

**Furniture Design and Construction - National
Technical Certificate (NTC) and Advanced National
Technical Certificate (ANTC)**

Furniture Design and Construction I

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

MODULE: FURNITURE DESIGN AND CONSTRUCTION I MODULE CODE: CFC II

GOAL: This module is designed to provide the trainee with the basic knowledge and skill to enable him understand simple furniture and Construction

General Objectives:

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

1. Understand design elements.
2. Appropriate design principles to design elements.
3. Understand the anthropometrics principles of apportioning sizes to products.
4. Know the principles of timber preparation.
5. Know the principles of marking out and be able to mark out given stock accurately.
6. Know the nature of timber and timber growth.
7. Know the principles of surface preparation.
8. Understand the principles and purpose of timber conversion and seasoning.
9. Know the various timber defects and how to prevent them.
10. Know the various technical terms associated with the furniture trade.
11. Know the various adhesives used in woodwork and be able to apply them on a given job.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

Module: FURNITURE DESIGN AND CONSTRUCTION I	Module Code CFC - 11	Contact Hours:
--	-----------------------------	-----------------------

Module Specification: Theoretical Content.

General Objective: 1.0 Understand design elements and design principles.

Week	Specific Learning Outcome:	Teacher Activities	Resources
1	1.1 Explain the meaning of design 1.2 State the basic design elements, i.e. space, line, shape, form, colour, value and texture. 1.3 Explain how these elements affect the quality of a design. 1.4 State how these elements affect the quality of a design in two and three dimensions.	<ul style="list-style-type: none">• Explain to students, design elements with regards to types of lines, shapes and forms applied in drawing and how they affect dimensions.	<ul style="list-style-type: none">• Chalk board.• Drawing instruments.• Lesson notes.

General Objective 2:0 Understand Design Principles

Week	Specific Learning Outcome:	Teacher Activities	Resources
2	2.1 Know the various design principles i.e. balance, movement, repetition, emphasis, contrast and unity. 2.2 Explain their effects in application to the design elements. 2.3 Describe how the design principles apply to the various design elements in nature.	<ul style="list-style-type: none">• Explanation of types of lines e.g. Zig zag dotted line, thick line, thin line etc.• State the functions of these lines in drawings.	<ul style="list-style-type: none">• Chalk board.• Drawing instruments.• Lesson notes.

General Objective 3.0: Know Anthropometrics Principles

Week	Specific Learning Outcome:	Teacher Activities	Resources
3	3.1 Explain the principles of human proportions and dimensions, e.g. relationship of distance between one part of the body and another. 3.2 Use anthropometrics principles to determine various sizes of different types of furniture, e.g. chairs, stools, tables, etc.	<ul style="list-style-type: none">• Draw the three-dimensional views of a chosen object showing the front, side, and plan views.• Draw the pictorial view of a chosen furniture item.	<ul style="list-style-type: none">• Chalk board working using drawing instruments.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

Module: FURNITURE DESIGN AND CONSTRUCTION I	Module Code CFC - 11	Contact Hours:
--	-----------------------------	-----------------------

Module Specification: Theoretical Content.

General Objective 4.0: Know the Principles of Timber Preparation

Week	Specific Learning Outcome:	Teacher Activities	Resources
4	4.1 Explain the principles of cutting wood to size using handsaws and machine.	<ul style="list-style-type: none"> List the tools used for timber preparation and explain their functions. 	<ul style="list-style-type: none"> Chalk board Woodwork tools Materials (wood)

General Objective 5.0 Marking Out

Week	Specific Learning Outcome:	Teacher Activities	Resources
5	5.1 Interpret simple working drawing of wood projects. 5.2 Identify conventional representation for timber fastenings on a drawer. 5.3 Define conversion and state its purposes. 5.4 Describe with annotated sketches how a log is converted to timber by the following methods. a. Through and through sawing b. Quarter sawing 5.5 State the merits and demerits of each type of conversion method.	<ul style="list-style-type: none"> Teach students to make orthographic drawing of simple objects. Give drawing assignment 	<ul style="list-style-type: none"> Drawing Equipment Marking out tools. Text books Chalk board. Lesson notes.

General Objective 6.0 Know the nature of Timber Growth And Structure

Week	Specific Learning Outcome:	Teacher Activities	Resources
6	6.1 Describe the growth of a tree from which timber is obtained, how it is fell; and cut into logs for sawmills. 6.2 Classify timber into two groups: - hardwoods and softwood and explain the difference between the two classification. 6.3 State the main characteristics of hardwoods and softwoods.	<ul style="list-style-type: none"> Explain timber growth and Structure Explain the nature of trees from which timber is obtained. Classify timber into hard and soft wood. Show samples of these. 	<ul style="list-style-type: none"> Text Books Chalk board. Samples of woods. Lesson notes.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

Module: FURNITURE DESIGN AND CONSTRUCTION I	Module Code CFC - 11	Contact Hours:
--	-----------------------------	-----------------------

Module Specification: Theoretical Content.

General Objective 7.0 Know the methods of Wood Surface Preparation for Finishing

Week	Specific Learning Outcome:	Teacher Activities	Resources
7	7.1 State the purpose of finishing e.g. decoration, preservation. 7.2 Explain the working principles of air compressors and air line dryers. 7.3 Explain the importance of fan extractors. 7.4 Recognise and remove surface defects. 7.5 Outline the process of staining and filling 7.6 Apply stains, e.g. matching stain using appropriate safety equipment.	<ul style="list-style-type: none"> • State the purpose of surface preparation and finishing e.g. for aesthetics, preservation, hygiene. • Name the types of finishing materials e.g. abrasive paper, stain, transparent and opaque finishes paint, polish, etc. 	<ul style="list-style-type: none"> • Chalk board. • Samples of wood finishing materials. • Lesson note

General Objective 8.0 Know the Principles of Timber Conversion And Seasoning

Week	Specific Learning Outcome:	Teacher Activities	Resources
8	8.1 Explain the two types of conversion: - a) through and through method, (b) back sawing or quarter sawing method. List the merits and demerits of each method. 8.2 Explain the difference between kiln seasoning and natural or air seasoning. 8.3 State the merits and demerits of each type of seasoning. 8.3 Describe the effect of proper staking of boards on the seasoning of the timber.	<ul style="list-style-type: none"> • Explain conversion of timber. • Explain the various methods of conversion. • Explain seasoning and state the importance of seasoning wood. Explain the two main classes of wood seasoning.	<ul style="list-style-type: none"> • Chalk board. • Samples of timber from different conversion methods. • Lesson note • Pictures of defects infested woods.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

Module: FURNITURE DESIGN AND CONSTRUCTION I	Module Code CFC - 11	Contact Hours:
--	-----------------------------	-----------------------

Module Specification: Theoretical Content.

General Objective 9.0 Timber Defects

Week	Specific Learning Outcome:	Teacher Activities	Resources
9	<p>9.1 Classify timber defects into two main groups namely natural and artificial defects.</p> <p>9.2 Explain the causes of the following timber defects; splits, warp, twist, casehardening, collapse, etc.,</p> <p>9.3 Explain the possible causes of the following timber defects; dry rot, wet rot,, woodborers and how they can be prevented.</p> <p>9.4 Explain the possible causes of timber defects</p> <p>9.5 Explain the methods of preventing natural and artificial defects in timber.</p>	<ul style="list-style-type: none"> • Identify the various types of defects in timber - natural and artificial. • State the merits and demerits of the various methods of wood conversion. • Mention the natural and artificial defects in timber and explain their effects. 	<ul style="list-style-type: none"> • Chalk board. • Samples of defects infested woods. • Lesson note • Pictures of defects infested woods.

General Objective 10.0 Know Technical Terms In Furniture Work.

Week	Specific Learning Outcome:	Teacher Activities	Resources
10	<p>10.1 Make a list of Technical Terms used in furniture making e.g. Pot life, blooming, bleaching, staining, padding, tacking etc.</p> <p>10.2 Define technical terms used in Furniture Making.</p> <p>10.3 Identify the following Nigerian timbers - mahogany obeche, (cedar), afara, abura, etc and their uses.</p>	<ul style="list-style-type: none"> • Define the related glossaries in furniture making. 	<ul style="list-style-type: none"> • Chalk board. • Lesson notes.

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION**Module: FURNITURE DESIGN AND CONSTRUCTION I****Module Code CFC - 11****Contact Hours:****Module Specification: Theoretical Content.****General Objective 11.0: Know the Adhesives used in Woodwork**

Week	Specific Learning Outcome:	Teacher Activities	Resources
11-12	11.1 Explain the principles of adhesion 11.2 Classify adhesives into interior and exterior types: Interior: - animal, Vegetable and thermo-plastic glues; Exterior:- Phenol formaldehyde (cascamite) 11.3 State the composition of the adhesive listed above. 11.4 Prepare and apply adhesives. 11.5 Cure glue lines by normal temperature and artificial heating methods.	<ul style="list-style-type: none">• Define and explain the types of adhesives and glues used in woodworking and their application.• Show samples of different adhesives to students.	<ul style="list-style-type: none">• Chalk board• Lesson note• Samples of adhesive materials.
13	Examination: Practical: - 70%: Theory - 30%		

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

Module: FURNITURE DESIGN AND CONSTRUCTION - I	Module Code: CFC 11	Contact Hours 252
--	----------------------------	--------------------------

Module Specification: Practical Content.

	General Objective 1.0: Design, mark-out and prepare wood for the specified furniture item to be produced.		
Week	Specific Learning Objective:	Teacher Activities	Resources
1-5	<ol style="list-style-type: none"> 1. Carry out a simple design of own choice of furniture item. 2. Carry out some design work applying specific design principles to the various design elements. 3. Use the anthropometrics principles to determine various sizes of different types of furniture e.g. chairs, stools, tables, etc. 4. Saw timber to given length and width 5. Use hand tools to make simple joint 6. Plane timber to size by following the proper sequence: <ol style="list-style-type: none"> i. Plan the face side and mark ii. Plan face edge square to the face size and mark. iii. Gauge to correct width and remove waste. iv. Gauge to correct thickness and remove waste v. Plane one end. 	<ul style="list-style-type: none"> • Guide the students to produce design of own choice of furniture item • Draw the pictorial view of a chosen piece of furniture. • List the procedures for timber preparation:-e.g. sawing, planning, marking out, etc. • Guide the students to prepare a given piece of timber material to specification. 	<ul style="list-style-type: none"> • Drawing instruments and equipment. • Tools • Materials, etc.
6 & 7	<ol style="list-style-type: none"> 7. Select tools for marking out: <ol style="list-style-type: none"> a. Try square; b. Pencil; c. Rule d. Gauges e. Compasses f. Marking knife. g. Mark-out stock accurately to given specifications. h. Prepare materials. 	<ul style="list-style-type: none"> • Select marking out tools and demonstrate the steps for accurate marking out. • Observe the students as they perform similar operations. 	<ul style="list-style-type: none"> • Marking out tools. • Materials. • Cutting List

PROGRAMME: NATIONAL TECHNICAL CERTIFICATE IN FURNITURE DESIGN AND CONSTRUCTION

Module: FURNITURE DESIGN AND CONSTRUCTION - I	Module Code: CFC 11	Contact Hours 252
--	----------------------------	--------------------------

Module Specification: Practical Content.

	General Objective 1.0: Design, mark-out and prepare wood for the specified furniture item to be produced.		
8-12	<p>8. Select and apply various grades of abrasive paper to prepare specified surfaces for finishing.</p> <p>9. Apply base coating, e.g. wood filler, undercoat and sanding sealer.</p> <p>10. Apply lacquer or paint by spraying or by hand brush</p> <p>11. Maintain and clean spray equipment</p> <p>13 Identify the types of common manufactured boards: Plywood, lamin-board, etc.</p> <p>14 State the structural properties each type of manufactured board.</p> <p>15 Handle and store board materials correctly</p>	<ul style="list-style-type: none"> • Explain the need for safety wear during surface preparation. • Explain the importance of fan extractors. • Carry out surface preparation and spray finish a given job. • Ask students to perform similar task. • Bring samples of plywood, block board etc. to the class and explain their composition and application. 	<ul style="list-style-type: none"> • Marking out tools. • Materials. • Cutting List
	Examinations: Theory 30%; Practical 70%		