NATIONAL VOCATIONAL TRAINING INSTITUTE

TRADE TESTING

REGULATIONS AND SYLLABUS

FOR

GRADE: TEXTILE HANDWEAVING

LEVEL: CERTIFICATE ONE

TRADE TEST CERTIFICATE ONE

A. INTRODUCTION

i. The review of this syllabus has been generally influenced by the demands of industries due to its continuous change as a result of technological advancement and the changing needs of society. It was also influenced by the TVET reforms under the directions of the new educational reform with the view to opening up further education and training opportunities to TVET graduates.

The certificate ONE syllabus is designed to respond to the following level descriptors:

QUALIFICATION	KNOWLEDGE LEVEL	SKILLS AND ATTITUDE:
Certificate 1	1. To demonstrate a broad knowledge base incorporating some technical concepts. 2. To demonstrate knowledge of the theoretical basis of practical skills. 3. To demonstrate knowledge in numeracy, literacy, IT and Entrepreneurial skills	1. Require a wide range of technical skills 2. Are applied in a variety of familiar and complex contexts with minimum supervision. 3. Require collaboration with others in a team

ii. This course is intended to upgrade trainees' knowledge on continuing courses of study in Technical/Vocational Institutions, schools and apprentices who aspire to become qualified textile weavers, directors and artists in the industry.

In addition to textile weaving studies, general textile studies have been added in order to develop trainees' ability to absorb, interpret and transmit information on textiles.

The programme has been derived from major topics in the textile hand weaving industry.

B. THE GENERAL OBJECTIVES

On completion of this course, the trainee should be able to:

i) Identify fabrics by test and different methods of production
ii) Understand the uses and economic value of textile hand weaving products
iii) Design and produce artifacts in textile hand weaving
iv) Set-up their own textile industry
v) Further education to certificate 2

C. THE COURSE COMPONENTS

Trade Theory
Science and Calculation
Trade Drawing
General Paper
Trade Practical

EXAMINATION: The candidates would be examined in the FIVE components listed in 'C' above. Practical work must be carefully planned to illustrate application of the theory and to provide maximum opportunity for shop practice, laboratory work and demonstration.

D. KNOWLEDGE AND SKILLS REQUIREMENT

The prime objective of the programme is to provide knowledge and skills in Textile Hand Weaving in a manner that will best meet the needs of the trade as well as industries needing the expertise of the graduates.

F. ELIGIBILITY FOR ENTRY TO EXAMINATION

Candidates may enter for examination only as internal candidate; that is those who at the time of entry to the examination are undertaking (or) have already completed the course at an approved establishment.

G. EXTERNAL EXAMINERS

The practical work of candidates will be assessed by an external examiner appointed by the Trade Testing Commissioner.

H. EXAMINATION RESULTS AND CERTIFICATES

Each candidate will receive record of performance given the grade of performance for the components Taken. These are:

i) Distinction
ii) Credit
iii) Pass
iv) Referred/Fail

Certificates would be issued to candidates who pass in all the components.

NOTE:
All Technical and Vocational trainees who aspire to take advantage of the opportunities opened to them in the educational reforms should NOTE that, for a trainee to progress to certificate Two (2) a pass in Certificate One (1) is compulsory.

I. APPROVAL OF COURSE

Institutions or other establishments intending to prepare trainees for the Examination must apply to
THE COMMISSIONER
TESTING DIVISION
NVTI, HEAD OFFICE
P.O. BOX MB 21, ACCRA

L. ACKNOWLEDGEMENT

NVTI wishes to acknowledge the preparatory material done by the team of experts, which have been incorporated
into this syllabus.

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Mr. John Kofi Bintsil BED

Government's desire to improve the lot of Technical/Vocational Training, which led to the preparation of this syllabus, is hereby acknowledge.

1. RECOMMENDED BOOKS

1. Art for Schools and Colleges
   (S. Adu Akwaboah)

2. Textile Technology 1-3
   (Joseph Sackey)

3. Fibres and Fabrics of Today
   (Helen Thomson)

4. Fabrics Unravelled
   (Carol Watkinson)

CERTIFICATE ONE – TRADE THEORY

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
1.0	TEXTILES	Definition of textile	- Definition of Textiles giving examples	Discuss definition of textiles as the processing of fibers into yarns and yarn into fabric Discuss the scope as including, spinning, weaving, crocheting, dying, printing. Discuss examples of textile materials as clothes, carpets, curtains etc.
2.0	RATIONALE FOR STUDYING TEXTILES	• Importance of textiles • Uses of textile materials	- Social, economic, cultural and moral factors - Addressing contemporary issues through textiles. e.g. unemployment, leisure's, ppoverty, teenage pregnancy, rural-urban migration etc - Clothing, curtains, carpentry, medical fields etc	Discuss with trainees the socio-economic benefits of textiles to the nation. Discus uses of textiles to the benefit of society
3.0	SAFETY IN THE WORKSHOPS	• Hazards in the workshop • Solutions of hazards in the workshop	- Hazards in the traditional workshop as cutting of fingers - Hazard in the factory as noise making, getting wounded by machine - Hazards related to prolonged sitting - Wearing ear mask, using adhesives to cover fingers when spinning	Discuses with trainees the hazards associated with the weaving industries and suggest solutions to them.

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
4.0	TOOLS AND MATERIALS IN WEAVING	Tools in weaving Materials in weaving	- Tools such as loom, accessories. - Materials such as yarns and dyes	Discuss types of looms, broadloom, table loom, power loom etc. Discuss and show accessories as shuttle, pirn, warping mill, castle etc. Discus the role of the yarn in the weaving process Discuss the role of the dyes in weaving.
5.0	FIBRES	• Natural fibers • Man-made fibers	Natural fibers: vegetables, protein, minerals Man-made fibers: regenerated and synthetic fibers	Discuss vegetable, protein and mineral fibers and give examples. Discuss regenerated and synthetic fibers.
6.0	DESIGNING	Elements and principles of designing	• Identification of elements of design • Identification of principles of design	Unearth the elements of design Discuss principles of design.
7.0	YARN PREPARATION AND MAKING	• Traditional spinning • Spinning in the factory	• Spinning by pulling and twisting fibres. • Winding of yarns on spools.	Discuss with Trainings the importance of twisting, winding, spinning of yarn.
8.0	INTRODUCTION TO COLOURS	• Colour as a light • Colour as a pigment	- Colours as light by Isaac Newton - primary colours of light - primary colours of pigment - secondary colours of pigment - 12 colour wheel	Discuss colour as light, rainbow and introduce trainees to colour as light. Introduce trainee to primary, secondary and 12 –colour wheel
9.0	WEAVING	Introduction to weaving	- relevance of tools and materials to weave - preparation for weaving - tools as basic items in weaving - materials as basic materials - preparation for weaving - warping, beaming, heddling, reeding, tying up, test weaving and weaving	Techniques Discuss relevance of tools and materials in weaving . Define and explain the preparation of the warp. Explain how weft is worn unto the bobbing and inserted into the shuttle

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
10.0	WEAVES	Introduction to the basic weaves	The plain weave and variations such as the basket, warp rib, weft rib etc.	Discuss fabrics and the relevance of the variation to the plain weaving etc.
11.0	FINISHING	Preparatory finishes Actual finishes	Introduction: Preparatory finishes such as desizing - scouring, sizing, bleaching, mercerization	Discuss with trainees importance of preparatory processes to fabric decoration.
12.0	FABRIC DECORATION	• Introduction to fabric • Decoration processes • Relevance of fabric decoration	Introduction to processes such as dying, printing, appliqué, embroidery, tapestry	Explain to trainees the meaning and relevance of the processes as dying, printing appliqué etc Discuss with trainees the relevance of fabric decoration. E.g. enhance appearing,
13.0	FABRIC FINISHING	Introduction to fabric finishing processes	Introduce trainees to finishes processes into manual, mechanical, temporal and permanent etc	Explain the mechanical finishes such as strengthening and chemical finishes such as bleaching
14.0	COSTING, PRICING AND MARKETING	• Costing a woven product • Pricing a woven product • Marketing a woven product	Costing factors: - cost of materials - tools maintenance - profit - labour All the factors put together for pricing Strategies for marketing a product	Discuss with trainees the means to cost a woven fabric. Use the costing fabrics to price the fabrics and help define some marketing strategies.

CERTIFICATE ONE – TRADE SCIENCE AND CALCULATIONS

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
1.0	ADDITION AND SUBTRATION	Simple Addition and subtraction	• Addition of numbers • Addition of currencies • Subtraction of numbers • Subtraction of currencies • Addition of weight • Subtraction of weight	Demonstrate simple addition and subtraction in numbers, currencies weight and lengths
2.0.	MULTIPLICATION AND DIVISION	Simple multiplication and division	• Multiplication of whole numbers. • Division of numbers, multiplication and division of currencies. • Multiplication and division of anything related to the trade – textile handweaving. • Explanation of the division of natural fibres into groups – vegetable, protein and mineral	Lead trainees to calculate by multiplying and dividing simple numbers, currencies, lengths, walls etc.
3.0.	FIBRES	• Natural fibres • Man-made fibres	• Explanation of the term man-made fibres as fibres made by man. • Explanation of the grouping of man-made fibres. • Regenerated - chemicals + cellulose • Synthetic – Pure chemical	Explain the groupings of natural fibre and give examples. E.g. Vegetable – cotton, flax Protein – Wool, silk Mineral – Asbestos Explain the fibre groupings of man-made fibres into synthetic.
4.0.	FRACTIONS	Simple fractions: Addition and subtraction. Addition and subtraction of fractions with different denominators	Explanation of how to add common fractions: E.g. ½ + ½ = 2/2 = 1 Demonstration of addition of fractions with different denominators. Demonstration of the L.C.M. Least Common Multiple E.g. ½ + 1/3 = 3/6 + 1/3 = 4/6 = 2/3	Explain the rule that when denominators are common, addition or subtraction are straight forward

CERTIFICATE ONE – TRADE SCIENCE AND CALCULATIONS

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
5.0	YARN CALCULATIONS	Simple yarn calculation using the reed density as the base.	Explanation of reed density as the number of reeds in either an inch or a centimeter. Hence when multiplied by the width, the number of yarns is calculated.	Explain the reed density in relation to calculating the number of yarns. E.g. if reed density 24 per cm and width is 30then the number of yarns will be 24 x 30 = 720 Explain how given other variables either the reed density or the width of the fabric can be found.
6.0.	SPINNING	Spinning man-made fibres	Explanation of the wet spinning, dry spinning and melt spinning. E.g. In wet spinning the raw material. Logs of wood made into pulped is dissolved by chemicals. The solution is extruded from a spinnerset into an acqveans coagulating bath and it solidifies into filaments.	Explain the concepts of wet spinning, dry spinning and welt spinning.
7.0.	PERCENTAGES (INTRODUCTION)		Percentages as variables related to the number 100. Hence 60% means 60 out of 100. 75% as 75% out of 100. Explanation of the fact that numbers can be related to 100. For instance if 40 = 100. What will be 25? = $\frac{25 \times 100}{40}$	Explain percentages as numbers in relation to 100 Demonstrate how other numbers can be related to 100.

CERTIFICATE ONE – TRADE SCIENCE AND CALCULATIONS

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
8.0	PROFIT AND LOSS	Simple Profit and Loss Calculation	Explanation of profit as being the selling price of an article being more than the cost price. E.g. if an article is bought for GH¢25 and sold at GH¢30. The Profit is GH¢5. On the other hand if the article is bought for GH¢25 and sold at GH¢20, then the loss made is GH¢5.00.	Lead trainees to appreciate the understanding of either profit or loss situation.
9.0.	MOTIONS IN WEAVING	Introduction to primary motions in weaving	Primary motions in weaving include shedding – the opening of the warp sheets, picking the laying of the weft thread and battening (beating up) the beating of the laid weft to the fell of the cloth.	Lead trainees to understand the primary motions in weaving.
10.0.	PROPORTION	Simple proportion	The relationship of two numbers is to a new number. E.g. If 3 is to 6, what will 9 be to: • 3:6 • 9:18	Use the explanation under sub-points to explain proportion.

CERTIFICATE ONE – TRADE DRAWING

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
1.0	DRAWING EXPLANATION	Exploration of tools, equipment, materials etc.	Meaning of drawing as an act of running an implement over a surface and leaving some trace of the gesture.	Discuss the meaning and importance of drawing. Assemble different types of tools. Work and create textures as follows randomly.
		Identification and experimentation	Identification and experimentation with tools and materials for drawing e.g. dry media, wet media .	Organize and randomly discuss the purpose of drawing with trainees
		Purpose of drawing	Purpose of drawing as preliminary study, illustration, recording and expression of ideas.	Discuss how tools are cared for.
		Caring for and maintenance of drawing media	Drawing media can be cared for and maintained by washing, repairing , sharpening using them for the right activity, placing them at appropriate places etc.	E.g. washing, repairing etc.
2.0.	OBSERVATION OF NATURAL AND SYNTHETIC OBJECTS	Critical observation with all senses	Observation of variety of objects noting their shapes, lines, quality, planes, texture. Using senses, to touch, feel, smell, weigh, Taste, observe, smell	Organise the collection of some objects from the environment for drawing
3.0.	DRAWING TECHNIQUES	Exploration of drawing and shading techniques	Exploration of drawing techniques such as hatching, cross-hatching, shading, rubbing etc. Using appropriate tools to draw using dots, lines, shapes, texture etc.	Demonstrate and lead trainees to draw using dots, lines, shapes etc.

CERTIFICATE ONE – TRADE DRAWING

TASK		CRITICAL POINTS	SUB-POINTS	INSTRUCTIONAL TECHNIQUES
4.0	IDEA DEVELOPMENT AND DRAWING BY RECORDING	Developing ideas about environment through drawing	Drawing of objects stage by stage. Drawing by recording minute details as closely as possible to the original objects	Demonstrate sketching of items in their environment through drawing
5.0.	ANALYTICAL DRAWING FROM OBJECTS	Recording objectively what has been observed in detail	Making analytical and objective drawing from objects	Drainage objects for drawing by using lines and tonal graduation to bring out solidity of objects and other features
6.0.	PERSPECTIVE	Perspective in drawing	Explanation of perspective, one point perspective, two point perspective and aerial/colour perspective	Take students out to observe why objects look smaller the farther away from the onlooker. E.g. Road becoming narrow Trainees draw objects to show perspective.
7.0.	DRAWING IN RELATION TO TEXTILE HANDWEAVING	Drawing of equipment, tools and materials	Drawing of tools and materials such as the loom and accessories such as skeiner, bobbin, winder, skein winder, reed hook, heddling hook etc.	Lead trainees to sketch items related to weaving such as mentioned in sub-skills.
8.0.	DEVELOPING WEAVING PATTERNS	Using ideas so far derived the experience gained to develop weave patterns	Assisting trainees to explore weave patterns on their own exclusive weaving.	Encourage trainees to come out with their own weave patterns for sketching and weaving.

CERTIFICATE ONE – TRADE PRACTICAL

TASK		CRITICAL SKILLS	SUB-SKILLS	INSTRUCTIONAL TECHNIQUES
1.0	YARN PREPARATION	Traditional method Contemporary method	Ginning, opening and mixing, carding, combing, roving, actual spinning	Demonstrate skills in the basic process and preparation of cellulosic fibers convert them into yarn. Make a trip to a textile manufacturing company and get skilled people to explain. Relate spinning to cotton, sisal and jute
2.0	BASIC DESIGN	Elements of design Principle of design Computer as an aid of design	Definition of elements and principles of design Introduction to components and functions of a computer Parts of the computer and uses of computer for arts	Create elements of design with ideas derive from natural and synthetic environment. Create elements and principles of design by techniques of drawing, printing , robbing, painting, spraying, scratching . Organize elements according to the principle of design. Introduce trainees to the computer Identify parts of the computer and uses of computer. Discuss functions of hardware and software of the computer, show and demonstrate functions. Trainees practice the handling and use of computer .

CERTIFICATE ONE – TRADE PRACTICAL

TASK		CRITICAL SKILLS	SUB-SKILLS	INSTRUCTIONAL TECHNIQUES
3.0	FABRIC CONSTRUCTION TECHNIQUE	Basic design for weaving Warp planning, preparation and laying	Definition of weaving Plain weaving and its variations on squared paper Warp planning estimation of number of warp and weft winding etc.	Define weaving as the making of yarns to form fabric Design plain weave and variations on squared paper e.g. $^{2}/_{2}$, ½, $^{2}/_{1}$, $^{2}/_{4}$, etc, warp rib and weft rib plain weave. Plan purpose and lay warp for weaving plain fabrics on broadloom. Demonstrate the processes involve in wrap laying, beaming, raddling, shedding, reeding, tying up and weaving. Demonstrate calculation of warp ends based on reed density (total ends = reed density × width of fabric)
4.0	COLOUR	What is colour Sources of colour Colour wheel Mixing colours	Definition of colours: a perception of reflected light rays Source of colour: natural, artificial 12-point colour wheel Primary, secondary, tertiary, warm/cool colours	Explain what colour is Explain and identify the sources of colour Assist trainees to make 12-hue colour wheel Mix colours Identify colours that match etc

TASK		CRITICAL SKILLS	SUB-SKILLS	INSTRUCTIONAL TECHNIQUES
5.0	TOOLS AND MATERIALS	Manpower looms and accessories for weaving	Types of manpower looms and accessories. E.g. traditional loom, broad loom, table loom Types of weaving accessories. E.g. warp mill, skeiner reed, shuttle, bobbing winders, raddle, reed hook, heddle hook, shuttle	Identify and observe tools and accessories for weaving Discuss the structure of the traditional loom and the broadloom and their accessories
6.0	DRAWING	Idea development Analytical drawing Perspective	Idea development from natural and synthetic objects, trees, mountains, stars, moon, flowers, building etc Making analytical objective drawing from objects Perspective as a way of drawing objects and scenes to create an illusion of distance	Help trainees to develop ideas from natural or artificial source Arrange objects for drawing using lines and gravitation to bring quality of objects and other features Explain perspective Explain 1pt. perspective Explain 2pt. perspective Explain aerial/colour perspective
7.0	WEAVING PROCESSES	Weft preparation Basic loom movement	Winding of weft using the bobbing winder Weaving processes: primary motions – shedding, picking and beating up	Demonstrate bobbing winding Emphasis appropriate winding to avoid storphing of yarn during weaving Interlace weft with warp yarns applying primary motions. Trainees practice how to step on the treadle and throwing of shuttle

CERTIFICATE ONE – TRADE PRACTICAL

TASK		CRITICAL SKILLS	SUB-SKILLS	INSTRUCTIONAL TECHNIQUES
8.0	EXHIBITION	Definition of the term exhibition	Definition of exhibition as public display of artifacts	Define the term exhibition
		Types of exhibition	Identification of types of exhibition- Individual exhibition, group exhibition, class exhibition, distinct exhibition, regional exhibition, international exhibition. General and special exhibitions	- mention and categories types of exhibition - discuss the need for exhibition
		Demonstration on planning, preparing and mounting exhibition	How to prepare plan and mount exhibition	Assist trainees to plan, prepare and mount exhibition

LEVEL – CERTIFICATE ONE – TEST SPECIFICATION TABLE
TRADE THEORY - OBJECTIVE

NO	TOPIC	COGNITIVE KNOWLEDGE	AFFECTIVE UNDERSTANDING	PSYCHOMOTOR APPLICATION	TOTAL
1.	Textures, Definition and Rational	1	1		2
2.	Tools and Materials		1	1	2
3.	Designing	1	1		3
4.	Yarn Preparation		1	1	2
5.	Introduction to Colours	1	1		
6.	Weaving	2	2	2	6
7.	Weaves	1	2	1	4
8.	Prefinishing	1	1		2
9.	Decoration	1	1		2
10.	Actual Finishing		1		1
					25

LEVEL – CERTIFICATE ONE – TEST SPECIFICATION TABLE
TRADE THEORY - SUBJECTIVE

NO	TOPIC	COGNITIVE KNOWLEDGE	AFFECTIVE UNDERSTANDING	PSYCHOMOTOR APPLICATION	TOTAL
1.	Tools and Materials			1	
2.	Designing		1		
3.	Weaving			1	
4.	Weaves			1	
5.	Precolouring		1		

LEVEL – CERTIFICATE ONE – TEST SPECIFICATION TABLE
SCIENCE AND CALCULATION

NO	TOPIC	COGNITIVE KNOWLEDGE	AFFECTIVE UNDERSTANDING	PSYCHOMOTOR APPLICATION	TOTAL
1.	Addition/Subtraction		1		1
2.	Fibres				
3.	Fractions		1		1
4.	Yarn calculation		2		2
5.	Spinning		1		1
6.	Fractions		1		1
7.	Profit and Loss				
8.	Percentage		1		1
9.	Motions in Weaving		2		2
10.	Proportion		1		1
					10

LEVEL – CERTIFICATE ONE – TEST SPECIFICATION TABLE
TRADE DRAWING

NO	TOPIC	COGNITIVE KNOWLEDGE	AFFECTIVE UNDERSTANDING	PSYCHOMOTOR APPLICATION	TOTAL
1.	Drawing Exploration				
2.	Observation of natural and Synthetic Objects				
3.	Drawing Techniques				
4.	Idea development and drawing by recording				
5.	Analytical drawing from objects				
6.	Prospective				
7.	Drawing in relation to textile Handweaving				
8.	Developing Weaving Patterns				

LEVEL – CERTIFICATE ONE – TEST SPECIFICATION TABLE
TRADE PRACTICALS

NO	TOPIC	COGNITIVE KNOWLEDGE	AFFECTIVE UNDERSTANDING	PSYCHOMOTOR APPLICATION	TOTAL
1.	Yarn Preparation				
2.	Basic Design				
3.	Fabric Construction Techniques				
4.	Colour				
5.	Tools and Materials				
6.	Drawing				
7.	Weaving Process				
8.	Exhibition				