

Painting and Decorating - National Technical Certificate (NTC) and Advanced National Technical Certificate (ANTC)

REVISED NATIONAL TECHNICAL CERTIFICATE (NTC) & REVISED ADVANCED NATIONAL TECHNICAL CERTIFICATE(ANTC) PROGRAMMES

CURRICULUM AND COURSE SPECIFICATIONS

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NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

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General Information

AIM:

To give training and impart the necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self-reliant.

ENTRY QUALIFICATIONS

CRAFT PROGRAMME

Candidates must not be less than 14 years of age and should have successfully completed three years of Junior Secondary education or its equivalent. Special consideration may be given to sponsored candidates with lower academic qualifications who hold trade test certificates and are capable of benefiting from the programme.

ADVANCED CRAFT PROGRAMME

Candidates should possess the National Technical Certificate or its equivalent and should have had a minimum of two years post qualification cognate industrial experience.

THE CURRICULUM

The Curriculum of each programme is broadly divided into three components:

- a. General Education, which accounts for 30% of the total hours required for the programme.
- b. Trade Theory, Trade Practice and Related Studies which account for 65% and,
- c. Supervised Industrial Training/Work Experience, which accounts for about 5% of the total hours required for the programme. This component of the course which may be taken in industry or in college production unit is compulsory for the full-time students.

Included in the curriculum is the teacher's activity and learning resources required for the guidance of the teacher.

Unit Course/Module

A Course/Module is defined as a body of knowledge and skills capable of being utilized on its own or as a foundation or pre-requisite knowledge for more advanced work in the same or other fields of study. Each trade when successfully completed can be used for employment purposes.

BEHAVIOURAL OBJECTIVES

These are educational objectives which identify precisely the type of behaviour a student should exhibit at the end of a course/module or programme. Two types of behavioural objectives have been used in the curriculum. They are:

- a General Objectives
- b Specific learning outcomes

General Objectives are concise but general statements of the behaviour of the students on completion of a unit of work such as understanding the principles and application.

- a Orthographic projection in engineering/technical drawing
- b Loci in Mathematics
- c Basic concepts of politics and government in Political Science
- d Demand and Supply in Economics

Specific Learning Outcomes are concise statements of the specific behaviour expressed in units of discrete practical tasks and related knowledge the students should demonstrate as a result of the educational process to ascertain that the general objectives or course/programme have been achieved. They are more discrete and quantitative expressions of the scope of the tasks contained in a teaching unit.

GENERAL EDUCATION IN TECHNICAL COLLEGES

The General Education component of the curriculum aims at providing the trainee with complete secondary education in critical subjects like English Language, Economics, Physics, Chemistry, Biology, Entrepreneurial Studies and Mathematics to enhance the understanding of machines, tools and materials of their trades and their application and as a foundation for post-secondary technical education for the above average trainee. Hence, it is hoped that trainees who successfully complete their trade and general education may be able to compete with their secondary school counterparts for direct entry into the polytechnics or colleges of education (Technical) for ND or NCE courses respectively. The Social Studies component is designed to broaden the trainee's social skills and his understanding of his environment.

For purpose of certification, only the first three courses in Mathematics will be required. The remaining modules are optional and are designed for the above average students.

National Certificate

The NTC and ANTC programmes are run by Technical Colleges accredited by NBTE

NABTEB conducts the final National Examination and awards certificates.

Trainees who successfully complete all the courses/modules specified in the curriculum table and passed the national examinations in the trade will be awarded one of the following certificates

S/NO	LEVEL	CERTIFICATE
	Technical Programme	
1	Craft Level	National Technical Certificate
2	Advanced Craft Level	Advanced National Technical Certificate

Guidance Notes For Teachers Teaching The Curriculum

The number of hours stated in the curriculum table may be increased or decreased to suit individual institutions' timetable provided the entire course content is properly covered and the goals and objectives of each module are achieved at the end of the term.

The maximum duration of any module in the new scheme is 300 hours. This means that for a term of 15 weeks, the course should be offered for 20 hours a week. This can be scheduled in sessions of 4 hours in a day leaving the remaining hours for general education. However, (properly organised and if there are adequate resources), most of these courses can be offered in two sessions a day, one in the morning and the other one in the afternoon. In so doing, some of these programmes may be completed in lesser number of years than at present.

The sessions of 4 hours include the trade theory and practice. It is left to the teacher to decide when the class should be held in the workshop or in a lecture room.

Integrated Approach In The Teaching Of Trade.

Theory, Trade Science And Trade Calculation

The traditional approach of teaching trade science and trade calculation as separate and distinct subjects in technical college programmes is not relevant to the new programme as it will amount to a duplication of the teaching of mathematics and physical science subjects in the course. The basic concepts and principles in mathematics and physical science are the same as in the trade calculation and trade science. In the new scheme therefore, mathematics and physical science will be taught by qualified persons in these fields and the instructors will apply the principles and concepts in solving trade science and calculation problems in the trade theory classes. To this end, efforts have to be made to ensure that mathematics and science modules required to be able to solve technical problems were taken as pre-requisite to the trade module.

Evaluation Of Programme/Module

For the programme to achieve its objectives, any course started at the beginning of a term must terminate at the end of the term.

Instructors should therefore device methods of accurately assessing the trainees to enable them give the student's final grades at the end of the term. A national examination will be taken by all students who have successfully completed their modules. The final award will be based on the aggregate of the scores attained in course work and the national examination.

Curriculum Table Course Hours/Week (NTC)

Module Code	MODULE	YEAR 1						YEAR 2						YEAR 3						TOTAL HRS FOR EACH
		Term 1		Term 2		Term 3		Term 1		Term 2		Term 3		Term 1		Term 2		Term 3		
		T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	
CMA12 - 15	Mathematics	2	-	2	-	2	-	2	-	2	-	2	-	2	-	2	-	2	-	216
CPH 10 - 12	Physics	2	-	2	2	2	2	2	1	2	1	2	1	2	1	2	1	2	-	288
CCH 11 - 12	Chemistry	2	-	2	2	2	2	3	1	2	1	2	1	2	1	2	1	2	1	288
CEN 11 - 17	English Language	2	-	2	-	2	-	2	-	3	-	3	-	3	-	3	-	3	1	288
CEC 11 - 13	Economics	2	-	2	-	2	-	2	-	2	-	2	-	2	-	2	-	-	-	216
CTD 11 - 13	Drawing		3	-	3	-	3	-	3	-	3	-	3	-	-	-	-	-	-	216
ICT 11 - 15	Computer Studies	-	-	-	-	-	-	1	2	1	2	1	2	-	-	-	-	-	-	108
CBC 11	Intro. To Building Const.	2	1	2	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	108
CBM 12	Basic Const. Mgt. I	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	36
CTD 14	Building Drawing	-	-	0	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48
CPD 10	General Safety	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
CPD 11	Decorative Painting	2	10	2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	288
CPD 12	Spray Painting	-	-	-	-	2	10	-	-	-	-	-	-	-	-	-	-	-	-	144
CPD 13	Wall Hanging	-	-	-	-	-	-	2	10	-	-	-	-	-	-	-	-	-	-	144
CPD 14	Colour Mixing	-	-	-	-	-	-	2	8	-	-	-	-	-	-	-	-	-	-	120
CPD 15	Lining, Sign and Design	-	-	-	-	-	-	-	-	-	-	-	-	2	10	2	10	-	-	288
CPD 16	Glazing	-	-	-	-	-	-	-	-	-	-	-	-	2	6	-	-	2	6	192
CBM 11	Entrepreneurship.	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	48
	Total	16	13	14	22	14	18	16	25	11	7	14	7	20	18	13	12	11	8	2960

Curriculum Table Course Hours/Week (ANTC)

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING PROGRAMME

ADVANCED NATIONAL TECHNICAL CERTIFICATE PROGRAMME IN PAINTING AND DECORATING

Module Code	MODULE	ONE YEAR						TOTAL HRS FOR EACH
		Term 1		Term 2		Term 3		
		T	P	T	P	T	P	
CMA 21-22	Mathematics	2	-	2	-	2	-	72
CEN 21-22	English Language	2	-	2	-	2	-	72
CEC 21-22	Economics	2	-	2	-	2	-	72
CBC 20	Building Science I	3	0	-	-	-	-	36
CBC 21	Building Science II	-	-	3	1	-	-	48
CTD 23	Building Drawing II	-	-	-	5	-	-	60
CBM 22	Construction Mgt. II	3	0	3	0	-	-	72
CPD 21	Screen Printing Process	1	16	-	-	-	-	204
CPD 23	Decorative Finishes	-	-	2	12	-	-	168
CPD 24	Advanced Spray Painting	-	-	-	-	2	6	96
ICT 13-14	AutoCAD	-	2	-	2	-	-	48
CTD 22	Fabrication II	-	5	-	-	-	-	60
	Total	13	23	14	20	8	6	1008

Introduction to Building Construction

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING		
MODULE: INTRODUCTION TO BUILDING CONSTRUCTION	Module Code: CBC II	Contact Hours: 108 (2-1)
<p>GOAL: This module is designed to introduce the trainee in the building trades to the basic construction principles, materials and methods so that he may be able to appreciate the roles of the various trades in the building industry.</p> <p>GENERAL OBJECTIVES:</p> <p>On completion of this module, the trainee should be able to:</p> <ol style="list-style-type: none">1. Understand basic workshop and site safety principles and methods and be able to undertake their application.2. Know the use of common hand tools and building trades3. Understand the use of materials and basic processes in carpentry and joinery4. Understand the basic principles of site preparation5. Understand setting out principles and be able to apply them to set out simple rectangular buildings on site.6. Understand basic principle of choice and construction of foundations7. Understand the principle of ground and upper floor construction in timber and concrete8. Understand the principles of construction load bearing walls9. Know materials and methods used in fixing openings10. Understand the function and principles of construction of basic roof types11. Understand the basic principles of design and construction of stairs12. Understand the application of common types of finishes in the building trade13. Understand the basic principles of installation of various types of services in dwellings		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 1.0: Understand Basic Workshop And Site Safety Principles And Methods To Be Able To Undertake Their Application.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1-2	<p>1.1 Enumerate and discuss various hazards in the workshop environment relating same to a construction site situation and stating their causes and methods of prevention.</p> <p>1.2 Identify dangerous components of construction tools and equipments e.g. drilling machines, grinding, machine and circular saw etc.</p> <p>1.3 Name dangerous gases and liquids in common use in the workshop or construction site e.g. paint frames, flammable liquids, acetylene, etc.</p>	<ul style="list-style-type: none"> • Teacher should arrange to use slide, video films, Computer simulation etc. to show and explain proper handling of construction tools and equipment and how to prevent accidents both in the workshop and on site. • Various movable hand tools and machines should be displayed and shown to students and the methods of safe handling explained. • Show films and photo clips of the hazards that can be caused by poisonous and dangerous gases e.g. paint fumes, carbon monoxide etc. 	<ul style="list-style-type: none"> • Slide, video player and Television, video films (related to the subject matted), diskettes etc. • Drilling, grinding/cutting machine circular saw, molding machine etc. • Chalkboard, lesson notes etc.
	<p>1.4 State and explain the relevant clauses in the factory act on Health, Safety and Welfare Regulations for workers on a construction site.</p> <p>1.5 Apply appropriate First Aid Treatment on a victim in need of First Aid. e.g. burn, shock, cuts cases etc.</p>	<ul style="list-style-type: none"> • Use dummy to practicalise the application of 1st Aid on victims, this could be done in the classroom to reinforce the knowledge being imparted to students. 	<ul style="list-style-type: none"> • Dummy, first Aid box well equipped with drugs, bandage, cotton wool, iodine, etc. • Safety signs, hand gloves, boots protective clothing goggles etc. • Circular saw, and drilling machines etc.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 1.0: Understand Basic Workshop And Site Safety Principles And Methods To Be Able To Undertake Their Application.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	1.6 Undertake habitual maintenance of health, safety and general welfare of the individual. Identify what safety is and how to prevent accidents generally.		• First aid box with relevant drugs and dressings
General Objective 2.0: Know The Use Of Common Hand Tools In Building Trades.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	2.1 Identify and describe the basic hand tools for plumbing work and state their functions. 2.2 Identify and describe the basic hand tools in Brick/Block work and state their functions. 2.3 Identify basic hand tools in carpentry and joinery and state their functions.	<ul style="list-style-type: none"> • Show the students the basic workshop hand tools related to a plumber's work e.g.. Wrench, yarn, dicing machine etc. • Show and practically handle Brick/Block work tools with students, naming each tool and asking the students to identify same. • Show and demonstrate the use of basic carpentry hand tools to the students e.g. hammer, pincers, drill etc. 	Basic hand tools for: <ul style="list-style-type: none"> - Joiners and carpenters - Block/brick layers - Painters - Plumbers
	2.4 Describe and identify the basic hand tools in Painting and Decorating and state their functions. 2.5 Understand the repair, routine care and maintenance of hand tools in use in the workshop.	• Show students the basic Painting and decorating hand tools.	- do -

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 3.0: Understand The Use Of Materials And Basic Processes In Carpentry & Joinery.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
4 5	3.1 Identify and know various types of Nigerian timbers and state their characteristics and uses. 3.2 Describe methods of timber conversion and preservation. 3.3 Identify various types of manufactured boards and state their uses. 3.4 Construct simple car-case joints using a variety of materials and \tools.	<ul style="list-style-type: none"> • Teacher should bring various types of timber pieces to class and identify same to students by name and characteristics. • Describe wood preservation process. • Bring pieces of various types of boards e.g. plywood, particle board etc. to the class for identification and state their uses. 	<ul style="list-style-type: none"> • Timber • Wood Preservatives • Plywood • Particle Board.
General Objective 4.0: Understand The Basic Principles Of Site Preparation.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
6-7	4.1 Define vegetable soil and identify same. State the reasons for removing vegetable soil or top-soil before setting out. 4.2 Identify and know hand tools and mechanical plants used for excavation. 4.3 Explain the importance of site investigation and preparation prior to setting out. 4.4 Describe site preparation and procedures prior to setting out.	<ul style="list-style-type: none"> • Use question and answer technique to describe vegetable soil and reasons for removal before setting out. • Show students various hand tools used for earth excavation e.g. auger, excavator, shovel, digger etc. • Take a visit to new construction site with the students. 	<ul style="list-style-type: none"> • Vegetable soil. • Digger, trowel, excavator, etc.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 5.0: Understand Setting Out Principles And Be Able To Apply Them To Set Out Simple Build On Site.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
8-12	5.1 Define and explain the principles of setting out of buildings. 5.2 Sketch and describe the method of pegging out the perimeter walls of a building. 5.3 Explain with sketches the use of timber profiles in setting out. 5.4 Identify and explain the basic equipment required for setting out on site. 5.5 Set out a simple rectangular building on site	<ul style="list-style-type: none"> • Demonstrate the principles of setting out of buildings. • Use sketches to explain why timber is used as setting out profiles. • Describe the basic equipment needed for setting out and use sketches where necessary. • Set out a simple rectangular building with the students' participation. 	<ul style="list-style-type: none"> • Chalkboard, sketches etc. • Pegs, profile, nails, line, T-square, Iron Square etc. • Setting out equipment etc.
13	EXAMINATIONS: PRACTICAL 60% THEORY 40%		
General Objective 6.0: Understand Basic Principles Of Choice & Construction Of Foundations.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1-2	6.1 Define and explain the functions of foundation and describe the different types of foundations indicating their suitability. 6.2 Describe equipment and methods used in excavating foundation trenches. 6.3 Sketch and describe temporary supports to the sides of deep trenches in various soils. 6.4 Describe the equipment and methods used in mixing concrete on site.	<ul style="list-style-type: none"> • Show pictures of excavating machines. • Explain the functions of the equipment. 	<ul style="list-style-type: none"> • Chalkboard etc. • Lesson note • Films, clips, pictures, sketches etc. • Concrete mixer, coarse aggregate, fine aggregate, cement, water, etc. • Digger, shovels, profile, line, etc.
3-4	6.4 Explain batching of concrete by weight and by volume and compare the two methods. 6.5 Organise and execute strip foundation laying under supervision by the teacher.	<ul style="list-style-type: none"> • Explain batching with regards to concrete work. • Explain the difference between batching by volume and by weight. 	<ul style="list-style-type: none"> • Cement • Mortar • Aggregates • Equipment and tools • Water

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 7.0: Understand The Principles Of Ground Upper Floor Construction In Timber Concrete.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	7.1 Describe and state the various functions of floors 7.2 Describe various types of floor and the methods of construction. 7.3 Describe various types of floorings and their application. 7.4 Organise and execute concrete ground floor laying operations.	<ul style="list-style-type: none"> Teacher should identify the various types of floors available and describe the functions of each type to the students. 	<ul style="list-style-type: none"> Concrete, aggregates etc. Visit to a construction site.
General Objective 8.0: Understand The Principle Of Constructing Load Bearing Walls.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
7-8	8.1 List the principal functions of external walls and Internal walls. 8.2 Describe various types of wall units in common use. 8.3 List typical mixes for mortar used for bonding wall units in 8.2 above. 8.4 Describe the procedures and precautions involved in mixing of concrete and mortar on site. 8.5 Explain the function, method of placing and position of D.P.C. in walls. 8.6 Set out and erect simple straight walls.	<ul style="list-style-type: none"> Describe D.P.C. and differentiate between D.P.C. and D.P.M. 	<ul style="list-style-type: none"> Block, Cement, etc. Posters Drawing of various bonds

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 9.0: Know Materials And Methods Used In Fixing Openings.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
9-10	<p>9.1 Identify Nigerian timbers and timber products suitable for window and door construction.</p> <p>9.2 State the functions of openings in dwellings e.g. light, ventilation, privacy, exclusion of external weather.</p> <p>9.3 Describe with sketches various types of timber and metal doors and windows including their mode of operation.</p> <p>9.4 Describe various types of ironmongery and state their uses.</p> <p>9.5 Explain the need for the provision of weathering structures (e.g. sill) at openings and describe with sketches structures used in simple dwellings.</p>	<ul style="list-style-type: none"> • Explain the difference between wooden shutter windows and doors, steel windows and doors, Crittal-Hope type Windows and doors. Aluminum projected windows and sliding doors etc. 	<ul style="list-style-type: none"> • Pictures/Posters • Charts • Door/window Schedules (Manufacturer's)
General Objective: 10.0 Understand The Function And Principles Of Construction Of Basic Roof Types.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
11-12	<p>10.1 Define and describe with sketches, basic roof types and Profiles e.g. beam and slabs as in concrete flat roofs, lattice and similar guiders, trusses (Howe truss, double roof, truss rafter, standard fink French Truss, North light truss, couple, umbrella, bow string, etc), portal frames, shell roofs, folded plates etc.</p> <p>10.2 Describe the maximum allowable span and application of the various roof types in 10.1.</p> <p>10.3 Name and describe various roof coverings suitable for tropical use and identify the areas suitable for their use in Nigeria.</p>	<ul style="list-style-type: none"> • Show the pictorial representation of the various roof types to the students while describing each. 	<ul style="list-style-type: none"> • Pictures, Charts, Drawings, film clips
EXAMINATIONS: PRACTICAL: 70%, THEORY: 30%			

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective 11.0: Understand The Basic Principles Of Design And Construction Of Stairs.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	<p>11.1 Describe with the aid of sketches, the different types of stairs e.g. straight flight, dog-leg open well, spiral etc.</p> <p>11.2 Explain with sketches the design standards for the construction of stairs e.g. riser, tread relationship, minimum headroom, standard sizes of structural members etc.</p> <p>11.3 Explain the basic principles of construction of a straight flight stair in timber, concrete and steel.</p>	<ul style="list-style-type: none"> • Differentiate between timber, concrete and steel stair cases. 	<ul style="list-style-type: none"> • Poster • Lesson note • Chalk board
General Objective 12.0: Understand The Application Of Common Tyes Of Finishes In Building Trade.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	<p>12.1 List some external and internal wall finishes and explain their applications, e.g. paint, wall paper, premix finishes, etc.</p> <p>12.2 State the functions of ceiling in a house.</p> <p>12.3 Describe with sketches various types of ceiling construction and ceiling finishes in the tropics e.g. normal ceiling, suspended ceiling etc.</p> <p>12.4 List various types of finishes for joinery works and explain their application e.g. varnish, polish, paint etc.</p> <p>12.5 Organise and execute the painting of a small dwelling to specification.</p> <p>12.6 Carry out the painting project using two different (paint) brand names to test their quality and efficiency</p>	<ul style="list-style-type: none"> • Guide the students. 	<ul style="list-style-type: none"> • Berger paint, other brand names.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: - INTRODUCTION TO BUILDING CONSTRUCTION		Module Code: CBC II	Contact Hours: 2hrs Theory; 1Hr. Practical/Wk.
Course Specification: Theoretical Content			
General Objective: 13.0 Understand The Basic Principles Of Installation Of Various Types Of Services In Dwelling.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	<p>13.1 Explain the basic principles of a good drainage system.</p> <p>13.2 Describe with sketches the installation standards relating to cold and; hot water supply.</p> <p>13.3 Sanitary wares; fittings e.g. sinks, bath, W.C. shower, wash hand basin, Urinals, etc.</p> <p>13.4 Explain with sketches construction standards relating to the domestic drainage system, e.g. Inspection chamber/cesspool, septic tank, soakaway.</p> <p>13.5 Explain the functions of good insulation and lighting in dwellings.</p> <p>13.6 Describe the different modes of supply and installation systems of electricity in dwellings e.g. single phase, 3-phase supply (conduit or surface wiring system)</p>	<ul style="list-style-type: none"> • State the use of hand gloves and hard-sole shoes and other protective wears.. 	<ul style="list-style-type: none"> • Hand gloves, shoes etc. • Hard-sole shoes • Goggles • Posters and sketches
11-12	<p>13.7 Identify and describe various electrical fixtures stating their functions and explaining their installation principles.</p> <p>13.8 List the precautions to be taken to ensure safety electrical installation work in dwellings.</p> <p>13.9 Interpret electrical circuit symbols and drawings.</p>	<ul style="list-style-type: none"> • Use a detailed electrical drawing to teach the students and explain the various circuit symbols. 	<ul style="list-style-type: none"> • Electrical drawing of a typical building.
13	EXAMINATIONS: PRACTICAL 70% THEORY 30%		

Building Drawing I

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I

Module Code: CTD - 14

Contact Hours: 4hrs/Wk

GOAL: This module is intended to introduce the trainee to the basic principles of design of residential bungalows and to enable him prepare and interpret building drawings with ease.

General Objectives

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

1. Interpret and/or apply symbols and conventions and other standard practices in building drawing.
2. Identify various architectural draughting materials and equipment and use them effectively in making building drawing
3. Demonstrate knowledge of the basic principles of design of dwelling in warm climate.
4. Prepare preliminary sketch design of a modern 3-bedroom bungalow.
5. Draw the site and floor plans, elevations and sections of the proposed 3-bedroom flat.
6. Prepare essential detail drawings of components.
7. Draw detail plan of the electrical services
8. Demonstrate knowledge of the principles and methods of preparing schedules.
9. Reproduce drawings.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I	Module Code: CTD - 14	Contact Hours: 5hrs/Wk
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Course Specification: Theoretical/Practical Content

General Objectives: 1.0 Interpret and apply symbols and conventions and other standard practices in building drawing

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1 - 2	<p>1.1 Identify and draw commonly used symbols and representations in building drawing. NOTE: Symbols and representations should be as contained in B.S. 1192 or similar Nigerian Standard.</p> <p>1.2 Identify various lettering styles and apply as appropriate in making building drawings.</p> <p>1.3 List the essential information required in the title block and indicate them in standard layout as recommended in B.S. 1192 or similar Nigerian standard.</p> <p>1.4 Use sketches to describe dimensioning methods in building drawing. NOTE: Dimensioning methods should be those commonly used by Nigerian Architects.</p> <p>1.5 State factors which govern choice of scale e.g.</p> <ul style="list-style-type: none"> a Need for lucid working information: b Need to achieve economy of effort and time in drawing perpetration; c Nature of drawing. 	<ul style="list-style-type: none"> • List the symbols in tabular form on the chalk board and explain their application. • Display various lettering styles and explain their uses. • Identify various scales in common use and factors that influence the scale. • Explain the importance of accurate dimensioning in drawings 	<ul style="list-style-type: none"> • Chalk Board • Charts of graphical symbols • A building drawing with various graphical symbols. • Drawing instruments • Materials • Lesson note • Standard drawing sheets of various sizes
	<p>1.6 State a range of standard scales for the following:</p> <ul style="list-style-type: none"> a Site plans b Floor plans c Elevations d Component details 		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I	Module Code: CTD - 14	Contact Hours: 5hrs/Wk
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Course Specification: Theoretical/Practical Content

General Objective: 2.0 Identify Various Architectural Draughting Materials And Equipment And Use Them Effectively In Producing Building Drawing.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
3-5	<p>2.1 Recognize various standard sizes of drawing papers and boards, explain their uses.</p> <p>2.2 Explain the various metric scales on architects triangular or flat scale rules and demonstrate their use in the making of building drawings.</p> <p>2.3 Describe the character and state the use of:-</p> <ol style="list-style-type: none"> Cartridge drawing paper Natural tracing paper Tracing film (acetate paper). <p>2.4 Select appropriate instruments and use them effectively in the making of building drawings NOTE: Essential instruments to be used should include: scales, drawing pens, lettering templates, adjustable set-square, instrument set, irregular (French) curves, T-square/parallel ruling straight edge/draughting machine.</p> <p>2.5 Explain the working principles of a typical plan printing machine or device.</p>	<ul style="list-style-type: none"> List the standard sizes of drawing paper. Show the students drawing pens, templates and explain their uses. Explain why rooms should be well ventilated. Discuss the factors that influence design of residential buildings in Nigeria. 	<ul style="list-style-type: none"> Drawing papers and instruments Picture of a plan printing machine Lesson note Drawing instruments

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I	Module Code: CTD - 14	Contact Hours: 5hrs/Wk
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Course Specification: Theoretical/Practical Content

General Objective 3.0: Demonstrate Knowledge Of The Basic Principles Of Design Of Dwellings In Warm Climate.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
6	<p>3.1 Explain the concepts of form, function and beauty as applied in building design.</p> <p>3.2 Identify the basic parts of a typical modern residential bungalow, explain their functional relationship and state the design requirement with regards to warm climate condition.</p> <p>NOTE: Basic parts should include: dinning room, bed room, kitchen, garage (internal and annexed), bath/toilet, store, etc.</p> <p>3.3 Identify typical water and sanitary services in a modern flat and use sketches to illustrate their installation standards, e.g. shower, W.C., sink, bath, water heater, wash hand basin, etc.</p> <p>3.4 Name common types of exterior and interior finishes for domestic buildings and explain their application.</p> <p>3.5 Explain the purpose of town planning authority regulations.</p>	<ul style="list-style-type: none"> • Explain the functions of the various building components. • List the essential services necessary in a building. 	<ul style="list-style-type: none"> • Lesson note • Chalk Board • Posters • Charts
7	<p>3.6 Explain how site characteristics may influence the design of a residential building.</p> <p>3.7 List and explain the characteristics of good floor plan, e.g. adequate and properly located openings, good functional relationship, etc.</p> <p>3.8 List and explain the factors which influence the design of residential buildings in Nigeria, e.g. site, town planning authority regulations, materials and labour availability, client taste/culture, financial ability.</p> <p>3.9 Distinguish between design plan and as-built plan</p> <p>3.10 Describe the essential elements of good site plan.</p>	<ul style="list-style-type: none"> • Use question and answer technique to explain the functions of the town planning authority and the importance of good town layout. 	<ul style="list-style-type: none"> • Town Planning Laws. • Picture/Posters of a well planned modern city.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I	Module Code: CTD - 14	Contact Hours: 5hrs/Wk
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Course Specification: Theoretical/Practical Content

General Objective 4.0: Prepare Preliminary Sketch Design Of A Modern 3 Bedrooms Bungalow.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
8-9	<p>4.1 Determine the characteristics of a given Surveyor's plan, e.g. solar orientation; plot size, access road, etc.</p> <p>4.2 Prepare preliminary sketch design of a modern 3-bedroom bungalow suitable for the plot in 4.1 above.</p> <p>4.3 Justify the space arrangement and choice of materials of the proposed bungalow.</p>	<ul style="list-style-type: none"> • Show a well prepared surveyor's Plan and explain the various characteristics, • Guide students to prepare a preliminary sketch design of domestic building. 	<ul style="list-style-type: none"> • Lesson Note • Survey Plan of a given site

General Objective 5.0: Draw The Site And Floor Plans, Elevations And Sections Of A Proposed 3-Bedroom Bungalow.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
10-12	<p>5.1 Prepare presentation floor plan and working drawings to suitable scales of a proposed bungalow.</p> <p>5.2 Draw the elevation to suitable scale.</p> <p>NOTE: Elevations may include front, rear, left and right side views.</p> <p>5.3 Determine and draw details of essential sections.</p> <p>NOTE: Use may be made of offset and removed sections where necessary.</p> <p>5.4 Draw the foundation plan.</p> <p>5.5 Draw the site plan.</p> <p>NOTE: Site plan should conform with local authority planning regulations and in particular indicate drainage plan. (Septic tanks, soak away, inspection chambers, pipelines), boundary wall or line, access road.</p>	<ul style="list-style-type: none"> • Distinguish between a bungalow, storey building and a duplex, etc. • Explain the importance of proper detailing in building drawing. • Discuss presentation plan • Show details of cut sections across hidden components - Stair case, etc. • Draw elevations e.g. approach, rear and side elevations. • Give assignments on drawing to students. 	<ul style="list-style-type: none"> • Finished drawing plan • A well equipped drawing studio. • A well equipped drawing studio • Drawing instruments

Examinations

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I

Module Code: CTD - 14

**Contact Hours:
5hrs/Wk**

Course Specification: Theoretical/Practical Content

General Objective 6.0: Prepare Essential Detail Drawings Of Components.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
	<p>6.1 Determine and draw to suitable scales essential details of components. NOTE: Details may include: Floor, beams, lintels, hoods, railings, screen walls, boundary wall and gate, plumbing etc.</p> <p>6.2 Prepare working drawings of the septic tank and soak-away suitable for the bungalow.</p> <p>6.3 Draw the interior elevations and sections of the kitchen and launderette. NOTE: Drawings should show details of cabinets; and worktop.</p>	<ul style="list-style-type: none"> • Prepare an example of a working drawing using a suitable scale. • Draw the various elevations and sections of given components. • Guide the Students to produce a given drawing to specification. 	<ul style="list-style-type: none"> • A well equipped drawing studio • Drawing instruments and materials

General Objective 7.0: Draw Detail Plan Of The Electrical Services.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
	<p>5.1 Use the presentation floor plan as an aid in determining the types and location of electrical services.</p> <p>5.2 Draw the electrical service plan for the bungalow.</p>	<ul style="list-style-type: none"> • Using the presentation floor plan, determine location of electrical services. 	<ul style="list-style-type: none"> • Drawing showing the floor plan.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN BRICKLAYING, BLOCKLAYING & CONCRETE WORK.

Module: BUILDING DRAWING I	Module Code: CTD - 14	Contact Hours: 5hrs/Wk
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Course Specification: Theoretical/Practical Content

General Objective 8.0: Demonstrate Knowledge Of The Principles And Methods Of Preparing Schedules.

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
8-10	<p>8.1 Explain the meaning of “scheduling” as used in building drawing, state the uses of schedules and typical subjects for schedules.</p> <p>8.2 State the two categories of information in schedule, e.g. a a specification of materials, component of activity. b the location of theses specifications.</p> <p>8.3 Prepare the following schedules for the bungalow: door, windows, electrical installation, plumbing, painting, reinforcement (where necessary), etc</p>	<ul style="list-style-type: none"> • Explain scheduling and describe the use. • Prepare schedules for the following: doors, windows, electrical, plumbing and painting components. • Give assignments and guide the students to prepare schedules for a given building projects. 	<ul style="list-style-type: none"> • Chalk Board • Drawing of a given bungalow

General Objective 9.0: Reproduce Drawings

Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
11-12	<p>9.1 Trace and ink effectively the design and working drawings_ above.</p> <p>9.2 Print out inked or pencil drawing using plan printing machine or a manual printing device.</p> <p>9.3 Assess the quality of drawings from printed copies.</p>	<ul style="list-style-type: none"> • Organize a printing Exercise. • Produce sample copies of drawing. • Guide the students to perform the exercise 	<ul style="list-style-type: none"> • Drawing instrument • Dark Room • Printing Equipment • Posters
13	EXAMINATIONS: 100%		

General Safety Rules in Painting and Decorating

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING		
Module: GENERAL SAFETY RULES IN PAINTING AND DECORATING	Module Code: CPD 10	Contact Hours: 2hrs/WEEK
GOAL: this module is designed to provide the trainee with adequate knowledge of safety to enable him work in safety and avoid danger for himself and other shop users.		
General Objectives:		
On completion of this module, the trainee should be able to:		
1 Know general rules and information in the occupation		
2 Know safety working condition in the work location		
3 Know safety in materials and tools handling		
4 Know safety in scaffold and ladder handling		
5 Know and observe safety in painting works		
6 Know and observe personal safety and be able to use protective clothing and equipment		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GENERAL SAFETY RULES IN PAINTING AND DECORATING		Module Code: CPD 10	Contact Hours: 2hrs/Wk
Module Specification: THEORETICAL CONTENT			
General Objective 1.0: Know General Rules And Information In The Occupation.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
1-2	<p>1.1 Discuss general rules and information required in most work places.</p> <p>1.2 State the general hazards and safety precautions to be observed in a work place.</p> <p>1.3 Explain the federal and state laws regarding explosives, flammable materials, electrical and mechanical equipment, heating devices, compressed air and pressure vessels.</p> <p>1.4 List the proper clothing, respiratory equipment to be used when painting, burning, exposure to dust, toxic hazards and when working in a confined area.</p> <p>1.5 Explain the need to keep and maintain a first aid box and spare safety equipment</p>	<ul style="list-style-type: none"> • List out the rules. • List the hazards and lay emphasis on the dangers involved. • List out the available federal and state laws on the use of explosives and flammable materials. • Show those respiratory equipment and demonstrate their application. • Display a first aid box and explain its uses. 	<ul style="list-style-type: none"> • Safety charts. • Lesson plan. • Overhead projector • Chart board. • Goggles, facemask. • Blasting hood (using audio visual aids/industrial visit). • First aid box • Charts. • Lesson plan • Specimen of essential drugs and first aid materials.
General Objective 2.0: Know Safety Working Condition In The Work Locations.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
	<p>2.1 State the importance of providing and maintaining adequate and safe access to an exit.</p> <p>2.2 List the safety requirements in working areas on a construction site including temporary structures.</p> <p>2.3 List sources of fire accidents.</p> <p>2.4 State the causes of fire accidents.</p> <p>2.5 List and explain types of fire fighting equipment, suitable for a building construction site</p> <p>2.6 Discuss good house keeping in safety-removal of protruding nails, loose materials, debris, excess materials, oil/grease, bulk cement, saws or other wood working equipment, etc.</p>	<ul style="list-style-type: none"> • List the dangers involved in not having exit routes or doors. • Take the student for industrial visit to a site. • Show specimen of fire accident damages. • Give examples of some causes of fire accidents • Demonstrate the proper use of fire fighting equipment e.g. fire extinguisher, sand buckets etc. • Take the student to a workshop for house keeping exercise. 	<ul style="list-style-type: none"> • Chalkboard, visual aids. • Lesson plan. • Video films. • Industrial visit • Visual aid • Chalkboard. • Chalkboard • Fire extinguishers • Blankets, sand bucket etc. • Workshop • House keeping equipment, e.g. • Sweepers, dustbins.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GENERAL SAFETY RULES IN PAINTING AND DECORATING		Module Code: CPD 10	Contact Hours: 2hrs/Wk
Module Specification: THEORETICAL CONTENT			
General Objective: 3.0 - Know Safety In Materials And Tools Handling.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
	3.1 State the dangers involved in lowering or throwing objects from a height. 3.2 State the importance of safe keeping and proper stacking of materials loose materials when not in use. 3.3 Discuss the need to keep free, all platforms, gangways and stairs.	<ul style="list-style-type: none"> • Give a typical example of an accident arising from object thrown from a height • Give an example of material not properly stacked and its danger. • List the danger involved in not keeping gangways free. 	<ul style="list-style-type: none"> • Chalkboard
General Objective: 4.0 - Know Safety In Scaffolds And Ladders Handling.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
	4.1 Describe safe ladder climbing procedures 4.2 State the international standard for erection of scaffolds and ladders. 4.3 Discuss safe loading of scaffolds. 4.4 Explain the safe usage of scaffolds. 4.5 Use ladders for safe access to scaffolding. 4.6 Discuss safe usage of tools and equipment. 4.7 Discuss safe keeping of tools and equipment. 4.8 Explain the safe handling of electrical tools. 4.9 Discuss machinery guards, safest approach for rotating, reciprocating or moving parts. 4.10 Explain the importance of fixing pressure cut-off valve to all compressors. 4.11 State the safe usage of air compressors.	<ul style="list-style-type: none"> • Position a ladder to show safe way of wage. • List the rules. • Show badly loaded and safely loaded scaffolds. • Use a ladder to demonstrate safe access to scaffolding. • Have classroom discussion and question and answer session with emphasis on dangerous use of tools. • Lay emphasis on the common electrical problems associated with painting equipment. • Show specimen of machinery guards. • Draw on chalkboard or use actual compressor equipment to show position of cut-off valve and explain its uses. • Show compressor equipment to students. 	<ul style="list-style-type: none"> • Ladder, wall. • Charts. • Set of scaffold, plants. • Chalkboard, scaffold. • Ladder, scaffold. • Classroom, chalkboard, charts. • Classroom, chalkboard, charts. • Drilling machines. • Sanding machines. • Audio visual aid. • Picture/diagrams

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GENERAL SAFETY RULES IN PAINTING AND DECORATING		Module Code: CPD 10	Contact Hours: 2hrs/Wk
Module Specification: THEORETICAL CONTENT			
General Objective 5.0: Know And Observe Safety In Painting Works.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
8-9	<p>5.1 Discuss safe usage of paints and paint materials such as thinners, cleaning agent.</p> <p>5.2 List the importance of protective materials in painting e.g. gloves, goggles, and respirators.</p> <p>5.3 Discuss general safety in painting works.</p>	<ul style="list-style-type: none"> • Show sample of paints, thinner, cleaning agents. • Show the items i.e. gloves, goggles, respirator and explain their uses • Have class discussion with emphasis on the dangers involved. 	<ul style="list-style-type: none"> • Paints (emulsion & oil based) thinner, cleaning agent, wood/metal. • Goggles, gloves, respirator. • Chart.
	<p>5.4 Describe the general precautions that must be taken while painting inside tanks, vessels and similar confinements.</p> <p>5.5 List the safety materials for sand blasting in painting e.g. blasting hoods with fresh air supply, leather hand gloves, safety shoes and appropriate clothes.</p>	<ul style="list-style-type: none"> • Show typical examples of accidents in vessels/tank painting. • Show item of the sand blasting equipment to students. 	<ul style="list-style-type: none"> • Film strip • Audio visual aid
	<p>5.6 State the importance of checking the component parts and attachment regularly.</p> <p>5.7 List the safety precautions required in sand blasting/chipping during the day or night.</p> <p>5.8 Explain the use of dead-man handle or similar control system in blasting equipment.</p> <p>5.9 State the use of dust extractors when blasting in tanks and similar confined spaces.</p> <p>5.10 List the safety precautions required by operators of blasting pots and workers in the blasting and chipping works.</p>	<ul style="list-style-type: none"> • Demonstrate a typical problem in a tool/equipment. • Display a table showing the precautions and dangers associated with blasting. • Demonstrate the use of a dead-man handle or similar control system. • Demonstrate the use of an extractor in the workshop. • Discuss the danger involved in not following laid down precautions 	<ul style="list-style-type: none"> • Specimen, chart. • Dead-man handles. • Dust extractor, • Lesson plan • Charts. • Chalkboard, • Lesson plan • Overhead projector.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GENERAL SAFETY RULES IN PAINTING AND DECORATING		Module Code: CPD 10	Contact Hours: 2hrs/Wk
Module Specification: THEORETICAL CONTENT			
General Objective 6.0: Know And Observe Personal Safety And Use Protective Clothing And Equipment.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
10-12	<p>6.1 State the personal safety required by workers in painting industries and construction works.</p> <p>6.2 List the protective clothing and equipment required by workers on site.</p> <p>6.3 List the different eye protection for different operations on the construction sites.</p> <p>6.4 State the use of respirators by those working in painting, sandblasting and cement industry etc.</p>	<ul style="list-style-type: none"> • Give different example of a worker in a proper/safe working condition and safety gears. • Display samples of protective clothing and equipment. • Show specimen of this eye protection gear such as facemask, eye goggles, etc. • Show an example of a respirator. 	<ul style="list-style-type: none"> • Pictures • Chalk board • Items of protective equipment • Face mask, eye goggles, etc. • A respirator.
13	EXAMINATIONS: PRACTICAL = 70% THEORY = 30%		

Decorative Painting

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING

Module: DECORATIVE PAINTING

Module Code: CPD 11

Contact Hours: 12hrs/WEEK

GOAL: This module is designed to provide the trainee with adequate knowledge and skills to produce properly finished plain paint work on broken colour work in painting and decorating

General Objectives:

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

- 1 Know all the basic equipment, tools and materials used in decorative painting, their uses and maintenance
- 2 Prepare working drawings materials, sample panels, colour patterns, surfaces and grounds for decorative painting jobs to be carried out.
- 3 Estimate and cost decorative painting jobs
- 4 Understand decorative painting techniques and the health and safety measures associated with them

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: DECORATIVE PAINTING		Module Code: CPD 11	Contact Hours: 2hrs theory, 10hrs practical/wk
Module Specification: Theoretical Content			
General Objective 1.0: Know All The Basic Tools And Materials Used In Decorative Painting, Their Application And Maintenance.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1-6	1.1 Describe the common hand tools used in decorative painting and their application e.g. (brushes (assorted), rollers, knives, hammers, pincers, trowels, etc.)	• Display before the student samples or pictures of the various tools.	• Assorted brushes, rollers, knives, trowels, pincers, hammers, etc.
	1.2 State the composition and uses of preparatory materials used in decorative painting e.g. primers, sealers, fillers, undercoat, egg shell, gloss vanishes, etc.	• Prepare and show students a list of materials used in painting and decorating work explaining their composition and uses.	• Various primers, sealers, fillers glass undercoat, egg shell, vanishes, etc.
	1.3 Identify the following equipment used in decorative, painting and describe their uses: torches, buckets, paint kettles, scaffolds, etc.	• Take students to a painting site and explain each of the equipment used in decorative painting and their uses.	• Torches, Buckets, Paint kettles, Scaffolds, etc.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: DECORATIVE PAINTING		Module Code: CPD 11	Contact Hours: 2hrs theory, 10hrs practical/wk
Module Specification: Theoretical Content			
General Objective 2.0: Prepare Working Drawing, Materials, Sample Panels, Colour Patterns, Surfaces And Grounds For Decorative Painting Jobs To Be Carried Out			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
7-8	2.1 Identify the various components of a building in a given working drawing, e.g. (i) primary elements e.g. walls, columns, etc. (ii) secondary elements e.g. staircases, doors, windows, etc.	• Prepare a wall labeled chart showing the various components of Building, e.g. Primary Elements and Secondary Elements.	• Walls, columns, staircases, doors, windows, etc.
	2.2 Scale a given drawing to size.	• Give students exercises on scale drawing.	• A well prepared chart drawn to a given scale.
	2.3 Prepare colour patterns to specifications.	• Show to students already prepared colour pattern. Give them exercise on colour pattern.	• Display various colour specifications work.
	2.4 State the physical properties and uses of the following materials in decorative painting: turpentine, white spirit, degreasing solvent, abrasives, water, etc	• Show students each of the materials and explain their uses in relation to Decorative work.	• Turpentine, white spirit, degreasing solvent, abrasives, water, etc.
EXAMINATIONS: Practical 70%; Theory = 30%			
General Objective 3.0: Know How To Prepare Estimate And Cost Of Decorative Painting Work			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1-3	3.1 Identify the instruments used for measuring and setting out projects in decorative painting e.g. metric rule, plumb bob and line, spirit level, scale rule, try square.	• Display and explain the various measuring and setting out instruments for decorative painting.	• Metric rule, plumb bob and line, spirit level, scale rule, try square etc.
	3.2 Explain the basic considerations and procedures in the estimating and costing of decorative painting jobs.	• Prepare estimate and cost for a typical decorative work for the students to see.	

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: DECORATIVE PAINTING		Module Code: CPD 11	Contact Hours: 2hrs theory, 10hrs practical/wk
Module Specification: Theoretical Content			
General Objective 3.0: Know How To Prepare Estimate And Cost Of Decorative Painting Work			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
4-5	3.3 Calculate area of plain surfaces to be decorated e.g. rectangular, circular and triangular surfaces.	• Give exercise on surface area calculation, and provide guide to students work.	• Display basic formula on surface area calculation, and supervise the students
6-7	3.4 Calculate the quantity of paint to be used in decorating a given surfaces.	• Give simple exercise on material calculation.	• Guide student with worked examples.
8-9	3.5 Estimate the cost per square meter of decorating a surface taking into consideration: (i) time element (ii) materials (iii) overhead and profit (iv) nature of background, etc.	• Give more exercise on calculation on estimating/costing of materials.	• Guide students with worked examples.
10	4.4 Distinguish between the following broken colour effects: rag-rolling effect, sponge stippling effect, spatter effect, shading, and multi-colour.	• Show students the various broken colour effects and explain the difference between them.	• Samples of each effect
General Objective 5.0: Understand The Principles And Practice Of Interior Decoration Work.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
11-12	5.1 Identify the various materials used for interior decoration work e.g. Types of pictures, flowers, fabrics etc.	• Make available to students various decorative materials and fabric and explain their application.	• Display a picture of decorative materials.
	5.2 Discuss the importance of interior decoration in homes, offices, public buildings etc.	• Take students to well decorated offices and places of interest. Explain details of each decoration.	• Visit to public buildings and standard Hotels.
	5.3 List various items used to enhance interior decoration work. E.g. balloons, motive designs, art works. Etc.	• Explain and show each of the items of interior decoration.	• Display a chart containing decorative items and colour scheme chart.
13	EXAMINATIONS: Practical = 70%; Theory = 30%.		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: DECORATIVE PAINTING		MODULE CODE: CPD 11	CONTACT HOURS: 10HRS/WEEK
MODULE SPECIFICATIONS: PRACTICAL CONTENT			
General Objective 1.0: Prepare Working Drawing, Materials, Sample Panels, Colour Patterns, Surfaces And Grounds For Decorative Painting Jobs To Be Carried Out.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1 - 2	1.1 Prepare colour patterns to specifications.	<ul style="list-style-type: none"> • Explain and show to students already prepared colour pattern. Give them exercise on colour pattern. 	<ul style="list-style-type: none"> • Display of various colour specification works.
3 - 4	1.2 Prepare various substrates (including new, previously painted and badly cracked substrates e.g. wood (hard and soft woods), metal (ferrous and non-ferrous), plaster etc. Note: Use appropriate technique for the preparation of the substrates, viz: cleaning, rubbing down, burning off, solvent removal, stopping and filling.	<ul style="list-style-type: none"> • Demonstrate the preparation of various substrates e.g. wood, metal and plaster surface. 	<ul style="list-style-type: none"> • Sample of hard and soft wood, ferrous and non-ferrous metals plastered surfaces etc.
5 - 7	1.3 Erect scaffold for a given job e.g. tressles and board to form a working platform.	<ul style="list-style-type: none"> • Take students on exercises on erection and dismantling of specified scaffold. 	<ul style="list-style-type: none"> • Scaffold items and accessories.
	1.4 Dismantle the scaffold erected in 1.3 above.	- Do -	- Do -
General Objective 2.0: Estimate And Cost Decorative Painting Jobs.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
	2.1 Measure and set out given projects in decorative painting. 2.2 Calculate area of plain surfaces to be decorated e.g. rectangular, circular or triangular surfaces. 2.3 Calculate quantity of paints to be used in decorating the surfaces. 2.4 Estimate the cost per square meter of decorating a surface taking into consideration: (i) time (ii) materials (iii) overhead and profit (iv) nature of background, etc.	<ul style="list-style-type: none"> • Give exercise to students on measurement and set out for decorative work. • Give exercise on calculation with a guide to students. • Give simple exercise on material calculation. • Give more exercise on calculating of the cost of material. 	<ul style="list-style-type: none"> • Display a chart on similar project. • Display basic formula on calculating area.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: DECORATIVE PAINTING		MODULE CODE: CPD 11	CONTACT HOURS: 10HRS/WEEK
MODULE SPECIFICATIONS: PRACTICAL CONTENT			
General Objective 3.0: Techniques In Decorative Painting.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
8-10	<p>3.1 Paint panel Board using the correct size of brushes, appropriate technique, painting sequence and observing safety precautions.</p> <p>3.2 Paint paneled door using the correct size of brushes, appropriate technique and safety practice and following the correct painting sequence, i.e. panels, mutins, rails and stiles.</p>	<ul style="list-style-type: none"> • Explain and demonstrate practical painting of panel board observing basic sequence and safety regulation. • Explain and demonstrate the proper sequence of panelled door painting 	<ul style="list-style-type: none"> • Sample of a painted panel board displayed. • Chart of a well labeled paneled door indicating sequential stages of painting. • Paint and brushes.
11-12	<p>3.3 Paint wall area using the correct size of brushes, appropriate technique and safety practice and following the correct painting sequence i.e. ceiling, cornice frieze, wall filling, dado, picture rails, dado rail, skirting board.</p> <p>3.4 Paint to produce the broken colour effects.</p>	<ul style="list-style-type: none"> • Take the students to a project site to see real practical painting of wall area. Explain to them sequence and safety practices. • Demonstrate before the students each of effects and produce sample. Guide them to do same. 	<ul style="list-style-type: none"> • Display samples of each of effects.
	<p>3.5 Maintain proper work environment during and after painting by:</p> <ol style="list-style-type: none"> Displaying wet sign at appropriate positions on wet or partially completed work. Placing barriers at appropriate positions on completed or partially complete decorative painting jobs. Removing paint drops and scaffold after painting. 		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: DECORATIVE PAINTING		MODULE CODE: CPD 11	CONTACT HOURS: 10HRS/WEEK
MODULE SPECIFICATIONS: PRACTICAL CONTENT			
General Objective 4.0: Perform Interior Decoration Work.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
	4.1 Prepare an interior decorative pattern work to specification. Note: Students should be taken to well decorated offices and public places of interest to appreciate the importance of interior decoration.	• Demonstrate some decorative work before the students.	• Provide some sample of decorative work.
13	EXAMINATIONS: Practical = 70%; Theory = 30%		

Spray Painting

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING

Module: SPRAY PAINTING

Module Code: CPD 12

Contact Hours: 2hrs Theory/10hrs Practical

GOAL: this module is designed to provide the trainee with adequate knowledge and skills required to carry out spray painting jobs with proficiency

General Objectives:

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

1. Know the basic properties and application of various finishing and refinishing materials for metal and wood surfaces.
2. Know the tools, materials and equipment used in spray painting work.
3. Know safety regulations and organisational requirements in vehicle painting workshop.
4. Measure spray-painting jobs and be able to plan and cost finishing and refinishing jobs.
5. Understand the nature and techniques of preparing various surfaces for spray painting.
6. Understand the techniques involved in various finishing and refinishing processes and be able to execute vehicle spray-painting process proficiently.
7. Understand the maintenance of spray guns and other tools used in spray painting

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objectives 1.0: Know The Basic Properties And Application Of Various Finishing And Refinishing Materials For Metal And Wood Surfaces.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
1 - 3	1.1 State four reasons for painting i.e. protection, hygiene, and decoration identification.	<ul style="list-style-type: none"> Show examples of where painting is used for protection, hygiene, decoration, identification, etc. 	<ul style="list-style-type: none"> Pictures, Audiovisual. Equipment. Lesson plan.
	1.2 List the basic ingredients in the composition of paint and state their functions e.g. pigments, binder or film former, thinner or solvent, extender, additives (thickness, flow agents, thixotropic agents, accelerators, inhibitors and anti-oxidants).	<ul style="list-style-type: none"> Explain each of the ingredients in relation to their function. 	<ul style="list-style-type: none"> Specimen of each material.
	1.3 Define and explain the importance of the following properties of paints: consistency, opacity (hiding power), spreading capacity, adhesion, elasticity (flexibility), density, and drying speed, flow durability.	<ul style="list-style-type: none"> Use question and answer technique to explain the properties of paints.. Explain each property to students with emphasis to their functions 	<ul style="list-style-type: none"> Charts Lesson plan Specimen of paints.
	1.4 Describe the composition, basic properties and general application of the following classes of auto-body paints: a. Cellulose lacquer and cellulose synthetic paints; b. Synthetic enamels (c) acrylic enamels. c. Epoxy/Two pack materials.	<ul style="list-style-type: none"> Display samples showing the different classes of auto-body paint. 	<ul style="list-style-type: none"> Display paint specimen.
	1.5 Identify at least one form of supply (trade brand) of each of the classes of autobody paints in 1.3 in the Nigerian Market.	<ul style="list-style-type: none"> Provide specimen of paint of each of the classes of paint in Nigerian market. 	<ul style="list-style-type: none"> Paint specimen.

<p>1.6 Identify and explain various types of defects of paints in the tin. State their causes and methods of prevention.</p> <p>Note: Examples of defects should include: flattening, feeding or livering: settling; skinning, etc.</p>	<ul style="list-style-type: none"> List types of paint defects, explain their causes and method of prevention. 	<ul style="list-style-type: none"> Chalkboard Lesson note Video clips
<p>1.7 Explain the importance of the following with regards to automobile paints: shelf life, viscosity, spraying temperature, drying time.</p>	<ul style="list-style-type: none"> Explain each concept in relation to spray painting 	<ul style="list-style-type: none"> Chalkboard
<p>1.8 Define the term “paint system” and explain its importance in painting.</p>		<p>- Do -</p>
<p>1.9 Identify factors that may influence choice of a paint system e.g. availability and cost of paint and painting equipment, drying time. Standard of finish required, etc.</p>		<ul style="list-style-type: none"> Display samples of equipment used for painting.
<p>1.10 Explain the functions of the operations below and name the common materials used in the operations and describe their properties: degreasing, filling, stopping, priming, burnishing, sealing, feather-edging, flattening, tacking off.</p>	<ul style="list-style-type: none"> Demonstrate each function Explain each of the operations 	<p>- Do -</p>
<p>1.11 Explain the difference between straight paints and metallic paints in terms of their basic composition, general method of application and peculiar problems.</p>	<ul style="list-style-type: none"> Explain each of the paints and their composition. 	
<p>1.12 Specify paint systems suitable for large metallic surfaces e.g. public service vehicles, insulated and refrigerated bodies, ambulances, furniture vans, caravans, coaches.</p>	<ul style="list-style-type: none"> Display pictures and samples of paints and explain specific area of application. 	<ul style="list-style-type: none"> Video charts, pictures, facemasks, conveyor, spray gun, air compressor.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 2.0: Know The Tools, Materials And Equipment Used In Spray Painting Work.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
4-6	2.1 Identify spray painting tools outlining their parts and uses: e.g. vanish brushes, touch up brushes (assorted), scrapers, knives (assorted) strainers, etc.	<ul style="list-style-type: none"> • Explain the use of each tool used in the spray shop. 	<ul style="list-style-type: none"> • Spray-painting tools.
	2.2 Identify various types of sprayable materials and state their compositions, properties and uses e.g. water paints, etching primers and surface primers, oil paints, rust removers, lacquers, nitro cellulose, etc.	<ul style="list-style-type: none"> • Display samples of sprayable materials. • Explain each of the displayed materials to students 	<ul style="list-style-type: none"> • Water paint • Primer paints. • All relevant materials
	2.3 Identify spray painting equipment including petrol and power driven types e.g. spray guns (various types e.g. suction, gravity, pressure, internal/external mix etc.) high pressure equipment, volume spray equipment, sanders, hoses (air and fluid types), spray booths (wet and dry), drying equipment (infra-red lamps and ovens), extractor fans, air compressors, ancillary equipment including face masks, protective wears, etc.	<ul style="list-style-type: none"> • Display spray-painting equipment e.g. petrol and power driven types and explain their operational principle and application. 	<ul style="list-style-type: none"> • Spray gun, Spray booths, extractor fans, etc. • Visit to a well-equipped spray booth.
	2.4 Explain the working principles/functions of the spray-painting equipment and their relative merits.	<ul style="list-style-type: none"> • Demonstrate the working principles/functions of spray painting equipment e.g. spray guns, face masks, protective wear, etc. 	<ul style="list-style-type: none"> • Spray gun, brush, hose, air compressor, driers, etc. • Visit auto shops for practise observation.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 3.0: Know Safety Regulations And Organizational Requirements In Vehicle Painting Workshop.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
7-9	3.1 Explain the responsibilities of employer and employees with regard to safety in a vehicle painting shop.	<ul style="list-style-type: none"> Use display charts, showing safety measures. Use question and answer technique to explain the importance of good safety consciousness to students. Explain the importance to students 	<ul style="list-style-type: none"> Audio visual aids, films and pictures of how safety can be maintain in a vehicle paint shop.
	3.2 List health hazards likely to be encountered in a painting and industrial finishing workshop, state their causes and preventive measures. 3.3 Note: Examples of health hazards may include: fire and burns, industrial dematitis, toxic fumes, dust, etc.	<ul style="list-style-type: none"> Use charts, questions and answer's to explain the effect of each of the harzards as it affects the painter 	<ul style="list-style-type: none"> Charts, Audio visual aids.
	3.3 Describe a typical material storage system in a painter's workshop.	<ul style="list-style-type: none"> Visit the college workshop and show how materials are stored. 	
	3.4 Identify and state the functions of basic safety equipment essential for the painting shop e.g. fire extinguisher, face mask and respirators, overall, fume and dust extractors, safety shoes or boots, industrial gloves, safety helmet, goggles, etc.	<ul style="list-style-type: none"> Display some safety equipment e.g. fire extinguisher, face mask, etc. and explain the functions of each of the equipment. 	<ul style="list-style-type: none"> Sample of the equipment
	3.5 Draft safety rules and regulations for use in a vehicle-painting workshop.	<ul style="list-style-type: none"> Prepare a chart of safety rules and regulations used in a vehicle-painting workshop. 	<ul style="list-style-type: none"> Chart

	3.6 Identify the basic considerations in the location and planning of layout and facilities of a vehicle painting shop.	<ul style="list-style-type: none"> • Explain factors to be considered in the location and planning of layout of a vehicle painting shop. • Visit an established vehicle painting shop with the students and explain a typical workshop layout. 	• Visit to a vehicle spray shop.
	3.7 State the necessary booth conditions for effective spraying and describe methods of their attainment e.g. pure air, adequate temperature and humidity, proper lighting.	<ul style="list-style-type: none"> • List conditions for effective spraying techniques and demonstrate methods by which it can be attained. 	• Lesson note
	3.8 Explain the relative merits of the following methods of moving vehicles in the paint shop: (a) manual method (b) mobile hydraulic jacks (c) turn-table (d) rail and bogie system.	<ul style="list-style-type: none"> • List the advantages and disadvantages of the various methods of moving vehicles in a paint shop 	• Visit to an auto workshop for observation demonstration.
	3.9 Explain the basic elements in the organisation of a vehicle painting shop.	<ul style="list-style-type: none"> • Use diagram, charts and audio visual aids to explain the basic elements organisation of painting shop. 	• Charts and diagrams.
General Objective 4.0: Measure Spray Painting Jobs And Be Able To Plan And Cost Finishing And Refinishing Jobs.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
10-12	4.1 Explain the need for adequate planning for finishing and refinishing jobs and identify the basic elements in the job planning e.g. size, nature and condition of paint material, standard of finish, paint system to be used, method of application and equipment availability, etc.	<ul style="list-style-type: none"> • Explain each of the elements 	<ul style="list-style-type: none"> • Charts and diagrams. • Audio visual aids and slides
	4.2 State the importance of costing before commencing a job.	<ul style="list-style-type: none"> • Use question and answer technique to explain the importance of costing. 	• Chalkboard.
	4.3 Identify and explain the elements in the costing of finishing and refinishing jobs, e.g. paint material preparatory, material cost, labour cost, (man hour), labour hourly rate, cost of overheads, profit.	<ul style="list-style-type: none"> • Give the students exercises to perform on costing and provide a guide. 	<ul style="list-style-type: none"> • Lesson plan • Exercise sheet.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 4.0: Measure Spray Painting Jobs And Be Able To Plan And Cost Finishing And Refinishing Jobs.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
	4.4 Explain the general procedures in the costing of refinishing jobs.	<ul style="list-style-type: none"> • Give students some exercises to perform and supervise their work. 	<ul style="list-style-type: none"> • Lesson plan.
	4.5 Determine the requirement for the application of paint taking into consideration: (i) volume and air pressure of paint (ii) distant from power source to the object being sprayed.	<ul style="list-style-type: none"> • List the requirements for paint application Give student 	<ul style="list-style-type: none"> • Charts, Visual aid.
	4.6 Calculate the surface area to be spray-painted and the quantity of paint required.	<ul style="list-style-type: none"> • Give students exercises and assist those that need extra help after working out some examples 	
13	4.7 Determine the cost for producing a finished spray job taking into consideration materials, time, profit and overhead.	<ul style="list-style-type: none"> • Work some examples. • Give students exercises and assist those that need help. Use question and answer. 	<ul style="list-style-type: none"> • Lesson notes
General Objective 5.0: Understand The Nature And Technique Of Preparing Various Surfaces For Spray Painting.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
1-3	5.1 Identify the qualities of various sprayable surfaces e.g. metal (ferrous and non-ferrous) fibre glas, reinforced plastics, wood (hard and soft) plaster/rendered surface, etc.	<ul style="list-style-type: none"> • List the qualities of surface of materials and explain the composition of each material. 	<ul style="list-style-type: none"> • Display samples. • Chalkboard • Lesson note

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 6.0: Understand The Techniques Involved In Various Finishing And Refinishing Processes And Be Able To Execute Vehicle Spray Painting Process Proficiently.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
4-6	6.1 Explain the rusting action and other forms of metal corrosion including their activating conditions.	• Show examples of various rusted metal surface and explain the conditions	• Chalkboard. • Rusted metal surface
	6.2 List general measures for the prevention of rusting and other forms of metal corrosion.	• State measures for prevention of rust action on metal surfaces	• Charts, Audiovisual aids, diagrams.
	6.3 Describe application methods and equipment used in relation to the nature of work, paint system and finish required in the following painting processes: brush painting, spray painting, dipping process, flow coating application, electro-deposition process, wet-on-wet application.	• Discuss the various methods of painting processes by brush, spray gun, dipping, flow coating, etc.	• Chalk board • Visual aids diagrams/posters • Lesson note.
	6.4 Describe briefly the industrial “high-baked”, “low-baked and stoving processes. Note: A visit to automobile assembly plants e.g. Dornier, Peugeot, Leyland and ANAMCO is recommended.	• Use question and answers to explain the process.	• Chalk board • Charts. • Exercise sheet.
	6.5 Outline the general procedure for carrying out complete spray over bare metal and respraying over an existing finish for jobs involving single and multi-colours.	• Explain the procedure for spraying and respraying of metal.	• Charts. • Audio visual aids.
	6.6 State the relative merits and demerit of hot and cold spraying methods.	• Enumerate the merits and demerits of hot and cold spraying	• Charts.

<p>6.7 Explain the importance of adequate preparation of surfaces for painting and describe various methods of preparing metal and wood surfaces for finishing and refinishing processes.</p> <p>NOTE: Methods of preparation may include (a) use of paint remover, (b) abrasive cleaning (c) acid pickling and treatment with phosphate liquid (d) flame cleaning (e) washing with cellulose thinner or white spirit (f) use of aluminum primer for resinous woods (g) shot blasting, etc.</p>	<ul style="list-style-type: none"> • Explain with the help of well-labeled chart and real material as specified. 	<ul style="list-style-type: none"> • Sample of prepared surfaces. • Lesson note
<p>6.8 Identify the essential general final detail operations after spraying and explain their importance e.g. removal of masks, burnishing, polishing, removal of over spray, cleaning and refitting of parts removed, vacuum cleaning of the interior, lining work.</p>	<p>- Do -</p>	<ul style="list-style-type: none"> • Lesson plan • Chalkboard • Exercise sheet.
<p>6.9 Identify defects in spray painting, explain their causes and preventive measures e.g. blistering, blooming, blushing, bridging, cob webbing, dry spray, battiness, over-spray, lifting, orange peel, pin-holing, (popping cissing) runs, sags, curtains, shelving, discolouration, grinning, etc.</p>	<ul style="list-style-type: none"> • Visit an auto workshop with the student to explain each defect. 	<ul style="list-style-type: none"> • Visit to an auto workshop.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 7.0: Understand The Maintenance Of Spray Guns And Other Tools Used In Spray Painting.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
7-8	7.1 Identify and replace defective parts of the spray gun.	<ul style="list-style-type: none"> • Mention the parts of the equipment that requires periodic replacement and show how it could be replaced. 	<ul style="list-style-type: none"> • Chalkboard. • Exercise sheet.
General Objective 8.0: Know The Basic Properties And Application Of Various Wood Finishes On Different Types Of Wood Surfaces.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
9-10	Identify types of wood suitable for furniture finishing, select material suitable for furniture finishing:- <ol style="list-style-type: none"> a. Type of wood b. Type of finish 	<ul style="list-style-type: none"> • Teacher uses question and answer to introduce different kinds of woods to students. • Show sample of woods to students. • Shows physically the material for finishing. • Demonstrate to students the use of spray painting equipment. • Demonstrate the sequence of finishing a wood using spray painting method. • Demonstrate the use of French polish by hand polishing. • Demonstrate polishing and burnishing on a sprayed or polished wood surface. 	<ul style="list-style-type: none"> • Lesson plan. • Sample of various types of wood. • Overhead projector. • Chalkboard. • Different kinds of wood finishing materials. • Spray painting equipment.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours: 2hrs Theory/10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective: 9.0 Know The Basic Properties And Application Of Various Wood Finishes On Different Types Of Wood Surfaces.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources.
11-12	9.1 Identify various types of wood used in making furniture e.g. oak, maple, walnut, pine, mahogany rosewood, etc.	• Explain to student each of the woods and their characteristics	• Specimen of woods • Lesson note
	9.2 State reasons for furniture finishing e.g. decoration, protection, and sanitation.	• Explain the 3 main reasons for wood finishing	
	9.3 List all the safety and health regulation as it affects wood finishing e.g. cellulose regulations.	• List and explain the health and safety regulations to students	• Charts • Safety posters
	9.4 Explain various methods of wood finishing application e.g. spray painting, brushing, hand polishing.	• Explain each of the wood finishing techniques to students.	• Specimen of various wood finishes.
	9.5 Select required finishing material for the wood e.g. cellulose wood finishing, varnishes, French polish....	• Explain to students the importance of proper selection of materials.	• Materials • Lesson note
	9.7 Select appropriate method of application of wood finishing as specified. Cellulose wood finish should be sprayed while French polish should be by hand polishing.	• Explain each of the concepts of paint application to students	
13	EXAMINATIONS: Practical 70% Theory 30%		

PROGRAMME: NATIONAL AND ADVANCED TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: SPRAY PAINTING		Module Code: CPD 12	Contact Hours:
Module Specification: PRACTICAL CONTENT:			
General Objective: 1.0 Know The Basic Properties And Application Of Various Wood Finishes On Different Types Of Wood Surfaces.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
	a. Select the materials to be sprayed. b. Select appropriate tools and equipment. c. Prepare surface ready for spray painting d. Carry out spry painting work to specification.	<ul style="list-style-type: none"> • Demonstrate to students the use of spray painting equipment. • Demonstrate the sequence of finishing a wood using spray painting method. • Demonstrate the use of french polish by hand polishing. • Demonstrate polishing and burnishing on a sprayed or polished wood surface. 	<ul style="list-style-type: none"> • Spray-painting equipment. • Materials • Safety equipment and wears
General Objective 5.0: Know The Basic Properties And Application Of Various Wood Finishes On Different Types Of Wood Surfaces.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
1 - 2	5.1 Prepare a wood surface to receive a finishing coat. e.g. sand papering, dusting off, filling with paste or liquid fillers, staining (if required) distressing and application of sanding sealer.	• Guide the students to carry out finishing work on wooden surface to specification using specified method or process	Wood, Sandpaper, and fillers.
3 - 4	5.2 Select required finishing material for the wood e.g. cellulose wood finishing, varnishes, french polish....	- do -	Finishing materials
5 - 6	5.3 Select appropriate method of application e.g. cellulose wood finish should be sprayed while french polish should be by hand polishing.	- do -	Brush Spraying equipment Materials
7 - 8	5.4 Apply cellulose based finishes by means of spray painting observing all rules and regulations attached to spraying.	- do -	Spraying equipment Safety gear

PROGRAMME: NATIONAL AND ADVANCED TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.

Module: SPRAY PAINTING

Module Code: CPD 12

Contact Hours:

Module Specification: PRACTICAL CONTENT:

General Objective 5.0: Know The Basic Properties And Application Of Various Wood Finishes On Different Types Of Wood Surfaces.

Week	Specific Learning Outcome	Teacher Activities	Learning Resources
9 - 10	5.5 Restore lustre to surface with overspray after cellulose application by means of: (i) polishing (ii) burnishing.	- do -	Polish Brush and materials
11 - 12	5.6 Apply french polish on plain as well as intricate surfaces by means of hand polishing and burnishing.	- do -	- do -
	5.7 Apply oil based finishes such as clear furnishes.	- do -	- do -
	5.8 The student to apply safety precaution in spray painting.	- do -	- do -
	a. Metal surface for spray painting b. Select material for painting. c. Prepare the surface e.g. welding minor joints, repairing and using body filler, cleaning sanding, sealing stopping etc d. Dry the prepared surface e. Mask up job prior to spray painting. f. Spray test an area taking care to adjust (i) Material setting, (ii) pressure, etc. g. Organise an executive spray painting operation h. Inspect finishing and refinishing jobs for finish standard and defects. i. Take preventive methods against in metal surface such as vehicle body spray painting.	• Guide the students to select, prepare surface and carry out spray painting operation of metal surface e.g. vehicle	• Materials • Spray equipment • Safety wears and equipment

PROGRAMME: NATIONAL AND ADVANCED TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.

Module: SPRAY PAINTING

Module Code: CPD 12

Contact Hours:

Module Specification: PRACTICAL CONTENT:

General Objective 5.0: Know The Basic Properties And Application Of Various Wood Finishes On Different Types Of Wood Surfaces.

Week	Specific Learning Outcome	Teacher Activities	Learning Resources
	<ul style="list-style-type: none"> a. Maintenance in spray painting b. Identify and replace defective parts of spray gun c. Dismantle the gun set-up d. Clean up the spray gun components with appropriate solvent. e. Grease and oil spray gun components to prevent rust f. Re-assemble spray gun components g. Maintain other tools used in spray painting h. Tidy up work and work place 	<ul style="list-style-type: none"> • Guide the students to perform maintenance operation on assigned spray painting equipment 	<ul style="list-style-type: none"> • The equipment to be maintained • Solvent • Oil and or grease etc
13	EXAMINATIONS: Practical = 70%; Theory =30%		

Wall Hanging

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING		
Module: WALL HANGING	Module Code: CPD 13	Contact Hours: 2hrs Theory/10hrs Practical
GOAL: this module is designed to provide the trainee with adequate knowledge and skills to carry out wall hanging jobs with proficiency		
General Objectives:		
On completion of this module, the trainee should be able to:		
<ol style="list-style-type: none"> 1. Know and use appropriate tools, materials and equipment required for all aspects of wall hanging 2. Know the quantity of materials and the cost for completing a wall hanging job 3. Prepare materials and equipment required for completing wall hanging job 4. Hang wall hangings (paper) to various surfaces 		

YEAR ONE TERM 3

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: WALL HANGING		Module Code: CPD 13	Contact Hours: 2HRS Theory, 10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective: 1.0 Know And Use Appropriately The Tools, Materials And Equipment Required For All Aspects Of Wall Hanging.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
1 - 2	1.1 Identify specific tools used in wall hanging stating their parts and application e.g. paper hanging brush, scissors or shears, seam and angle rollers, felt rollers, casing wheels.	<ul style="list-style-type: none"> • Draw and label the parts of tools. Show the students the actual tools. Demonstrate how to use the tools. 	<ul style="list-style-type: none"> • Paper hanging brush, scissors or shares, steam and angle roller. Felt rollers, casing wheel.
	1.2 Identify materials used in wall hanging stating their composition, properties and uses e.g. adhesives (assorted), lining papers (assorted), wall hangings (assorted), etc. 1.3 Identify specific equipment used in wall hanging stating their specific functions	<ul style="list-style-type: none"> • The teacher to bring the materials to the classroom. • Explain each of the materials and their composition, properties and uses. 	<ul style="list-style-type: none"> • Different types of adhesives. • Lining papers.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: WALL HANGING		Module Code: CPD 13	Contact Hours: 2HRS Theory, 10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 2.0: Know the Quantity of Materials and the cost for completing a Wall hanging Project.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
5-6	2.1 Identify the instruments used for measuring and setting out projects in wall hanging: metric rule, tape rule, scale rule.	<ul style="list-style-type: none"> • The teacher to draw and label the metric rule, tape rule and scale rule. • Tell the students the use of each of the measuring tools above. • Demonstrate to the student how each of them is used in particular situation. • Ask students to draw the measuring tools. 	<ul style="list-style-type: none"> • Metric rule, tape rule and scale rule • Lesson note • Chalk board
	2.2 Calculate the area of surfaces for wall hanging.	<ul style="list-style-type: none"> • The teacher to give the formulae for calculating the area of rectangular surfaces, triangular surfaces and circular surfaces. 	<ul style="list-style-type: none"> • The surface to be use for wall hanging. • Metric rule, tape rule and scale rule. • Models of Mathematical shapes
7 - 8	2.3 Describe various standard sizes of wall hanging e.g. 10.05m x 530mm. Note: Available British, American or other international standards could be used.	<ul style="list-style-type: none"> • The teacher to bring the standard paper to the Class (British and American) and 	
	2.4 Calculate the quantity of materials required for a given wall hanging job e.g. wall hangings, adhesives, lining papers.	<ul style="list-style-type: none"> • The teacher to bring the required materials and do a practical lesson with them. 	<ul style="list-style-type: none"> • Wall hanging papers, adhesives, lining papers.
9 - 10	2.5 Cost a wall hanging job taking into consideration (i) time (ii) material (iii) area of surface to be covered (iv) labour cost (iv) profit/overhead. Note: Student should know also standard cost of wall hanging per meter.	<ul style="list-style-type: none"> • The teacher should guide the students to cost a wall hanging job, taking into consideration all the materials to be used, time, materials, the surface area, the labour cost, overhead and profit should be calculated using stand cost of wall hanging per meter. • Give the students different surface areas to calculate the total cost. 	<ul style="list-style-type: none"> • Worked examples as a guide to students.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: WALL HANGING		Module Code: CPD 13	Contact Hours: 2HRS Theory, 10hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 3.0: Prepare Materials And Equipment Required For Completing Wall Hanging Job.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
11	3.1 Identify the various components of building in given working drawings for wall hanging based on (i) primary elements e.g. walls, ceilings etc, (ii) secondary elements e.g. staircases, wall partitions or claddings.	<ul style="list-style-type: none"> • The teacher to bring a working drawing to show students the parts of the building. • The teacher can use the workshop or classroom building to show them the main parts of a building. • Take the students where they can see stair cases, wall partitions or claddings. 	<ul style="list-style-type: none"> • Visit to a construction site.
12	3.2 Determine the sizes of surfaces of the wall prepared from given drawings using the scale rule.	<ul style="list-style-type: none"> • The teacher to emphasize the use of scale in a working drawing. • The scale could be calculated to know the exact surface to use for wall hanging. 	<ul style="list-style-type: none"> • Sample of a finished job.
13	EXAMINATIONS: PRACTICAL = 70% THEORY = 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: WALL HANGING		Module Code: CPD 13	Contact Hours: 12RS/WEEK
Module Specification: PRACTICAL CONTENT			
General Objective 1.0: Select And Use Appropriately The Tools, Materials And Equipment Required For All Aspects Of Wall Hanging.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
1 - 2	1.1 Select and use as appropriate wall hanging tools, equipment and materials in given jobs.	• Guide the students to select, use and maintain appropriately wall hanging tools and materials	• Paper hanging brush, a pair of scissors, angle rollers and casing wheels.
	1.2 Undertake care and maintenance of tools and equipment in use.		• Bring few tools and equipment common in wall hanging.
General Objective: 2.0 Prepare Materials And Equipment Required For Completing Wall Hanging Job.			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
3 - 4	2.1 Select colour pattern to specifications.		• Colour pattern chart.
	2.2 Prepare substrates for wall hanging e.g. wood, metal, plaster, Note: Ideal surface should be used i.e. slightly porous surface (b) The surfaces, of the substrates will include: new surfaces, previously painted surfaces, badly defected surfaces. (c) The technique to be used in the preparation will include: cleaning, rubbing down, burning off, solvent removal, stopping and filling, painting, undercoating, application of the appropriate ground coat.	• Guide the students on the selection of colour pattern, preparation of substrates and wall hangings to specification	• Metal surfaces • Wood surfaces • Plaster surfaces.
5	2.3 Prepare for wall hanging operations as follows: a. trim the edges of wall hangings (paper) b. cut wall hangings (paper) to specification c. match and shade the prints of the wall hangings (paper) d. set and prepare appropriate adhesive for the material to be hung e. set scaffold or trestles as appropriate with board(s) to form a working platform f. set paste table in a convenient position.	• Guide the students to carry out wall hanging operation to specification	• Wall paper • A pair of scisors • Paper hanging brush. • Steam and angle rollers. • Casing wheels.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: WALL HANGING		Module Code: CPD 13	Contact Hours: 12RS/WEEK
Module Specification: PRACTICAL CONTENT			
	General Objective: 3.0 Hang Wall Hanging (Paper) To Various Surfaces.		
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
6	3.1 Apply adhesive (see 3.54) in an even film of adequate weight avoiding soiling of the face of the wall hanging (paper), paste table, tools and hands.	- do -	• Adhesives • Wall hanging brush
7	3.2 Fold wall hanging (paper) as appropriate to ensure ease of handling during hanging.	- do -	• Wall hanging paper.
8	3.3 Plumb lines using plumb bob and line to strike a line for the first length of wall hanging (paper) at the appropriate place.	- do -	• Plumb line • Plumb Bob.
9 - 10	3.4 Hang the wall paper to plumbed and struck lines avoiding greases, blisters, tears, and other defects.	- do -	• Greases, blisters, tears.
11-12	3.5 Cut wall hangings accurately to angles and around obstructions avoiding damages to or solid of adjacent surfaces.	• Guide the students to cut wal hanging materials accurately to minimise wastage	• A pair of scissors or shares.
	3.6 Observe safety precautions associated with wall hanging.		• A chat on safety precautions.
13	Examination: Practical 70% Theory 30%		

Colour Mixing Matching

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING

Module: COLOUR MIXING MATCHING | Module Code: CPD 14 | Contact Hours: 2hrs Theory/10hrs Practical

GOAL: this module is designed to produce a colour mixer/matcher capable of selecting the right materials and equipment for the job and also be able to carry out and finish colour mixing and matching jobs with proficiency.

General Objectives: On completion of this module, the trainee should be able to:

1. Know and use correctly tools, equipment and materials for colour mixing/matching
2. Measure to specification the various colours and materials required for a given colour sample
3. Prepare materials and equipment for colour mixing/matching
4. Use appropriate techniques in mixing to match a given colour observing the required safety regulations of practice.
5. Maintain the tools, equipment and work premises.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: COLOUR MIXING/MATCHING		Module Code: CPD 14	Contact Hours: 96 (2-6)
Module Specification: THEORETICAL CONTENT			
General Objective 1.0: Know and use correctly, tools, equipment and materials for colour mixing/matching.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
1 - 4	1.1 Identify various colour mixing/matching tools and equipment and their application e.g. weighing, scale, palette knives, paints kettle, glass aid, paints stirrer (mixing paddle) paint mixer, colour meter, micro reader, etc.	<ul style="list-style-type: none"> • The teacher to show and explain to students tools and equipment used in colour mixing/matching work. • Draw the tools and equipment and label the parts. • Explain the use of each tools. • Show the tools to the students. 	<ul style="list-style-type: none"> • Lesson plan • Tools • Chalk board • Charts • Posters
	1.2 List the primary and secondary colours of pigment and demonstrate their relationship.	<ul style="list-style-type: none"> • List the three primary colours yellow, blue and red. • Secondary colours: green, purple and orange. • Mix yellow and blue = Green • Mix blue and red = Purple • Mix yellow and red = Orange. • Draw the colour circle • Rainbow "ROYGBIV" seven colours. 	<ul style="list-style-type: none"> • Lesson plan • Colour circle • Specimen of a rainbow. • Colour chart
	1.3 List the primary and secondary colours of light and show their relationship.	<ul style="list-style-type: none"> • Demonstrate how to mix and obtain each colour. 	<ul style="list-style-type: none"> • Lesson plan • Text book. • Colour chart
	1.4 Describe the chemical composition, properties and importance of pigments in paints.	<ul style="list-style-type: none"> • Define:- Opacity, film, durability and drying properties. • Binder or media. • Thinners • Driers 	<ul style="list-style-type: none"> • Table showing the pigment. • Lesson plan • Text book.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: COLOUR MIXING/MATCHING		Module Code: CPD 14	Contact Hours: 96 (2-6)
Module Specification: THEORETICAL CONTENT			
General Objective 1.0: Know and use correctly, tools, equipment and materials for colour mixing/matching.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
	1.5 Name standard colours for building and decorative paints (B.S. 4800). Note: Standard range contains 88 colours.	<ul style="list-style-type: none"> The teacher should used BS colour chart and, explain the concept to the students. 	<ul style="list-style-type: none"> Colour chart Lesson plan. Textbook.
	1.6 Read the colour circle in both natural and discordant orders.	<ul style="list-style-type: none"> Explain the arrangement of the colour circle. Use the primary colours to mix the paint so that they too can practice. 	<ul style="list-style-type: none"> The colour circle. Lesson note. paints
	1.7 Read the ten basic colours in Munsell colour scale given in the chart: yellow, green-yellow, green, blue-green, blue, purple-blue, purple, red-purple, red, yellow-red.	<ul style="list-style-type: none"> Explain Munsell colour scale. 	- do -
	1.8 Explain the common terms used in colour mixing/matching work: hues, value, chroma harmony, contrast, tone value, chromatic, natural order discord, etc.	<ul style="list-style-type: none"> Define Hues, chroma, harmony, contrast, tone value, discord, natural order. 	- do -
General Objective 2.0: Measure to specification for the various colours and materials required for a given colour sample:			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
5-6	2.1 Apply appropriate formulae to produce a secondary colour e.g. blue + yellow = green.	<ul style="list-style-type: none"> Demonstrate each of these colours Mixture. Blue + Yellow = Green Blue + Red = Purple. Yellow + Red = Orange, etc. 	<ul style="list-style-type: none"> Colour circle Text book Lesson Plan Paints Mixing knife.
	2.2 Apply the colour circle to produce pigment colour.	<ul style="list-style-type: none"> Explain and show students the colours on the colour circle. 	<ul style="list-style-type: none"> Colour chart Paint in various colours.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: COLOUR MIXING/MATCHING		Module Code: CPD 14	Contact Hours: 96 (2-6)
Module Specification: THEORETICAL CONTENT			
General Objective 3.0: Use appropriate technique in mixing to match a given colour observing the required safety regulations or practice.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
7-9	3.1 State safety precautions to be observed in colour mixing/matching work.	<ul style="list-style-type: none"> • State the safety precautions required in colour mixing/matching. • Impress the students to strictly observe the safety precautions. 	<ul style="list-style-type: none"> • Chart on safety precaution • Text book • Lesson plan.
	3.2 Outline the hazards associated with colour mixing/matching work e.g. inhalation of toxic fumes, explosion, contamination.	<ul style="list-style-type: none"> • Inform the students some of the paints that are dangerous to human health. • Students to avoid inhalation of toxic fumes. • Students to avoid eye contact with paint. 	<ul style="list-style-type: none"> • Chart on safety • Pictures • Text book. • Lesson plan.
General Objective 4.0: Know How To Maintain The Tools, Equipment And Work Premises.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
10-12	4.1 State the composition of the various solvents - water, turpentine, white spirit, cellulose thinners, etc used for cleaning colour mixing/matching tools and equipment.	<ul style="list-style-type: none"> • Teach the student how to properly clean the paint containers after use. 	<ul style="list-style-type: none"> • Water • Turpentine • White spirit • Cellulose thinner.
13	EXAMINATION: PRACTICAL 70%; THEORY 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: COLOUR MIXING/MATCHING		MODULE CODE: CPD 14	CONTACT HOURS: 6hrs/wk
MODULE SPECIFICATION: PRACTICAL CONTENT			
General Objective 1.0: Measure To Specification The Various Colours And Materials Required For A Given Colour Sample:			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1 - 2	1.1 Measure paints and produce given pigment colours using weighing scale.	<ul style="list-style-type: none"> • Give specification with regards to the exercise. • Guide the student to perform the exercise 	<ul style="list-style-type: none"> • Table of pigments • Yellow) • White)-grouping. • Orange) • Red) • Lesson plan • Text book.
General Objective 2.0: Prepare Materials And Equipment For Colour Mixing/Matching.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
3 - 4	2.1 Prepare mixing bases for colour mixing/matching using the primary colours of pigments and the neutrals (black & white) by: (i) opening the containers (ii) stirring up the content (iii) fixing up the container in an agitating the mixing machine.	<ul style="list-style-type: none"> • Guide the students in the preparation of materials and equipment for colour mixing and matching work 	<ul style="list-style-type: none"> • Black paint • White paint • Stirring stick • Container • Text book • Lesson. note
General Objective 3.0: Use Appropriate Technique In Mixing To Match A Given Colour Observing The Required Safety Regulations.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
5 - 8	3.1 Mix pigment colours yellow, red, blue, white and black e.g. (i) day light (natural) and artificial (ii) north-east light, under given environment.	<ul style="list-style-type: none"> • Supervise the students in the selection of pigments and colour mixing. 	<ul style="list-style-type: none"> • Yellow paint • Blue paint • Red paint • White paint • Black paint • Colour chart.
	3.2 Match any given colour of paint with another one. Note: Correct sequence of mixing/matching is as follows: start from light colour and add deep colour gradually to develop the required colour sample. Safety precautions should be observed. 3.3 Wet mixed pigment should be lighter than the colour sample because in all cases mixed colour dry darker than colour samples.	<ul style="list-style-type: none"> • List the correct sequence of operation in colour mixing for students to follow. 	<ul style="list-style-type: none"> • Paint • Mixing knife • Colour chart.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: COLOUR MIXING/MATCHING		MODULE CODE: CPD 14	CONTACT HOURS: 6hrs/wk
MODULE SPECIFICATION: PRACTICAL CONTENT			
	General Objective 4.0: Maintain The Tools, Equipment And Work Premises.		
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
9 - 12	4.1 State the composition of the various solvents - water, turpentine, white spirit, cellulose thinners, etc used for cleaning colour mixing/matching tools and equipment.	• Teacher to direct as appropriate.	<ul style="list-style-type: none"> • Water • Turpentine • White spirit • Cellulose thinner. • As appropriate
	4.2 Select appropriate solvent from item 5.1 for the cleaning of tools and equipment after use. e.g. water for water based paint, turpentine for oil based paint, etc.	• Check to ensure that appropriate solvent is selected.	<ul style="list-style-type: none"> • Water • Turpentine • White spirit or • Cellulose thinner as the case may be
	4.3 Clean up tools and tidy up work environment as appropriate.	• Supervise cleaning up exercise.	<ul style="list-style-type: none"> • Brooms • Dusting brush • Dustbin • Mop.
13	EXAMINATIONS: Practical 70% Theory 30%		

Lining, Sign and Design

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION

Module: LINING, SIGN AND DESIGN | **Module Code: CPD 15** | **Contact Hours: 6hrs Practical, 2hrs Theory**

GOAL: This module is designed to provide the trainee with the knowledge and skills to produce finished lining, sign and design work.

General Objectives:

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

1. Know and use correctly the tools, materials, and equipment for sign writing,
2. Measure and cost jobs to be accomplished in lining, sign and design projects.
3. Prepare working drawings, specifications, ground, equipment and materials for lining, sign and design project.
4. Understand the procedure and appropriate technique for planning and carrying out lining, sign and design work.
5. Render perspectives of interiors of buildings.
6. Cut signs and designs and coat surfaces with portable power tools.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: LINING, SIGN & DESIGN		Module Code: CPD 15	Contact Hours: 2hrs theory 6hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective: 1.0 Know And Use Correctly The Tools; Material And Equipment For Sign Writing.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
1 - 2	1.1 Identify tools used in lining, sign and design work and state their applications: e.g. liners, fitches, pencil brushes (various sizes for water and oil paint), varnish brushes (various sizes), knives, scrapers, bridges, mahl stick, straight edge, pencils (assorted), set squares, dividers, etc.	<ul style="list-style-type: none"> • Provide specimen of each of the lining tools. • Explain their uses. 	<ul style="list-style-type: none"> • Items of tools • Chart • Lesson plan
3	1.2 Identify lining, sign and design, work materials e.g. drawing papers (various grades and sizes), water colours. oil colours, cellulose materials, varnishes, stickers.	<ul style="list-style-type: none"> • Show students each of these materials physically and discuss their use. 	<ul style="list-style-type: none"> • Materials • Audio visual equipment. • Lesson note
4	1.3 Describe the properties and uses of the various items for lining, sign and design work.	<ul style="list-style-type: none"> • Explain the properties of lining sign and design work. 	<ul style="list-style-type: none"> • Chalk board • lesson plan.
5	1.4 Identify equipment used in lining, sign and design work e.g. step ladders, trestles, scaffold boards, paint kettles, paint buckets, spray guns, blow lamps (gas blow torches) compressors, etc.	<ul style="list-style-type: none"> • Show each of these lining equipment and explain their usage. 	<ul style="list-style-type: none"> • Lining, sign and design equipment.
General Objective 2.0: Measure And Coat Jobs To Be Accomplished.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
7 - 8	2.1 Identify measuring instruments used in lining, sign and design work e.g. metric rule, tape rule, scale rule.	<ul style="list-style-type: none"> • Use question/answer technique and guide students to identify measuring instrument. 	<ul style="list-style-type: none"> • Samples of measuring instruments. • Chalkboard. • Metric rule
9 - 12	2.2 Estimate the time required to complete a given job taking into consideration: (i) area or size of work (ii) design involved (iii) materials to be used.	<ul style="list-style-type: none"> • Prepare a working plan and show to students. 	<ul style="list-style-type: none"> • Chalkboard.
	2.3 Estimate cost of production of lining, sign and design project taking into consideration: (i) area of work (ii) type of finish (iii) materials required (iv) design involved.	<ul style="list-style-type: none"> • Prepare simple estimation for a given sign and design project • Give similar costing project to students • Assess students 	<ul style="list-style-type: none"> • Chart. • Chalkboard.
13	EXAMINATION: Practical 70%; Theory 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING.			
Module: LINING, SIGN & DESIGN		Module Code: CPD 15	Contact Hours: 2hrs theory 6hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective: 3.0 Understand The Procedure And Appropriate Technique For Planning And Carrying Out Lining Sign And Design Work.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
2	3.1 Identify protective material/coatings used in lining, sign and design work e.g. varnish, lacquer, glass, wax, etc.	• List and explain the protective materials/coatings used in lining and sign work.	• Display specimen of protective materials.
3	3.2 Outline the composition and/or the characteristics of the items listed in 4.6 above.	• With question and answers, explain the composition of sample protective materials/coatings for lining.	• Chalkboard.
General Objective 4.0: Cut Signs And Designs And Cut Surfaces With Portable Power Tools.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
4 - 5	4.1 Identify power tools for cutting sign and designs e.g. jig saws, manual pedal machine, orbital sandal, hand drilling machines, fret saw machine, etc.	• Define each of the power and tools; explain their uses.	• Show sample of tools
6	4.2 State the safety precautions for working with tools identified in 6.1 above on metallic, wooden or plastic patterns.	• Discuss all related safety precaution.	• Display charts on safety.
7 - 8	4.3 Identify the following portable equipment used in the application of coating (i) dip coating machine (ii) roller coating machine (iii) electrostatic machine (iv) fluidized bed coating equipment (v) curtain coating equipment.	• Discuss the portable equipment and their uses.	• Display these equipment
9	4.4 Explain the working principles of each of the equipment listed in above.	• Explain in a discussion class; the workings of portable equipment for motive power work.	• Charts. • Chalkboard • Power tools
10	4.5 Identify and select materials required for motive power design work e.g. wood, plastic, metal, etc.	• Discuss different types of materials for motif power design.	• Samples of materials displayed.
11-12	4.6 Identify and select finishing material for each substrate used in motif design work e.g. oil based finishes, water based finishes, cellulose based finishes and epoxy finished.	• Discuss the various materials in relation to their uses and nature.	• Sample of materials
13	Examination: Practical 70%; Theory 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: LINING SIGN AND DESIGN		MODULE CODE: CPD 15	CONTACT HRS: 6hrs Practical, 2hrs Theory
MODULE SPECIFICATION: PRACTICAL CONTENT			
General Objective 1.0: Measure And Cost Jobs To Be Accomplished.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1 - 2	1.1 Measure out lining, sign and design jobs in given specifications.	• Demonstrate lining, sign and design skill to given specification before the students.	• Sample of a well finished job.
	1.2 Determine the quantity of materials required for a given project.	• Prepare simple estimation guide for basic painting project.	• Estimation. • Chart
	1.3 Estimate the time required to complete a given job taking into consideration: (i) area or size of work (ii) design involved (iii) materials to be used.	• Prepare a working plan to help estimate size of work. • Give assignment to students	• Chalkboard.
3	1.4 Estimate cost of production of lining, sign and design project taking into consideration: (i) area of work (ii) type of finish (iii) materials required (iv) design involved.	• Give students to measure and cost a typical lining/design job to be accomplished.	• Chart. • Chalkboard.
General Objective 2.0: Prepare Working Drawings Specifications, Ground, Equipment And Materials For Lining, Sign And Design Project.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
4 - 5	2.1 Sketch the interior and exterior of a given building plan taking into consideration details of components in: (i) front elevation (ii) back elevation (iii) side elevation (iv) interior details.	• Provide students with exercises and guide them in producing detailed sketches.	• Pictures of interior and exterior of building.
	2.2 Colour the drawings produced in 3.1 above according to the specifications written in 3.2 above in (i) postal colours (ii) actual colours.	• Guide the student to carry out an exercise in colouring process.	• Picture of a well colored building.
6	2.3 Prepare paint by stirring, addition of thinner to required viscosity and straining of the paint mixed.	• Guide student to perform print stirring, thinning and paint straining before students.	•

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: LINING SIGN AND DESIGN		MODULE CODE: CPD 15	CONTACT HRS: 6hrs Practical, 2hrs Theory
MODULE SPECIFICATION: PRACTICAL CONTENT			
General Objective 2.0: Prepare Working Drawings Specifications, Ground, Equipment And Materials For Lining, Sign And Design Project.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
7	2.4 Match paint colour to specification.	<ul style="list-style-type: none"> • Guide students to perform colour matching skill to specification. 	<ul style="list-style-type: none"> • Sample of matched colour.
8 - 9	2.5 Prepare the substrates e.g. wood, metal, plaster, etc. using appropriate technique e.g. cleaning, rubbing down (sanding), bob correctly	<ul style="list-style-type: none"> • Engage students in surface preparation of various surfaces with the teacher's supervision. 	<ul style="list-style-type: none"> • Practice board. • Preparatory tools and materials.
	2.6 Prepare ground (surface) by using primers e.g. wood primer, metal primer, alkali resisting primer.	<ul style="list-style-type: none"> • Give students exercise on surface priming with different types of primers. 	<ul style="list-style-type: none"> • Practice Board. • Preparatory tools for priming.
10	2.8 Apply paint to a given surface taking into consideration the colour of the background for the job.	<ul style="list-style-type: none"> • Involve students in applying paint on given background to colour specification with a guide by the teacher. 	<ul style="list-style-type: none"> • Practice Boards. • Tools, colour & equipment for printing.
11-12	2.9 Set up working platform involving the use of trestle and scaffold board taking into consideration the safety practice required.	<ul style="list-style-type: none"> • Engage students in erecting trestle scaffold, guide them to ensure that they observe safety practice required. 	<ul style="list-style-type: none"> • Visit to construction site where such scaffold are erected and used.
13	EXAMINATIONS - Practical = 70 % theory = 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: LINING SIGN AND DESIGN		MODULE CODE: CPD 15	CONTACT HRS: 6hrs Practical, 2hrs Theory
MODULE SPECIFICATION: PRACTICAL CONTENT			
General Objective 3.0: Understand The Procedure And Appropriate Technique For Planning And Carrying out Lining Sign And Design Work			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
1	3.1 Line freely with the following: pencils, pencil brushes, brush liners, fitches.	• Demonstrate the use of the lining tools, involving the students in the exercise.	• Display all the lining tools and materials.
	3.2 Line with the aid of the following tools: bridges, mahl sticks, wheel liners.	• Show students the effective and proper use of tools that aid lining.	• Charts and pictures showing the use of tool that aid lining.
2 - 3	3.3 Construct and paint various types of letters and numerals (in capitals and lower cases including san serif block lettering) e.g. fine square letter, Roman letters, scripts.	• Plan exercises on the construction of various types of lettering with students made to participate.	• Sample of various types of lettering displayed.
4	3.4 Scale out a design by (i) graphing (ii) blowing.	• Prepare a scaled design by graphing and blowing; involving students in the practice.	• Display sample of scaled design.
General Objective 4.0: Render Perspectives Of Interiors Of Buildings.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
5-6	4.1 Draw perspectives of the interior of a building	• Give exercise on perspective drawing and guide the students.	• Display samples of finished drawings.
	4.2 Colour the perspective drawing produced in 4.1 above.	• Guide the students in the painting exercise.	• Samples of coloured work.
	4.3 Design the colour scheme to suit the lighting effect of the interior.	-do-	• Sample of such scheme • Tools and materials.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: LINING SIGN AND DESIGN		MODULE CODE: CPD 15	CONTACT HRS: 6hrs Practical, 2hrs Theory
MODULE SPECIFICATION: PRACTICAL CONTENT			
General Objective 5.0: Cut Signs and Designs and Coat Surfaces with Portable Power Tools.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
7-8	5.1 Sand the edges and surfaces of the cut-out design with orbital sander.	• Give exercises to students and guide them to perform the various tasks on motive design to specification.	• Samples of various coatings. • Tools/equipment. • Materials.
	5.2 Apply appropriate coating to a given surface using portable power equipment.	-do-	-do-
9-12	5.3 Identify and select finishing materials for each substrate used in motif design work e.g. oil based finishes, water based finishes, cellulose based finishes and epoxy finishes.	-do-	-do-
	5.4 Carry out motive power design work in the following order:(a) select design (b) sketch out design, (c) transfer design to substrate, (d) cut out design, (e) mount relief object on background of choice, (f) prepare surface to receive finishing coat, (g) finish design as desired, (h) clean up.	-do-	-do-
	Project Prepare the project material Line freely	• Demonstrate each of the practical steps for students to see	• Liners, fitches, pencil brushes, varnish brushes, scrappers, bridges, water colours, cellulose material, varnishes, compressors, paint kettles, paint buckets, spray guns,scaffold boards, step ladders, tressles.
		• Give exercise and guide students on the job	

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
MODULE: LINING SIGN AND DESIGN		MODULE CODE: CPD 15	CONTACT HRS: 6hrs Practical, 2hrs Theory
MODULE SPECIFICATION: PRACTICAL CONTENT			
General Objective 5.0: Cut Signs and Designs and Coat Surfaces with Portable Power Tools.			
Week	Specific Learning Outcome:	Teacher Activities	Learning Resources
	<ul style="list-style-type: none"> a. Construct and paint various types of letters and numerals b. Scale out a design by (i) graphing (ii) blowing c. Reproduce the scaled design using specific colours. d. Identify protective material/coating used in lining, sign and design work e. Apply protective coatings 		
13	Examinations: Practical 70% Theory 30%		

Glazing

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING

Module: GLAZING

Module Code: CPD 16

Contact Hours: 2hrs Theory, 6hrs Practical

GOAL: This module is designed to provide the trainee with the knowledge and skills required to carry out glazing jobs with proficiency

General Objectives:

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

1. Know and be able to use tools, materials and equipment for glazing.
2. Measure materials and area of work for glazing
3. Use the correct tools and technique to cut various types of glass sheets.
4. Prepare the surface and materials for glazing
5. Complete glazing job with proficiency

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GLAZING		Module Code: CPD 16	Contact Hours: 2hrs Theory, 6hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 1.0: Know And Use Correctly Glazing Tools Equipment And Materials			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
1-5	1.1 Identify glazing tools and state their uses e.g. cutters, hacking knives, putty or glazing knives, hammers, pincers, rules, straight edge, tape, screw driver, wire brush, T-squares.	<ul style="list-style-type: none"> • The teacher to draw the tools on the board or chart, label all the parts. • Tell the students the use of each tool. • Outline the safety precautions. 	<ul style="list-style-type: none"> • Cutters, hacking, knives, hammers, pincers, rules, straight edge, tape, screw driver, wire brush and T-square.
	1.2 Identify various materials used for glazing, state their composition and specific uses e.g. glasses, glazing compounds, metal casement, putty, primers, headless nails, spring clips, etc.	<ul style="list-style-type: none"> • The teacher shows sample of materials used for glazing. • State their composition and specific uses. 	<ul style="list-style-type: none"> • Glasses, glazing compounds, metal casement, putty, primers, headless nails and spring clips.
	1.3 Identify glazing equipment and outline the safety precautions in their use e.g. step ladders, ladders, trestles, scaffold boards, tables, blankets.		
6 - 7	1.4 Explain the basic rules and precautions in the care and storage of glazing tools and materials.	<ul style="list-style-type: none"> • The teachers to explain the basic rules and precautions in the care and storage of glazing tools and materials. 	<ul style="list-style-type: none"> • Pictures • Chalkboard.
General Objective 2.0: Measurement Materials And Area Of Work For Glazing.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
8 - 9	2.1 Calculate the area of work to be glazed and the area of glass required for the job.		<ul style="list-style-type: none"> • Chalkboard • Lesson plan • Tape rule • Exercise book • Writing pen.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GLAZING		Module Code: CPD 16	Contact Hours: 2hrs Theory, 6hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 3.0: Use The Correct Technique And Tools To Cut Various Types Of Glass Sheets.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
10 - 12	3.1 Enumerate safety precautions in handling glass e.g. (i) carry one pane at a time (ii) make sure that the way ahead is clear and free from obstruction (iii) do not stop suddenly or step backwards when carrying glass sheets (iv) correct carrying technique should be observed, etc.	<ul style="list-style-type: none"> • The teacher to enumerate the safety precautions in handling glass 	<ul style="list-style-type: none"> • Pictures • Glass • Safety regulation • Chart • Lesson plan.
	3.2 State precautionary measures in cutting glass; (i) do not exert much pressure or weight on glass to avoid breakage (ii) avoid cutting in wrong direction (iii) avoid injury to body during cutting.	<ul style="list-style-type: none"> • The Teacher to emphasis the precautionary measures to be observed during glass cutting exercise. 	<ul style="list-style-type: none"> • Drawings • Pictures • Glass cutter • Lesson plan.
13	EXAMINATIONS: Practical = 70%; Theory = 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GLAZING		Module Code: CPD 16	Contact Hours: 2hrs Theory, 6hrs Practical
Module Specification: PRACTICAL CONTENT			
General Objective 1.0: Use correctly all glazing tools, equipment and materials			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
1	1.1 Undertake care and maintenance of glazing tools and equipment in use and tidiness of work stations.	<ul style="list-style-type: none"> • The teacher to teach the students on care and maintenance of glazing tools and materials. • Drawings and pictures of various methods. 	<ul style="list-style-type: none"> • Drawings • Pictures. • Chalkboard.
General Objective 2.0: Measurement Materials And Area Of Work For Glazing.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
2	2.1 Measure the area of work to be glazed e.g. windows, doors, etc.	<ul style="list-style-type: none"> • Measure the arc, shape of work to be glazed e.g. windows and doors, etc. • Demonstrate the arc of measuring object/shape. • Calculate the area of the work to be glazed and the area of the glass needed. • Formula of areas e.g. $\text{Arc} = \frac{(nr^2)m^2}{2}$ • - Rectangular = (c x B)m². 	<ul style="list-style-type: none"> • Chalkboard • Lesson plan • Tape rule • Exercise book • Writing pen.
General Objective 3.0: Use The Correct Technique And Tools To Cut Various Types Of Glass Sheets.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
3-5	3.1 Cut measured size of glass using appropriate technique and correct sequence.	<ul style="list-style-type: none"> • The teacher should guide the students to measure the size of glass using the appropriate technique and correct sequence. 	<ul style="list-style-type: none"> • Tape • Straight edge. • Lesson plan. • Glass cutter

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GLAZING		Module Code: CPD 16	Contact Hours: 2hrs Theory, 6hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 4.0: Prepare The Surface And Materials For Glazing.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
6-7	4.1 Prime new surfaces (wood, metal) with recommended primers e.g. red lead primer.	<ul style="list-style-type: none"> • Prepare the new surfaces for wood primer • Prepare the new surfaces for metal primer • The students should know the correct primers for different surfaces in metal or wood. 	<ul style="list-style-type: none"> • Pictures • Chalkboard. • Lesson plan.
	4.2 Hack out existing broken glass pieces and putty from old glazed work using the following (i) hacking knife and hammer (ii) glazing knife.	<ul style="list-style-type: none"> • The teacher to teach the students to remove out broken glasses and putty from old glazing work. • The proper usage of hacking knife and hammer. • The use of glazing knife. 	<ul style="list-style-type: none"> • Old glazing • Hacking knife • Glazing knife • Lesson plan.
	4.3 Clean the casement thoroughly with (i) wire brush (in case of metal casement) (ii) sand paper (in case of wooden casement).	<ul style="list-style-type: none"> • The teacher should demonstrate how to remove casement. • Wire brush (in case of metal casement) • Sand paper (in case of wooden casement). 	<ul style="list-style-type: none"> • Wire brush • Sand paper. • Drawing.
	4.4 Prime and clean old casement surfaces before re-glazing with recommended primers e.g. red lead primer.	<ul style="list-style-type: none"> • Demonstrate to the students how to prime old casement surfaces before re-glazing with recommended primers e.g. red lead primer for metal surfaces. 	<ul style="list-style-type: none"> • Red lead primer • Brush • Drawing.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: GLAZING		Module Code: CPD 16	Contact Hours: 2hrs Theory, 6hrs Practical
Module Specification: THEORETICAL CONTENT			
General Objective 5.0: Complete Glazing Job With Proficiency.			
Week	Specific Learning Outcome:	Teacher Activities:	Learning Resources:
8 - 9	5.1 Apply bedding putty (back putty) on casement (metal, wooden)	<ul style="list-style-type: none"> • Use glazing technique to apply bedding putty on a casement on metal surfaces and wood surfaces. 	<ul style="list-style-type: none"> • Pictures • Chalkboard • Tools and materials
	5.2 Place glass already cut to size into position in the bedded casement.	<ul style="list-style-type: none"> • Demonstrate how to place already cut glass in position in the bedded casement. 	<ul style="list-style-type: none"> • The glass • Casement • Chalkboard.
	5.3 Hold glass into position using headless nails (only applicable to wooden casement).	<ul style="list-style-type: none"> • Demonstrate to the students how to hold glass into position by using headless nails, applicable to wooden casement. 	<ul style="list-style-type: none"> • Hammer • Headless nail • Glass.
10 - 12	5.4 Apply the front putty with a putty knife faced at an angle to provide weather proof fillet. <ol style="list-style-type: none"> Prepare the project material e.g. metal or wood Prime new surfaces (wood, metal) with primers Hack out existing broken glass pieces and putty from old glazed work. Clean the casement thoroughly Prime cleaned old casement glazing Apply bedding putty (back putty) on casement. Place glass already cut to size into position in the bedded casement. Hold glass into position using headless nails 	<ul style="list-style-type: none"> • Demonstrate how to apply putty using the putty knife faced at an angle to provide weather proof fillet. • The putty should be properly mixed using the correct thinner. • Demonstrate each of the practical steps for students to see • Give exercises and guide students on the job. 	<ul style="list-style-type: none"> • Putty • Putty knife • Hacking knife • Hammer • Glazing knife • Putty • Metal casement • Wood casement • Plain glass • Glass cutter • Prigs • Paint brushes • Paint (primer) • Dusting brush.
13	EXAMINATION: THEORY = 30% PRACTICAL = 70%		

Advanced Courses

ADVANCED NATIONAL TECHNICAL CERTIFICATE PROGRAMME CURRICULUM AND MODULE SPECIFICATIONS IN PAINTING AND DECORATING

Building Science I

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE - I		Module Code: CBC - 20	Contact Hours: 3hrs Theory
Course Specification: THEORETICAL CONTENT			
General Objective: 1.0: Understand The Basic Principles Of Thermal Movements In Building And Building Materials.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
1-7	<p>1.1 Define the following terms:</p> <ul style="list-style-type: none"> a. thermal conductivity b. thermal resistivity c. heat transmittance coefficient or "U" value. d. Thermal emissivity e. Thermal absorptivity. <p>1.2 State the factors which determine the magnitude of the above terms for a structural unit or building materials.</p> <p>1.3 Explain the variation of the amount of heat transmitted between the surface of a slab of building material of uniform thickness and composition.</p>	<ul style="list-style-type: none"> • Compute the 'u' and 'k' values for structural units or building materials from given data. • Student to define and explain all the thermal terms.. 	<ul style="list-style-type: none"> • 'U' and 'u' values for structural units.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE - I		Module Code: CBC - 20	Contact Hours: 3hrs Theory
Course Specification: THEORETICAL CONTENT			
General Objective 2.0: Sound Transmission And Control: Know The General Principles Of Sound Transmission And Control.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
3 - 4	2.1 Explain the general principles of sound transmission. 2.2 Explain the following terms. a. air born sound b. structure-born sound c. sound reflection, reverbration and reveration time. d. Impact sound 2.3 Explain the general principles and methods of sound control.	<ul style="list-style-type: none"> • Measure sound transmission level (intensity) in decibels. • By visiting an acoustic building describe the general principles and methods of sound control (Insulation and absorption) in buildings e.g. • Principle of discontinuity • Mass law • Sound reduction at source, etc. 	<ul style="list-style-type: none"> • Sound measuring instruments • Sound producing source. • A coustic building
General Objective 3.0: Understand The Basic Principles Of Lighting			
Week	Specific Learning Outcome:	Teachers Activities	Resources
5-6	3.1 State the general functions of lighting. 3.2 Define the following terms: a. illumination b. luminous flex c. illuminance d. luminance e. day light factor 3.3 Distinguish between disability glare and discomfort glare. 3.4 State ways by which glare is controlled in buildings.	<ul style="list-style-type: none"> • Explain the general functions of lighting e.g • To illuminate the internal envelope and contents; • To illuminate task (reading, working with equipment etc). to the extent appropriate to optimal functioning of the eye. • Emphasize the following ways of controlling share in buildings. • Types, sizes, number and position of openings 	<ul style="list-style-type: none"> • Source of light • Hall with good lighting system. • Hall with bad lighting system.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE - I		Module Code: CBC - 20	Contact Hours: 3hrs Theory
Course Specification: THEORETICAL CONTENT			
General Objective 3.0: Understand The Basic Principles Of Lighting			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	3.5 Determine the intensity of illumination due to a given source of light. 3.6 Calculation of day light factor. 3.7 Describe the main classes of lighting. 3.8 State the uses of the main classes of lighting. 3.9 Explain the interdependence of color and lighting in buildings.	<ul style="list-style-type: none"> • Colour and texture of building surfaces. • Types of lighting fittings • Structure of internal envelope etc. • Calculate day-light factor from given date and by direct measurement. • Emphasize the following classes of lighting. • Direct lighting • Indirect lighting • General lighting • Luminous lighting 	<ul style="list-style-type: none"> • Data for calculating day-light factor • Instrument for calculating day-light factor by direct measurement.
General Objective 4.0: Understand The Principles Of Electricity Supply In Buildings			
Week	Specific Learning Outcome:	Teachers Activities	Resources
7-8	4.1 State the difference between alternating current and direct current. 4.2 Explain the construction and working principles of generators, motors and transformers. 4.3 Explain with the aid of experiments the heating, lighting, magnetic and chemical effects of electric current. 4.4 Calculate the power and energy consumption in simple circuits. 4.5 Explain the function of earthing in electrical circuits. 4.6 State the purpose and explain the functioning of circuit breakers and fuses. 4.7 Illustrate the correct method of distributing electrical power from the mains to socket outlets and lighting points in house wiring systems. 4.8 Compute total electrical load for a given load for a given house wiring. 4.9 Calculate fuse capacity for house wiring system. 4.10 Identify dangers of electricity and essential safety measures against them.	<ul style="list-style-type: none"> • Carry out experiments to demonstrate the heating, lighting, magnetic, and chemical effects of electric current. • Mathematical calculation of power and energy consumption in simple circuit. • Identify earthing in an electrical circuit. E.g in a bungalow. • Identify circuit breakers and fuses in a building. • Emphasize the correct method of distributing electrical power from the mains (NEPA line or stand by generator) to socket outlets and lighting points in house wiring systems. • Interpret electrical installation drawings of a small bungalow or two storey building. • Emphasize the dangers of electricity and enumerate the essential/necessary safety measures against them. 	<ul style="list-style-type: none"> • Simple electric circuits • Electric heater • Electric bus • Solenoid • circuit breakers • fuses • NEPA line • Generator • Bungalow with complete wiring system • Electrical installation. • Drawing of a small project i.e. the bungalow.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE - I		Module Code: CBC - 20	Contact Hours: 3hrs Theory
Course Specification: THEORETICAL CONTENT			
General Objective 5.0: Know The Basic Principles Of Plant Installation In Buildings.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
9-10	5.1 Explain the working principles of lift and escalators. 5.2 Outline safety, principles for lifts and escalators. 5.3 Explain the general principles of air-conditioning.	<ul style="list-style-type: none"> • Visit a building with escalators and or lift. • Emphasize maintenance principles for lifts and escalators. 	<ul style="list-style-type: none"> • Escalators • Air conditioners
	5.4 Describe various mechanical methods of ventilation. 5.5 Explain the principle of mechanical ventilation. 5.6 Outline the general installation requirements for central and room air conditioning equipment in dressings. 5.7 Define the following: <ul style="list-style-type: none"> a. relative humidity b. dew point 5.8 Explain the occurrence of condensation in buildings. 5.9 Describe methods of control of condensation.	<ul style="list-style-type: none"> • Illustrate the application of turbulent and non turbulent flow in domestic water supply and drainage • Determine experiments the rate of flow from an orifice. • Calculate the velocity of flow of water from given date • Calculate pipe sizes for drains or water supply from given date. • Experimentally explain the general principles of installation of cold and hot water supply systems having water pumps. 	<ul style="list-style-type: none"> • Orifice • water containers • water • data for calculating velocity of flow of water.
	5.11 Explain the principle of turbulent and non-turbulent flow. 5.11 Explain the followings terms and state their importance in the design and installation of piped water supply system: <ul style="list-style-type: none"> a. static head of water b. velocity head c. friction head d. pressure head e. water hammer f. coefficient of velocity g. coefficient of discharge. 		

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE - I		Module Code: CBC - 20	Contact Hours: 3hrs Theory
Course Specification: THEORETICAL CONTENT			
General Objective 6.0: Analyse Forces In Simple Building Structures And Structural Frame Work.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
11-12	6.1 State the laws of static equilibrium. 6.2 Explain with illustrative examples the laws of static equilibrium e.g. $\sum V = 0$ 6.3 Determine the magnitude and position of the resultant of a simple system of coplanar forces in. 6.4 Analyse forces in simple pin-jointed frame work.	<ul style="list-style-type: none"> Determine the magnitude and position of the resultant of a simple system of coplanar forces by: - graphical method. Method of resolution experiment. Experiment. Analyse forces in simple pin-jointed frame-work by method of resolution of force diagram method method of section 	<ul style="list-style-type: none"> Charts Model of simple pin-jointed frame work.
	6.5 Identify common loading systems for various building structures 6.6 Determine beam reaction, shear force and bending moments in simply supported beams under various loading systems using. a. Link polygon system b. method of resolution experiments. 6.7 Define the following properties of structural sections. centre of gravity, moments of inertia, radius of inertia, radius of gyration section modulus	<ul style="list-style-type: none"> Emphasize the following common loading systems concentrated load on beams, straddling and nodes in frame-works. Knife-edge load on partitions or walls. Uniformly distributed load such as self-weight wind load,. Distributed load with linear variation such as loads against piling retaining walls triangular load such as block-work over opening. Calculate beam reactions under various loads. 	<ul style="list-style-type: none"> Model beam sections
	6.8 State the general theory of simple bending i.e. $\frac{E}{R} = \frac{M}{F} = \frac{F}{V}$	<ul style="list-style-type: none"> Determine the value of the following for a given section. Centre of gravity Moments of inertia Radius of gyration Section modulus Determine maximum bending stress and moment of resistance of beam sections. 	
13	Examinations = 100%		

Building Science II

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective 1.0: Know The General Process Of Manufacture, Properties And Uses Of Different Types Of Cement.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
1	<p>1.1 Outline the manufacturing process, basic composition properties and uses of the following types of cement:</p> <ul style="list-style-type: none"> a. ordinary Portland cement b. rapid hardening Portland c. extra rapid hardening Portland d. low heat Portland cement e. blast-furnace Portland cement f. super-supplanted cement g. high alumina-cement h. colored Portland cement i. hydrophobic cement j. pozzolana-cement 	<ul style="list-style-type: none"> • Describe the manufacturing process of cement. • Name the different types of cement and explain uses and areas of application. 	<ul style="list-style-type: none"> • Chalk board. • Lesson note. • Specimen of cement of different types.
	<p>1.2 State factors which influence setting time, strength and hardness of ordinary Portland cement.</p> <p>1.3 Describe the test procedure and carry out standard tests to determine:</p> <ul style="list-style-type: none"> a. strength b. soundness c. setting time d. hardness; of ordinary Portland cement. <p>1.4 State and justify the essential precautions in the storage and use of cements in 1.1 above.</p>	<ul style="list-style-type: none"> • Explain the main features of each type of cement. • Explain the factors that influence the setting time, strength and hardness of Portland cement. 	<ul style="list-style-type: none"> • Lesson note. • Cement specimens. • Chalk board.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective 2.0: Know The Manufacture, Properties And Uses Of Lime And Gypsum Plasters.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
2	2.1 Explain the differences in the manufacture and composition of lime and gypsum plasters. 2.2 State the classifications and uses of lime and gypsum plasters. 2.3 Describe the method of application of lime and gypsum and state essential precautions.	<ul style="list-style-type: none"> • Define: "Lime", " Gypsum" and explain their uses in building construction processes. • Discuss the manufacturing, properties, and uses of lime and gypsum. • Explain the methods of application of the materials. 	<ul style="list-style-type: none"> • Lesson note • Chalk board Posters • Specimen of lime and gypsum.
General Objective: 3.0 Carry Out Stand Tests To Determine The Quality Of Aggregates.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
3	3.1 Describe procedures of sieve analysis and determine aggregate grading by sieve analysis. 3.2 Describe the test procedure and carry out laboratory tests to determine silt content of given sample of aggregates. 3.3 Describe the test procedure and carry out the test to determine the crushing values of a given sample of aggregate. 3.4 Describe the test procedure and carry out bulking test.	<ul style="list-style-type: none"> • Define "aggregate" • Explain methods of grading of aggregates • Conduct silt content, crushing value and bulking tests and guide the students to perform similar tests. 	<ul style="list-style-type: none"> • Aggregates • Lesson notes • Posters • Samples of Aggregates

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective: 4.0: Know Different Types Of Mortar And Their Application.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
4	<p>4.1 Outline the general desirable properties of mortar e.g. good workability and water retentivity, adequate cohesion and adhesion, strength, durability, tolerable shrinkage, etc.</p> <p>4.2 Name different types of mortar, their properties, typical mix proportions to be taken in the proportioning and mixing of mortar.</p> <p>4.3 Explain the precautions to be taken in the proportioning and mixing of mortar.</p>	<ul style="list-style-type: none"> • Define “Mortar” • State the properties of mortar and typical mix proportion. 	<ul style="list-style-type: none"> • Mortar • Lesson notes • Charts
	<p>4.4 State the basic considerations in the choice of mortar e.g weather characteristics, appearance, type of job, etc.</p> <p>4.5 Describe the procedure and carry out an experiment to determine the air content of plasticised mortar.</p>	<ul style="list-style-type: none"> • Demonstrate the procedures for determining air content of plasticised mortar. 	<ul style="list-style-type: none"> • Mortar. • Lesson notes. • Posters.
General Objective 5.0: Know The Process Of Manufacture, Properties And Uses Of Different Clay Products.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
5	<p>5.1 Name and state the properties and uses of different clay products in the building industry. e.g. clay-bricks (engineering bricks, facing bricks, common bricks, and specials), clay blocks, clay roofing tiles, clay floor tiles and quarries, vitrified clay pipes, etc.</p> <p>5.2 Outline the process of manufacturing of the products in 5.1 above.</p> <p>5.3 Determine hardness, compressive strength, porosity and permeability of given sample of bricks by laboratory methods.</p>	<ul style="list-style-type: none"> • Define “Clay” and State the properties of clay. • Discuss the process of manufacturing clay bricks blocks, tiles etc. • Demonstrate how to determine hardness, compressive, strength porosity and permeability test of bricks. 	<ul style="list-style-type: none"> • Clay. • Clay Products. • Lesson note. • Chalkboard. • Clay bricks. • Test Instruments.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective 6.0: Know Different Types Of Building Rocks Their Sources And Uses.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
6	<p>6.1 Classify natural rocks and igneous, sedimentary and metamorphic rocks.</p> <p>6.2 Describe the characteristics and uses of different types of rocks of commercial value in the construction under the classification in 6.1 above.</p> <p>6.3 Describe the sources of rocks in 5.2 and their quarrying methods. e.g., igneous rocks, sedimentary rocks, metamorphic rocks, granites, sands, limestone, marble, slate.</p>	<ul style="list-style-type: none"> Show samples of building stones and explain their characteristics. Name sources of building stone. 	<ul style="list-style-type: none"> Lesson note. Posters. Chalkboard.
General Objective 7.0: Understand The Production And Use Of Concrete As Structural Material			
Week	Specific Learning Outcome:	Teacher Activities	Resources
7	<p>7.1 Outline the desirable qualities of the ingredients of mass and reinforced concrete.</p> <p>7.2 Explain the effects of aggregate grading, water cement ratio compaction and curing on the compressive strength of concrete.</p> <p>7.3 Describe methods of proportioning and mixing concrete materials and placing compacting, curing and protecting green concrete.</p>	<ul style="list-style-type: none"> Define concrete and describe the composition of concrete. 	<ul style="list-style-type: none"> Concrete. Aggregates. Lesson note concrete cube. Equipment.
	<p>7.4 Carry out slump and cube test and interpret results.</p> <p>7.5 Carry out permeability test on given sample of concrete.</p> <p>7.6 Estate from project drawings the quantities of concrete materials required for the execution of the project.</p> <p>7.7 Compute the quantities of batch materials from prescribed or designed mix.</p> <p>7.8 Explain the general principles in the reinforcement of beams, columns, floor slabs, walls, retaining walls, concrete tanks, can designed mix.</p>	<ul style="list-style-type: none"> Guide students to carry out slum test and permeability tests on given sample of concrete. 	- do -

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective 8.0: Know The Characteristics, Methods Of Conversion And Uses Of Different Types Of Timber In The Building Industry.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
8	8.1 Classify timber as hard-wood and soft-wood and state the distinguishing characteristics. 8.2 Describe the structure of timber and state the functions of the parts. 8.3 Describe different methods of timber conversion and state the merits of each method. 8.4 Explain the purpose of seasoning, timber and describe various methods of seasoning and preserving timber, 8.5 Identify nature of defects in timber and explain their causes. 8.6 Identify various causes of deterioration in converted timber and state necessary precautions. 8.7 Explain the BS system of grading timber. 8.8 Identify various type of manufactured boards and sheet and explain their characteristics and uses. 8.9 Carry out cleavage test, static bending test and hardness test on given specimen of timber.	<ul style="list-style-type: none"> • Explain the sources of timber in Nigeria. • Discuss the uses of timber in the building industry. • Explain the structure of timber. • Explain the process of timber production up to point of use. • Explain the causes of timber deterioration and how these could be controlled. 	<ul style="list-style-type: none"> • Lesson note. • Specimens of different types of timber. • Chart. - do -
General Objective 9.0: Understand The Characteristics Various Metals Used In The Building Industry.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
9	9.1 Identify various metals used as structural components in building and state their mechanical properties. E.g. brass, aluminium, mild steel, galvanized iron, copper, lead, stainless steel, wrought iron, cast iron, medium carbon steel. 9.2 Explain the process of corrosion of the metals in 9.1 above and describe the necessary preventive measures.	<ul style="list-style-type: none"> • List the various kinds of metal - ferrous and non-ferrous metals. • Define corrosion and explain its process and effect on metal. 	<ul style="list-style-type: none"> • Samples of metals. • Lesson note. • Charts.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective: 10.0: Know The Properties And Application Of Various Types Of Paints And Varnishes			
Week	Specific Learning Outcome:	Teacher Activities	Resources
10	10.1 Describe the basic constituents of paints. 10.2 Name types of paints and explain their composition, properties and uses. 10.3 Explain the functions of primer, under-coat and finishing paints. 10.4 Identify paint schemes for various building surfaces: e.g. wood, block-work, brick-work, steel, etc. 10.5 Estimate quantity of paint required for a given house painting job. 10.6 Carry out experiments to determine spreading power, drying times and permeability of a paint sample. 10.7 Carry out experiment to demonstrate the effect of alkali on a given sample of oil paint. 10.8 Explain the occurrence of defects in painting and state the necessary precautions. 10.9 Explain the need for surface preparation before painting.	<ul style="list-style-type: none"> • Define “Vanish” and “Paint” • Explain the basic components of paints • Use question and answer technique to explain the functions of primer and under-coat. - do - 	<ul style="list-style-type: none"> • Specimens of Vanish and Paints. • Lesson note.
General Objective 11.0: Understand The Manufacture, Properties And Uses of Plastics In Building.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
11	11.1 Explain the basic chemical process of manufacture of plastics. 11.2 Distinguish between thermoplastics and thermosetting plastics. 11.3 Name different types of plastics in use in the building industry, describe their characteristics and uses. e.g. PVC, PVA, Polystyrene, silicones, etc.	<ul style="list-style-type: none"> • Define “Plastic”. • Explain the use of plastic materials in the construction industry. 	<ul style="list-style-type: none"> • Specimen of plastic materials. • Lesson note. Chalk board.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN CARPENTRY AND JOINERY.			
MODULE: BUILDING SCIENCE II		MODULE CODE: CBC 21	Contact Hours: 3hrs theory & 1 Hr. practical
MODULE Specification: THEORETICAL CONTENT			
General Objective 12.0: Understand The Properties And Uses Of Adhesives In The Building Industry.			
Week	Specific Learning Outcome:	Teacher Activities	Resources
12	<p>12.1 Name different types of adhesives in the building industry, describe their characteristics and uses. E.g. animal glue, casein glue, amino-resins, epoxy resin, etc.</p> <p>12.2 Explain the action of adhesives and the need for surface preparation before application.</p> <p>12.3 Explain factors to be considered in the selection of adhesive for use.</p> <p>12.4 Explain with illustrative examples, the use of sealants and mastics in the building industry.</p> <p>12.5 Describe the test procedure and carry out standard test to determine the dry and wet strengths of given specimen of adhesive.</p>	<ul style="list-style-type: none"> • Define “Adhesive”. • Explain the use and importance of adhesives in construction work. • Prepare detailed notes. - do - 	<ul style="list-style-type: none"> • Samples of adhesives • Lesson note. • Chalk board. - do -
13	Examinations: Practical = 60% Theory = 40%		

Building Drawing II

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION

MODULE: BUILDING DRAWING II	MODULE CODE: CTD 23	CONTACT HOURS: 3hrs. Practical, 1hr Theory
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GOAL: This module is intended to provide the trainee basic knowledge of the principles of design of two storey building as well as enable him to interpret fairly complex architectural drawing

General Objectives:

Upon completion of this module, the trainee should be able to:

- 1 Understand the general principles of design of a two storey house
- 2 Draw the site and floor plans, elevations and sections of a specific two storey building.
- 3 Prepare essential detail drawing of components.
- 4 Draw detail plan of the electrical services
- 5 Prepare schedules.
- 6 Understand the principles and be able to prepare and interpret simple structural drawings.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION

MODULE: BUILDING DRAWING II	MODULE CODE: CTD 23	CONTACT HOURS: 3hrs. Practical, 1hr Theory
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COURSE SPECIFICATION: THEORETICAL/PRACTICAL CONTENT

General Objective 1.0: Understand The General Principles Of Design Of A Two Story House.

Week	Specific Learning Outcome:	Teachers Activities	Resources
1 - 2	<p>1.1 Explain the importance of and relationship between function, form and beauty in building design.</p> <p>1.2 Describe the basic structural differences between a bungalow and a storey building.</p> <p>1.3 Explain the principles of balance and harmony as used in the design of elevations and general exterior of buildings.</p> <p>1.4 Describe the basic considerations in the planning of a storey (1) residential house.</p> <p>1.5 Describe the characteristics of a give plot plan (i.e. solar orientation, direction of prevailing winds, size of plot, access road, services, etc) and explain their influence on the pattern of design.</p> <p>1.6 Prepare a preliminary sketch design of a two storey building suitable for a specified plot of land</p>	<ul style="list-style-type: none"> • List the relationship between function, form and beauty in building design. • List the basic structural differences between a bungalow and a storey building. • Discuss the principles of balance and harmony used in design of elevations and exterior building. • Explain the basic structural considerations in planning of storey/residential house. • List characteristics of a given plot plan e.g. 	<ul style="list-style-type: none"> • Lesson plan • Pictures • Posters • Drawings
	<p>1.7 Justify the choice of materials for the proposed house in 1.6.</p>	<ul style="list-style-type: none"> • size of plot • access road • services etc • Explain the influence of the characteristics of a plot on the pattern of design. 	- do -
		<ul style="list-style-type: none"> • solar orientation • Sketch design of a two storey building suitable for 1.5m plot. • Explain the choice of materials for the proposed a based on a given specification house 	- do -

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: BUILDING DRAWING II		MODULE CODE: CTD 23	CONTACT HOURS: 3hrs. Practical, 1hr Theory
COURSE SPECIFICATION: THEORETICAL/PRACTICAL CONTENT			
General Objective 2.0: Draw The Site And Floor Plans, Elevations And Sections Of A Specified Two Story Building.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
3 - 4	<p>2.1 Draw presentation floor plans. (Presentation floor plans should show furniture arrangement as well as landscaping).</p> <p>2.2 Prepare the floor plans to suitable scale (Elevations may include: front, side, left, and right).</p> <p>2.3 Determine and draw to suitable scale essential sections. (use may be made of-set and part sections)</p> <p>2.4 Draw the elevations to suitable scale (Elevations may include front, side, left, and right).</p> <p>2.5 Draw the site plan. (site plan should indicate the drainage system, building line and access, landscaping, etc.)</p>	<ul style="list-style-type: none"> • Draw floor plans indicating • furniture arrangement • landscaping • Draw floor plans to scale i.e. ground and first floor. • Draw elevations to scale i.e. front, side, left and right. • Draw site plan showing. • Drainage system • Building line • Access road • Landscaping etc 	<ul style="list-style-type: none"> • Chalkboard • Drawing • Board, • Tee Square • Pencil • Set squares • Scale rule
General Objective 3.0: Prepare Essential Detail Drawing Of Components.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
5-6	<p>3.1 Draw to suitable scales, essential details of components (Details may include: floor, stairs, screen walls, boundary wall, plumbing system, floor slabs, etc.)</p> <p>3.2 Prepare working drawings of the septic tanks and soak away suitable for the house.</p> <p>3.3 Draw the interior elevations and sections of the kitchen and utility room.</p> <p>3.4 Draw details of the kitchen and utility room cabinets.</p>	<ul style="list-style-type: none"> • Draw to scales details of components, such as floor stairs, and screen walls. • Make a working drawing of septic tank and soak away. • Draw the interior elevations. • Draw sections of kitchen. • Draw section of utility room. • Give students drawing assignment/project. 	<ul style="list-style-type: none"> • Charts • Posters • Drawing board • Papers • Tee squares • pencils

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: BUILDING DRAWING II		MODULE CODE: CTD 23	CONTACT HOURS: 3hrs. Practical, 1hr Theory
COURSE SPECIFICATION: THEORETICAL/PRACTICAL CONTENT			
General Objective 4.0: Draw Detail Plan Of The Electrical Services			
Week	Specific Learning Outcome:	Teachers Activities	Resources
	4.1 Use the presentation floor plan to determine the type and location of electrical services. 4.2 Draw the electrical services plan	<ul style="list-style-type: none"> • Determine the type and location of electrical services on a floor plan. • Sketch electrical services plan. • Draw to scale the electrical services on a plan. • Give assignment and assess the student 	<ul style="list-style-type: none"> • Charts • Pictures • Drawing board • Tee square • Set square • Pencil
General Objective 5.0: Prepare Schedules			
Week	Specific Learning Outcome:	Teachers Activities	Resources
9-10	5.1 Prepare the following schedules: <ul style="list-style-type: none"> a. Doors b. Windows. c. Electrical installation d. Plumbing e. Painting f. Reinforcement schedule. 	<ul style="list-style-type: none"> • Prepare doors schedule • Prepare windows schedule • Prepare electrical installation schedule. • Prepare plumbing schedule • Prepare painting schedule • Prepare reinforcement schedule. • Give assignment on component scheduling and supervise and assess student 	<ul style="list-style-type: none"> • Charts • Drawing papers • Drawing board • Tee square • Set square • Pencil

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: BUILDING DRAWING II		MODULE CODE: CTD 23	CONTACT HOURS: 3hrs. Practical, 1hr Theory
COURSE SPECIFICATION: THEORETICAL/PRACTICAL CONTENT			
General Objective 6.0: Understand The Principles And Be Able To Prepare And Interpret Simple Structural Drawings.			
Week	Specific Learning Outcome:	Teachers Activities	Resources
11-12	6.1 Interpret and apply conventional representation of structural elements. 6.2 Interpret simple structural design data e.g. design data for the two story project drawing in this module. 6.3 Prepare structural detail drawing from given design data and sketches. 6.4 Prepare and interpret bending schedules. 6.5 Trace and reproduce structural drawings.	<ul style="list-style-type: none"> • List conventional ways of representing structural elements. • Explain simple structural design data for two story project. • Prepare detail structural drawing from given data and scale • Prepare and interpret bending drawings • Trace structural drawings. • Reproduce structural drawings. 	<ul style="list-style-type: none"> • Charts • Drawing papers • Drawing instrument • Reproduction equipment. • Schedule of structural design data.
13	EXAMINATION: 100%		

Screen Process Printing

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION

MODULE: SCREEN PROCESS PRINTING | **MODULE CODE: CTD 21** | **CONTACT HOURS: 17hrs./WK**

GOAL: This module is intended to provide the trainee adequate knowledge and skill in screen printing.

General Objectives:

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

1. Know and use correctly tools, equipment and materials for screen process printing
2. Produce various types of stencils for screen printing
3. Carry out screen process printing jobs with the correct techniques and safety practices

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: SCREEN PROCESS PRINTING		MODULE CODE: CPD 21	CONTACT Hours: 16hrs Practical, 1hr Theory
Module Specification: THEORETICAL CONTENT			
General Objective: 1.0 Know And Use Correctly Tools, Equipment And Materials For Screen Process Printing.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
1 - 4	1.1 Describe and identify various screen process printing tools, e.g. a. Squeegees (assorted) b. Stencil knives (assorted) c. Palette knife d. Electric iron e. Screw driver f. Pencil brushes (assorted) etc.	<ul style="list-style-type: none"> • The Teacher to describe and identify the various process printing tools • Draw and label the tools • Show the tools to the students. 	<ul style="list-style-type: none"> • The tools: • Pencil brushes. • Screw drivers • Electric irons • Palette knife • Stencil knife • Squeegees
	1.2 Describe and identify various screen printing equipment: e.g. a. Screen frame (assorted) b. Printing tables (assorted) c. Exposure units d. Printing down frame e. Process camera f. Mesh stretchers etc.	<ul style="list-style-type: none"> • Describe the various types of equipment used in screen printing. 	<ul style="list-style-type: none"> • Pictures • Lesson Plan • Text book
5 - 12	1.3 Identify screen process printing materials: e.g. a. screen fabric (assorted) b. screen inks (assorted) c. films (assorted) d. emulsions (assorted) e. solvents, bichromates, printing stock (assorted)	<ul style="list-style-type: none"> • Explain the materials used in screen printing. 	<ul style="list-style-type: none"> • Pair of scissors • Squeegee • Stencil knife • Palette knife • Brushes • A sponge • Films • Emulsions • Solvents • Bichromates, etc
	1.4 Describe the physical properties of screen process printing materials listed in 1.3 above and state their uses	<ul style="list-style-type: none"> • Describe the printing materials and give short notes on each. 	<ul style="list-style-type: none"> • Lesson plan • Pictures • Screen fabric • Screen inks • Films • Emulsions • Solvents, etc
13	EXAMINATIONS PRACTICAL= 70% THEORY=30%		

PROGRAMME: ADVANCE NATIONAL TECHNICAL CERTIFICATE IN PRINTING PROCESS			
MODULE: SCREEN PRINTING PROCESS		MODULE CODE: CPD 21	Contact hour: 16hrs Practical/wk
MODULE SPECIFICATION: Practical content			
General Objective: 1.0 Know How To Produce Various Types Of Stencils For Screen Printing.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
1 - 3	1.1 Design art works for screen printing project by: a. Visualising and finishing a project. b. Separation of the colours from a given art work.	• The teacher to set-up an art work for screen painting by visualising.	• Charts. • Lesson plan • Screen printing materials • Screen printing tools
	1.2 Design art works using various lettering techniques. e.g. a. Use of transfer lettering b. enlarging or blowing out c. Paste-up etc.	• The teacher to design an art work using various lettering techniques;-	• Letter • Paste • Lesson plan • Chart • Ink.
	1.3 Determine the quantity of materials required to carry out a given screen printing job. Examples of materials to include substrates, screen fabric and inks.	• Perform an example of calculations of the materials needed for a particular job.	• Lesson plan • Text book • Calculator
	1.4 Estimate the time and cost of completing a given screen printing job taking into consideration; a. type of substrate to be printed b. type of stencil to be used c. number of colours to be printed.	• Do work examples of calculation of the cost of completing a given screen printing job.	- do -
General Objective 2.0: Carry Out Screen Process Printing Jobs With The Correct Techniques And Safety Practices.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
6 - 10	2.1 Prepare the printing unit and materials using appropriate techniques. e.g (i)hanging of the frame a. registration b. mixing of ink c. drying.	• The teacher to prepare a printing unit and materials using appropriate techniques. • Guide the students to do same.	• Frame • Ink • Text book • Lesson plan • PVC sticker. • Textile pieces, etc.

PROGRAMME: ADVANCE NATIONAL TECHNICAL CERTIFICATE IN PRINTING PROCESS			
MODULE: SCREEN PRINTING PROCESS		MODULE CODE: CPD 21	Contact hour: 16hrs Practical/wk
MODULE SPECIFICATION: Practical content			
General Objective 2.0: Carry Out Screen Process Printing Jobs With The Correct Techniques And Safety Practices.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
	2.2 Print out a given job using appropriate procedures. e.g. <ul style="list-style-type: none"> a. proofing b. print lightest colour first and dry c. print next colour and dry etc. Note: Every impression must be properly registered. Examples of surfaces to be used includes paper, pvc sticker, textile pieces, metal wood, glass, etc. Safety practices should be observed.	<ul style="list-style-type: none"> • Print out a sample job and ask students to do the same. 	<ul style="list-style-type: none"> • Lesson plan • Text book • Paper • Glass • Pvc sticker • Textile pieces • Metal wood.
11 - 12	2.3 Dry printed job on the drying rack or heat dry on the oven.	<ul style="list-style-type: none"> • Guide the students to dry a freshly printed job. 	<ul style="list-style-type: none"> • The dry job. • Lesson plan • Textbook. • Chart.
	2.4 Undertake routine care and maintenance of tools and equipment in use and tidying up station.	<ul style="list-style-type: none"> • Guide and direct students to carry out care and maintenance of equipment on a routine basis. 	<ul style="list-style-type: none"> • Broom • Solvent • Brush • Water • Dustbin.
13	EXAMINATIONS PRACTICAL= 70% THEORY = 30%		

Decorative Finishes

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION		
MODULE: DECORATIVE FINISHES	MODULE CODE: CTD 22	CONTACT HOURS: 2hrs Theory. 12hrs Practical
<p>GOAL: This module is designed to produce a master craftsman who is capable of carrying out and supervising various specialised jobs in decorative finishes.</p> <p>General Objectives:</p> <p>On the completion of this module, the trainee should be able to:</p> <ol style="list-style-type: none">1. Accomplish decorative painting project involving graining2. Accomplish decorative painting project involving marbling3. Accomplish decorative painting project involving gliding.4. Accomplish decorative painting project involving texture effects5. Erect and dismantle suspended and buildup scaffolds6. Carry out relief wall hanging jobs involving heavy embossed, paper backed, fabric backed and plastic coated materials7. Execute a given project in spray painting		

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING

Module: DECORATIVE FINISHES	Module Code: CPD 22	Contact Hours: 2hrs Theory, 12hrs Practical/wk
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Module Specification: THEORETICAL CONTENT

General Objective 1.0: Be Able To Accomplish Decorative Projection Graining

Week	Specific Learning Objective:	Teacher Activities	Learning Resources
1 - 3	1.1 Identify the graining tools and describe their uses, e.g. (a) graining brushes. (b) painters knives. (c) hammers, etc.	• Explain the functions of the various tools used in graining work	• Samples of tools, * *Chalk board, Lesson notes, etc.
	1.2 Identify graining materials e.g. pigments, stainers, oils, solvents, driers, etc	- do -	• Graining colour.
	1.3 Describe the physical properties and uses of graining materials listed in 1.2 above.	- do -	• Specimen of graining colour.
	1.4 Calculate area of work to be grained in a given project..	- do -	
	1.5 Determine the quantity of materials to be carried out in a given graining project.	• Discuss and provide exercise on the application of protective coatings.	
	1.5 Estimate the time and cost for completing a given graining project taking into consideration: i. type of surface being imitated ii. job quantity iii. job position	• Instruct the students on importance of screening as it applies to wet grained job.	• Chalkboard

General Objective 2.0: Be Able To Accomplish Marbling Job

Week	Specific Learning Objective:	Teacher Activities	Learning Resources
	2.1 Identify the marbling tools and state their uses	• Explain the use of each tool in marbling.	• Chalk board, Lesson note • Posters
	2.2 Identify marbling materials e.g. pigments, stainers, etc.	• Identify marbling materials and explain their application and properties.	• Marbling tools and materials.
	2.3 Describe the physical properties of marbling materials	-do -	

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: DECORATIVE FINISHES		Module Code: CPD 22	Contact Hours: 2hrs Theory, 12hrs Practical/wk
Module Specification: THEORETICAL CONTENT			
General Objective 2.0: Be Able To Accomplish Marbling Job			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
	2.4 Calculate a given area to be marbled.	• Solve some calculations on surface area relating to marbling work.	- do -
	2.5 Determine the quantity of materials required for a given marbling project.	- do -	
4-5	<p>2.6 Estimate the time required to accomplish a given marbling project</p> <p>a. Produce a given surface to imitate the following white marble,</p> <p>b. sienna marble (iii) black and gold (iv) graniting.</p> <p>c. Select marbling effect you will like to produce.</p> <p>d. Make a cutting list of tools and material.</p> <p>e. Prepare the given surface to receive a ground coat, bearing in mind the type of surface to be worked upon.</p> <p>f. Prepare the marbling colour considering the nature of marbling</p> <p>g. work to be produce.</p> <p>h. Apply protective coating to the finished marbled job.</p> <p>i. Screen the finished job to avoid damage.</p>	<p>Teacher should demonstrate the practical procedure on sequence of operation in marbling job.</p> <p>• Give practical exercise to students and guide them.</p> <p>- do -</p> <p>- do -</p>	<ul style="list-style-type: none"> • Substrate • Marbling brushes assorted • Knives assorted • Hammer, pincers • Pigment, stainers, oil, solvents. • Varnish.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: DECORATIVE FINISHES		Module Code: CPD 22	Contact Hours: 2hrs Theory, 12hrs Practical/wk
Module Specification: THEORETICAL CONTENT			
General Objective 3.0: Accomplish Decorative Painting Project Involving Gilding.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
6-7	3.1 Prepare a given surface to be gilded taking into consideration the physical and chemical properties of the surface to be gilded e.g. a. Metal (ferrous, non-ferrous) b. Wood (soft, hard, etc).	• Provide exercises to students and guide them to achieving result.	• Specimen of gilded surface.
	3.2 Prepare the ground colour for a gilding job taking into consideration the characteristics of the ground to be gilded e.g.- smoothness; thickness, etc.	- do -	• Specimen of ground colour.
	3.3 Prepare the mordant (isin-glass) taking into consideration the quality (fineness and strength of the mordant).	• Give exercises on the preparation of mordant.	• Prepared specimen.
	3.4 Produce a given gilding job with transfer gold leaf or loose gold leaf using the appropriate mordants in 3.9 above. Note: Mordants should be applied to the area to be gilded only. The gold leaf (transfer gold leaf) should be applied to the mordant when it is still tacky.	• Give exercise to students and provide proper guide and supervision	• Specimen of finished job displayed.
General Objective 4.0: Accomplish Decorative Painting Project Involving Texture Effect.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
8 - 9	4.1 Prepare working drawing for relief texture work.	- do -	
	4.2 Prepare ground for relief texture work, Example of ground include: a. plaster; b. Wood; c. metal.	• Initiate practical exercise and guide students on the job.	

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: DECORATIVE FINISHES		Module Code: CPD 22	Contact Hours: 2hrs Theory, 12hrs Practical/wk
Module Specification: THEORETICAL CONTENT			
General Objective 4.0: Accomplish Decorative Painting Project Involving Texture Effect.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
	4.3 Prepare the materials for relief texture work. Example of materials include: a. plastic paint; b. plasters; c. Polychromatic paints, etc.	• Discuss and arrange relief material with the students.	
	4.4 Place the working drawing on the substrate.	• Exercise on placement of working drawing.	• Tools and equipment
	4.5 Transfer the working drawing on the substrate.		
	4.6 Mark-out the work;	• Engage students on marking-out exercise.	
General Objective 6.0: Carry Out Relief Wall Hanging Involving Embossed, Paper Backed, Fabric Backed And Plastic Coated Materials.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
10	6.1 Prepare the surface for relief wall hanging taking into consideration various types of surface characteristics. e.g. a. Previously painted surface; b. defected surfaces, etc.	• Provide practical exercise and guide students.	• Sample of a such activities.
	6.2 Select materials for relief wall hanging e.g. paper, wood, leather, etc. Choosing appropriate adhesive for the selected materials to be hung.	• Discuss and explain each procedure.	• Pictures, charts and specimen. • Lesson plan
	6.3 Trim cut up materials required for relief wall hanging job.	• Give practical exercise and assist students.	• Chart and pictures.
	6.4 Paste the materials to be hung.	• Give exercise on pasting of wall papers.	• Picture and charts.
	6.5 Fold material as appropriate to ensure ease of handling during hanging.	• Give practical exercise and assist students.	• Charts.

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: DECORATIVE FINISHES		Module Code: CPD 22	Contact Hours: 2hrs Theory, 12hrs Practical/wk
Module Specification: THEORETICAL CONTENT			
General Objective 6.0: Carry Out Relief Wall Hanging Involving Embossed, Paper Backed, Fabric Backed And Plastic Coated Materials.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
	6.6 Hang relief material with the correct technique.	- do -	• Pictures and charts.
	6.7 Dispose of surplus and waste materials.	• Assign students and direct them appropriately.	• Cleaning equipment.
	6.8 Clean tools and equipments and store as appropriate.	• Demonstrate and assign students to do same.	• Chart. • Cleaning solvent • Rags.
General Objective 7.0: Execute A Given Project In Spray Painting.			
Week	Specific Learning Objective:	Teacher Activities	Learning Resources
11 - 12	7.1 Select the following equipment for car and wood refinishing e.g. i. high pressure equipment ii. air volume spray equipment.	• Discuss and explain each of the equipment expose the students to each of the equipment.	• Specimen of the equipment made available.
	7.2 Prepare the surface for spraying e.g. car or wood structure.	• Give practical exercise on surface preparation and guide the student to achieve result.	• Vehicle body and wooden surface.
	7.3 Mask the prepared surface.	• Give the students exercise on masking.	• Specimen of a well masked job.
	7.4 Prepare materials for spraying e.g. a. Acrylic paint; b. Cellulose paint; c. Metallic paint		• All the various materials needed.
	7.5 Prepare the equipment for the application of spray.	• Show the equipment to the students and explain its working principles.	• Equipment
13	Examination: Practical = 70% Theory = 30%		

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: DECORATIVE FINISHES		MODULE CODE: CPD 22	CONTACT HOUR: 2hrs Theory, 12hrs Practical/wk
Module Specification: Practical Content			
General Objective: 1.0 Accomplish Decorative Projection			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
1-3	1.1 Prepare a given surface for graining taking into consideration the physical and chemical properties of the surface to be grained, e.g. metal (ferrous and non ferrous) - wood (soft and hard) etc.	• Give graining exercise to students to perform and supervise/guide them	• Sample of grained work
	1.2 Prepare the ground colour for a given graining job taking into consideration the characteristics of the ground colour for the graining job. The characteristics include hardness, smoothness, eggshell, (semi-gloss finish, etc.)	- do -	• Display a specimen of ground colour
	1.3 Prepare the graining colour for a given graining job taking into consideration the characteristics of the graining colour e.g. nearness, to ground colour, glaze, (transparent and semi-transparent) drying effect, etc	- do -	• Display a specimen of graining colour
	1.4 Products given graining jobs to imitate various grain patterns e.g. oak, mahogany, rose wood, walnut, etc. NOTE: Appropriate tools and techniques should be used in accordance with safety regulations	- do -	• Specimen of various grain patterns
	1.5 Apply protective coating (vanish) to a finished graining job	• Discuss and provide exercise on the application of protective coatings	• Specimen of protective coatings
	1.6 Screen wet job to prevent damage	• Instruct the students on importance of screening as it applies to wet grained job.	• Chalkboard illustration

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: DECORATIVE FINISHES		MODULE CODE: CPD 22	CONTACT HOUR: 2hrs Theory, 12hrs Practical/wk
Module Specification: Practical Content			
General Objective: 1.0 Accomplish Decorative Projection			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
4-5	1.7 Prepare a given surface for marbling taking into consideration the physical and chemical properties of the surface to be marbled; e.g. i. metal (ferrous, non-ferrous) ii. wood (soft, hard etc.)	• Give students exercise and guide them to achieve result	• Specimen of marbled job displayed
	1.8 Prepare the ground colour for a given marbled job taking into consideration the characteristics of the ground coat for the marbling job. The characteristics include hardness, eggshell, (semi-gloss finish), etc	- do -	• Specimen of ground colour displayed
	1.9 Prepare the marbling colour for a given marbling job taking into consideration the characteristics of the marbling colour e.g. a. nearness to ground colour b. glaze c. scumble (transparent and semi-transparent drying effect, etc.)	- do -	• Display specimen of marbled colour work.
	1.10 Produce a given surface to imitate the following: a. white marble b. sienna marble c. black and gold d graining etc. Note: Appropriate tools and techniques should be used and the safety practices involved should be observed.	- do -	• Specimen of various marble imitation
	1.11 Apply protective coating (various) to a finished marbling job	- do -	2 Specimen of protective coatings
	1.12 Screen wet job to prevent damage	- do -	• Chalkboard illustration
	1.13 Undertake routine care of tools in use	• Involve students in routine care and maintenance of tools	• Chalkboard

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: DECORATIVE FINISHES		MODULE CODE: CPD 22	CONTACT HOUR: 2hrs Theory, 12hrs Practical/wk
Module Specification: Practical Content			
General Objective 2.0: Accomplish Decorative Painting Project Involving Gilding			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
6-7	2.1 Prepare a given surface to be gilded taking into consideration the physical and chemical properties of the surface to be gilded e.g. metal (ferrous, non-ferrous; wood (soft, hard etc.)	• Provide exercises to students and guide them to achieving result	• Specimen of gilded surface
	2.2 Prepare the ground colour for a gilding job taking into consideration the characteristics of the ground to be gilded e.g. smoothness; thickness, etc.	- do -	• Specimen of ground colour
	2.3 Prepare the mordant (isin-glass) taking into consideration the quality (fineness and strength of the mordant	• Give exercises on the preparation of mordant of mordant	• Prepared specimen
	2.4 Produce a given gilding job with transfer gold leaf or loose gold leaf using the appropriate mordants in 3.9 above Note: Mordants should be applied to the area to be gilded only. The gold leaf (transfer gold leaf) should be applied to the mordant when it is still tacky.	• Give exercise to student and give them proper guide	• Specimen of finished job displayed
General Objective 3.0: Accomplish Decorative Painting Project Involving Texture Effect			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
8-9	3.1 Prepare working drawing for relief texture work	- do -	
	3.2 Prepare ground for relief texture work, e.g. of ground include - Plaster, Wood, Metal.	• Initiate practical exercise and guide students on the job	
	a. Prepare the materials for relief texture work, e.g. of materials include: b. plastic paint c. plasters d. polychromatic paints etc. e. Place the working drawing on the substrate f. Transfer the working drawing on the substrate g. Mark-out the work	• Discuss and arrange relief material with the students - do - - do - • Engage students on marking-out exercise	

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: DECORATIVE FINISHES		MODULE CODE: CPD 22	CONTACT HOUR: 2hrs Theory, 12hrs Practical/wk
Module Specification: Practical Content			
General Objective 4.0: Carry out relief wall hanging involving embossed, paper backed, fabric backed and plastic coated materials			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
10	4.1 Prepare the surface for relief wall hanging taking into consideration various types of surface characteristics e.g. a. previously painted surface b. defected surfaces etc.	• Provide practical exercise and guide students	• Sample of a such activities
	4.2 Select materials for relief wall hanging e.g. 4.3 Paper, wood, leather, etc. Choosing appropriate adhesive for the selected materials to be hung	• Discuss and explain procedure.	• Pictures, charts and specimen
	4.4 Trim cut up materials required for relief wall hanging job	• Give practical exercise and assist students	• Chart and pictures
	4.5 Paste the materials to be hung	• Give exercise on pasting of wall papers	• Picture and charts
	4.6 Fold material as appropriate to ensure ease of handling during hanging	• Give practical exercise and assist students	• Charts displayed
	4.7 Hang relief material with the correct technique	• - do-	• Picture and Charts
	4.8 Dispose of surplus and waste materials	• Assign students and direct them appropriately	• Site work • Cleaning equipment
	4.9 Clean tools and equipments and store as appropriate	• Demonstrate and assign students to do same	• Chart • Cleaning solvent • Rags

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION			
MODULE: DECORATIVE FINISHES		MODULE CODE: CPD 22	CONTACT HOUR: 2hrs Theory, 12hrs Practical/wk
Module Specification: Practical Content			
General Objective 5.0: Execute A Given Project In Spray Painting			
Week	Specific Learning Outcome	Teacher Activities	Learning Resources
11-12	5.0 Select the following equipment for car and wood refinishing e.g. 5.1 High pressure equipment 5.2 Air volume spray equipment	<ul style="list-style-type: none"> • Discuss and explain each of the equipment • Expose the students to each of the equipment 	<ul style="list-style-type: none"> • Specimen of the equipment made available
	5.3 Prepare the surface for spraying e.g. car or wood structure	<ul style="list-style-type: none"> • Give practical exercise on surface • Preparation and guide them to achieve result 	<ul style="list-style-type: none"> • Vehicle body and wooden surface
	5.4 Mask the prepared surface	<ul style="list-style-type: none"> • Give the students exercise on masking 	<ul style="list-style-type: none"> • Specimen of a well masked job
	5.5 Prepare materials for spraying e.g. <ul style="list-style-type: none"> a. Acrylic paint b. Cellulose paint c. Metallic paint 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • All the various materials needed
	5.6 Prepare the equipment for the application of spray	<ul style="list-style-type: none"> • Show the equipment to the students and explain its working principles 	<ul style="list-style-type: none"> • Equipment
	5.7 Spray material to the prepared surface to give desired effect	<ul style="list-style-type: none"> • Carry out actual spraying exercise 	<ul style="list-style-type: none"> • Sample of finished work. • Pictures
13	Examination: Practical =70% Theory=30%		

Advanced Spray Painting

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATION		
MODULE: ADVANCED SPRAY PAINTING	MODULE CODE: CTD 23	CONTACT HOURS: 8hrs./WK
GOAL: This module is designed to further equip the trainee with the knowledge and skill to perform complex spray painting work		
General Objectives:		
On the completion of this module, the trainee should be able to:		
Understand the nature and techniques of preparing vessels/tanks for spray painting		
Prepare surface of new metal ready for spray painting		

PROGRAMME: ADVANCED NATIONAL TECHNICAL CERTIFICATE IN PAINTING AND DECORATING			
Module: ADVANCED SPRAY PAINTING		Module Code: CPD 23	Contact Hours: 2hrs Theory, 6 Hrs Practical/Wk
Module Specification: THEORETICAL/PRACTICAL CONTENT			
General Objective 1.0: Understand The Nature And Techniques Of Preparing Vessels/Tanks For Spray Painting.			
Week	Specific Learning outcome	Teacher Activities	Learning resources
1 - 5	1.1 Prepare tanks/vessel for spray application by appropriate methods e.g. sandblasting, sand sweeping, chipping scrapping, etc.	• Take the students to see a vessel/or tank in a repair ship yard.	• Audio/video • Film strip
	1.2 Mask up job prior to spray painting using masking paper, etc.	- do -	- do -
	1.3 Prepare adequate scaffoldings or crane with basket.	• Take the students to the site to see scaffold materials	- do -
	1.4 Prepare a report giving approval for the spray painting confirming all other jobs have been done.	• Show a typical approved report and ask them to prepare similar one.	• An industrial visit to an oil servicing company/ship repair yard.
6-12	Surface Preparation of a new Metal		
	Select Project	• Guide the students to perform given project on surface preparation of new and old metal	• Materials, Tools, Work
	Dust off debris	• Assess students	
	Select materials		
	Scrape down surface		
	Chip necessary spots		
	Wire brush the surface/sandblasting Vigorously		
	Apply primer immediately (same day)		
	Apply second coat of primer to bolts		
	Apply second coat of primer to bolts rivet heads and sharp edges		
END OF ANTC Examination: Practical= 70% Theory =30%			

List of Equipment

MINIMUM TOOLS AND EQUIPMENT LIST FOR PAINTING AND DECORATING

S/NO	DESCRIPTION	MINIMUM QUANTITY REQUIRED
1	Brushes (assorted)	20
2	Rollers (assorted)	20
3	Knives (assorted)	10 each
4	Hammers	10
5	Pincers	10
6	Trowels	10
7	Blow lamps	10
8	Touch	10
9	Buckets	10
10	Paint kettles	20
11	Scaffold materials (set)	5
12	Tape rule	20
13	Plumb bulb and line	10
14	Spirit level	10
15	Scale rule	20
16	Try square	10
17	Scraper	10
18	Strainers	10
19	Spray guns	10
20	High pressure equipment	1
21	Volume spray equipment	2
22	Hoses	10
23	Sander	10
24	Spray booths	20
25	Drying equipment infra-red lamp	5
26	Extractor fans	5
27	Air duster	20
28	Glove	20
29	Chamoise leather	20
30	Flow cup or viscometer	5

S/NO	DESCRIPTION	MINIMUM QUANTITY REQUIRED
31	Scissors or shears	5
32	Casing wheels	10
33	Paste board	5
34	Stencil plates (figures)	10
35	Stencil (alphabets)	10
36	Nail punch	10
37	Files (assorted)	10
38	Wire brush	10
39	Shave hook	10
40	Straight edge	10
41	Steam stripper	10
42	Liner fitchers	10
43	Bridges	10
44	Mal stick	10

List of Participants

UNESCO-NIGERIA PROJECT IN SUPPORT OF REVITALIUSATION OF TECHNICAL AND VOCATIONAL EDUCATION(TVE) IN NIGERIA

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3	Engr. S.C. Odumah	Curriculum Development Coordinator
4	Mr. B.N. Niriyyus	Staff Development Coordinator
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FINAL REVIEW

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