </ul> </li> </ol>
3. Sewing	<ol style="list-style-type: none"> <li>3.4 Sewing slow run</li> <li>3.2 Sewing straight Line</li> <li>3.8 Sewing curve Line</li> <li>3.9 Sewing different types of angle</li> </ol>
4. PPE	<ol style="list-style-type: none"> <li>4.1 Mask</li> <li>4.2 Apron</li> </ol>

	4.3 Insulated pad 4.6cap
5. Safety Guard	5.1 Motor guard 5.2 Eye guard 5.3 Belt guard 5.4 Needle guard
6. Machine Parts	6.1 Loopier (Upper and Lower) 6.2 Knife (Upper and Lower) 6.3 Knife guide 6.4 Feed dog 6.5 Needles 6.6 Tension post assembly 6.7 Thread guide 6.8 Lever 6.9 Wheel 6.10 Pressure foot
7. Components	7.1 Hemming 7.2 Attaching 7.2 Sleeve attaching/Armhole
8. Faults	8.1 Puckering 8.2 Uneven Stitch 8.3 Floating Stitch 8.4 Wrinkles

**Evidence Guide:**

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Checked and adjusted machine parts properly 1.2 Checked the tension of stitches and sharpness of blades. 1.3 Sewed Components according to the specific quality and quantity 1.4 Maintained the quality of trimming excess tread and neatening 1.5 Finished seam edge
2. Underpinning Knowledge	2.1 Parts of Top and Bottom Covering Chain Stitch Machine 2.2 Components of Garments

	<p>2.3 Characteristics of Fabrics, Threads and other Materials</p> <p>2.4 Safety Procedures in operating Top and Bottom Covering Chain Stitch Machine.</p> <p>2.5 Needle Setting, suitability of setting operation and stitches per inch (SPI)</p>
3. Underpinning Skills	<p>3.6 Operating Top and Bottom Covering Chain Stitch Machine</p> <p>3.7 Threading procedure</p> <p>3.8 Sewing techniques</p> <p>3.9 Setting Needle</p> <p>3.10 Machine speed controlling</p> <p>3.11 First aid and fire fighting skills.</p> <p>3.12 Reading basic instructions in specification sheet</p> <p>3.13 Using safety guard and following safety procedure</p>
4. Underpinning Attitudes	<p>4.1 Commitment to occupational health and safety</p> <p>4.2 Environmental concerns</p> <p>4.3 Eagerness to learn</p> <p>4.4 Tidiness and timeliness</p> <p>4.5 Respect for rights of peers and seniors in workplace</p>
5. Resource Implications	<p>The following resources should be provided:</p> <p>5.1 Single Needle Lock Stitch Machine</p> <p>5.2 Various types of Fabrics</p> <p>5.3 Threads</p> <p>5.4 Sewing materials</p>
6. Methods of Assessment	<p>Competency should be assessed through:</p> <p>6.1 Direct observation</p> <p>6.2 Demonstration</p> <p>6.3 Written Exam.</p> <p>6.4 Oral questioning</p> <p>6.5 Portfolio</p> <p>6.6 Practical Project</p> <p>6.7 Assignment</p>
7. Context for Assessment	<p>For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.</p>

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Unit of Competency:	<b>Operate Kansai Special Machine</b>
Unit Code:	RMGSMO200912A
Unit Descriptor:	This unit covers the knowledge, skills and attitudes required to operate Kansai special machine. It includes setting machine, sewing, and transferring components.
Nominal Hours:	39 hours

<b>Elements of Competency</b>	<b>Performance Criteria</b> Bold italicized words are detailed in the Range of Variables
1. Collect tools and materials	1.1 <b>Tools</b> and <b>materials</b> are selected and collected. 1.2 Materials are arranged.
2. Set Machine	2.1 <b>PPE</b> are collected and used. 2.2 Machine is cleaned. 2.3 Lubricant is checked. 2.4 Motor guard, eye guard, belt guard and needle guard are checked and used as <b>safety guard</b> . 2.5 <b>Machine parts</b> are checked and adjusted. 2.6 Types of needle are selected according to materials, sewing manuals. 2.7 Tension of the stitches checked and set. 2.8 Machine is checked to ensure the width of the stitch and folder and tools are in place.
3. Perform Sewing	3.1 <b>Components</b> are assembled. 3.2 Components are sewed. 3.3 Quality of trimming is checked. 3.4 <b>Faults</b> are checked and rectified. 3.5 <b>Sewing</b> components are stacked in a sequential order to facilitate next operation.
4. Transfer the sewn components for next operation	4.1 Components are tied in a bundle. 4.2 Components are placed in transport 4.2 Components are transferred for next operation.
5. Close down and clean the machine at the end of work	5.1 Machine is switched off the power. 5.2 Waste materials are shifted to proper place. 5.2 Machines and workplace are cleaned.

**Range of Variable:**

<b>Variable</b>	<b>Range</b> (Included but not limited to):
1. Tools	<ol style="list-style-type: none"> <li>1. Trimmers</li> <li>2. Scissors</li> <li>3. Cutters</li> <li>4. Screw drivers</li> <li>5. Tweezers/Forceps</li> <li>6. Required fabrics used in garment manufacture</li> <li>7. Allen key</li> <li>8. Combination Pliers</li> <li>9. Flat nose pliers</li> <li>10. Hammers/Plastic Hammer</li> <li>11. Mallet</li> <li>12. Brass</li> <li>13. Hand Blower/Air gun</li> </ol>
2. Materials	<ol style="list-style-type: none"> <li>2.1 Fabric <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> <li>• Denim</li> <li>• Gevardin</li> <li>• interlining</li> </ul> </li> <li>2.2 Thread <ul style="list-style-type: none"> <li>• Cotton</li> <li>• Tetron/Cotton</li> </ul> </li> </ol>
3. Sewing	<ol style="list-style-type: none"> <li>3.5 Sewing slow run</li> <li>3.2 Sewing straight Line</li> <li>3.10 Sewing curve Line</li> <li>3.11 Sewing different types of angle</li> </ol>
4. PPE	<ol style="list-style-type: none"> <li>4.1 Mask</li> <li>4.2 Apron</li> <li>4.3 Insulated pad</li> <li>4.4 cap</li> </ol>
5. Safety Guard	<ol style="list-style-type: none"> <li>5.1 Motor guard</li> <li>5.2 Eye guard</li> <li>5.3 Belt guard</li> <li>5.4 Needle guard</li> </ol>
6. Machine	<ol style="list-style-type: none"> <li>6.1 Loopier (Upper and Lower)</li> </ol>

Parts	6.2 Knife (Upper and Lower) 6.3 Knife guide 6.4 Feed dog 6.5 Needles 6.6 Tension post assembly 6.7 Thread guide 6.8Lever 6.9Wheel 6.10 Pressure foot
7. Components	7.1 Waist belt 7.2 Button hole facing
8 .Faults	8.1 Puckering 8.2 Uneven Stitch 8.3 Floating Stitch 8.4 Wrinkles

**Evidence Guide:**

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: <ol style="list-style-type: none"> <li>1.1 Checked and adjusted machine parts properly</li> <li>1.2 Checked the tension of stitches and sharpness of blades.</li> <li>1.3 Sewed Components according to the specific quality and quantity</li> <li>1.4 Maintained the quality of trimming excess tread and neatening</li> <li>1.5 Finished seam edge</li> </ol>
2. Underpinning Knowledge	<ol style="list-style-type: none"> <li>2.1 Identification and use of parts of Kansai special machine</li> <li>2.2 Components of Garments</li> <li>2.3 Characteristics of Fabrics, Threads and other Materials</li> <li>2.4 Safety Procedures in operating Kansai special machine.</li> <li>2.5 Needle Setting, suitability of setting operation and stitches per inch (SPI)</li> </ol>
3. Underpinning Skills	<ol style="list-style-type: none"> <li>3.1 Kansai special machine Operation</li> <li>3.2 Threading procedure</li> <li>3.3 Sewing techniques</li> <li>3.4 Setting Needle</li> </ol>

	<p>3.5 Machine speed controlling</p> <p>3.6 First aid and fire fighting skills.</p> <p>3.7 Reading basic instructions in specification sheet</p> <p>3.8 Using Safety guard and following safety procedure</p>
4. Underpinning Attitudes	<p>4.1 Commitment to occupational health and safety</p> <p>4.2 Environmental concerns</p> <p>4.3 Eagerness to learn</p> <p>4.4 Tidiness and timeliness</p> <p>4.5 Respect for rights of peers and seniors in workplace</p>
5. Resource Implications	<p>The following resources should be provided:</p> <p>5.1 Kansai special machine</p> <p>5.2 Various types of Fabrics</p> <p>5.3 Threads</p> <p>5.4 Sewing materials</p> <p>5.5 Interlining</p>
6. Methods of Assessment	<p>Competency should be assessed through:</p> <p>6.1 Direct observation</p> <p>6.2 Demonstration</p> <p>6.3 Written Exam.</p> <p>6.4 Oral questioning</p> <p>6.5 Portfolio</p> <p>6.6 Practical Project</p> <p>6.7 Assignment</p>
7. Context for Assessment	<p>For certification competency should be assessed individually in the actual work place or simulated environment after completion of the module.</p>

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**Annexes**

**Annex 1. Competency Map for Sewing Machine Operation in RMG sector**

<b>OCCUPATION SPECIFIC COMPETENCIES</b>	Perform Lock Stitch Sewing Machine	Operate Single Needle Lock Stitch Machine	Operate Double Needle Lock Stitch Machine	Operate Button Hole Machine	Operate Bar Take Machine	Operate Zig-Zag Machine	Operate Vertical Trimming Machine	Operate Eyelet Hole Machine
		1	1	3	3	3	3	3
	Perform Over Lock Machine	Operate Four Thread Over Lock	Operate Five Thread Over Lock					
		2	2					
Perform Chain Stitch Sewing Machine	Operate Single Needle Chain Stitch Machine	Operate Double Needle Chain Stitch Machine	Operate Bottom Covering Chain Stitch Machine	Operate Top and Bottom Covering Chain Stitch	Operate Feed of the Arm Machine			
	1	1	2	2	3			
Perform Special Type Sewing Machine	Operate Button Attach Machine	Operate Kansai Special Machine						
	3	2						

<b>SECTOR SPECIFIC COMPETENCIES</b>	Work in the RMG sector	Use hand tools and power tools for the RMG sector					
	1	1					
	Interpret drawing and specifications in manuals for RMG sector	Perform measurement and calculation					
	2	2					
<b>GENERIC COMPETENCIES</b>	Communicate in the workplace	Work in a team environment	Practice workplace cleanliness	Practice occupational health and safety			
	1	1	1	1			
	Lead small team	Demonstrate work values	Perform negotiation skills				
	3	3	3				

## Annex 2. Bangladesh National Qualifications Framework

TVQF Level	Education Type			Current Qualification Structure	Job Classification
	Pre-Voc	VE	TE		
<b>TVQF 6</b>			Diploma	4-year Diploma	Supervisor/Middle Manager/Sub-Assistant Engineer
<b>TVQF 5</b>		**NSC-V		NSS Master	Highly-Skilled Worker/Supervisor
<b>TVQF 4</b>		**NSC-IV		NSS 1/HSC (Voc) Year 11/12	Skilled Worker
<b>TVQF 3</b>		**NSC-III		NSS 2/SSC (Voc) Year 10	Semi-Skilled Worker
<b>TVQF 2</b>		**NSC-II		NSS 3/SSC (Voc) Year 9	Basic Skilled Worker
<b>TVQF 1</b>		**NSC-I		NSS Basic/Basic Trade Course	Basic Worker
<b>Pre-Voc 2</b>	*NPVC-II			None	Pre-Vocational Trainee
<b>Pre-Voc 1</b>	*NPVC-I			None	Pre-Vocational Trainee

\*NPVC – National Pre-Vocational Certificate

\*\*NSC – National Skills Certificate

**Annex 3. Qualification Level Descriptors**

<b>BTVQF Level</b>	<b>Knowledge</b>	<b>Skills</b>	<b>Responsibility</b>	<b>Job Class</b>
6	Comprehensive actual and theoretical knowledge within a specific study area with an awareness of the limits of that knowledge.	Specialised and restricted range of cognitive and practical skills required to provide leadership in the development of creative solutions to defined problems	Manage a team or teams in workplace activities where there is unpredictable change Identify and design learning programs to develop performance of team members	Supervisor / Middle-Level Manager / Sub Assistant Engineer
5	Very broad knowledge of the underlying, concepts, principles, and processes in a specific study area	Very broad range of cognitive and practical skills required to generate solutions to specific problems in one or more study areas.	Take overall responsibility for completion of tasks in work or study Apply past experiences in solving similar problems	Highly Skilled Worker / Supervisor (NSC 4)
4	Broad knowledge of the underlying, concepts, principles, and processes in a specific study area	Range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying the full range of methods, tools, materials and information	Take responsibility, within reason, for completion of tasks in work or study Apply past experiences in solving similar problems	Skilled Worker
3	Moderately broad knowledge in a specific study area.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy	Semi Skilled worker
2	Basic underpinning knowledge in a specific study area.	Basic skills required to carry out simple tasks	Work or study under indirect supervision in a structured context	Medium Skilled Worker
1	Elementary understanding of the underpinning knowledge in a specific study area.	Limited range of skills required to carry out simple tasks	Work or study under direct supervision in a structured context	Basic Skilled Worker
Pre-Voc 2	Limited general knowledge	Very limited range of skills and use of tools required to carry out simple tasks	Work or study under direct supervision in a well-defined, structured context.	Pre-Vocation Trainee (NPVC 2)
Pre-Voc 1	Extremely limited general knowledge	Minimal range of skills required to carry out simple tasks	Simple work or study exercises, under direct supervision in a clear, well defined structured context	Pre-Vocation Trainee (NPVC 1)

**Annex 4. Key for Coding**

Code	Description
BC	Basic Competencies
Occupational Sector	
RMG	Ready-Made Garments
LEG	Light Engineering
CON	Construction
INF	Informal Sector
Occupation	
SMO	Sewing Machine Operator

## Acknowledgments

The Bangladesh Technical Education Board (BTEB) wishes to extend heartfelt thanks and appreciation to the business and industry, academic community and other government agencies who shared their precious time and expertise to the conceptualization, development, validation and finalization of this National Competency Standards.

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