NATIONAL BOARD FOR TECHNICAL EDUCATION
CURRICULUM AND COURSE SPECIFICATIONS
IN

NATIONAL DIPLOMA (ND)

LAUNDRY AND DRY-CLEANING TECHNOLOGY

JULY, 2019

GENERAL INFORMATION

1.0 Title of the Programme

The title of the programme and certificate awarded shall be National Diploma (ND) in Laundry and Dry Cleaning Technology.

2.0 Goal and Objectives of the programme

2.1 Goal

The National Diploma programme is designed to produce diplomates who should be able to process fabrics efficiently.

2.2 Objectives

Diplomates of this programme should be able to:

i] Observe the health and safety regulation in the work environment

ii] Identify, operate and maintain laundry machinery

iii] Carry out laundry and dry cleaning services

iv] Set up and manage a Business enterprise

3.0 Entry Requirements

3.1 National Diploma

The entry requirements into National Diploma Computer Science programme are as follows:-

a) Five credit level passes in GCE "O" level, WAEC (WASSCE), NECO (SSCE) and NABTEB at not more than two sittings. The five subjects must include:

I. English Language, Mathematics, Chemistry, Physics and one other subject chosen from the following: Economics, Geography, Biology/Agricultural Science, Further Mathematics, Physics, Chemistry,

II. And Relevant NTC/NBC & NVC Trades

III. Plus JAMB Examination as resolved by National Policy on Education.

b) Upper credits pass Certificate in Laundry and Dry Cleaning Technology of any recognised tertiary institution. The student must be prima fascia qualified as in (a) above.

4.0 Curriculum

4.1 The curriculum of the ND programme consists of four main components. These are:

i. General studies/Education
ii. Foundation courses
iii. Professional courses
iv. Supervised Industrial work experience scheme (SIWES).

4.1.1 The General Education component shall include courses in

English Language
Communication
Citizenship Education
Entrepreneurship

The General Education component shall account for not more than 15% of total contact hours for the programme.

4.2 Foundation Courses include courses in Basic Science, Mathematics, and Statistics etc. The number of hours will vary with the programmes and may account for about 10 –15% of the total contact hours.

Professional Courses are courses, which give the student the theory and practical skills he needs to practice his field of calling at the technical/technologists level.

Student Industrial Work Experience Scheme (SIWES) shall be taken during the long vacation following the end of the second semester of the first year. See details of SIWES at paragraph 9.0.

5.0 Curriculum structure

5.1 ND programmes

The structure of the programme courses of four semesters of classroom, laboratory and workshop activities in the college – and a period (3-4 months) of supervised industrial work experience scheme (SIWES). Each semester shall have 17 weeks duration made up as follows:-

15 contact weeks of teaching, i.e. recitation, practical exercises, quizzes, test, etc; and 2 weeks for examinations and registration. SIWES shall take place at the end of the second semester of the first year.

6.0 Accreditation

Programme offered at the ND level shall be accredited by the NBTE before the diplomats can be awarded National Diploma certificate. Details about the process of accrediting a programme for the award of the ND is available from the Executive Secretary, National Board for Technical Education, P. M. B. 2239, Kaduna, Nigeria.

7.0 Conditions for the Award of the National Diploma

Institution offering accredited programme will award the National Diploma programme after passing the prescribed course work, examinations, diploma project and the supervised industrial work experience. Such candidates should have completed a minimum of between 72 and 80 semester credit units depending on the programme.

7.1 Unified Grading System

The unified grading system to be applied in scoring all course work, examinations, project, etc is as stated on table below:

Marked Range	**Letter Grade**	**WEIGHTING**
75 and above	A	4.0
70 – 74	AB	3.5
65 – 69	B	3.25
60- 64	BC	3.0
55 – 59	C	2.75
50-54	CD	2.50
45 – 49	D	2.25
40-44	E	2.0
Below 40%	F	0.0 0

7.2 Classification of Diplomas

The final Cumulative Grade Point Average (CGPA) shall be determined (calculated) and applied to the classification of the National Diploma as follows:

Class (Level of Pass)	**CGPA**
Distinction	3.50 and Above
Upper Credit	3.00 – 3.49
Lower Credit	2.50 – 2.99
Pass	2.00 – 2.49
Fail	Below 2.00

8.0 Guidance notes for Teachers teaching the programme

8.1 The new curriculum is drawn in unit courses. This is in keeping with the provisions of the National Policy on Education which stress the need to introduce the semester credit units which will enable a student who so wish to transfer the units already completed in an institution of similar standard from which he is transferring.

8.2 In designing the units, the principle of the modular system by product has been adopted; thus making each of the professional modules, when completed provides the diplomates with technician skills, which can be used for recognition as in self-employed or for employment purposes.

8.3 As the success of the credit unit system depends on the articulation of programmes between the institutions and industry, the curriculum content has been written in behavioural objectives, so that it is clear to all the expected performance of the student who successfully completed some of the courses or the diplomats of the programme. There is a slight departure in the presentation of the performance based curriculum which requires the conditions under which the performance are expected to be carried out and the criteria for the acceptable levels of performance. It is a deliberate attempt to further involve the staff of the department teaching the programme to write their own curriculum stating the conditions existing in their institution under which the performance can take place and to follow that with the criteria for determining an acceptable level of performance. The Academic Board of the institution may vet departmental submission on the final curriculum. Our aim is to continue to see to it that a solid internal evaluation system exists in each institution for ensuring minimum standard and quality of education in the programmes offered throughout the polytechnic system.

8.4 The teaching of the theory and practical work should, as much as possible, be integrated. Practical exercises, especially those in professional courses and laboratory work should not be taught in isolation from the theory. For each course, there should be a balance of theory to practice in the ratio of about 40:60.

9.0 Guidelines on SIWES programme

9.1 For the smooth operation of the SIWES, the following guidelines shall apply:

Responsibility for placement of Students

a) Institutions offering the ND programme shall arrange to place the students in industry. By April 30 of each year, six copies of the master list showing where each student has been placed shall be submitted to the Executive Secretary, NBTE which shall, in turn, authenticate the list and forward it to the industrial Training Fund, Jos

b) The Placement officers should discuss and agree with industries on the following:

i. A task inventory of what the students should be expected to experience during the period of attachment. It may be wise to adopt the one already approved for each field.

ii. The industry-based supervisor of the students during the period, likewise the institution based supervisor.

iii. The evaluation of the student during the period. It should be noted that the final grading of the student during the period of attachment should be weighted more on the evaluation by his industry-based supervisor.

9.2 Evaluation of Students during the SIWES

In the evaluation of the student, cognizance should be taken of the following items: a) Punctuality

b) Attendance

c) General attitude to work

d) Respect for authority

e) Interest in the field/technical area

f) Technical competence as a potential technician in his field.

9.3 Grading of SIWES

To ensure uniformity of grading scales, the institution should ensure that the uniform grading of students' work which has been agreed to by all polytechnics is adopted.

9.4 The Institution based Supervisor

The institution-based supervisor should initial the log book during each visit. This will enable him/her to check and determine to what extent the objectives of the scheme are being met and to assist students having any problems regarding the specific given to them by their industry-based supervisor.

9.5 Frequency of visit

Institution should ensure that students placed on attachment are visited within one month of their placement. Other visits shall be arranged so that:

I. There will be another visit six weeks after the first visit and
II. A final visit in the last month of the attachment.

9.6 Stipend for Students in SIWES

The rate of stipend payable shall be determined from time to time by the Federal Government after due consultation with the Federal Ministry of Education, the Industrial Training Fund and the NBTE.

9.7 SIWES As a component of the Curriculum

The completion of SIWES is important in the final determination of whether the student is successful in the programme or not. Failure in the SIWES is an indication that the student has not shown sufficient interest in the field or has no potential to become a skilled Technician in his/her field. The SIWES should be graded on a fail or pass basis. Where a student has satisfied all other requirements but failed SIWES, he may only be allowed to repeat another four months SIWES at his/her own expense

YEAR I SEMESTER I

S/N	Course Code	Course Title	L	P	CH	CU	Prerequisite
1	LDT 111	Introduction to Textile	2	3	5	5	
2	LDT 112	Introduction to Laundry and Dry Cleaning	2	3	5	5	
3	LDT 113	Occupational Health and Safety	2	0	2	2	
4	COM 111	Introduction to Computing	2	2	4	4	
5	STP 112	Heat Energgy	1	0	1	2	
6	STC 111	General Principles of Chemistry	2	1	3	3	
7	STA 111	Descriptive Statistics I	1	0	2	2	
8	GNS 101	Citizen Education I	2	0	2	2	
9	GNS 102	Use of English	2	0	2	2	
	TOTAL		16	9	26	**27**	

YEAR I SEMESTER 2

S/N	Course Code	Course Title	L	P	CU	CH	Prerequisite
1	LDT 121	Laundry Technology I	2	2	4	4	
2	LDT122	Dry Cleaning Technology I	1	2	3	3	
3	LDT 123	Infection Control	2	2	4	4	
4	LDT 124	Introduction to Dyeing	2	1	3	3	
5	EED 126	Introduction to Practice of Entrepreneurship	2	0	2	2	
6	STC 121	Organic Chemistry	2	1	3	3	
7	GNS 102	Communication in English I	2	0	2	2	
8	GNS 128	Citizenship Education II	2	0	2	2	
	TOTAL		17	8	25	26	

YEAR II SEMESTER I

S/N	Course Code	Course Title	L	P	CU	CH	Prerequisite
1	LDT 211	Bleaching and Spotting in Laudry Work	2	2	4	4	
2	LDT 212	Laundry Technology II	1	1	2	2	
3	LDT 213	Dry Cleaning Technology II	2	2	4	4	
4	COM 215	Computer Application II	2	2	4	4	
5	EED 216	Practice of Entrepreneurship	2	0	2	2	
6	GNS 201	Use of English II	2	0	2	2	
7	GNS 228	Research Methodology	2	2	4	4	
8	SIW 219	SIWES	0	4	4	4	
	TOTAL		13	13	26	26	

YEAR II SEMESTER 2

S/N	Course Code	Course Title	L	P	CU	CH	Prerequisite
1	LDT 221	Laundry and Dry Cleaning Management	2	0	2	2	
2	LDT 222	Resource Management in Laundry	2	-	2	2	
3	LDT 223	Laundry and dry cleaning Machine Operation	1	2	3	3	
4	LDT224	Textile Testing and Quality Control	2	1	3	3	
5	LDT 225	Project	2	4	6	6	
6	GNS 204	Communication in English II	2	0	2	2	
			11	7	18	18	

PROGRAMME: **NATIONAL DIPLOMA IN LAUNDRY AND DRY CLEANING TECHNOLOGY**

ND 1 SEMESTER I

Programme: Laundry and Dry Cleaning Technology	Code: LDT 111	Credit Hours: 2hrs.
Course: Introduction to Textiles	Pre-requisite	Theoretical:
Semester: First Semester		
Goal: This course is designed to enable the student acquire basic knowledge of different types of textiles, yarn and fabrics and their uses		

GENERAL OBJECTIVES: On completion of the course the student should be able to:

1. Know major textile fibres classification.
2. Understand the physical and chemical properties of fibres.
3. Understand the end uses of major fibres.
4. Understand the basic methods of yarn production.
5. Understand the basic methods of fabric production.

COURSE SPECIFICATION: INTRODUCTION TO TEXTILES			COURSE CODE: LDT 111	CONTACT HOURS: HOURS 2		
GENERAL OBJECTIVE: Know major textiles fibres classification						
COURSE SPECIFICATION: **THEORETICAL CONTENT 1.0**				COURSE SPECIFICATION: **PRACTICAL CONTENT**		
Week	***Specific Learning Objectives***	***Teacher's Activities***	***Learning Resources***	***Specific Learning Objective***	***Teacher's Activities***	***Evaluation***
	1.1 Define fibres 1.2 Give general classification	Explain textiles fibres classification	Internet and pcs, Text books, journals etc			Give general classification of textiles fibre
GENERAL OBJECTIVE 2.0- Understand the physical and chemical properties of fibres						
	2.1 Explain the physical properties of natural fibres 2.2 Explain the physical man made fibres 2.3 Explain the chemical natural fibres 2.4 Explain the chemical man made fibre.	Discuss physical and chemical properties of fibres	PC and internet, books, journals etc			The student should be able to explain physical and chemical properties of fibre
GENERAL OBJECTIVE 3.0 - **Understand the end uses of major textiles fibres**						
	3.1 Lis t the end uses of natural fibres 3.2 List the end uses of man made fibre	Explain the end uses of natural man made fibres	Charts and text book			List the end uses of natural and man made

GENERAL OBJECTIVE 4.0 - Understand the basic methods of yarn production						
	4.1 Explain the principles of cleaning fibres 4.2 State the objectives of carding. **4.3** State the objectives of spinning 4.4 Explain the principles of operation of ring frame	Explain the objective blow room, carding spinning Explain principles of operation ring frame	Use the text book and internet Use the text book and internet			Explain the onjective of blow room, carding spinning
GENERAL OBJECTIVE 5.0 -**Understand the basic methods of fabric production**						
	5.1 State the sequence of operation of fabric production e.g warping, sizing pirn winding, gaiting earing 5.2 Explain 1 – 5 in 5.1 5.3 Explain types of looms fabric production 5.4 Explain primary and secondary motion 5.5 States other methods of fabric production	Explain the sequence of operation of fabric prduction	Use text books and periodicals	Explain types of looms for fabric production. Discuss primary and secondary motion of the loom Explain other methods of fabrics production		Explain fabric production process

Programme: LAUNDRY AND DRY CLEANING TECHNOLOGY	Code: LDT 112	**Credit Unit**: 2hrs.
Course: INTRODUCTION TO LAUNDRY AND DRY CLEANING TECHNOLOGY		**Theoretical:**
Semester: ND 1 Semester 1		

Goal: This course is designed to acquaint the student with basic knowledge of laundry and dry cleaning processes.

GENERAL OBJECTIVES: On completion of this course the student should be able to:-

1.0 Understand the concept of wet and Dry cleaning processes.

2.0 Understand how fabric gets soiled and the system of removing the soiling.

3.0 Know basic laundry and dry cleaning principles.

4.0 Identify laundry and dry cleaning equipment.

5.0 Understand functions of soap and alkali in cleaning process.

6.0 Understand different cleaning process.

PROGRAMME: **NATIONAL DIPLOMA IN FASHION DESIGN AND C:OTHING TECHNOLOGY**						
COURSE SPECIFICATION: **INTRODUCTION TO LAUNDRY** AND **DRY CLEANING TECHNOLOGY**			COURSE CODE: LDT 112	CONTACT HOURS: HOURS		
GENERAL OBJECTIVE: **Define Dry Cleaning and Know the Difference Between Wet and Dry Cleaning.**						
COURSE SPECIFICATION: **THEORETICAL CONTENT**				COURSE SPECIFICATION: **PRACTICAL CONTENT**		
Week	***Specific Learning Objectives***	***Teacher's Activities***	***Learning Resources***	***Specific Learning Objective***	***Teacher's Activities***	***Evaluation***
	1.1 Explain the concept of: - Wet cleaning. - Dry cleaning. 1.2 State the similarities in wet and dry cleaning processes. 1.3 Explain difference between wet and dry cleaning.	Explain the concept, similarities and differences in wet and dry cleaning processes.	Internet and text books.			Explain the concept, similarities and differences in wet and dry cleaning processes.
GENERAL OBJECTIVE 2.0 - Understand how Fabrics get Soiled and the System of Removing Soiling.						
	2.1 Define soiling. 2.2 State the difference between soiling and staining. 2.3 list the types of soiling. 2.4 explain how fabrics get soiled. 2.5 explain how soiled particles are removed from fabrics. 2.6 explain how grease, oil and fatty substance are removed during dry cleaning. 2.7 how transfer and water borne	Discuss how fabrics get soiled and the method of removing the soils. Explain how oils, fatty substances, grease, water borne soiling are removed during dry cleaning.	Books, internets, and periodical journals.			Explain how fabrics get soild and the methods of removing the soils. Explain how oils, fatty substances, grease, water borne soiling are removed during dry cleaning.

	soiling are removes during dry cleaning.					
GENERAL OBJECTIVE 3.0 :- Know Basic Laundry and Dry Cleaning Principles.						
	3.1 State the basic laundry processes e.g. washing, rinsing, drying and finishing. 3.2 Explain the processing of each above 3.1. 3.3 Explain the basic processes of dry cleaning e.g. washing, extraction, drying, recycling of solvent. 3.4 State Similarities and differences in laundry and dry cleaning.	State the basic processes of laundry and dry cleaning. Distinguish between laundry and dry cleaning.	Text books, Journals, Laundry Machines, Dry Cleaning Machine, Soiled Materials and Soap Solvents.			Explain the basic processes of laundry and dry cleaning. Distinguish between laundry and dry cleaning.
GENERAL OBJECTIVE 4.0 :- Identify Laundry and Dry Cleaning Equipment						
	4.1 Enumerate basic laundry equipment e.g. Washing Machine, Hydro Extractor Machine, Tumble Dryer Machine, Calender Machine. 4.2 Explain briefly main functions of Washing Machine, Hydro Extractor Machine, Tumble Dryer Machine, Calendar Machine. 4.3 Name the major parts of dry cleaning machine e.g. - lids. - Cage. - Case. - Switches. - Distil Cabinet. - Reclamation Chamber. - Base, etc.	Identify the basic laundry and dry cleaning machine. Explain the functions of the basic laundry and dry cleaning equipment.	Text Books, Periodicals, Laundry Machine, Catalogue, Drying Machine Cataogue.			Identify the basic laundry and dry cleaning machine. Explain the functions of the basic laundry and dry cleaning equipment.

	4.4 Explain the functions of the drying machine parts mentioned in 4.3.					
GENERAL OBJECTIVE 5.0 - Understand the Functions of Soaps and Alkali in Cleaning Process						
	5.1 Define soap and alkali. 5.2 state function of soap in cleaning process. 5.3 State the function of alkali in cleaning process. 5.4 explain the reason of combining soap and alkali in cleaning process.	Explain the functions of soap and alkali in cleaning process. Explain why soap and alkali are combined in cleaning process.	Books, Internet, Journals, Soaps And Alkali.			Explain the functions of soap and alkali in cleaning process. Explain why soap and alkali are combined in cleaning process.
GENERAL OBJECTIVE 6.0 - Understand Different Wash Variables						
	6.1 Identify different wash processes e.g. i. Short process. ii. Medium process. iii. Long process. 6.2 State the characteristics of these processes i.e. (i-iii) in 6.1. 6.3 Explain the linens that are cleaned using the processes in 6.1 above.	Explain the different wash processes i.e. (i.iii) of 6.1. State the main feature of each of the processes in 6.1.	Text Books, Internet and Journals, Washing Machine Catalogues, Consumables and Samples of soiled linen			Explain the different wash processes i.e. (i.iii) of 6.1. State the main feature of each of the processes in 6.1.

Programme: NATIONAL DIPLOMA IN LAUNDRY AND DRY CLEANING TECHNOLOGY	Code: LTD 113	**Credit Unit**: 2hrs.
Course: OCCUPATIONAL HEALTH AND SAFETY	**Pre-requisite**	**Theoretical:**
Semester: ND 1 Semester 1		
Goal: This course is designed to provide the students with the fundamentals of occupational health and safety and types of occupational hazards/diseases and their control.		
General Objectives: On completion of this course the student should be able to:- 1.0 Know the concepts of occupational health and safety. 2.0 Know the components of occupational health and occupational health programmes in industries. 3.0 Understand the types of occupational hazards and diseases in an occupational environment. 4.0 Know the major principles of controlling hazards and diseases in an occupational environment. 5.0 Know the various occupational health and safety laws		

PROGRAMME: **NATIONAL DIPLOMA IN LAUNDRY AND DRY CLEANING TECHNOLOGY**						
COURSE SPECIFICATION:			COURSE CODE: LTD 113	CONTACT HOURS: 2HOURS		
GENERAL OBJECTIVE: **Know the concepts of occupational health and safety**						
COURSE SPECIFICATION: **THEORETICAL CONTENT - 1**				COURSE SPECIFICATION: **PRACTICAL CONTENT - 1**		
Week	***Specific Learning Objectives***	***Teacher's Activities***	***Learning Resources***	***Specific Learning Objective***	***Teacher's Activities***	***Evaluation***
	1.1 Explain the history of occupational health and Safety.	Narrate the history of occupational Health and Safety.	PCs, Internet , charts		.	List out common diseases associated with the profession.
	1.2 Explain the following:- Occupation, health, Occupational health services, occupational environment, work associated diseases, work related diseases, industrial hygiene, Non occupational environment.	Explain in (1,2)				List out diseases associated with work environment and beyond.
	1.3 Explain the objectives of occupational health and safety as define by WHO/ILO joint committee.	Discuss the occupational health and safety as per WHO/ILO				Explain objectives of occupational health and safety as defined by WHO/ILO.
	1.4 Explain major constraints and limitation in the practice of occupational health in developing countries.	Explain constraints in the practice of occupational health in developing countries.				List out major constraints and limitation in the practice of occupational health in developing countries.

GENERAL OBJECTIVE 2.0 – Know the components of occupational health and occupational health programmes in industries						
	2.1 Explain the components of occupational health to include the following: a. Occupational health medicine. b. Industrial hygiene. c. Industrial welfare services. d. Ergonomics. e. Physiological. f. Psychological. 2.2 Explain occupational health programmes under the following: - - Preventive. - Curative. - Rehabilitative. - Promotive. 2.3 Explain possible safety and health risk areas in typical factories, manufacturing industry, educational institution home, and recreation ground.	Explain in (2.1) . Explain safety health risk areas in all work place.	PCs, Internet, charts			List out components of occupational health. List out occupational health programmes under preventive, curative, rehabilitative and promotive aspect. Explain safety and health risk areas in work environment
GENERAL OBJECTIVE 3.0 - Understand the Types of Occupational Hazards and Diseases in an Occupational Environment.						
	3.1 Explain occupational hazards under the following:-	Explain occupational hazards in (3.1)	PCs, Internet			Enumerate occupational hazards under chemical, physical

	i. Chemical ii. Physical iii. Biological 3.2 Explain the broad categories of occupational diseases e.g. - Occupational lung diseases. - Occupational dermatosis. - Occupational cancer. - Occupational asphyxiation. - Occupational injuries and accidents.	Explain the categories of occupation diseases				and biological. List occupational disease at work environment.
GENERAL OBJECTIVE 4.0 - Know the major principles of controlling hazards and diseases in an occupational environment						
	4.1 Explain major principles for controlling occupational hazards and diseases in a work environment under the following:- a. Engineering control (e.g. Shielding, ventilation etc.) b. Administrative control (e.g. Work practices etc.) c. Personal protective equipment. d. Elimination/Substitution. 4.2 Identify protective clothing in various occupations e.g. hand gloves, etc.	List principals for controlling occupational hazards and diseases in occupational environment. List protective clothing in various occupations.	PCs, Internet , Charts		.	Explain the principles for controlling occupational hazards and diseases in work List out major protective clothing in various occupations.

	4.3 Explain hazards and possible control measures.	Explain hazards and control measures				Explain major factory inspection to identify hazards and recommend possible control measures.
GENERAL OBJECTIVE 5.0 - Know the various occupational health and safety laws						
	5.1 Explain occupational health and safety laws under the following:- - Factories Act 1958 - Factories Decree 1987 - Factories Act 1993 - Workman Decree 1987	Explain in (5.1).	Internet PCs, charts			List out occupational health and safety laws under factories Act 1958, factories Decree 1987, factories Act 1993, workman Decree 1987

Assessment:
Coursework/ Assignments 10%; Practical 60%; Examination 30 %
Recommended Textbooks & References:

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY				
COURSE LAUNDRY TECHNOLOGY I		**COURSE CODE: LDT 121**	**Credit HOURS: 4HRS**	
GOAL: This course is designed to enable the student know all the laundry and finishing equipments used in linen processing and functions of different parts of the equipments				
COURSE SPECIFICATION: THEORETICAL CONTENT 2 Hrs		**COURSE SPECIFICATION:** PRACTICAL CONTENT 2HRS		
SEMEATER:2nd	**Pre-requisite**			
	GENERAL OBJECTIVE : On completion of this course, the students should be able to: 1.0 Know laundry equipments 2.0 Know essential fittings of laundry machines 3.0 Know essential fittings on a hydro extractor 4.0 Know industrial boiler, its major parts and their functions			

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY						
COURSE: LAUNDRY TECHNOLOGY I		**COURSE CODE: LDT 121**		**CONTACT HOUR:** 4RS		
GOAL: This course is designed to enable the students know the laundry and finishing equipment used in linen processing						
COURSE SPECIFICATION: THEORETICAL CONTENT 2HRS				**COURSE SPECIFICATION: PRACTICAL CONTENT 2Hrs**		
Week	**Specific Learning Objectives**	**Teacher's Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teacher's Activities**	**Evaluation**
	GENERAL OBJECTIVE 1.0: Know laundry equipment.					
	1.1 Identify laundry equipment	Explain the types of laundry equipment Explain the steps in laundry process Discuss the components and functions of laundry equipment	Classroom Lecture Visual videos of laundry operations	Carry out laundry operation using any equipment e.g. sluicing machine, boilers and finishing machine.	Guide the students on laundry operation	Explain the steps in laundry process Draw a laundry equipment of your choice
	GENERAL OBJECTIVE 2.0: Know essential fittings on a laundry machine					
	2.1 List the objectives of the washing machine	Explain the	Classroom	Carry out washing in a	Explain the	List and

	2.2 Differentiate between case and cage and their functions 2.3 Identify the filters and their roles in cleaning process. 2.4 Identify the inlet and outlet valves and their functions 2.5 Identify the various dip gauges available and their functions. 2.6 Explain the thermometer, and its functions in the washing machine. 2.7 Identify the hopper and its functions. 2.8 List out the functions of interrupted, low speed and high speed gears.	washing machine Explain the functions of each feature of a washing machine	Lecture Visual videos of washing machine and its features Washing machine	washing machine and observe the functions of each feature	procedures of washing using washing machine	explain the features and functions of a washing machine
	GENERAL OBJECTIVE 3.0: Know essential fittings on a hydro extractor					
	3.1 State the objectives of a hydro extractor. 3.2 Explain the need for different speeds during spinning. 3.3 Describe the "G" factor. 3.4 Explain the disadvantages of over timing the hydro-extractor. 3.5 Explain details of how excess water is discharged From the hydro-extractor.	Explain the features of hydro extractors and their functions Explain the effects of speeds during spinning, "G" factor and over timing the	Classroom Lecture Visit a laundry unit and observe the use of hydro extractor	Carry out hydro extraction from washed fabrics	Explain the objectives and principles of a hydro extractor	Draw and outline the functions of a hydro extractor

		hydro extractor				
	GENERAL OBJECTIVES 4.0: Know industrial boiler, its major parts and their functions					
	4.1 Identify the capacities of different types of steam boilers 4.2 List functions of the boiler tubes and different methods of routine cleaning of the tubes. 4.3 Describe the boiler head and its functions. 4.4 List the functions of the electrodes. 4.5 List the functions of the sequence timer. 4.6 Explain the functions of the water treatment plant attached to the boiler. 4.7 Identify the reagents/chemicals used for treating water before being fed into the boiler.	Explain the different types of steam boilers Explain the features, functions and methods of routine cleaning of boiler tubes Discuss the function reagents/chemicals used in water treatment plants	Classroom Lecture Visit and observe the process in a water treatment plant	Carry out routine cleaning of boiler tubes	Explain the principles and procedures of cleaning boiler tubes	Outline the different types of steam boilers List the reagents and chemicals used in water treatment plant

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY				
COURSE: DRY CLEANING TECHNOLOGY		**COURSE CODE: LDT 122**	**Credit HOURS: 4 Hours**	
GOAL: This course is designed to enable the students understand the mechanism of the dry cleaning machine and the different methods.				
COURSE SPECIFICATION: THEORETICAL CONTENT 2Hours		**COURSE SPECIFICATION:** PRACTICAL CONTENT 2Hrs		
SEMEATER: 2nd	**Pre-requisite**			

GENERAL OBJECTIVE :

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

1.0 Know the dry cleaning equipment

2.0 Know the design of a dry cleaning machine cage.

3.0 Identify the types of dry cleaning machines, types of materials normally employed in manufacturing the cylinder and cage.

4.0 Know the essential fittings in a flat work ironer and the roles played in the ironing process

5.0 Know calendaring process

6.0 Know the essential fitting on a steam-finishing table, utility pressers, other dry and steam pressers and the roles played in ironing process.

7.0 Know the essential fitting on a steam finishing table, utility pressers, other dry and steam pressers and the roles they play in ironing process

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY						
COURSE: DRY CLEANING TECHNOLOGY I		**COURSE CODE: LDT 122**		**CONTACT HOUR: 2 Hours**		
GOAL: This course is designed to enable the student understand the mechanism of how the dry cleaning machine carries out The cleaning process and different methods used.						
COURSE SPECIFICATION: THEORETICAL CONTENT				**COURSE SPECIFICATION: PRACTICAL CONTENT**		
Week	Specific Learning Objectives	**Teacher's Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teacher's Activities**	**Evaluation**
	GENERAL OBJECTIVE 1.0: Know the dry cleaning equipment					
	1.1 Describe dry cleaning equipment.	Explain the types of dry cleaning equipment Explain the steps in a dry cleaning process	Class room lecture Visual videos of dry cleaning operations	Carry out dry cleaning operation using available equipment e.g. sluicing machine and finishing equipment	Guide the students on dry cleaning operation	Explain the steps in a dry cleaning process Draw dry cleaning equipment of your choice
	GENERAL OBJECTIVES 2.0: Know the design of a dry cleaning machine cage.					
	2.1 Explain the construction of a dry cleaning machine cage and how it differs from washing machine cage. 2.2 Explain how such modification permit dry cleaning Cage to use organic solvents safely and	Explain dry cleaning machine cage, its modification and action on fabrics	Online notes, PCs loaded with Power-Point connected to multimedia projector to view dry cleaning machine	Carry out modifications of washing machine cage for use in a dry cleaning machine	Describe the construction of dry cleaning machine cage and modification that make them difference from washing machine cage	Outline the steps in modification of a washing machine cage to construct a dry cleaning machine cage

	economically. 2.3 Identify the six (6) various ways dry Cleaning machine cage provide mechanical action on fabrics being processed. 2.4 Explain five operation factors that Influence drying efficiency. 2.5 Define graying, causes and how it can be prevented or minimized and methods of removal when it occurs.		operation			
	GENERAL OBJECTIVE 3.0: Identify types of dry cleaning machines, materials normally employed in manufacturing the cylinder and cage					
	3.1 Describe side-loading machine and identify their characteristics. 3.2 Identify end loading machines and their characteristics. 3.3 Explain how characteristics inherent in each of them (3.2) determine the dry cleaning solvent.	Discuss side-loading and end-loading machines and their characteristics. Describe the effect and inherent characteristics of each of them with respect to choice of solvent	Classroom Lecture Online video viewing	Carry out dry cleaning activity using either side loading or end loading machine	Illustrate how side loading and end loading operation is carried out	Outline how the characteristics inherent in side loading and end loading determine the dry cleaning solvent
	GENERAL OBJECTIVES 4.0: Identify the essential fittings on a tumble dryer					

	4.1 Differentiate between case and cage in a tumble dryer 4.2 Identify the low speed motor and its function 4.3 List the advantages of clock- wise and anti-clockwise movement of the cage. 4.4 Explain the function of the heater battery on a tumble dryer 4.5 Explain the functions of the filters and the needs for its regular cleaning	Differentiate between case and cage in a tumble dryer and its effect on clockwise and anti-clock wise movement Explain the function of filter and need for their regular cleaning	Classroom lecture Online videos of tumble dryers	Visit a dry cleaning unit and draw a tumble dryer	Demonstrate how a tumble dryer works	Explain the function of filter and need for their regular cleaning Mention the functions of low-speed motor and heater battery of tumble dryer
	GENERAL OBJECTIVE 5.0: Know calendaring process					
	5.1 Identify the rollers and their functions 5.2 Identify the steam feed connection of the calendar 5.3 Identify steam traps and their functions on steam line.	Describe rollers and their functions Explain steam feed connection of calendar steam traps and its functions on steam line	Classroom Lecture Online notes Visual aids	Carry out calendaring process in a dry cleaning unit	Explain the process of calendaring	Outline the function of rollers and steam traps
	GENERAL OBJECTIVES 6.0: Know the essential fittings in a steam finishing table					
	6.1 Explain the different models of steam pressers 6.2 Differentiate between dry	Identify different models of steam pressers Differentiate	Online notes Classroom Lecture View any visual	Visit a dry cleaning unit and draw steam presser, steam finishing table, utility presser, cabinet presser and dry or	Describe the essential fittings of a dry cleaning unit	Outline the dry cleaning fittings and their functions

	and steam finisher 6.3 Describe the boiler and compressor on steam finisher and know their functions 6.4 Identify a steam condenser unit and its functions on a steam finisher.	between dry and steam finisher Describe boiler compressor and steam condenser units and their functions	video on the essential fittings	steam finisher		

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY		
COURSE Infection Control	**COURSE CODE: LDT 123**	**Credit HOURS: 4 Hours**
GOAL: This course is designed to introduce the students to the basic hygiene and health care in the working environment		
COURSE SPECIFICATION: THEORETICAL CONTENT 2Hours	**COURSE SPECIFICATION:** PRACTICAL CONTENT 2Hours	
SEMESTER: 2nd	**Pre-requisite**	

GENERAL OBJECTIVE :

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

1.0 know the need to keep the body and immediate environment clean

2.0 know the causes of ill health

3.0 Understand the methods of community disposal of refuse in towns and villages

4.0 know the cleaning equipment of waste matter

5.0 know out-door lavatories and proper drainage systems

6.0 Understand disease vectors and its control

7.0 Know infectious diseases

8.0 Know danger of sorting soiled materials on the floor

9.0 Understand control and preventive measures against infections

10.0 Understand sterilization and its techniques

11.0 Know protective clothing in the working environment

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY

COURSE: Infection Control	**COURSE CODE: LDT 123**	**CONTACT HOUR:** LECTURE
GOAL: This course is design to introduce the students to the basic hygiene and health care in the washing environment		
COURSE SPECIFICATION: THEORETICAL CONTENT		**COURSE SPECIFICATION: PRACTICAL CONTENT**

Week	**Specific Learning Objectives**	**Teacher's Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teacher's Activities**	**Evaluation**
	GENERAL OBJECTIVE 1.0: know the need to keep the body and immediate environment clean					
	1.1 Define hygiene 1.2 Identify cleaning agents 1.3 Describe the body cleaning process 1.4 Explain the effect of cleaning the body 1.5 Explain the effect of the cleaning effluent on the environment 1.6 Describe the effect of cleaning agents on the body	Explain hygiene and the effects on the body and environment	Classroom Lecture	Classify various cleaning agents in the working place	Show cleaning agents	List cleaning agents Explain body cleaning process
	GENERAL OBJECTIVE 2.0: know the causes of ill health					
	2.1 Describe illness 2.2 Describe symptoms of illness 2.3 Describe causes of illness 2.4 Discuss the remedy of ill health	Discuss in detail causes and remedy of ill health.	Classroom lecture Visual illustration of sick persons via video	Visit the hospital or the home of sick person to observe the feelings of sick persons	Describe the feelings of a sick person	List the symptoms of sickness Outline the

			clips.			causes of ill health
	GENERAL OBJECTIVE 3.0: Understand the methods of community disposal of refuse					
	3.1 Define refuse. 3.2 Describe how refuse are generated 3.3 Explain the effective disposal methods of refuse 3.4 Discuss the hazards of refuse on the environment.	Explain the sources and handling methods of refuse Outline the hazard of improper disposal of refuse on the environment	Classroom Lecture View video of dump site Visit dumping sites	Collect refuse around the environment and dispose properly	Demonstrate collection and disposal of refuse	Enumerate how refuse are generated Outline the hazards and disposal of refuse
	GENERAL OBJECTIVES 4.0: know the cleaning equipments of waste matter					
	4.1 Identify various cleaning equipment of waste matter. 4.2 Describe the cleaning equipment of waste matter. 4.3 Explain the operation of waste matter equipment. 4.4 Describe the benefits of proper usage of waste matter equipment.	Explain various cleaning equipment and their application. Outline the benefits of using waste matter equipment	Classroom Lecture	Use vacuum cleaner, mopping stick, broom, etc. to clean the classroom and laboratories	Demonstrate the use of cleaning equipment.	Describe the vacuum cleaning equipment. Explain the use of each cleaning

		for cleaning				equipment
	GENERAL OBJECTIVES 5.0: know the out-door lavatories and proper drainage systems					
	5.1 Define lavatory 5.2 Describe the various types of lavatories 5.3 Explain the advantages and disadvantages of the various lavatories 5.4 Describe drainage system 5.5 Identify the types of drainage systems	Explain lavatory and drainage systems Outline the benefits of lavatory and drainage systems	Classroom Lecture Visit lavatories and drainage systems around	Carry out cleaning of lavatories and drainages in the environment	Guide the students to perform cleaning of lavatories and drainages	State the different types of lavatories and drainage systems

	GENERAL OBJECTIVES 6.0: Understand disease vectors and their control					
	6.1 Define vectors 6.2 Describe disease vectors 6.3 Understand the effect of vectors on the environment 6.4 Describe methods of vector control	Discuss extensively disease vectors Explain in details effect of disease vectors and their control	Classroom Lecture Visual videos of infected patient by disease vectors	Draw some disease vectors e.g. mosquitoes, flies, cockroach, bed bugs, rats etc.	Guide students in collecting disease vectors	List diseases caused by various vectors
	GENERAL OBJECTIVES 7.0: Know infectious diseases					
	7.1 Define infectious diseases 7.2 Identify infectious diseases 7.3 Describe the agents of infectious diseases 7.4 Identify symptoms of an infected persons	Discuss infectious diseases Explain control and preventive measures against infectious diseases	Classroom Lecture Visual videos of infected persons	Draw some infectious agents through the microscope	Guide the students on the use of microscope	Outline the control measures against infectious diseases List symptoms of infected persons by an agent
	GENERAL OBJECTIVES 8.0: Know the danger of sorting soiled materials on the floor					

	8.1 Define soiled material 8.2 Explain sorting of soiled materials 8.3 Identify contaminated floor 8.4 Explain the methods of minimizing floor contamination 8.5 Explain categories of sorting soiled materials	Explain soiled and sorted soiled materials Discuss the danger of contaminated floors and methods of minimizing it	Classroom Lecture Visit to hospitals, hotels, hostels, etc. and observe sorting of soiled materials	Carry out mopping of classrooms and hostels	Guide the students on how to carry out mopping	Explain the methods of sorting soiled materials Outline the methods of minimizing floor contamination
	GENERAL OBJECTIVES 9.0: Understand control and preventive measures against infections					
	9.1 Define sterilization 9.2 Explain the various sterilization techniques 9.3 State the advantages and disadvantages of each of the techniques 9.4 List sterilization equipment 9.5 Explain safety precautions in sterilization	Explain the meaning, techniques and equipment used in sterilization Discuss the safety precautions, advantages and disadvantages of sterilization techniques	Classroom Lecture A visit to the hospital to observe sterilization process View videos of sterilization processes	Carry out two or more sterilization techniques of your choice	Demonstrate sterilization process to your students	State the techniques of sterilization Outline the advantages and disadvantages of sterilization techniques.
	GENERAL OBJECTIVES 10.0: Know the personal protective equipment (PPE) in the working environment					
	10.1 Define personal	Discuss types and	Classroom	Carry out caring	Illustrate caring	Explain caring

	protective equipment 10.2 Explain types personal protective equipment 10.3 Explain the handling of personal protective equipment 10.4 Explain the benefits of personal protective equipment	benefits of personal protective equipment	Lecture	processes of personal protective equipment	processes of personal protective equipment	processes of personal protective equipment

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY		
COURSE; Introduction to dyeing	**COURSE CODE: LDT 124**	**Credit HOURS: 4 Hours**
GOAL: This course is designed to provide the student with adequate knowledge and skills in dyeing textile materials.		
COURSE SPECIFICATION: THEORETICAL CONTENT 2Hours	**COURSE SPECIFICATION:** PRACTICAL CONTENT 2Hrs	
SEMEATER: 2nd	**Pre-requisite**	

GENERAL OBJECTIVE:

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

1.0 Understand the basic theory of dyeing

2.0 Understand the mode of operation of various dyeing machines

3.0 Know the uses of dyeing assistants in dyeing

PROGRAMME: NATIONAL DIPLOMA LAUNDRY AND DRY CLEANING TECHNOLOGY		
COURSE: Chemical processing II	**COURSE CODE: LDT 123**	**CONTACT HOUR:** LECTURE

(Dyeing)						
GOAL: this course is designed to provide the student with adequate knowledge and skill in dyeing various textile materials						
COURSE SPECIFICATION: THEORETICAL CONTENT				**COURSE SPECIFICATION: PRACTICAL CONTENT**		
Week	**Specific Learning Objectives**	**Teacher's Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teacher's Activities**	**Evaluation**
	GENERAL OBJECTIVE 1.0: Understand the basic theory of dyeing					
	1.1 Differentiate between dyes and pigments 1.2 Classify dyes according to application 1.3 List the dyeing variables 1.4 Explain the forms in which substrates are presented for dyeing 1.5 Explain the principles and importance of fastness properties of dyed materials	Explain dyes in relation to pigments Explain the classification of dyes according to application Discuss dyeing variables and their effects on dyeing process Explain fastness properties	Substrates, dyes, audio visuals Charts	Carry out dying process on cellulose. Carry out wash fastness property on the dyed cellulose above	Guide student to carry out dyeing process and wash fastness	Explain the principles and importance of fastness properties of dyed materials
	GENERAL OBJECTIVE 2.0: Understand the mode of operation of various dyeing machines					
	2.1 Describe the operation of the following dyeing	Sketch the	Dyeing machinery	Carry out dyeing using any of the machinery (2.1)	Supervise the process of dyeing	Describe the operation of

	machines: Jig and Winch 2.2 Dye textile materials using the machines listed in 2.1 above	operation of (2.1)	Jig and winch			any Jig and winch dyeing machine
	GENERAL OBJECTIVE 3.0: Know the uses of dyeing assistants in dyeing					
	3.1 List dyeing assistants for dyeing with direct dyes, vat dyes, reactive dyes and disperse dyes 3.2 Explain the importance and uses of textile auxiliaries in dyeing	Explain the importance of dyeing assistants	Charts, PCs	Carry out Dyeing of a cotton piece with direct dyes and show the effect of sodium chloride concentration	Supervise the dyeing of a cotton piece with direct dyes showing the effect of sodium chloride concentration	Explain the importance of dyeing assistants

Assessment:
Coursework/ Assignments 10%; Practical 60%; Examination 30 %
Recommended Textbooks & References:

Programme: Laundry and dry cleaning Technology (ND)	**Code: LDT 211**	**Credit Hours**: 4hrs.
Course: Bleaching and spotting in laundry work	**Pre-requisite**	**Theoretical: 2** **Practical: 2**
Semester: Three		

Goal: This course is designed to equip the students with the technical skills used in bleaching and spotting for the removal of stains in fabrics.

General Objectives: On completion of this course the students should be able to:

1.0 Know bleaching agents according to bleaching species
2.0 Understand bleaching process using Chlorine-based agents.
3.0 Understand bleaching process using peroxide-based agents.
4.0 Understand the effects of bleaching variables such as temperature, pH, catalyst and concentration.
5.0 Know the objectives of spotting in the cleaning industry
6.0 Know spotting equipment, their applications, care and uses.
7.0 Know stains and their methods of removal

PROGRAMME: **NATIONAL DIPLOMA IN FASHION DESIGN AND C:OTHING TECHNOLOGY**						
COURSE SPECIFICATION: **Bleaching and spotting in laundry work**			COURSE CODE: LDT 211	CONTACT HOURS: 4 HOURS		
COURSE SPECIFICATION: **THEORETICAL CONTENT**				COURSE SPECIFICATION: **PRACTICAL CONTENT**		
Week	***Specific Learning Objectives***	***Teacher's Activities***	***Learning Resources***	***Specific Learning Objective***	***Teacher's Activities***	***Evaluation***
	GENERAL OBJECTIVE 1.0 Know bleaching agents according to bleaching species					
	1.1 Define bleaching 1.2 Identify the different types of bleaching agents 1.3 Characterize bleaching agents according to active bleaching species	Explain bleaching Explain chlorine based and peroxide based bleaching agents Classify chlorine based and peroxide based bleaching agents based on their types and active species Compare chlorine based and peroxide based bleaching agents	Computer device, multimedia projector, Marker and board, reagents	• Identify the states of the different types of bleaching agents • Prepare bleaching solutions with different concentrations	Demonstrate how to prepare bleaching solutions with different concentrations	Define bleaching, List and classify the types of bleaching agents according to active bleaching species

Week	*Specific Learning Objectives*	*Teacher's Activities*	*Learning Resources*	*Specific Learning Objective*	*Teacher's Activities*	*Evaluation*
	GENERAL OBJECTIVE 2.0 Understand bleaching process using Chlorine-based agents.					
	2.1 Give simple explanation of the chemistry of Sodium chlorite bleaching 2.2 Give simple explanation of the chemistry of sodium hypochlorite bleaching 2.3 Explain bleaching using sodium chlorite 2.4 Explain bleaching using sodium hypochlorite	Explain the stoichiometry of sodium chlorite and sodium hypochlorite in bleaching	Multimedia for power point presentation, Markers and Chalk, Reagents	• Carry out bleaching using sodium chlorite Carry out bleaching using sodium hypochlorite	Demonstrate bleaching using sodium hypochlorite and sodium chlorite	Give the chemical formula of sodium hypochlorite, Sodium chlorite and Hydrogen peroxide. Carryout bleaching with sodium chlorite and sodium hypochlorite Give the chemistry of generating the active species
	GENERAL OBJECTIVE 3.0 Understand bleaching process using peroxide-based agents					
	3.1 Explain what is hydrogen peroxide 3.2 Give with simple explanations how to generate the bleaching specie 3.3 Explain the advantage of using peroxide bleaching over the chlorite based ones 3.4 Explain why hydrogen peroxide needs a stabilizer 3.5 Give a typical recipe for carrying	Give the formula of hydrogen peroxide Explain the chemistry of obtaining the active specie with hydrogen peroxide Explain why hydrogen peroxide needs to be stabilized List some	Multimedia power point Markers, Reagents	Carry out bleaching using hydrogen peroxide Demonstrate the advantages of using a stabilizer in bleaching with hydrogen peroxide	Demonstrate how to carry out bleaching with hydrogen peroxide with and without a stabilizer	Give the formula of hydrogen peroxide Explain why stabilizer is needed in hydrogen peroxide bleaching Give a recipe for bleaching with hydrogen peroxide

	out bleaching using hydrogen peroxide	stabilizers for hydrogen peroxide				
	GENERAL OBJECTIVE 4.0 Understand the effects of bleaching variables such as temperature, pH, catalyst and concentration.					
	4.1 Describe the effects of temperature on the bleaching with sodium chlorite 4.2 The effects of temperature on the bleaching with sodium hypochlorite 4.3 The effects of pH and Catalyst on bleaching with the bleaching agents .	Explain the effects of bleaching variables on the bleaching action and degradation of fabrics using chlorine based and the peroxide based bleaching agents	Multimedia for power point presentation, Markers and Chalk, Reagents	Demonstrate the effect of temperature on bleaching with sodium chlorite, sodium hypochlorite and hydrogen peroxide. Demonstrate the effect of pH on bleaching with sodium chlorite, sodium hypochlorite and hydrogen peroxide Demonstrate the effect of catalyst on bleaching with sodium chlorite, sodium hypochlorite and hydrogen peroxide. Demonstrate the effect of concentration on bleaching with sodium chlorite, sodium hypochlorite and hydrogen peroxide.	Carryout the practical demonstration of the effects of pH, catalyst, temperature and the concentration on bleaching with different agents	Explain the effects of temperature, catalysts, pH, and concentration on bleaching with the different agents
	GENERAL OBJECTIVE 5.0 Understand the objectives of spotting in the cleaning industry					
	5.1 Describe how to apply local treatment to stains 5.2 Explain spotting 5.3 Explain presorting and post-spotting activities	Explain the meaning of spotting as used in stain removal Explain the steps needed to	Power point Marker, spotting gun	Demonstrate the steps involved in treating local stains Carry out stain removal techniques using a spotting gun	Demonstrate how a local stain is removed Show how to use a spotting gun to remove stains	Explain how to treat a local stain Show how to use a spotting gun to remove stains

		remove a local stain				
	GENERAL OBJECTIVE 6.0 Understand spotting equipment, its application, care and uses					
	6.1 Explain the spotting board with all specifications and accessories 6.2 Give the functions of the equipment used in the spotting departments and their individual handling 6.3 list the different types of brushes used in the spotting department 6.4 Explain the use of chamois leather in the absorption of excess water during spotting. 6.5 Explain the functions of the drying cabinet in the spotting departments	Explain the uses and types of equipment used in the spotting department List the different types of brushes in the spotting department Explain what a chamois is Explain the drying cabinet and its use in the spotting department.	Spotting equipment, accessories and teaching aids	Show to the students the spotting board Explain all the accessories and equipment used in the spotting board	Demonstrate the use of the spotting gun, chamois and the brush in the spotting activities	Explain what a spotting board is Explain the functions of a chamois, brush and the drying board in the spotting activities
	GENERAL OBJECTIVE 7.0 Know stains and the methods employed in their removal					
	7.1 Classify the different types of stains 7.2 Explain how stain builds up 7.3 Differentiate between compound and simple stain and explain extent of stiffness and penetration 7.4 Explain how appearance of stains can assist its identification 7.5 Explain how the colour of stains can assist its identification 7.6 Explain how lubrication can assist in removal of insoluble substances	Give the different types of stains Explain the buildup of stains Classify stains into simple and compound Explain how the colour and appearance of stain can help in its	Multimedia projector, Board, markers and chalks	Show the different types of stains Demonstrate how to identify stains from their colours Demonstrate how to identify stains from their appearance Demonstrate the use of solvents and lubricants in stain removal	Show the students the different types of stains Carryout how to remove stains using different solvents and lubricants	Explain the different types of stains Explain how to identify stains based on their appearance and colour Explain how to remove stains using solvents and lubricants

		identification Explain how solvent type and lubrication can assist stain removal				

Programme: Laundry and dry cleaning technology (ND)	**Code:** LDT 212	**Credit Hours**: 2hrs.
Course: Laundry technology II	**Pre-requisite:**	**Theoretical:** 1 hr **Practical:** 1 hr
Semester: FIRST		
Goal: This course is designed to expose the students to laundry technology as it involves choice of machine, control variables and choice of detergents		

General Objectives: On completion of this course the students should be able to:

1.1 Understand the differences between batch and continuous laundry machines
1.2 Understand the control variables involved in industrial washing machines
1.3 Know the types of detergents used in laundry
1.4 Know the quality control measures to ensure quality laundry services

PROGRAMME: **Laundry and dry cleaning technology (ND)**						
COURSE: **Laundry technology 2**			**COURSE CODE:** LDT 212	**CREDIT HOURS**: 2 hrs		
SEMESTER: First				**THEORITICAL:** 1 hr **PRACTICAL:** 1 hr		
Week	***Specific Learning Objectives***	***Teacher's Activities***	***Learning Resources***	***Specific Learning Objective***	***Teacher's Activities***	***Evaluation***
	GENERAL OBJECTIVE 1.0 Understand the differences between batch and continuous laundry machines					
	1.1 Explain the difference between batch and continuous laundry machines. 1.2 Explain the advantages and otherwise of one against the other. 1.3 Explain the requirements for a continuous and batch laundry machines.	Explain batch wise operations and continuous operations in laundry activities Explain the differences between batch-wise and continuous operations in laundry Provide the requirements for continuous and batch operations in laundry Explain the advantages and the disadvantages of each	Computer device, multimedia projector, Marker and board			Explain batch-wise and continuous laundry machines Explain the advantages and the disadvantages of batch and continuous laundry machines

	GENERAL OBJECTIVE 2.0 Understand the control variables involved in industrial washing machines					
	2.1 List the control variables in washing operations such as concentration of detergent, temperature, time and agitation 2.2 Explain the effects of the control variables in washing operation	Explain the control variables in washing	Computer device, multimedia projector, Marker and board	Demonstrate the effects of control variables in washing operation	Identify each step involved in the demonstration of control variables (Concentration of detergent, temperature, time, agitation, bleaching agent etc.,) in washing operation Carry out practical to demonstrate the effects of control variables in washing operation	Explain what are the control variables in washing
	GENERAL OBJECTIVE 3.0 Know the types of detergents used in laundry					
	3.1 Classify the types of detergents used in laundry 3.2 Explain the mode of action of each detergent 3.3 Discuss the advantages and the disadvantages of each	Explain the classifications of detergents i.e anionic, cationic, amphoteric and non-ionic detergents Explain the modes of actions of each group of	Computer device, multimedia projector, marker, board and samples of reagents	Demonstrate the use of different types of detergents such as anionic, cationic, amphoteric and non-ionic detergents used in washing and compare their efficacies	Carryout practical to demonstrate the use of different detergents in washing	Mention different types of detergents

		detergent Mention the economic advantages of each detergent				
	GENERAL OBJECTIVE 4.0 Know the quality control measures to ensure quality laundry services					
	4.1 Explain the quality control measures involved in laundry services 4.2 List the control measures needed to ensure quality laundry 4.3 Explain how to measure the quality indices	Explain what is quality laundering List the quality indicators in laundering Explain how to ensure quality laundering	Computer device, multimedia projector, Marker and board			Mention what constitutes quality laundering List the quality indicators

Programme: Laundry and dry cleaning technology (ND)	**Code:** LDT 213	**Credit Hours**: 3hrs.
Course: Dry cleaning technology II	**Pre-requisite:**	**Theoretical: 2** **Practical: 1**
Semester: 3		
Goal: This course is designed to expose the students to Dry Cleaning Technology		
General Objectives: 1.5 Know the basic types of dry cleaning machines 1.6 Know the different types of solvents used in dry cleaning 1.7 Understand the environmental factors involved in dry cleaning 1.8 Understand the types of dry cleaning agents 1.9 Know the measures needed to control quality in dry cleaning		

PROGRAMME: **NATIONAL DIPLOMA IN FASHION DESIGN AND C:OTHING TECHNOLOGY**						
COURSE; **Dry cleaning technology II**			COURSE CODE: LDT 213	CONTACT HOURS: HOURS		
COURSE SPECIFICATION: **THEORETICAL CONTENT**				COURSE SPECIFICATION: **PRACTICAL CONTENT**		
Week	***Specific Learning Objectives***	***Teacher's Activities***	***Learning Resources***	***Specific Learning Objective***	***Teacher's Activities***	***Evaluation***
	GENERAL OBJECTIVE 1.0 Know the basic types of dry cleaning machines					
	1.4 Explain the types of dry cleaning machines 1.5 Identify the main differences between the machines 1.6 Explain the operational procedure involved in each machine	List the different types of dry cleaning machines Explain the operational procedure involved in using the different machines	Computer multimedia projector, marker, board, dry cleaning machine	Carry out dry cleaning using the different types of machines and quantify the extent of cleaning visually	Demonstrate the operation of two different types of dry cleaning machines	List the types of dry cleaning machines Explain how to operate the machines

Week	*Specific Learning Objectives*	*Teacher's Activities*	*Learning Resources*	*Specific Learning Objective*	*Teacher's Activities*	*Evaluation*
	GENERAL OBJECTIVE 2.0 Know the different types of solvents used in dry cleaning					
	2.1 List the general classification of solvents used in dry cleaning 2.2 Explain the properties of each of the classes (2.1) 2.3 Explain the advantages and the disadvantages of each (2.1)	List the groups of dry cleaning solvents and classify them accordingly Explain the properties of each of the classes Explain the cost implications and environmental hazards in the choice of solvents.	Computer multimedia projector, marker, board, dry cleaning machine Samples of solvent	Carry out dry cleaning using different solvents Compare the efficacy of the solvents	Supervise studnets to carry out dry cleaning using different solvents	List some common dry cleaning solvents Give the characteristics of the common solvents Classify the dry cleaning solvents Mention the advantages and the disadvantages of some common dry cleaning solvents
	GENERAL OBJECTIVE 3.0 Understand the environmental factors involved in dry cleaning					
	3.1 Explain the toxicity of dry cleaning solvents 3.2 Explain the in-flammability of the solvents 3.3 Explain the hazardous nature of the solvents	Explain the level of toxicity and hazards associated with the use of dry cleaning solvents on the environment.	Computer multimedia projector, marker, board, dry cleaning machine			Mention the common environmental hazards involved in using dry cleaning solvents
	GENERAL OBJECTIVE 4.0 Understand the types of dry cleaning agents					

	4.1 Mention the unconventional dry cleaning agents 4.2 Explain the properties of each (4.1) 4.3 Discuss the advantages of using these dry cleaning agents in contrast with the conventional ones 4.4 Explain machine modifications using these unconventional dry cleaning agents	List the unconventional dry cleaning agents with their properties Explain the advantage of unconventional dry cleaning agents with the conventional ones List the various machines modifications involved in unconventional dry cleaning agents	Computer multimedia projector, marker, board, dry cleaning machine			Mention the different types of unconventional dry cleaning agents State the properties of unconventional dry cleaning agents Explain the advantages of unconventional dry cleaning agents over the conventional ones
	GENERAL OBJECTIVE 5.0 Know the measures needed to control quality in dry cleaning					
	5.1 Define quality control in dry cleaning 5.2 Explain the different quality control measures applied in dry cleaning 5.3 Describe the quality control indicators in dry cleaning	Discuss the quality control measures involved in dry cleaning Explain the uses of various indicators in dry cleaning	Computers, multimedia projector, marker, board, dry cleaning machine	Carry out a dry cleaning of different loads	Guide students to carry out dry cleaning of different loads, then change the values of the control level and compare the qualities of the work done	Define quality control in dry cleaning List the common quality control measures

Assessment:
Coursework/ Assignments 10%; Practical 60%; Examination 30 %
Recommended Textbooks & References:

Programme: Laundry and dry cleaning technology (ND)	**Code:** LDT 221	**Credit Hours**: 3hrs.
Course: LAUNDRY MANAGEMENT	**Pre-requisite:**	Theory I Practical 2
Semester: FOUR		
Goal: This course is designed to equip students with administrative knowledge that will enable them to manage a laundry outfit		

General Objectives:

1.0 Know the concept of management and its fundamentals
2.0 Know the functions of management
3.0 Understand the different leadership styles and their effectiveness in an organization
4.0 Know discipline as a key factor revolving around management functions.
5.0 Know office organization and filling system.
6.0 Know good human relation and its importance in complex organizations
7.0 Understand the aims and objectives of induction and procedures for achieving same.

PROGRAMME: NATIONAL DIPLOMA IN LAUNDRY AND DRY CLEANING TECHNOLOGY						
COURSE: LAUNDRY MANAGEMENT		**COURSE CODE**: LDT 221		**CONTACT HOURS**: 2Hours/Week		
GOAL: This course is designed to equip students with administrative knowledge that will enable them function as supervisors						
COURSE SPECIFICATION: Theoretical Contents:				**Practical Contents**:		
	General Objective 1.0 Know the definition of management and its fundamentals					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Evaluation**
	1.1 Define management 1.2 Explain fundamentals of management 1.3 Explain who is a manager 1.4 Explain the requirements of good management	Define management. Explain the fundamentals in management Explain who is a manager Explain requirement of good management..	Text books Journals Periodicals Internet	- - -		

	General Objective: 2.0 Know the functions of Management					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**
	2.1 State the functions of management 2.2 Explain the concept of (i) Planning (ii)Organizing (iii) Staffing (iv) Control (v)Coordinating e.t.c in management 2.3 Explain how motivation energizes workers as a stimulus 2.4 State the types of Communication in management. 2.5 Explain the concept of decision making	State the functions of management in planning Organizing Staffing Control • Coordinating in management. etc Explain how motivation energizes workers as a stimulus • State the types of communication in management. • Explain the concept of decision making.	Text books. Periodical Journals Internet facilities	- - -	-	
	General Objective 3.0 Understand the different leadership styles and their effectiveness in an organization					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**
	3.1 Define Leadership 3.2 State the different	• Define and Explain leadership	Text books. Periodic Journals		-	

	leadership styles in management 3.3 State the effect of the leadership styles in3.2.	• Explain the effects of the different leadership styles and their effects in management.	Internet facilities Ditto		-	
	General Objective: 4.0 Know discipline as a key factor revolving around Management functions					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**
	4.1 Define discipline 4.2 State the primary objectives of discipline. 4.3 Enumerate acts on the part of an employee that could call for disciplinary measures. 4.4 State the procedure for carrying out disciplinary measures when a prime face has been established against an officer	• Define discipline and state its objectives. • Enumerate reasons for disciplinary action • Discuss procedure for disciplinary action	Text books. Periodic Journals Internet facilities Ditto	- - -	- - -	
	General Objective: 5.0 Know office organization and filing system					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**

	5.1 State the principle of office organizations that should serve as a guide to Managers. 5.2 State the importance of a comprehensive, simple and efficient filing system. 5.3 Explain the methods of classifying records and their speedy retrieval	• Discuss and Outline principal office organization • Explain the importance of a good filing system • Explain the importance of classifying records and their speedy retrieval.	Text books. Periodic Journals Internet facilities			
	General Objective: 6.0 Know good human relation and its importance in complex organization.					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**
	6.1 Define human relation. 6.2 State the right atmosphere that will guarantee employees to achieve peaceful co-existence and harmonious relationship.	• Explain good human relations. • Explain the importance of good working	Text books. Periodic Journals Internet facilities	- -		

		atmosphere	Ditto.			
	General Objective: 7.0 Understand the aims and objectives of Induction and procedures for achieving same.					
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**
	7.1 Explain the objectives of induction programme 7.2 Define the following: a. Economic welfare b. Statutory welfare c. Social welfare d. Staff promotion	• Outline the objective of induction programme. • Discuss the importance of welfare programmes.	Text books. Periodic Journals Ditto			

Programme: Laundry and dry cleaning Technology (ND)	**Code:** LDT 222	**Credit Hours**: 4hrs. Credit Unit:
Course: Resource Management in Laundry.	**Pre-requisite**	**Theoretical: 2** **Practical: 2**
ND II Semester: II		
Goal: This course is designed to enable students understand the key components of direct cost of cleaning of items.		
General Objectives: On completion of this course the students should be able to: 1.0 Know the resources used in the Laundry and how to efficiently handle them. 2.0 Know the efficient ways of packaging and transporting laundry items 3.0 Understand ways of minimizing wastage of laundry resources and efficient ways of disposing effluent 4.0 Know the basic chemicals used in dry- cleaning and consequential damages to health and fabrics.		

PROGRAMME: NATIONAL DIPLOMA						
COURSE: Resource management in laundry		**COURSE CODE**: LDT 222		**CONTACT HOURS**: 4Hours/Week		
GENERAL OBJECTIVE Know the efficient use of solvent, water, energy and chemicals in laundry						
COURSE SPECIFICATION: Theoretical Contents:				**Practical Contents**:		
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Evaluation**
	1.1 Enumerate the major resources used in laundry processes: - water - Energy - Soap - Febric Softener - Bleach etc. 1.2 Explain the implications of using inappropriate measures of the resources in 1.1. 1.3 Explain the control measures of the above 1.1 per load of washings.	List out resource used in the Laundry. List the various consequences of inappropriate use of the resources listed in 1.1 Explain the control	Textbooks Chalk board Prots type sluiced washing machine consumables: - water - different diligent 1. liquid detergent 2. powdered detergent sulphuric detergent 3. Bleach - Chlorine Bleach - Oxygen Bleach - Peroxide Beach 4. Fabric softener Soiled fabrics: -Oil Soiled fabric -	- Determine the: (i) PH of water. (ii) Apply the different types of soaps for the various soiled samples of: - Oil soiled - Protein Soiled - Coffee soiled - Ink Soiled etc (iii) Determine the effects of the various soaps on soiled materials and establish which is most suitable for	Guide student to find out the cost of items listed.	Identify the various resources used in laundry. What are the implications of in-appropriate use of the right measures? What are best results obtained from the actions of the various detergents on the soiled fabrics? What PH value of water is most appropriate for laundry washing.

		measure for 1.2 above	Protein Soiled fabric, -Ink soiled fabric, -Coffee Soiled fabric etc.	the appropriate soiled fabric -		
GENERAL OBJECTIVE 2.0: Know the efficient ways of packaging and transporting laundry item						
	2.1 Define the following with respect of Laundry? (a) Folding (b) Packaging (c) Transportation 2.2 State the various folding methods 2.3 Explain the following packaging method (1) Manual (2) Automated 2.4 State the material used for packaging Polyethylene: (a) Plain (b) Logo print 2.5Explain the various methods of Transportation,	List the various ways of packaging and transportation Enumerate the advantages of Motor vehicle transportation over trolley prototype in terms of Contagious materials being transported, Reduce labour, Time Saving.	Textbook Period and Journals Video Presentation online/offline.	Observe the video demonstration of the: Folding Packaging and Transportation processes for efficiency Show the efficient attributes displayed with respect for the folding, packaging and Transportation Show the safety	Show video simulation of the various folding methods, packaging methods, and transportation methods. Show the various areas of needful attention/observation during presentation Give an assignment to write on the concept of Packaging and Transporting of laundered fabrics as observed in the video presentation.	Outline the various efficient ways of packaging and Transportation in Laundry. Define the following with respect to laundry (a) Folding (b) Packaging (c) Transportation

	-Trolleys -Motor Vehicle 2.6 State the advantages of Motor Vehicle transportation over the Trolley prototype with respect to contagious linens. Hint: - Environmental hazard friendly (Non contagious) - Reduced labour - Time saving			measures observed during the presentation		
GENERAL OBJECTIVE 3.0 Understand ways of minimizing wastage of laundry resources and effluent disposals						
	3.1 Define laundry effluent 3.2 Explain the effluent generated during laundry process e.g - Soap residues - Soils - Organic waste - Etc 3.3 Explain ways of effluent disposal in the laundry	Discuss laundry effluent Explain the effluent generated during the laundry process.	Classroom Textbook periodic journals Laundry site channels of disposal septic tank Explain the efficient methods of disposing effluent in laundry.	-Identify the Effluent waste in the laundering site, channels of disposal to the septic tank.	Visit on site laundry to show channels of disposal and the septic tanks	Give an assignment to write an essay an Efficient ways of disposing effluent in laundry Outline 5 ways of minimizing wastage in laundry. Explain the effluent generated during laundry process.

	3.4 Explain how to minimize wastage of the following (a) Water (b) Consumables (c) Reagent (d) Time (e) Energy (f) Manpower 3.5 Explain the methods of disposing effluent in laundry	Outline the ways to minimize wastage in laundry IN (3.4) Explain the methods of disposing effluent in laundry.				
GENERAL OBJECTIVE 4.0: Know the basic chemicals used in dry- cleaning and consequential damages to health and fabrics.						
	4.1 Explain the chemical used in dry-cleaning. 4.2 Mention the type of health hazards in dry-cleaning 4.3 Explain the damages the dry-cleaning reagents cause to fabric 4.4 Explain how dry – cleaning regents are re-cycled.	Outline the chemical used in dry – cleaning Discuss the health hazards of the dry cleaning to health Discuss the damages the dry cleaning	Textbooks Periodic Journals Video presentation On Site dry cleaning Company	Identify video simulation of the re-cycling of dry cleaning reagent.	Show the video simulation of the re-cycling process of the dry cleaning reagent	List the chemicals used in dry-cleaning and outline the health hazard of the various dry-cleaning reagents. Give an assignment with sketches on the re-cycling processes of dry-cleaning reagent.

		reagent cause to fabric Sketch how dry cleaning reagents are recycled.				

Programme: Laundry and dry cleaning Technology (ND)	**Code:** LDT 223	**Credit Hours**: 3hrs. Credit Unit:
Course: Laundry Machine Operation	**Pre-requisite**	**Theoretical: 1** **Practical: 2**
ND II Semester: II		
Goal: This course is designed to provide students with skills and knowledge of machine operations in laundry.		
General Objectives: On completion of this course the students should be able to: 1.0 Know the different types of washing machines and their parts 2.0 Understand the Operations of laundry machines 3.0 Know the Operations of the Hydro-extraction machine 4.0 Know the operation of the Tumble Dryer machine 5.0 Know the operation of the Calendar machine		

PROGRAMME: NATIONAL DIPLOMA						
COURSE: **Laundry Machine Operation**		**COURSE CODE**: LDT 223		**CONTACT HOURS**: 3Hours/Week		
GENERAL OBJECTIVE :1.0 Know the different types of washing machines and their parts						
COURSE SPECIFICATION: Theoretical Contents: Hours 1				**Practical Contents**: Hours 2		
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Evaluation**
	1.1 List the different types of washing machine 1.2 Outline the functions of different types of washing machine 1.3 Mention parts of the different types of washing machine 1.4 List the functions of the parts of the different types of washing machine	Explain the different types of washing machine Explain the function of the types of washing machine Enumerate the part of the different washing machine Explain the function of the parts of the different types of washing machine.	Textbook Periodical, Journals On Site laundry.	Identify the different types of washing machines Explain the functions of the types of washing machine Identify and Explain the part of the different types of washing machine	Identify and Explain the different types of washing machine Explain the function of the types of washing machine.	List the different types of washing machine and outline their functions Outline the parts of the different types of washing machine and state their functions.
GENERAL OBJECTIVE 2.0 Understand the Operations of the laundry machines						
	2.1 Explain the operation of a laundry machines 2.2 State the various	- Explain the operation of a laundry machine - Explain the various methods	Textbooks Periodic Journals	2.1 Explain the operations of a laundry machine 2.2 identify the various	Show the operations of a laundry machine Guide the	Explain the operation of a laundry machine and the various methods of

	methods of operation in the wash processes of a laundry machine - Pre- wash - Regular wash - Delicate wash - Miscellaneous 2.3 List the programmed fining of operation in the washing process of a laundry machine - prewash fining - Regular wash timing - Delicate wash timing - Miscellaneous 2.4 List the fabrics suitable for the various operation of laundry machines.	of operation in the wash process of a laundry machine - Explain the timing of the operation in the washing process of a laundry machine - Show the fabrics suitable for the various operation of laundry machines.	Washing machine	methods of operation in the washing processes of a laundry machine - Prewash - Regular wash - Delicate wash - Miscellaneous 2.3 Show the timing of the operation in the washing processes of a laundry machine. 2.4 Identify the suitable fabrics for the various operations of the laundry machines	student to carry the various washing processes - Pre-wash - Regular wash - Delicate wash - Miscellaneous - Show and Guide the student on the timing of the operation in the washing process of a laundry machine - Show the fabrics suitable for the various operation of a laundry machine.	operation in the washing processes Describe the programmes timings of the operation in the washing processes. State the fabrics suitable for the various operation of the laundry machine.
GENERAL OBJECTIVE 3.0 Know the Operations of the Hydro-extraction machine						
	3.1 Define extraction in laundry operation. 3.2 Explain the two types of loading the hydro-extract of machine - washer-extractor	- Explain extraction in laundry operation - Describe the two types of hydro extraction machine - Washer	Textbooks Periodic Journals Hydro-extractor machine Washing extraction	3.1 Explain extraction in laundry operation Identify the two types of hydro extraction machine - Washing extractor - Hydro-extractor	- Show the two types of hydro-extraction machine - Demonstrate the principles of loading the hydro-	- List the two types of hydro-extraction machine - State the principle of loading the hydro-extractor machine

	- Hydro extractor 3.3 Explain the principles of loading the hydro-extractor machine - open the lid of the machine - introduce the divider - Load the baskets - Even distribution of the linens within the brackets ensure - Uniform levels of the liven - Cover with trampoline - chose the lid of the Machine - Run the Extractor machine - Run the Extractor machine 3.4 Outline the factors that determine water extraction in the Hydro-extractor machine - cage - rotation	extractor - Hydro extractor machine Explain the principles of loading the hydro extractor machine - open the lid of the machine - introduce the divider - load the basket - even distribution of the linen within the brackets - uniform level of the liven - Cover the trampoline - Chose the lid of the machines - Run the Extractor machine - Give the factors that determine water extraction in the hydro extractor machine - Cage - Rotation - Spin speed - Time etc	washing.	machine - Practice the principles of loading the hydro-extractor machine - Open the lid of the machine - Introduce the divider - Load the basket - Even distribute the liner with the bracket - Ensure uniform level of the linen - Cover with trampoline - Chose the lid of the machine - Run the extractor machine - Identify the factors that determine water extraction - cage - rotation - spin speed - spin speed - time etc.	extraction machine - Explain the factors that determine water – extraction.	- Outline the factors that determine water extraction.

	- spin speed - time etc					
GENERAL OBJECTIVE 4.0 Know the operation of the Tumble Dryer machine						
	4.1 Explain the Operation of a Tumble Dryer machine 4.2 State the two types of Tumble dryer machine - Electrically Operated and steam heated Tumble Dryer - Electrically Operated and Electrically heated Tumble Dryer 4.3 State the advantages of the electrical heated over the steam heated Tumble dryer. 4.4 List the two programmed timing of operation in the crying process. - Regular Timing - Delicate Training 4.5 Explain the importance of the lint compartment on the Dryer machine.	Explain the operation of a Tumble Dryer machine Enumerate the two types of Tumble dryer machine Explain the advantage of the electrically heated over the stream heated dryer Explain the timing period of their - regular drying - delicate drying - cold drying Explain the importance of the lint compartment in the Dryer machine.	Textbooks Periodic Journals Drying Tumbler machine On Site laundry	4.1 Explain the operation of a Tumbler Dryer machine 4.2 Identify the two types of Tumbler dryer machine. 4.3 Explain the timing periods of the: - regular drying - Delicate drying - cold drying	Demonstrate on how to operate the Tumble Dryer machine Guide the students on the advantages of the Electrically heated oven the steam heated. Expose them to the channels of the stream generation pipes from the boiler house Demonstrate on how to remove and clean the lint regularly.	Explain the Operation of a Tumble Dryer machine State the two types of Tumble dryer machine State the advantages of the Electricity heated oven the steam heated.

				4.4 Explain the importance of the lint compartment in the Dryer machine.		
GENERAL OBJECTIVE 5.0 Know the operation of the Calendar machine						
	5.1 Describe the Operation of a Calendar machine 5.2 State the two types of Calendar machine - steam heated - electricity heated 5.3 State the two feeding troughs: - Input - Output 5.4 Explain the calendar speed. - low - medium - high 5.5 What are the basic techniques for optimizing Calendar output.	Explain the operation of a calendar machine Describe the two types of calendar machine - Steam heated - Electrically heated Explain the two feeding troughs : - Input - Output Explain the calendar speed. - Low - Medium - High Outline the basic techniques for optimizing calendar output	Textbooks Periodic Journals Calendar machine	5.1 Identify the operation of a calendar machine 5.2 Explain the two types of calendar machine 5.3 Identify the two feeding troughs - Input - Output 5.4 Identify the Calendar speed. - Low - Medium - High speed	Show the process of operation of a calendar machine Show the two types of calendar machine Show the two feeding troughs Show the various calendar speed Demonstration the basic technique for optimizing calendar machine	Describe the operation of a calendar machine State the feeding methods in a calendar machine Outline the basic techniques for optimizing calendar output.

Programme: Laundry and dry cleaning Technology (ND)	**Code:** LDT 224	**Credit Hours**: 4hrs. Credit Unit:
Course: TEXTILE TESTING AND QUALITY CONTROL	**Pre-requisite**	**Theoretical: 2** **Practical: 2**
ND II Semester: II		
Goal: This course is designed to provide students with knowledge in textile testing and quality control techniques		
General Objectives: On completion of this course the students should be able to: 1.0 Understand the concept of specification and standardisation, quality control and service testing. 2.0 Understand the concept of sampling of textile raw materials and products 3.0 Know the basic principles of quality control operations 4.0 Understand the principles and sequence of quality assurance 5.0 Know the methods of fibre identification 6.0 Know the tests for fabric properties.		

PROGRAMME: NATIONAL DIPLOMA IN LAUNDRY AND DRYCLEANING TECHNOLOGY						
COURSE: **Textile Testing and Quality Control**			**COURSE CODE**: LDT 224		**CONTACT HOURS**: 2Hours/Week	
GENERAL OBJECTIVE 1.0: Understand the concept of specification and standardisation, quality control and service testing.						
COURSE SPECIFICATION: Theoretical Contents:				**Practical Contents**:		
WEEK	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Evaluation**
	1.1 Define quality control 1.2 Explain the need for specification and standardization 1.3 Describe on-line and off –line qualities control 1.4 Describe off-line service testing 1.5 Explain the need for off-line service text 1.6 Explain analysis as a tool of quality control. 1.7 List the various standard of organizations in Nigeria	Explain specification and standardization in quality control Explain off-line and on-line quality control, off-line service and texting Explain analysis as a tool for quality control	Text books. Periodical Journals	-		Define: i) Specification ii) Standardization iii) Quality control Discuss the need for specification and standardization in quality control
GENERAL OBJECTIVE 2.0: Understand the concept of sampling of textile raw materials and products						
	2.1 Define sampling 2.2 Enumerate the various sampling methods of standard organizations mentioned	- Explain sampling - Discuss the various sampling methods as provided by	Text books. Periodicals Journals Textile raw materials	-	Make arrangement for provision of raw cotton and some textile for quality control	Discuss sampling and the different method of sampling methods of sampling.

	in 1.7 above 2.3 Describe each of the sampling methods listed in 2.2 2.4 Sample raw materials and textile products for quality control analysis.	different standard organization - Describe each of this sampling methods identified above	textile products			
GENERAL OBJECTIVE 3.0: Know the basic principles of quality control operations						
	3.1 Explain the significant of statistical quality control 3.2 Explain mean of median and mode 3.3 Define consumer and producer risk 3.4 Explain how to calculate and construct: (i) Simple variable chart (ii)Simple attribute 3.5 Estimate significant differences in (i) Quality of raw materials (ii)Quality of products	- Explain significance of statistical quality control - Explain mean, median product risk - Demonstrate how to calcite and construct simple variable chart and simple attribute chart - Discuss signification difference in (i) Quality of raw materials (ii) Quality of products	Text books. Periodicals Journals Statistical Data	3.1 Use a given data to calculate means, mode and median 3.2 Use a given data to calculate and construct frequency attribute curve 3.3 Construct histogram from frequency attribute 3.4 calculate and construct operating characteristic using poison and binomial disturb 3.5 Calculate and	- Provide statistical data to the students supervise students to: - Calculate mean median and mode - Calculate and construct; (a) Frequency attribute curve histogram	- State significance of statistical quality control - Explain mean, median & mode - State how to calculate and construct simple variable chart simple attribute chart

	using analysis of variance and student T – Test.	using analysis of variance and students T. Test.		construct simple variable chart 3.6 Calculate and construct simple attribute chart		
GENERAL OBJECTIVE 4.0: Understand the principles and sequence of quality assurance						
	4.1 Define quality assurance 4.2 Identify the major criteria for determining the quality of laundry reagents 4.3 Identify methods of on-line control 4.4 List maintenance common in laundry 4.5 identify standard for finished products 4.6 Identify storage and in-service condition that influence quality.	- Define quality assurance - Explain the major criteria for determining quality in laundry reagent - State methods for on-line control - Online maintenance common in laundry operation - State storage and in-service condition that influence quality	Text books. Periodicals Journals			- Define quality assurance - State the major criteria for determining the quality - List common maintenance in laundry.
GENERAL OBJECTIVE 5.0: Know the methods of fibre identification						
	5.1 Explain the reasons for fibre identification	- Exlain the reasons for fibre identification,	- Sample of raw fibres - Bursen	- Carryout fibre identification of major fibres	- Guide the students to carry out the practical	- Explain the reasons for fibre identification

	5.2 Describe the physical appearance of major textile fibres 5.3 Describe burning characteristics of major textile fibres 5.4 State the reagents in which individual major textile fibres are soluble 5.5 Describe the use of shirlastain solutions	physical appearances of major textile fibres and burning characteristics of major textiles - Explain the reagents in which individual fibres are soluble - Explain shirlastain solutions and how they are applied	burner - Tongs - Shirlastain solutions - Assorted solvents - Textbooks - Journals - Periodicals - Optical micros copes - Source of gas - Glasswares	from their appearance - Determine the melting points (Tg) of major textile fibres - Carry out microscopic examination to identify the longitudinal and cross-section appearances of major Textile fibres - Apply shirlastain solutions in fibre identification - Determine moisture content of a frbre sample - Determine density of different fibre		- Describe the physical appearance of textile fibres - List the characteristic of swell of Textile fibres - Describe the use of shirlastain solutions in fibre identification.
GENERAL OBJECTIVE 6.0: Know the tests for fabrics properties.						
			- Instron Textile strength Testing machine - Bursting strength	6.1 Determine fabric tensile strength using the instron 6.2 Determine fabric extensibility	- Guide the students to conduct the practical	- Discuss the various tests carried out to determine fabric properties

			tester - Air permeability Tester - Textbooks - Journals Periodical	using instron 6.3 Determine bursting strength using bursting strength Tester 6.4 Determine air permeability and abrasion properties of fabrics		

LAUNDRY AND DRY CLEANING EQUIPMENTS

1. **WASHING MACHINES:**
   - **A. Washer Extractor- 3No**
   - **B. Manual Washing Machine- 2No.**
2. **Spotting Table- 1No.**
3. **Hydro-Extractor- 2NO.**
4. **Dry Tumber- 2NO**
5. **Flat Work Ironer- 1NO.**
6. **Finishing Table- 1NO.**
7. **Weighing Scale (Manual)- 1NO.**
8. **Electronic Weighing Scale- 1NO.**
9. **Wet Work Trolly- 6NO.**
10. **Dry Work Trolling- 6NO.**
11. **Coat Presser- 1NO.**
12. **Dry Cleaning Machine- 1NO.**
13. **Air Compresor- 5NO.**
14. **Maincoper- 10NO.**
15. **Wrap Reel- 1NO.**
16. **Viewing Cabinet- 1NO.**
17. **Rub Fastness- 1NO.**
18. **PH MATER- 2NO.**
19. **Thermometer- 30NO.**
20. **Cleancy Referency- 2NO.**
21. **Light Fastness- 1NO.**
22. **Blue Standard- 1NO.**
23. **Washing Fastness Kit- 1NO.**

24.Gray Scale-	**5NO.**
25.Instron-	**1NO.**
26.Bursting Strength-	**1NO.**
27.Hot Plates-	**5NO.**
28.Velvet Pad-	**5NO.**
29.Counting Glass-	**10NO.**
30.Calendaring Machine-	**1NO.**
31.Busan Burner Setup-	**10NO.**
32.Tongs-	**30NO.**
33.Air Permeability Tester-	**1NO.**
34.ABRASION Tester-	**1NO.**
35.Sluicing-	**1NO.**
36.Auto Press Machine-	**1NO.**
37.Colorimeter-	**5NO.**

LAUNDRY AND DRY CLEANING CHEMICAL EQUIPMENT

1. **Perchlorate ethylene**
2. **Tri-chloro ethylene**
3. **Methanol**
4. **Acetic acid**
5. **Hydrochloric acid**
6. **Ammonia solution**
7. **Acetone**
8. **Hydrogen peroxide**
9. **Calcium hypochlorite**
10. **Soda ash**
11. **Industrial disinfectant**

12.Oxalic acid (crystal)
13.Thinner
14.Amyl acetate
15.Industrial powered soap
16.Industrial liquid soap
17.Bar soap

LIST OF PARTICIPANTS

CURRICULUM DEVELOPMENT WORKSHOP FOR ND LAUNDRY AND DRYCLEANING TECHNOLOGY
AT AMINU KANO TEACHING HOSPITAL KANO CONFERENCE HALL

7th -12TH JULY 2019

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