



Skills for Employment Investment Program (SEIP)

**COMPETENCY-BASED LEARNING
MATERIAL**

(FACULTY GUIDE)

FOR

**PATTERN MAKING, GRADING AND CAD-CAM
OPERATION**

(LEATHER GOODS AND FOOTWEAR SECTOR)

**Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh**

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Copyright

The Competency-based Learning Material (Faculty Guide) for Pattern Making, Grading and CAD-CAM Operation is a document, aligned to its applicable competency standard, for providing training consistent with the requirements of industry in order for individuals who graduated through the established standard via competency-based assessment to be suitably qualified for a relevant job.

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Approval Sheet

Identification and validation of modules and content for this occupation were made by experts within this sector. A series of consultations were held to accurately capture industry and employer needs and expectations and develop the learning material that would help to enhance the employability of the youth trained. This process started on 4 November 2018 and concluded with a validation workshop with a sectoral working group on 25 March 2019.

Experts Involved

Industry and subject-matter experts who provided their valuable inputs to develop this competency-based learning material [November 2018 – March 2019]:

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Validation Workshop

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Committee Workshop

The National competency-based learning material for National Skills Certificate in Pattern Making, Grading and CAD-CAM Operation, **NTVQF Level [INSERT LEVEL]** qualification is a document developed by the Skill for Employment Investment Programme (SEIP), Finance Division, Ministry of Finance. This competency-based learning material has been developed by an industry expert group under guidance of SEIP. The competency-based learning material was approved by the SCDC [BTEB to insert date] at NTVQF Cell, BTEB.

Respectable members of the SCDC:

Pattern Making, Grading and CAD-CAM Operation - Level [INSERT LEVEL]		

How to Use this Competency-based Learning Material

Welcome to the competency-based learning material for Pattern Making, Grading and CAD-CAM Operation to use in footwear manufacturing work. These modules contain training materials and activities for learners to complete in order to become competent and qualified as a skilled worker.

There are five (5) modules that make up this course which comprises the skills, knowledge and attitudes required to become a skilled worker including:

1. Understand pattern making and CAD-CAM operation
2. Carry out manual pattern making operation
3. Prepare standard/shell using 3D software
4. Perform computer-aided pattern making operation using 2D software
5. Carry out pattern grading

As a trainer, you are required to guide the learners through a series of activities in order to complete each learning outcome of the module. These activities may be completed as part of structured classroom activities or they may be required to work at their own pace.

These activities will require the learners to complete associated learning and practice activities in order to gain knowledge and skills they need to achieve the learning outcomes. Refer to **Learning Activity Page of each module** to know the sequence of learning tasks and the appropriate resources to use for each task.

This page will serve as the road map towards the achievement of competence. If you read the **Information Sheets**, these will give you an understanding of the work, and why things are done the way they are. Once the learners have finished reading the Information Sheets, they are required to complete the questions in the **Self-Check Sheets**.

The self-check process follows the Information Sheets in the learning guide. Completing self-checks will help the learners know how they are progressing. To know how they fared with self-checks, they can review the **Answer Key**.

The learners are required to complete all activities as directed in the **Job Sheet**. This is where they will apply their newly acquired knowledge while developing new skills. When working, high emphasis should be laid on safety requirements. The learners should be encouraged to raise relevant queries or ask the facilitator for assistance as required.

When the learners have completed all the tasks required in the learning guide, an assessment event will be scheduled to evaluate if they have achieved competency of the specified learning outcomes and are ready for the next task.

Introduction to Teaching Adult Learners

Since you will be dealing with adult learners, it is important to understand the basic principles of adult learning and methodologies. Adults learn best through associations, experiences and application. A few facts to consider while teaching adult learners:

Discussion: Adult learning is best managed through mutual dialogue and discussion. Discussion needs to be encouraged and used in the classroom to maximise learning.

Associations: Adults have experiences which can be related to any learning objectives to create associations which enhance conceptual comprehension. Associations can be used to create user interest and gain attention. Adults learn new attitudes or skills best in relation to previous life experiences.



This strategy also ensures knowledge retention.

Create an environment conducive to learning and sharing: Make people feel comfortable talking to you and each other. They should feel at ease asking questions, sharing views even if they are not very sure of the efficacy of their suggestions or views.

Physical surroundings: Temperature, light, space and furniture should be optimal. There should be no distractions.

Inculcate respect: Encourage learners' contributions and experiences. People are more encouraged to learn and share when their experiences are acknowledged - new information builds easily on past knowledge and experience.

Reward and recognition: Acknowledging the efforts of people, even small attempts, can reap great benefits. Learners like to receive praise and positive encouragement, which motivates them to deliver their best.

Learners also like to be reassured that they are correctly recalling or using information they have absorbed in the classroom.

Structured teaching: Learners study faster when information or skills are presented in a structured way:

- Concepts to be taught in small, bite sized portions for easy assimilation
- Put forth the easiest ideas or skills first and then gradually build on them
- Bring in the important ideas first
- Reinforce key ideas at regular intervals
- Reinforce high order concepts at regular intervals

Move learner from generic to specific flow of information: Introduce the generic concepts first and then move to specific more complex information to ease understanding and comprehension.

Application of concepts/ideas taught: Help students put into practice the concepts taught in the class through exercises and work-based projects. Application ensures knowledge retention and skill building.

Relevance building: Build up relevance of the concepts being taught in class by relating them to day-to-day life and workplace experiences.

Learners should know to use and apply what they have learned in the classroom as they learn faster when they recognise that what they are learning will be useful in the future.

Sharing: Encourage learners to learn from each other and solve problems collectively. This makes learning easier and improves team spirit and the interpersonal skills of the learners.

Participation: Involve learners in the class - adults favour to be *active participants* in learning rather than passive receivers of knowledge. People learn faster when they actively process information, solve problems and practice skills.

Motivate: Inspire the class so that teaching does not become a one-way process of knowledge download. Learners will learn faster when they feel an inner urge to learn and be an active participant in the class.

Create a learning environment in which the learners feel free and able to shed their inhibitions and develop receptivity towards new ideas and concepts.

Students will have different motivation levels - some will be more eager to learn than others as each learner is different from the other and therefore need to be treated differently.

And remember - adapt your communication style to suit the needs of the audience.

Communicate effectively: Communicate in a manner that is understood by the class. The language and sentence structuring should be clear and succinct.

Technical concepts should be explained in a manner that de-mystifies the concept - make things simple and easy to understand.

Avoid using *too much* technical jargon - if it is part of the curriculum, ensure the class is first made familiar with the words or jargon used.

Assessments: Conduct skill and knowledge checks regularly:















- Reinforce high order concepts at regular intervals.
- Conduct formative and summative assessments.
- Strengthen areas which appear to be weak.

Regular feedback:

- Provide regular feedback to learners
- Help them identify their strengths and areas of improvement
- Feedback should always be constructive
- Timely and specific feedback is easier to accept and act on



List of Icons

Icon Name	Icon
Module content	
Learning outcomes	
Performance criteria	
Contents	
Assessment criteria	
Resources required	
Information sheet	
Self-check Quiz	
Answer key	
Activity	
Video reference	
Learner job sheet	
Assessment plan	
Review of competency	

Module 1: Understand pattern making and CAD-CAM Operation

Module Descriptor:	This module covers the skills, knowledge and attitudes to understand pattern making and CAD-CAM operations. The module covers the tasks of describing concept of pattern making, identifying requirements for CAD-CAM operations, devices and hardware required for CAD-CAM operations.	
Nominal Duration:	12 hours	
Learning Outcomes:	1.1.	Describe concept of pattern making
	1.2.	Identify basic requirements for CAD-CAM operations
	1.3.	Identify devices and hardware required for CAD-CAM operations
Performance Criteria:	1.1.	Basic styles of footwear are identified.
	1.2.	Shoe construction is explained and illustrated.
	1.3.	Types of lasts are identified and categorised.
	1.4.	Reference points for last are identified.
	1.5.	Concept of pattern making is clearly defined.
	1.6.	CAD-CAM operations are appropriately identified.
	1.7.	Functions of CAD-CAM systems are identified and described.
	1.8.	Basic CAD-CAM software is identified.
	1.9.	CAD-CAM devices required for effective operation are identified.
	1.10.	Use of CAD-CAM hardware is carried out.



Learning Outcome 1.1 – Describe Concept of Pattern Making

Contents:	<ul style="list-style-type: none"> ▪ Basic styles of footwear ▪ Shoe construction ▪ Types of last ▪ Reference points of last ▪ Concept of pattern making 		
Resources Required:	<ul style="list-style-type: none"> ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: measuring tape, different types of last 		
Learning Activities:	Activity	Resource	Student Guide Page
	1.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 1.1.1 ▪ Self-Check Quiz 1.1.1 ▪ Answer Key 1.1.1 	7 13 23
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Basic styles of footwear are identified. ▪ Shoe construction is explained and illustrated. ▪ Types of lasts are identified and categorised. ▪ Reference points for last are identified. ▪ Concept of pattern making is clearly defined. 		



Learning Outcome 1.2 – Identify Basic Requirements for CAD-CAM Operation

Contents:	<ul style="list-style-type: none"> ▪ CAD-CAM operations ▪ Functions of CAD-CAM systems ▪ Basic CAD-CAM software 		
Resources Required:	<ul style="list-style-type: none"> ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: CAD-CAM system 		
Learning Activities:	Activity	Resource	Student Guide Page
	1.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 1.2.1 ▪ Self-Check Quiz 1.2.1 ▪ Answer Key 1.2.1 https://www.youtube.com/user/caddsoftsolutions	14 17 23
Assessment Criteria:	<ul style="list-style-type: none"> ▪ CAD-CAM operations are appropriately identified. ▪ Functions of CAD-CAM systems are identified and described. ▪ Basic CAD-CAM software is identified. 		



Learning Outcome 1.3 – Identify Devices and Hardware Required for CAD-CAM Operations

Contents:	<ul style="list-style-type: none"> ▪ CAD-CAM devices ▪ Use of CAD-CAM hardware 		
Resources Required:	<ul style="list-style-type: none"> ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: CAD, CAM 		
Learning Activities:	Activity	Resource	Student Guide Page
	1.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 1.3.1 ▪ Self-Check Quiz 1.3.1 ▪ Answer Key 1.3.1 https://www.youtube.com/watch?v=KzxVZgO-iOA	18 22 23
Assessment Criteria:	<ul style="list-style-type: none"> ▪ CAD-CAM devices required for effective operation are identified. ▪ Use of CAD-CAM hardware is carried. 		

Module 2: Carry out manual pattern making operation

Module Descriptor:	This module covers the skills, knowledge and attitudes to carry out manual pattern making operations. The module covers the tasks of preparing mean form, developing standard/shell and cutting pattern from shell.	
Nominal Duration:	16 hours	
Learning Outcomes:	2.1.	Prepare a mean form
	2.2.	Develop standard/shell
	2.3.	Cut pattern from standard/shell
Performance Criteria:	2.1.	Mean form making process is identified and described.
	2.2.	Last, pattern paper and masking tape are identified and selected.
	2.3.	Mean form making is carried out as per job specification.
	2.4.	Types of standard/shell are identified
	2.5.	Upper standard/shell making is performed.
	2.6.	Lining standard/shell making is carried out.
	2.7.	Upper piece patterns are cut following upper standard.
	2.8.	Lining piece patterns are cut following lining standard.
	2.9.	Reinforcement pattern pieces are cut following upper piece pattern.



Learning Outcome 2.1 – Prepare Mean Form

Contents:	<ul style="list-style-type: none"> ▪ Mean form ▪ Mean form making process 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: Measuring scale/tape, last, scissor, NT cutter ▪ Materials: Masking tape, pattern paper 		
Learning Activities:	Activity	Resource	Student Guide Page
	2.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 2.1.1 ▪ Job Sheet 1 ▪ Self-Check Quiz 2.1.1 ▪ Answer Key 2.1.1 <p> https://www.youtube.com/watch?v=Y7nKo7boolE https://www.youtube.com/watch?v=O6_1eZkOM-E https://youtu.be/oOU45qd4RBQ </p>	<p>26 28 29 40</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Mean form making process is identified and described. ▪ Last, pattern paper and masking tape are identified and selected. ▪ Mean form making is carried out as per job specification. 		



Learning Outcome 2.2 – Develop Standard/Shell

Contents:	<ul style="list-style-type: none"> • Types of standard/shell • Upper standard/shell making ▪ Lining standard/shell making 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: NT cutter, measuring scale/tape, scissors ▪ Materials: Masking tape, pattern paper, pencil, eraser 		
Learning Activities:	Activity	Resource	Student Guide Page
	2.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 2.2.1 ▪ Job Sheet 2 ▪ Self-Check Quiz 2.2.1 ▪ Answer Key 2.2.1 https://www.youtube.com/watch?v=fzPMeVtymoY	30 33 34 40
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Types of standard/shell are identified. ▪ Upper standard/shell making is performed. ▪ Lining standard/shell making is carried out. 		



Learning Outcome 2.3 – Cut Pattern from Standard/Shell

Contents:	<ul style="list-style-type: none"> ▪ Upper piece patterns ▪ Lining piece patterns ▪ Reinforcement pattern pieces 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): Gloves, safety shoes, working clothes, apron. ▪ Tools and equipment: Scissors, NT cutter 		
Learning Activities:	Activity	Resource	Student Guide Page
	2.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 2.3.1 ▪ Self-Check Quiz 2.3.1 ▪ Answer Key 2.3.1 	<p>35</p> <p>39</p> <p>41</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Upper piece patterns are cut following upper standard. ▪ Lining piece patterns are cut following lining standard. ▪ Reinforcement pattern pieces are cut following upper piece pattern. 		

Module 3: Prepare standard/shell using 3D software

Module Descriptor:	This module covers the skills, knowledge and attitudes to prepare a standard/shell using 3D software. The module covers the tasks of digitising last and developing a standard/shell.	
Nominal Duration:	64 hours	
Learning Outcomes:	3.1.	Digitise last
	3.2.	Develop a standard/shell
Performance Criteria:	3.1.	A hole on back centre line curve point is made by drill machine as per pin diameter.
	3.2.	The last is placed on 3D scanning chamber by means of pin hole.
	3.3.	The parameter for scanning is set.
	3.4.	Digitising is carried out.
	3.5.	Scanned last is converted to 3D last (e-last).
	3.6.	3D last (e-last) is imported/ opened.
	3.7.	The last reference points are selected.
	3.8.	The guidelines are selected and followed.
	3.9.	The style lines are drawn and the standard/shell on 3D last (e-last) is completed.



Learning Outcome 3.1 – Digitise Last

Contents:	<ul style="list-style-type: none"> ▪ Parameter for scanning 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): Safety shoes, working clothes, apron ▪ Tools and equipment: Lasts, digitiser 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.1.1 ▪ Self-Check Quiz 3.1.1 ▪ Answer Key 3.1.1 https://www.youtube.com/results?search_query=sanny+3d	<p>43</p> <p>45</p> <p>48</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ A hole on back centre line curve point is made by drill machine as per pin diameter. ▪ The last is placed on 3D scanning chamber by means of pin hole. ▪ The parameter for scanning is set. ▪ Digitising is carried out. ▪ Scanned last is converted to 3D last (e-last). 		



Learning Outcome 3.2 – Develop a Standard/Shell

Contents:	<ul style="list-style-type: none"> ▪ Style lines 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: 3D last (e-last), 3D CAD software 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.2.1 ▪ Self-Check Quiz 3.2.1 ▪ Answer Key 3.2.1 	46 47 48
Assessment Criteria:	<ul style="list-style-type: none"> ▪ 3D last (e-last) is imported/opened. ▪ The last reference points are selected. ▪ The guidelines are selected and followed. ▪ The style lines are drawn and the standard/shell on 3D last (e-last) is completed. 		

Module 4: Perform computer-aided pattern making operating using 2D software

Module Descriptor:	This module covers the skills, knowledge and attitudes to perform computer-aided pattern making operation using 2D software. The module covers the tasks of digitising 2D standard/shell, creating new style lines and cutting piece pattern.	
Nominal Duration:	56 hours	
Learning Outcomes:	4.1.	Digitise 2D standard/shell
	4.2.	Create new style lines
	4.3.	Cut piece patterns
Performance Criteria:	4.1.	Standard/shell is developed and prepared for digitising, either manually or by 3D software.
	4.2.	Digitizing tablet is initialised.
	4.3.	Simple and advanced style lines are digitised.
	4.4.	New style lines are created.
	4.5.	Duplicate line is created.
	4.6.	New offset line is made.
	4.7.	Tied offset line is prepared.
	4.8.	Mirror line and tied mirror line is created.
	4.9.	Line modification is carried out.
	4.10.	Working sequence of CAD-CAM is identified.
	4.11.	Punches are created and saved.
	4.12.	New piece is created.
	4.13.	Pattern engineering is carried out.
	4.14.	Final piece pattern making is completed.
	4.15.	Piece pattern is cut using CAM.



Learning Outcome 4.1 – Digitise 2D Standard/Shell

Contents:	<ul style="list-style-type: none"> ▪ Digitising tablet ▪ Style lines 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: Digitiser 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.1.1 ▪ Self-Check Quiz 4.1.1 ▪ Answer Key 4.1.1 https://www.youtube.com/watch?v=jvUQ_whKje0	50 54 74
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Standard/shell is developed and prepared for digitising, either manually or by 3D software. ▪ Digitizing tablet is initialised. ▪ Simple and advanced style lines are digitized. 		



Learning Outcome 4.2 – Create New Style Lines

Contents:	<ul style="list-style-type: none"> ▪ Line modification 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: CAD, 2D software 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.2.1 ▪ Self-Check Quiz 4.2.1 ▪ Answer Key 4.2.1 https://www.youtube.com/watch?v=GhbGnMKeCSE	55 63 74
Assessment Criteria:	<ul style="list-style-type: none"> ▪ New style lines are created. ▪ Duplicate line is created. ▪ New offset line is made. ▪ Tied offset line is prepared. ▪ Mirror line and tied mirror line is created. ▪ Line modification is carried out. 		



Learning Outcome 4.3 – Cut Piece Patterns

Contents:	<ul style="list-style-type: none"> ▪ Piece pattern making ▪ Pattern engineering 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): gloves, safety shoes, working clothes, apron ▪ Tools and equipment: CAD, CAM 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.3.1 ▪ Job Sheet 3 ▪ Self-Check Quiz 4.3.1 ▪ Answer Key 4.3.1 https://www.youtube.com/watch?v=GhbGnMKeCSE	64 72 73 75
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Working sequence of CAD-CAM is identified. ▪ Punches are created and saved. ▪ New piece is created. ▪ Pattern engineering is carried out. ▪ Final piece pattern making is completed. ▪ Piece pattern is cut using CAM. 		

Module 5: Carry out pattern grading

Module Descriptor:	This module covers the skills, knowledge and attitudes to carry out pattern grading. The module covers the tasks of identifying grading parameters, carrying out grading and checking and cutting graded patterns using CAM.	
Nominal Duration:	12 hours	
Learning Outcomes:	5.1.	Identify grading parameters
	5.2.	Carry out grading
	5.3.	Check and cut graded patterns using CAM
Performance Criteria:	5.1.	Grading parameters are identified and defined.
	5.2.	Setting rules and default grade type are followed.
	5.3.	Grade setting, and shell grade rules are followed and maintained.
	5.4.	Measurement differences between the sizes are calculated and recorded.
	5.5.	Grading rules are selected, and parameters are applied.
	5.6.	Model size and size range is selected.
	5.7.	Dialog box is followed as per job specification.
	5.8.	Restriction grading areas are checked.
	5.9.	Pattern engineering points are followed.
	5.10.	Graded patterns are prepared and saved.
	5.11.	Graded patterns are cut using CAM.



Learning Outcome 5.1 – Identify Grading Parameters

Contents:	<ul style="list-style-type: none"> ▪ Grading parameters 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal Protective Equipment (PPE): safety shoes, working clothes, apron 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.1.1 ▪ Self-Check Quiz 5.1.1 ▪ Answer Key 5.1.1 	79 80 92
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Grading parameters are identified and defined. ▪ Setting rules and default grade type are followed. ▪ Grade setting and shell grade rules are followed and maintained. ▪ Measurement differences between the sizes are calculated and recorded. 		



Learning Outcome 5.2 – Carry Out Grading

Contents:	<ul style="list-style-type: none"> ▪ Grading rules 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): Gloves, safety shoes, working clothes, apron ▪ Tools and equipment: CAD,CAM 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.2.1 ▪ Job Sheet 4 ▪ Self-Check 5.2.1 ▪ Answer Key 5.2.1 	81 85 86 92
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Grading rules are selected, and parameters are applied. ▪ Model size and size range is selected. ▪ Dialog box is followed as per job specification. 		



Learning Outcome 5.3 – Check and Cut Graded Patterns Using CAM

Contents:	<ul style="list-style-type: none"> ▪ Restriction grading areas ▪ Cutting of prepared and saved graded patterns using CAM 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): Gloves, safety shoes, working clothes, apron ▪ Tools and equipment: CAM 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.3.1 ▪ Job Sheet 5 ▪ Self-Check Quiz 5.3.1 ▪ Answer Key 5.3.1 https://www.youtube.com/watch?v=MEje4AaDxIE	87 90 91 93
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Restriction grading areas are checked. ▪ Pattern engineering points are followed. ▪ Graded patterns are prepared and saved. ▪ Graded patterns are cut using. 		