



# **NATIONAL BOARD FOR TECHNICAL EDUCATION**

PLOT B BIDA ROAD, P.M.B. 2239, KADUNA, NIGERIA

## **NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY PROGRAMME**

**CURRICULUM AND COURSE SPECIFICATIONS**

**IN COLLABORATION**

**WITH**

**NIGERIAN INSTITUTE OF LEATHER AND SCIENCE TECHNOLOGY (NILEST)  
P. M. B 1034, SAMARU – ZARIA, NIGERIA**

APRIL, 2026

## PREFACE

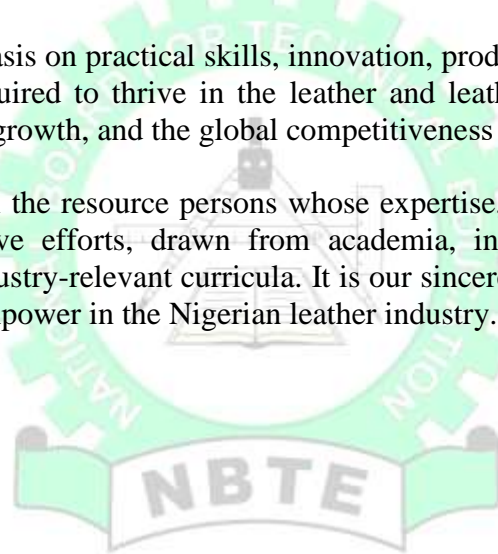
The dynamic nature of technology, industry demands, and global best practices necessitates the periodic review of programme curricula to ensure relevance, quality, and responsiveness to contemporary needs. It is in this regard that the National Diploma (ND) and Higher National Diploma (HND) in Leather Technology curricula have been carefully reviewed and restructured, culminating in their rebranding as the ND and HND Leather and Leather Products Technology (Leather Technology Option) Programme Curricula.

This important exercise was sponsored by the Nigerian Institute of Leather and Science Technology (NILEST), Zaria, whose unwavering commitment to advancing leather education, research, and industry development in Nigeria has once again been demonstrated. The review process was guided by the need to align the curricula with modern technological advancements, entrepreneurial opportunities, value addition across the leather value chain, and the evolving expectations of both local and international markets.

The newly reviewed curricula place greater emphasis on practical skills, innovation, product development, and sustainable practices, thereby equipping diplomates with the competencies required to thrive in the leather and leather products industry. It is expected that this will significantly contribute to job creation, economic growth, and the global competitiveness of Nigeria's leather sector.

I wish to express my profound appreciation to all the resource persons whose expertise, dedication, and insightful contributions made this review exercise a great success. Their collective efforts, drawn from academia, industry, and regulatory bodies, have ensured the development of robust, technology driven and industry-relevant curricula. It is our sincere hope that the implementation of these programme curricula will enhance the quality of technical manpower in the Nigerian leather industry.

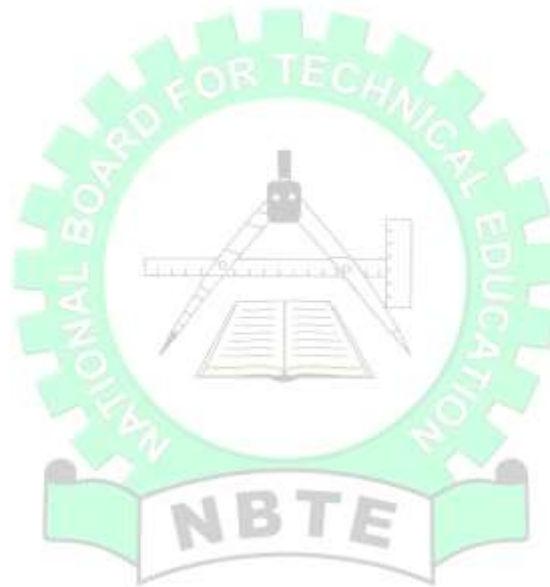
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## GENERAL INFORMATION

### 1. PROGRAMME NOMENCLATURE

*National Diploma in Leather and Leather Products Technology*

### 2. PROGRAMME GOAL

The National Diploma (ND) in Leather and Leather Products Technology is designed to produce Technicians capable of assisting the Technologists in Leather and Leather Products, and related industrial and practical works.

### 3. OBJECTIVES OF THE PROGRAMME

At the end of the programme, the diplomates should be able to:

- i. Assist in modern methods of leather and leather products production;
- ii. Assist in carrying out flaying procedures and various methods of preservation;
- iii. Carry out sizing using international sizing system;
- iv. Identify livestock skins' diseases and defects;
- v. Develop visually appealing and effective design and also to build a strong portfolio showcasing expertise;
- vi. Carryout pattern making, methods and processes for leather products production;
- vii. Assist in quality control during leather manufacture;
- viii. Assist in operating and maintaining machines and equipment used in leather manufacture and tannery operations;
- ix. Assist in physical and chemical processes involved in leather manufacture;
- x. Assist in leather manufacture using different techniques;
- xi. Carry out quality control during the manufacture of leathers;
- xii. Create effective and visually appealing designs to stay current with fashion trends and forecasting;
- xiii. Calculate and establish cost for leather and leather products;
- xiv. Assist in conducting leather and leather products production practical's in Institutions;
- xv. Set up their business enterprises.

### 4. ENTRY REQUIREMENTS

The entry requirements into National Diploma in Leather and Leather Products Technology Programme are as follows:

- a Five (5) GCE, WASC, SSCE, SAISSCE, NECO or NABTEB subjects passed at not more than two sittings. The subjects must be passed at Credit level and should include English Language, Mathematics, Chemistry, Biology or Agricultural Science and any one (1) other subject from the list contained in the most current Directory of Accredited programmes of Polytechnics and similar tertiary technical institutions in Nigeria;
- b A minimum admissible score in the Unified Tertiary Matriculation Examination (UTME) as stipulated by JAMB.

## 5. PROGRAMME STRUCTURE AND DURATION

The ND Leather and Leather Products Technology programme is structured to last for two (2) years (4 semesters) of classroom, workshop, studio, and laboratory activities. The National Diploma is a two-year terminal academic programme. The duration also incorporates 3-4 months Students' Industrial Work Experience (SIWES) which shall take place at the end of the second semester of the first year. Each semester shall be for 17 weeks, made up of as follows:

- 15 contact weeks of teaching (i.e. lectures and practical sessions etc.) and
- 2 weeks for registration and examinations

## 6. CURRICULUM

- a. The curriculum of all ND programme consists of four main components. These are
- i. General studies/education
  - ii. Foundation courses.
  - iii. Professional courses.
  - iv. Students' Industrial Work Experience Scheme (SIWES)

b. The General education component shall include courses in:

- Art and Humanities – English Language and Communication. These are compulsory.
- Mathematics and Science (for non-Science based programmes)
- Social Studies – Citizenship (the Nigerian constitution) and Entrepreneurship Studies.

The courses in Citizenship Education and Entrepreneurship are compulsory. The General Education component shall account for not more than 15% of total contact hours for the programme.

c. Foundation Courses include Computer, Mathematics, French Language and Statistics, etc. The number of hours will vary and may account for about 10 – 15% of the total contact hours.

d. Professional Courses are courses, which give the student the theory and practical skills he/she needs to practice his/her field of calling at the skilled middle level.

e. Students' Industrial Work Experience Scheme (SIWES) shall be taken during vacation following the end of the second semester of the first year. See details of SIWES at paragraph 14.0

## 7. STAFFING REQUIREMENTS

### a. Core Teaching Staff

A minimum of four (4) core teaching staff who should possess at least a HND or B.Sc in Leather Technology, Footwear Technology, Leather Science or any related disciplines at good grade.

**b. Technical Staff**

Technical staff shall have ND, HND or B.Sc. Leather Technology, Footwear Technology, Leather Science or any related field.

**c. Headship of the Department**

The Head of Department shall have at least a First and Master's Degree in Leather Technology, Footwear Technology or related field. He or she shall not be less than the rank of a Senior Lecturer and registered with relevant professional bodies.

**d. Career/Academic Prospects**

Holders of the ND in Leather and Leather Products Technology can work in:

- i. Educational Institutions;
- ii. Tanneries;
- iii. Footwear Industry;
- iv. Furniture Industry;
- v. Non-Government Organisations;
- vi. Leather goods industry;
- vii. Government Ministries and parastatals;
- viii. Private enterprises etc

They can also proceed to HND and BSc programmes for further studies.

**8. CERTIFICATION**

A diplomate of this programme shall be awarded ND in Leather and Leather Products Technology.

**9. ACCREDITATION**

The National Diploma (ND) in Leather and Leather Products Technology shall be accredited by NBTE before the diplomates can be awarded the diploma qualifications. Details about the process of accrediting a programme for the award of the ND are available from the Executive Secretary, National Board for Technical Education (NBTE) Plot "B", Bida Road, P.M.B. 2239, Kaduna, Nigeria.

**10. CONDITIONS FOR THE AWARD OF THE ND**

- a. Institutions offering accredited programmes will award the National Diploma to candidates who successfully completed the programme after passing prescribed coursework, examinations, diploma project and the Students Industrial Work Experience Scheme (SIWES). Such candidates should have completed a minimum of between 72 and 80 semester credit units depending on the programme.

National Diplomas shall be classified as follows:

- Distinction CGPA of 3.50 and above
- Upper Credit CGPA of 3.00- 3.49
- Lower Credit CGPA of 2.50 – 2.99
- Pass CGPA of 2.00 – 2.49

b. Grading of Courses:

Courses shall be graded as follows:

MARKED RANGE	LETTER GRADE	WEIGHTING
75% and above	A	4.00
70% – 74%	AB	3.50
65% – 69%	B	3.25
60% – 64%	BC	3.00
55% – 59%	C	2.75
50% – 54%	CD	2.50
45% – 49%	D	2.25
40% – 44%	E	2.00
Below 40%	F	0.0

## 11. GUIDANCE NOTE FOR TEACHERS

- 11.1 The new curriculum is drawn in unit courses. This is keeping with the provisions of the National Policy on Education which stresses the need to introduce the semester credit units which will enable a student who so wishes to transfer the units already completed in an institution of similar standard from which he is transferring.
- 11.2 In designing the units, the principles of the modular system by product has been adopted; thus making each of the professional modules, when completed provide the students with technical operative skills, which can be used for employment purposes.
- 11.3 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 the behavioral objectives, so that is clear to all, the special Learning objective of the student who successfully completed some of the courses or the diplomates of the programme. There is a slight departure in the presentation of the performance based curriculum which state categorically, the special learning objective for the students, also, there is a deliberate attempt to further involve the staff of the department teaching by having another column called Teachers activities. This is to ensure that the teachers deliver the required learning objectives. There is a third column for the Resources required for each learning objective. Each department is expected to develop its own teaching curriculum from this minimum Guide curriculum and ensure that the resources required are available. 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 TVET Institutions.

11.4 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 if possible. For each course, there should be a balance of theory to practice in the ratio 50:50 or 60:40, or the reverse.

## 12. PRACTICAL LOGBOOK

A practical Logbook to be kept by each student shall contain all day-to-day, weekly summary and semester summary of all the practical activities from day one to the end of the Programme. This is to be checked, marked, endorsed and recorded by the lecturers concerned at the end of every week.

## 13. FINAL PROJECT

Final year students in this programme are expected to carry out a project work. This could be on individual basis or group work of not more than five students per group, but reporting must be undertaken individually. The project should, as much as possible be related to the programme and core professional discipline. Project reports should be well presented and should be properly supervised. The department should make its own arrangement of schedules for project work.

## 14. GUIDELINES ON SIWES PROGRAMME

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

- a. Responsibility for placement of Students.
  - i. Institution offering the ND programme shall arrange to place the students in industry. By the end of second semester of the first academic session, six copies of the master list showing where each student has been placed shall be submitted to the Executive Secretary, NBTE, who shall, in turn authenticate the list and forward it to the Industrial Training Fund, Jos. The Placement Officer should discuss and agree with industry on the following
  - ii. The Placement Officer should discuss and agree with industry on the following:
    1. A task inventory of what the student is expected to experience during the period of attachment. It may be wise to adopt the one already approved for each field by the industry-based supervisor.
    2. The evaluation of the student by the industry-based supervisor and the institution-based supervisor.
    3. The final grading of the student during the period of attachment should be weighted more on the evaluation by industry-based supervisor.

### b. Evaluation of Student during the SIWES

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

- i. Punctuality

- ii. Attendance
  - iii. General attitude to work
  - iv. Respect for authority
  - v. Interest in the field/technical area
  - vi. Technical competence as a potential technician in his field.
- c. 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 TVET Institutions is adopted.
- d. The Institution based Supervisor  
The institution-based supervisor should initial the log book during each visit. This will enable him to check and determine to what extent the objectives of the scheme are being met and to assist students having any problems regarding the task given to them by their industry-based supervisor.
- e. Frequency of visit  
Institutions should ensure that students placed on the attachment are visited within one month of their placement. Other visits shall be arranged so that:
- i. There is another visit six weeks after the first visit; and
  - ii. A final visit in the last month of the attachment.
- f. 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.
- g. 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 skilled technician in his field. The SIWES should be graded on a fail or pass basis. Where a student has satisfied all other requirements but failed SIWES, he or she may only be allowed to repeat another four months SIWES at his own expense.

## CURRICULUM TABLE

## YEAR I – SEMESTER I

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	COM 111	Introduction to Computing	2	0	1	3	3
2.	GNS 101	Use of English I	2	0	0	2	2
3.	GNS 111	Citizenship Education I	2	0	0	2	2
4.	GLT 111	General Laboratory Techniques I	1	0	1	2	2
5.	MTH 111	Logic and Linear Algebra	1	1	0	2	2
6.	STA 111	Descriptive Statistics I	1	1	0	2	2
7.	STC 101	General Chemistry I	1	0	1	2	2
8.	STP 111	Mechanics and Properties of Matter	2	0	1	3	3
9.	MSQ 111	Mandatory Skills Qualification	1	0	1	2	2
10.	LPT 111	Hides and Skins Production	1	0	2	3	3
11.	LPT 112	Introduction to Footwear Production Technology	1	0	2	3	3
<b>Total</b>			<b>15</b>	<b>2</b>	<b>9</b>	<b>26</b>	<b>26</b>

## YEAR I – SEMESTER II

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	GNS 102	Communication in English I	2	0	0	2	2
2.	ENT 126	Introduction to Entrepreneurship I	2	0	1	3	3
3.	MTH 123	Algebra and Elementary Trigonometry	1	1	0	2	2
4.	MEC 113	Basic Workshop Technology and Practice	1	0	2	3	3
5.	STC 121	Organic Chemistry	2	0	1	3	3
6.	STB 121	Cell Biology	2	0	1	3	3
7.	LPT 121	Introduction to Leather Technology	2	0	1	3	3
8.	LPT 122	Hides and Skins Diseases and Defects	2	0	0	2	2
9.	LPT 123	Footwear Production Technology I	2	0	1	3	3
10.	LPT 124	Footwear Graphics	1	0	1	2	2
11.	LPT 125	Pattern Production I	1	0	3	4	4
<b>Total</b>			<b>18</b>	<b>1</b>	<b>11</b>	<b>30</b>	<b>30</b>

**YEAR II – SEMESTER I**

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	GNS 201	Use of English II	2	0	0	2	2
2.	COM 115	Computer Packages	2	0	1	3	3
3.	ENT 216	Introduction to Entrepreneurship II	2	0	1	3	3
4.	LPT 211	Introduction to Leather Manufacture I	2	0	2	4	4
5.	LPT 212	Process Control	2	0	0	2	2
6.	LPT 213	Tannery and Footwear Machinery	2	0	0	2	2
7.	LPT 214	Pattern Production II	1	0	3	4	4
8.	LPT 215	Footwear Production Technology II	1	0	2	3	3
9.	LPT 216	Research Methodology	2	0	0	2	2
10.	LPT 217	SIWES	0	0	4	4	4
<b>Total</b>			<b>16</b>	<b>0</b>	<b>13</b>	<b>29</b>	<b>29</b>

**YEAR II – SEMESTER II**

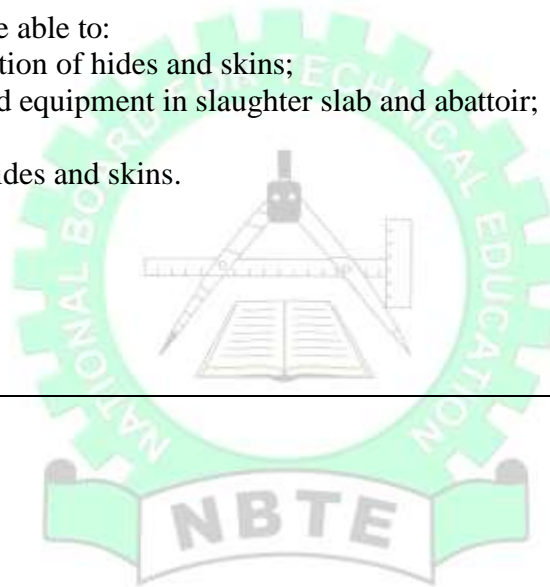
S/N	Course Code	Course Title	L	T	P	CU	CH
1.	GNS 222	Economics	2	0	0	2	2
2.	GNS 202	Communication in English II	2	0	0	2	2
3.	LPT 221	Introduction to Leather Manufacture II	2	0	2	4	4
4.	LPT 222	Quality Control	1	0	1	2	2
5.	LPT 223	Leather Goods and Footwear Accessories	1	0	2	3	3
6.	LPT 224	Footwear Costing	1	0	2	3	3
7.	LPT 225	Introduction to Leather Chemistry I	2	0	0	2	2
8.	LPT 226	Final Project	0	0	4	4	4
<b>Total</b>			<b>11</b>	<b>0</b>	<b>11</b>	<b>22</b>	<b>22</b>

**L - Lectures, T- Tutorial, P- Practical, CU - Credit Unit, CH - Contact Hours**

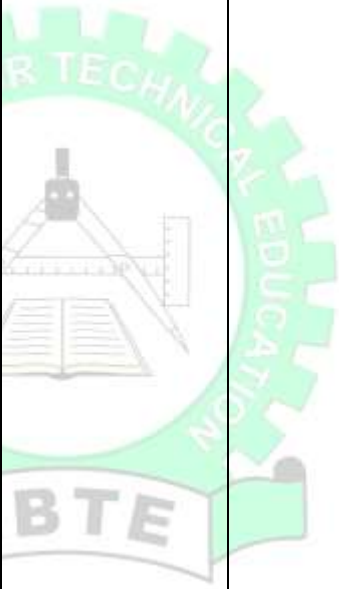
**YEAR I SEMESTER I COURSES**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: HIDES AND SKINS PRODUCTION</b>	<b>COURSE CODE: LPT 111</b>	<b>Contact Hours: 3 Hours/Week</b>
<b>Year: I Semester: I</b>	<b>Credit Unit: 3</b>	<b>Theoretical: 1 Hour/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 2 Hours/Week</b>
<b>GOAL: This course is designed to provide the students with a basic knowledge of the structure of hides and skins, flaying procedure and various methods of preservation.</b>		
<b>GENERAL OBJECTIVES:</b> At the end of this course, the students should be able to: 1.0 Know the sources, structures and production of hides and skins; 2.0 Comprehend the general layout, tools and equipment in slaughter slab and abattoir; 3.0 Know the flaying procedure of a carcass; 4.0 Understand preservation techniques of hides and skins.		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>							
<b>Course Title: HIDES AND SKINS PRODUCTION</b>				<b>Course Code: LPT 111</b>		<b>Contact Hours: 3 Hours/Week</b>	
				<b>Credit Unit: 3</b>		<b>Theoretical: 1 Hour/Week</b>	
<b>Year: I Semester: I</b>				<b>Pre-requisite: -</b>		<b>Practical: 2 Hours/Week</b>	
<b>COURSE SPECIFICATION: Theoretical</b>							
<b>GOAL: This course is designed to provide the students with a basic knowledge of the structure of hides and skins, flaying procedure and various methods of preservation</b>							
<b>General Objective 1.0: Know the sources, structures and production of hides and skins.</b>							
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>			
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	
1-3	1.1. Define hides and skins with their differences. 1.2. List major sources of hides and skins supply from domestic and bush animals e.g. cow, goat, sheep, buffalo, elephant etc. 1.3. List types of raw materials i.e. goat skins, snake skins, sheep skins, crocodiles' skins, cow hides, buffalo hides, ostrich hides etc. 1.4. List the various uses of different types of raw materials in 1.3 above e.g. shoe upper,	<ul style="list-style-type: none"> <li>Introduce the concepts of hides and skins and explain their definitions and differences using charts and examples.</li> <li>Show pictures, videos and charts of domestic and bush animals to illustrate the major sources of hides and skins.</li> <li>Display samples or images of different raw materials and guide students in identifying and classifying each type.</li> <li>Show various</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc	1.1 Identify different hides and skins production. 1.2 Draw the structure of hides and skins, highlighting the major layers 1.3 Carryout simple proximate analysis of hides and skins	Guide the students to carry out the following: <ul style="list-style-type: none"> <li>Identify different hides and skins production</li> <li>Draw the structure of hides and skins,</li> <li>Carryout simple approximate analysis of hides</li> </ul>	Hides, skins, textbooks, videos, manuals, drawing materials etc	

	<p>belting, garment, upholstery, leathers etc.</p> <p>1.5. Draw the structure of hides and skins.</p> <p>1.6. Explain the functions and structure of different layers of hides and skins i.e. epidermis, dermis, hypodermis.</p> <p>1.7. Apply 1.6 above to the theory of flaying and preservation e.g. loose subcutaneous tissues allow easy flaying.</p> <p>1.8. List various biochemical components of the hides and skins with their proportions e.g. water 60-65%, protein 33-35%, fat 2-5% etc.</p>	<p>Finished leather products and explain the different uses of each raw material with practical examples.</p> <ul style="list-style-type: none"> <li>• Draw and label the structure of hides and skins on the board and guide students through diagram sketching exercises.</li> <li>• Use diagrams, models and presentations to explain the structure and functions of the epidermis, dermis and hypodermis layers.</li> <li>• Demonstrate flaying and preservation techniques through videos or practical demonstrations and relate them to skin structure.</li> <li>• Present charts and tables showing the biochemical components and proportions of hides and skins and provide exercises for reinforcement.</li> </ul>			<p>and skins</p>	
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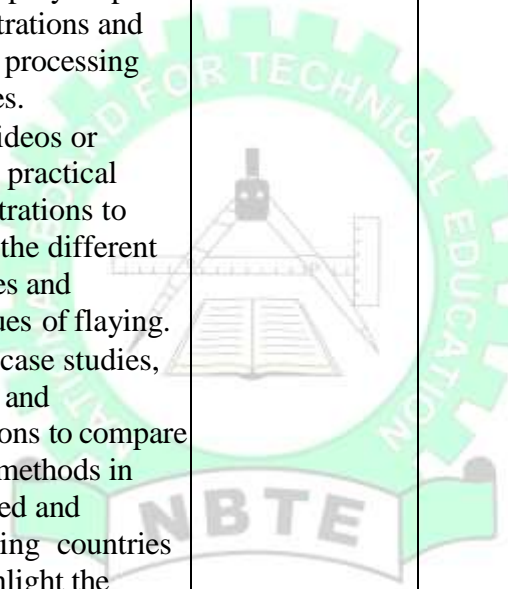
**General Objective 2.0: Comprehend the general layout, tools and equipment in slaughter slab and abattoir.**

<p>4-6</p>	<p>2.1 Define the terms slaughter slab and abattoirs.</p> <p>2.2 Differentiate between slaughter slab and abattoir.</p> <p>2.3 Explain the layout of a slaughter slab and abattoirs.</p> <p>2.4 Discuss the recent development in abattoirs.</p> <p>2.5 Explain the importance of sanitary practices in abattoirs and slaughter slabs.</p> <p>2.6 List the tools and equipment used in flaying in above e.g. slaughtering and flaying knives, pumps and sharpening rod etc.</p> <p>2.7 Explain the uses and maintenance of tools and equipment in 2.6 above.</p> <p>2.8 Describe the operations in a modern abattoir.</p>	<ul style="list-style-type: none"> <li>• Introduce the terms slaughter slab and abattoir</li> <li>• Explain their meanings using definitions and illustrations.</li> <li>• Present comparison charts and examples to highlight the differences between a slaughter slab and an abattoir.</li> <li>• Use diagrams, layouts and pictures to explain the structural arrangement of a slaughter slab and an abattoir.</li> <li>• Show videos, slides and case studies to discuss recent developments and modern technologies used in abattoirs.</li> <li>• Explain sanitary Practices using demonstrations and real-life examples And emphasize hygiene standards in slaughter facilities.</li> <li>• Display and</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>2.1 Draw a layout of a slaughter slab and abattoir.</p> <p>2.2 Identify the tools and equipment used in flaying e.g. flaying knives, pumps.</p> <p>2.3 Demonstrate the uses and maintenance of tools and equipment used in flaying.</p> <p>2.4 Identify equipment in a modern abattoir.</p> <p>2.5 Undertake an industrial visit to slaughter slab and abattoir</p>	<p>Guide the students to carry out the following:</p> <ul style="list-style-type: none"> <li>• Draw a layout of a slaughter slab and abattoir.</li> <li>• Identify the tools and equipment used in flaying e.g. flaying knives, pumps</li> <li>• Demonstrate the uses and maintenance of tools and equipment used in flaying</li> <li>• Identify equipment in a modern abattoir</li> <li>• Arrange an industrial visit to slaughter slab and abattoir</li> </ul>	<p>Hides, skins, textbooks, videos, manuals, abattoir, slaughter slab etc</p>
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		<p>Demonstrate the various tools and equipment used in flaying and allow students to identify each item.</p> <ul style="list-style-type: none"> <li>• Demonstrate the correct uses, handling and maintenance procedures of flaying tools and equipment through practical sessions.</li> <li>• Describe the step-by-step operations of a modern abattoir using flow charts, videos and guided explanations.</li> </ul>				
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**General Objective 3.0: Know the flaying procedure of a carcass**

9-11	<p>3.1. Define the terms proper throwing and proper slaughtering and their implications on the resultant hides and skins</p> <p>3.2. Describe the initial ripping cuts and correct pattern of the hides and skins.</p> <p>3.3. List the various flaying tools State reasons for the following processes: fleshing, trimming,</p>	<ul style="list-style-type: none"> <li>• Introduce the terms “proper throwing” and “proper slaughtering</li> <li>• Explain their effects on the quality of hides and skins using examples and illustrations.</li> <li>• Demonstrate the initial ripping cuts and correct cutting patterns on diagrams, charts or sample hides and guide students through the procedure.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet Pictures Videos etc</p>	<p>3.1 Identify slaughtering, ripping, fleshing and flaying knives.</p> <p>3.2 Carry out proper throwing and proper slaughtering.</p> <p>3.3 Identify the effects proper throwing and proper slaughtering on the resultant hides and skins.</p> <p>3.4 Inflate the animal (carcass).</p> <p>3.5 Make a correct</p>	<p>Guide students to carry out the following:</p> <ul style="list-style-type: none"> <li>• Identify slaughtering, ripping, fleshing and flaying knives.</li> <li>• Carry out proper throwing and “proper slaughtering”</li> </ul>	<p>Hides, skins, textbooks, videos, manuals, abattoir.</p>
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	<p>washing and draining of the skin. Explain the different processes of flaying. Compare hides and skins flaying in developed and developing countries</p>	<ul style="list-style-type: none"> <li>• Display the various flaying tools and explain their specific functions during practical demonstrations.</li> <li>• Explain the purposes of fleshing, trimming, washing and draining using step-by-step demonstrations and real-life processing examples.</li> <li>• Show videos or conduct practical demonstrations to explain the different processes and techniques of flaying.</li> <li>• Present case studies, pictures and discussions to compare flaying methods in developed and developing countries and highlight the differences in technology and practices.</li> </ul>		<p>initial ripping cuts on the carcass. 3.6 Perform fleshing, trimming, washing and draining of the skin.</p>	<ul style="list-style-type: none"> <li>• Identify the effects of “proper throwing” and “proper slaughtering” on the resultant hides and skins.</li> <li>• Inflate the animal (carcass)</li> <li>• Take a correct initial ripping cuts on the carcass</li> <li>• Perform fleshing, trimming, washing and draining of the skin.</li> </ul>	
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**GENERAL OBJECTIVE 4.0: Understand preservation techniques of hides and skins**

12-15	<p>4.1 Explain favourable conditions for the preservation of hides and skins. 4.2 Describe common</p>	<ul style="list-style-type: none"> <li>• Explain the favourable environmental conditions for preserving hides and</li> </ul>	<p>Laptop computers, smart board, Projector, Writing</p>	<p>4.1 Demonstrate the methods used to preserve hides and skins in</p>	<p>Guide students to carry out:</p> <ul style="list-style-type: none"> <li>• Demonstrate the methods</li> </ul>	<p>Hides, skins, textbooks, videos, manuals, knives, abattoir, sodium chloride,</p>
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	<p>preservation methods of hides and skins used in Nigeria.</p> <p>4.3 Describe the main features of siting a hides and skins drying shed.</p> <p>4.4 State the economic significance of 4.3.</p> <p>4.5 State proper time of curing.</p> <p>4.6 Explain the factors affecting the rate of salt penetration.</p>	<p>skins using charts and practical examples of temperature, humidity and ventilation.</p> <ul style="list-style-type: none"> <li>Describe and demonstrate the common preservation methods used in Nigeria through lectures, pictures, videos and local case studies.</li> <li>Use diagrams, sketches and site plans to illustrate the main features required when siting a hides and skins drying shed. Discuss and explain the economic benefits of proper drying shed siting using examples, calculations and class discussions.</li> <li>Explain the appropriate time of curing with timelines and practical demonstrations of curing stages.</li> <li>Present charts, demonstrations and</li> </ul>	<p>Materials, White board, Markers, Internet etc</p>	<p>Nigeria.</p> <p>4.2 Apply salt and observe the time of penetration</p>	<p>used to preserve hides and skins in Nigeria.</p> <ul style="list-style-type: none"> <li>Apply salt and observe the time of penetration</li> </ul>	<p>biocides.</p>
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		experiments to explain the factors affecting the rate of salt penetration in				
		<ul style="list-style-type: none"><li>• hides and skins.</li></ul>				

**Course Assessment:**

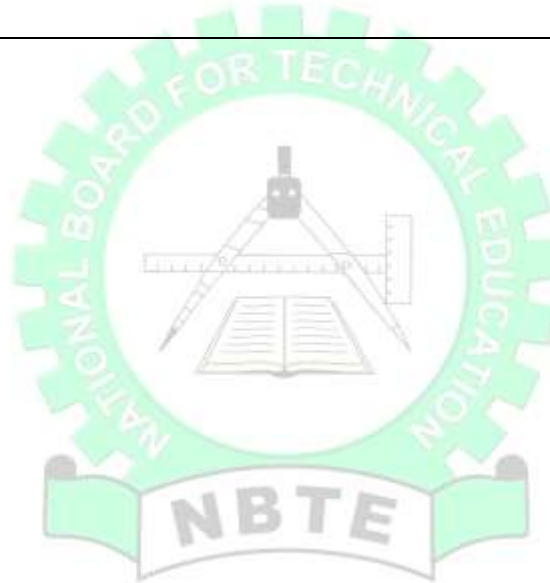
Course work: 10%

Test/Assignments: 10%

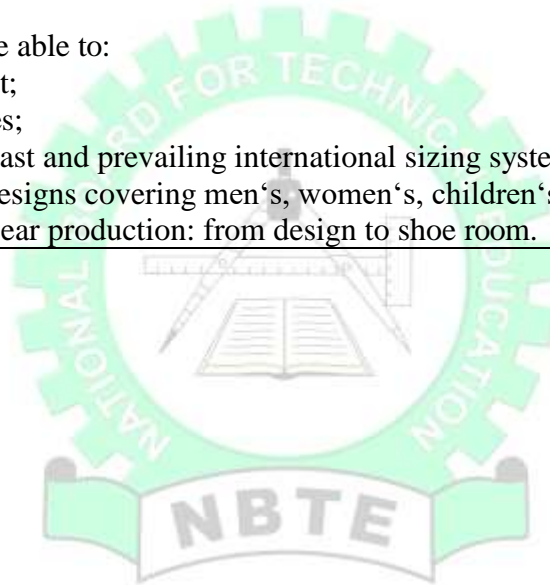
Practical: 40%

Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: INTRODUCTION TO FOOTWEAR PRODUCTION TECHNOLOGY</b>	<b>COURSE CODE: LPT 112</b>	<b>Contact Hours: 3 Hours/Week</b>
<b>Year: I Semester: I</b>	<b>Credit Unit: 3</b>	<b>Theoretical: 1 Hour/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 2 Hours/Week</b>
<b>GOAL: This is course it to equip students with the knowledge of the anatomy of the human foot, foot diseases, types of last and international sizing system</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand the anatomy of the human foot;</li> <li>2.0 Understand foot diseases and abnormalities;</li> <li>3.0 Know the types of last, measurements of last and prevailing international sizing system;</li> <li>4.0 Know the variety of footwear styles and designs covering men's, women's, children's footwear;</li> <li>5.0 Understand the general sequence of footwear production: from design to shoe room.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>							
<b>Course Title: INTRODUCTION TO FOOTWEAR PRODUCTION TECHNOLOGY</b>				<b>Course Code: LPT 112</b>		<b>Contact Hours: 3 Hours/Week</b>	
				<b>Credit Unit: 3</b>		<b>Theoretical: 1 Hour/Week</b>	
<b>Year: I Semester: I</b>				<b>Pre-requisite: -</b>		<b>Practical: 2 Hours/Week</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>							
<b>GOAL: This is course it to equip students with the knowledge of the anatomy of the human foot, foot diseases, types of last and international sizing system</b>							
<b>General Objective 1.0: Understand the anatomy of the human foot.</b>							
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>			
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	
1-3	1.1 Describe the general outline of the foot skeleton. 1.2 Explain the joints and ligaments of the foot. 1.3 Explain the muscular system of the foot. 1.4 Describe the structure and functions of the skin. 1.5 Describe the effect of pressure and friction on the skin. 1.6 Explain the circulatory and nervous system. 1.7 Explain the development of foot from infancy to adulthood.	<ul style="list-style-type: none"> <li>• Illustrate the general outline of the foot skeleton using diagrams and models.</li> <li>• Demonstrate the joints and ligaments of the foot with charts and visual aids.</li> <li>• Explain the muscular system of the foot using diagrams and practical examples.</li> <li>• Show the structure and functions of the skin using slides and models.</li> <li>• Explain the effects of pressure and friction on the skin with examples and</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc	1.1 Draw the skeletal structure of the foot and label it. 1.2 Identify the joints, ligaments and muscles of the foot 1.3 Draw the structure of the skin 1.4 Identify the pressure points of a human foot	Guide students to carry out the following: <ul style="list-style-type: none"> <li>• Draw the skeletal structure of the foot and label</li> <li>• Identify the joints, ligaments and muscles of the foot</li> <li>• Draw the structure of the skin</li> <li>• Identify the pressure points of a human foot</li> </ul>	Textbooks Skeletal dummy Drawing materials Charts etc	

		<p>demonstrations.</p> <ul style="list-style-type: none"> <li>• Describe the circulatory and nervous system of the foot using charts and diagrams.</li> <li>• Trace the development of the foot from infancy to adulthood using timelines and illustrations.</li> </ul>				
<b>General Objective 2.0: Understand foot diseases and abnormalities</b>						
4-5	<p>2.1 Explain common foot diseases.</p> <p>2.2 Explain foot abnormalities.</p> <p>2.3 Explain possible causes of foot abnormalities such as:</p> <ol style="list-style-type: none"> <li>Hallux valgus</li> <li>Hallux rigidus</li> <li>Hammer clawed/toes</li> <li>Flat feet; valgus ankles and pronation</li> <li>Corn nail disturbance</li> <li>Chilblains</li> </ol> <p>2.4 Explain footwear suitable for 2.3 above.</p>	<ul style="list-style-type: none"> <li>• Explain common foot diseases using diagrams, images, and case studies.</li> <li>• Illustrate foot abnormalities using charts, pictures, and models.</li> <li>• Describe possible causes of foot abnormalities such as hallux valgus, hallux rigidus, hammer/clawed toes, flat feet, valgus ankles, pronation, corn nail disturbance, and chilblains using examples and diagrams</li> <li>• Recommend suitable footwear for the conditions above</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>2.1 Identify foot abnormalities and diseases</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Identify foot abnormalities and diseases</li> </ul>	<p>Pictorials</p> <p>Videos</p> <p>Charts</p>

		using samples, images, and demonstrations.				
<b>General Objective 3.0: Know the types of last, measurements of last and prevailing international sizing system</b>						
6-8	<p>3.1 Define last.</p> <p>3.2 Enumerates the importance of last.</p> <p>3.3 Explain types of last</p> <p>3.4 List materials and tools used for last making</p> <p>3.5 Describe the process of last making.</p> <p>3.6 Describe preparation of insoles and determination of shape:</p> <p>i Heel height</p> <p>ii Toe spring</p> <p>3.7 Explain measurements of the last in relation to foot measurements. Explain the prevailing international sizing system and</p> <p>3.8 conversion from one scale to another.</p>	<ul style="list-style-type: none"> <li>• Explain last</li> <li>• Explain the importance of a last using examples and demonstrations.</li> <li>• Illustrate the types of last with diagrams, samples, and pictures.</li> <li>• Show materials and tools used for last making through practical display and explanation.</li> <li>• Demonstrate the process of last making using step-by-step instructions and models.</li> <li>• Explain preparation of Insoles and determination of shape, including heel height and toe spring, using diagrams and demonstrations.</li> <li>• Demonstrate measurements of the last in relation to foot measurements using charts and practical exercises.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, Whiteboard, Markers, Internet Pictures Videos etc</p>	<p>3.1 Carry out the following:</p> <p>i Foot measurement;</p> <p>ii Last measurement;</p> <p>iii Identification of materials used in last making</p> <p>3.2 Demonstrate last making</p> <p>3.3 Carryout reshaping of last</p> <p>3.4 Make foot models using plaster of Paris, composite and cardboard strawboard</p> <p>3.5 Prepare insole patterns from the foot prints and contour patterns from the lasts.</p>	<p>Guide students to carry out the following:</p> <ul style="list-style-type: none"> <li>• Foot measurement</li> <li>• Last measurement</li> <li>• Identification of materials used in last making</li> <li>• Demonstrate last making</li> <li>• Carryout reshaping of last</li> <li>• Make foot models using plaster of Paris, composite and cardboard/strawboard</li> <li>• Prepare insole patterns from the foot prints and contour patterns from the lasts</li> </ul>	<p>Strawboard</p> <p>Cardboard</p> <p>Plaster of Paris</p> <p>Foot Models</p> <p>Epoxyand hardener</p> <p>Adhesives</p> <p>Brush Mold</p>

		<ul style="list-style-type: none"> <li>Explain the prevailing international sizing system and demonstrate conversion from one scale to another using examples and charts.</li> </ul>				
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**GENERAL OBJECTIVE 4.0: Know the variety of footwear styles and designs covering men’s, women’s, children’s footwear**

9-11	<p>4.1 Explain the different classes of footwear</p> <p>4.2 Explain different footwear styles and designs such as:</p> <ol style="list-style-type: none"> <li>i Gibson</li> <li>ii Oxford</li> <li>iii Moccasin</li> <li>iv Court shoe</li> <li>v Military or combat boots etc.</li> </ol> <p>4.3 Explain specialty footwear such as:</p> <ol style="list-style-type: none"> <li>i. Orthopedic</li> <li>ii. Diabetic</li> <li>iii. Arthritis</li> <li>iv. Surgery Recovery etc.</li> </ol>	<ul style="list-style-type: none"> <li>Explain the different classes of footwear using charts, images, and examples.</li> <li>Illustrate different footwear styles and designs such as Gibson, Oxford, Moccasin, Court shoes, and military or combat boots using Samples and pictures.</li> <li>Describe specialty footwear, including orthopedic, diabetic, arthritis, and surgery recovery shoes, using demonstrations and case studies</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>4.1 Sketch and label different footwear</p> <p>4.2 Cut footwear patterns according to the sketch</p> <p>4.3 Close the component</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>Sketch and label different footwear</li> <li>Cut footwear patterns according to the sketch</li> <li>Close the components</li> </ul>	<p>Last Scissors Sewing Thread, Cardboard Sewing Machine Masking tape Skiving Knife Adhesive Standards Punch Owl Hammer Tacking Nails Needle Measuring tape Set square French Curve Ruler</p>
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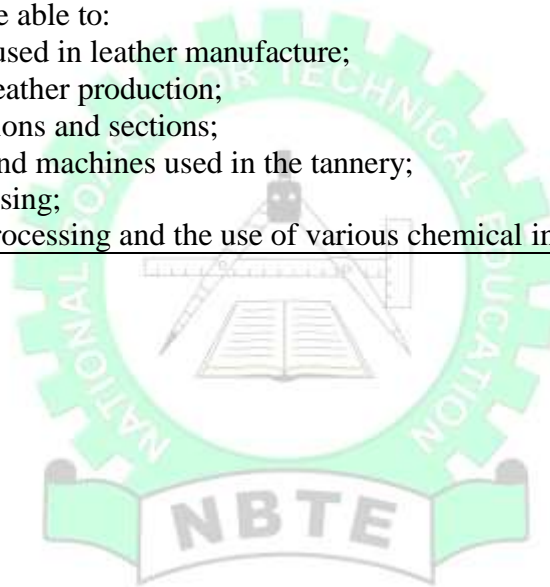
**General Objective 5.0: Understand the general sequence of footwear production: from design to shoe room**

<p>12-15</p>	<p>5.1 List different shoe styles                      5.2 Explain pattern creation                      5.3 Explain last making                      5.4 Explain sourcing and selection of materials                      5.5 Explain Prototype                      5.6 Explain Quality control                      5.7 Describe costing</p>	<ul style="list-style-type: none"> <li>• Show different shoe styles using samples, charts, and images.</li> <li>• Demonstrate pattern creation using step-by-step practical exercises.                              Demonstrate last making using tools, materials, and models.</li> <li>• Explain sourcing and selection of materials using examples and charts.                              Describe the concept of a prototype using samples and illustrations.</li> <li>• Explain quality control procedures using checklists and demonstrations.</li> <li>• Explain costing methods using worked examples and calculations.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc                      Charts</p>			
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**Course Assessment:**  
 Course work: 10%  
 Test/Assignments: 10%  
 Practical: 40%  
 Examination: 40%  
**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: INTRODUCTION TO LEATHER TECHNOLOGY</b>	<b>COURSE CODE: LPT 121</b>	<b>Contact Hours: 3 Hours/Week</b>
<b>Year: I Semester: II</b>	<b>Credit Unit: 3</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 1 Hour/Week</b>
<b>GOAL: This course is designed to enable students to be familiarized with leather terminologies and production steps</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand the common terminologies used in leather manufacture;</li> <li>2.0 Know the sources of raw materials for leather production;</li> <li>3.0 Understand the layout of tannery operations and sections;</li> <li>4.0 Understand common tools, equipment and machines used in the tannery;</li> <li>5.0 Understand the science of leather processing;</li> <li>6.0 Know the sequence of general leather processing and the use of various chemical involved.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: INTRODUCTION TO LEATHER TECHNOLOGY</b>			<b>Course Code: LPT 121</b>		<b>Contact Hours: 3 Hours/Week</b>	
<b>Year: I Semester: II</b>			<b>Credit Unit: 3</b>		<b>Theoretical: 2 Hours/Week</b>	
			<b>Pre-requisite: -</b>		<b>Practical: 1 Hour/Week</b>	
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: This course is designed to enable students to be familiarized with leather terminologies and production steps</b>						
<b>General Objective 1.0: Understand the common terminologies used in leather manufacture</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-3	1.1. Define the following: <ol style="list-style-type: none"> <li>i. Tanning</li> <li>ii. Tannins</li> <li>iii. Tanner</li> <li>iv. Tannery</li> <li>v. Hides and skins</li> <li>vi. Leather</li> <li>vii. Beam House etc.</li> </ol> 1.2. Differentiate between the following: <ol style="list-style-type: none"> <li>i. Hides and skins</li> <li>ii. leather and leatherette</li> <li>iii. Processes and operations, etc.</li> </ol> 1.3 Explain the similarities between the terms in 1.2 above.	<ul style="list-style-type: none"> <li>• Define tanning, tannins, tanner, tannery, hides and skins, leather, and beam house using notes, charts, and examples.</li> <li>• Compare hides and skins, leather and leatherette, and processes and operations using tables and illustrations.</li> <li>• Discuss the similarities between the related terms using examples and guided explanations.</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc			
<b>General Objective 2.0: Know the sources of raw materials for leather production</b>						

4-6	<p>2.1 List various raw materials that can be used for leather manufacture.</p> <p>2.2 Mention the sources of the raw material listed in 2.1 above.</p> <p>2.3 Explain the prohibition of some hides and skins in leather production.</p>	<ul style="list-style-type: none"> <li>• Show various raw materials used for leather manufacture using samples, charts, and images.</li> <li>• Identify the sources of the listed raw materials using maps, pictures, and examples.</li> <li>• Explain the prohibition of some hides and skins in leather production using regulations, case studies, and discussions.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>2.1 Identify raw materials that can be used for leather manufacture</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Identify raw materials that can be used for leather manufacture</li> </ul>	<p>Raw materials</p>
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**General Objective 3.0: Understand the layout of tannery operations and section**

7-9	<p>3.1 Describe the layout of tannery operations and section.</p> <p>3.2 Explain the major sections of the tannery e.g. beam house, tanyard, finishing yard.</p> <p>3.3 Explain the operations in section 3.1 above</p>	<ul style="list-style-type: none"> <li>• Illustrate the layout of tannery operations and sections using diagrams and flow charts.</li> <li>• Explain the major sections of the tannery such as the beam house, tanyard, and finishing yard using charts and visual aids.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet Pictures Videos etc</p>			
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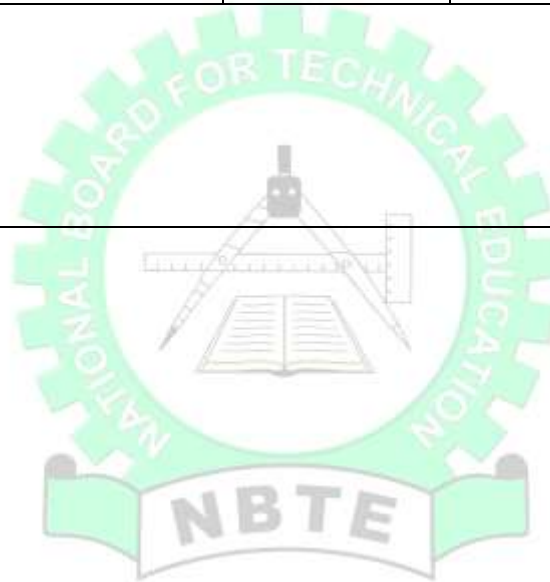
		<ul style="list-style-type: none"> <li>• Demonstrate the operations carried out in each section using videos, process charts, and practical examples.</li> </ul>				
<b>GENERAL OBJECTIVE 4.0: Understand common tools, equipment and machines used in the tannery</b>						
10-11	<p>4.1 List the tools commonly used in each section of the tannery.</p> <p>4.2 Explain the mode of operations of the machines used in each section of the tannery.</p> <p>4.3 Explain safety procedure while using the tools, equipment and machines above.</p>	<p>Show the tools commonly used in each section of the tannery using samples and illustrations.</p> <ul style="list-style-type: none"> <li>• Explain the mode of operation of the machines used in each section of the tannery using diagrams and demonstrations.</li> <li>• Demonstrate safety procedures while using the tools, equipment, and machines through practical sessions and guidance.</li> </ul>	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc			
<b>GENERAL OBJECTIVE 5.0: Understand the science of leather processing</b>						
12-13	5.1 Describe principles of mass and energy	<ul style="list-style-type: none"> <li>• Explain the principles of mass and energy</li> </ul>				

	<p>transfer.</p> <p>5.2 Explain the roles of acids, bases/ alkalis, salts in leather processing.</p> <p>5.3 State the uses of pH meter, indicators etc. in leather processing.</p> <p>5.4 Identify hazards and safety measures in the tannery.</p>	<p>transfer using diagrams and practical examples.</p> <ul style="list-style-type: none"> <li>• Describe the roles of acids, bases or alkalis, and salts in leather processing using charts and demonstrations.</li> <li>• Demonstrate the uses of pH meters, indicators, and related tools in leather processing through practical sessions.</li> <li>• Identify hazards and safety measures in the tannery using case studies, checklists, and discussions.</li> </ul>				
<p><b>GENERAL OBJECTIVE 6.0: Understand the sequence of general leather processing and the use of various chemicals involved.</b></p>						
<p>14-15</p>	<p>6.1 Explain the various leather manufacturing processes in sequence:</p> <ol style="list-style-type: none"> <li>Rehydration</li> <li>Unhairing/liming</li> <li>Deliming</li> <li>Bating</li> <li>Pickling</li> <li>Tanning etc.</li> </ol>	<ul style="list-style-type: none"> <li>• Explain the various leather manufacturing processes in sequence, including rehydration, unhairing or liming, deliming, bating, pickling, and tanning, using flow charts and demonstrations.</li> </ul>				

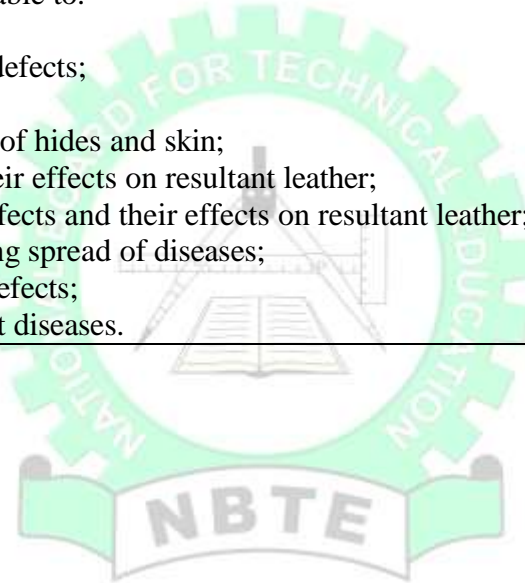
	<p>6.2 Identify the chemicals used in each process in 6.1 above</p> <p>6.3 Explain the purpose of chemical used in 6.2 above.</p>	<ul style="list-style-type: none"> <li>• Identify the chemicals used in each process using charts, samples, and practical illustrations.</li> <li>• Explain the purpose of each chemical used in the processes using examples and guided discussions.</li> </ul>				
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**Course Assessment:**

Course work: 10%  
 Test/Assignments: 10%  
 Practical: 40%  
 Examination: 40%  
**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: HIDES AND SKIN DISEASES AND DEFECTS</b>	<b>COURSE CODE: LPT 122</b>	<b>Contact Hours: 2 Hours/Week</b>
<b>Year: I Semester: II</b>	<b>Credit Units: 2</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 0</b>
<b>GOAL: This course was designed to provide the students a basic knowledge of livestock diseases and defects.</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand hides and skin;</li> <li>2.0 Understand the definition of diseases and defects;</li> <li>3.0 Understand the common animal diseases;</li> <li>4.0 Understand the common causes of defects of hides and skin;</li> <li>5.0 Understand hides and skin diseases and their effects on resultant leather;</li> <li>6.0 Understand the common hides and skin defects and their effects on resultant leather;</li> <li>7.0 Understand the common ways of preventing spread of diseases;</li> <li>8.0 Understand common ways of preventing defects;</li> <li>9.0 Understand some common ways to prevent diseases.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: HIDES AND SKIN DISEASES AND DEFECTS</b>			<b>Course Code: LPT 122</b>		<b>Contact Hours: 2 Hours/Week</b>	
			<b>Credit Unit: 2</b>		<b>Theoretical: 2 Hours/Week</b>	
<b>Year: I Semester: II</b>			<b>Pre-requisite: -</b>		<b>Practical: 0</b>	
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: This course was designed to provide the students a basic knowledge of livestock diseases and defects.</b>						
<b>General Objective 1.0: Understand hides and skin</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-2	1.1 Define hides and skins 1.2 Give examples of hides and skin 1.3 Discuss modern applications of hides and skins. 1.4 Identify the sources of hides and skins.	<ul style="list-style-type: none"> <li>Define hides and skins using notes, charts, and illustrations.</li> <li>Show examples of hides and skins using samples, pictures, and displays.</li> </ul>	<ul style="list-style-type: none"> <li>Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
<b>General Objective 2.0: Know the definition of diseases and defects</b>						
3	2.1 Define diseases and defects 2.2 Explain the differences between diseases and defects 2.3 State the similarities between defects and diseases.	<ul style="list-style-type: none"> <li>Define diseases and defects using notes and examples.</li> <li>Compare diseases and defects using charts and illustrations.</li> </ul>	<ul style="list-style-type: none"> <li>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
<b>General Objective 3.0: Understand the common animal diseases</b>						

4	<p>3.1 List the classes of hides and skins diseases in the topics: fungal, bacterial, viral, protozoan.</p> <p>3.2 List the diseases in the above classes fungal- ring worm streptothricosis viral lumpy skin diseases</p>	<ul style="list-style-type: none"> <li>• Show the classes of hides and skins diseases, including fungal, bacterial, viral, and protozoan, using charts and diagrams.</li> <li>• Illustrate the specific diseases in each class, such as ringworm, streptothricosis, and lumpy skin disease, using pictures and case studies.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Pictures, Videos etc</li> </ul>			
<b>GENERAL OBJECTIVE 4.0: Understand the common causes of defects of hides and skin</b>						
5-6	<p>4.1 Classify the hides/skins defects:</p> <ul style="list-style-type: none"> <li>i Mechanical</li> <li>ii Flaying</li> <li>iii Curing</li> <li>iv Natural occurring</li> </ul> <p>4.2 List the defect in each class antemortem insects and pests</p>	<ul style="list-style-type: none"> <li>• Classify hides and skins defects into naturally occurring, mechanical, flaying, and curing using charts and examples.</li> <li>• Show the specific defects in each class, including antemortem, insects, and pests, using pictures and samples.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
<b>GENERAL OBJECTIVE 5.0: Understand hides and skin diseases and their effects on resultant leather</b>						
7-9	<p>5.1 Describe the damages on hides/skins</p>	<ul style="list-style-type: none"> <li>• Show the damages on hides and skins using samples,</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board,</li> </ul>			

	<p>5.2 Explain the damages on the resultant leather</p> <p>5.3 Discuss the effect of hides and skin diseases on the quality of resultant leather.</p>	<p>images, and illustrations.</p> <ul style="list-style-type: none"> <li>Show the damages on the resultant leather using finished products and visual examples.</li> </ul>	<p>Projector, Writing Materials, White board, Markers, Internet etc</p>			
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**GENERAL OBJECTIVE 6.0: Understand the common hides and skin defects and their effects on resultant leather**

10-11	<p>6.1 Explain damages on the hides and skins caused by defects.</p> <p>6.2 Discuss damages on the leather.</p>	<ul style="list-style-type: none"> <li>Show the damages on hides and skins caused by defects using samples, pictures, and demonstrations.</li> <li>Show the damages on leather resulting from these defects using finished leather products and illustrations.</li> </ul>	<ul style="list-style-type: none"> <li>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
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**GENERAL OBJECTIVE 7.0: Know the common ways of preventing spread of diseases**

12	<p>7.1 List ways of contacting diseases.</p> <p>7.2 Explain the ways of preventing spread of diseases.</p> <p>7.3 Explain how to treat hide and skin diseases.</p>	<ul style="list-style-type: none"> <li>Show the ways hides and skins can contract diseases using charts, diagrams, and examples.</li> <li>Explain each method, such as damp environments, using illustrations and case studies.</li> </ul>	<ul style="list-style-type: none"> <li>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
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**GENERAL OBJECTIVE 8.0: Understand common ways of preventing defects**

13	<p>8.1 List ways of preventing defects on animals</p> <p>8.2 Explain the use of proper housing materials</p>	<ul style="list-style-type: none"> <li>• Show ways of preventing defects on animals using charts, examples, and illustrations.</li> <li>• Explain the use of proper housing materials using pictures, diagrams, and demonstrations.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
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**GENERAL OBJECTIVE 9.0: Understand some common ways to prevent diseases**

14-15	<p>9.1 Explain the importance of maintaining a hygienic environment for animals.</p> <p>9.2 Explain the role of proper nutrition and culling of sick animals in disease prevention.</p> <p>9.3 Explain the significance of vaccination in protecting animals from diseases.</p>	<ul style="list-style-type: none"> <li>• Explain the importance of maintaining a hygienic environment for animals using diagrams, examples, and demonstrations.</li> <li>• Explain the role of proper nutrition and culling of sick animals using charts, pictures, and case studies.</li> <li>• Explain the significance of vaccination in protecting animals from diseases using videos, examples, and guided discussions.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
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**Course Assessment:**

Course work: 20%

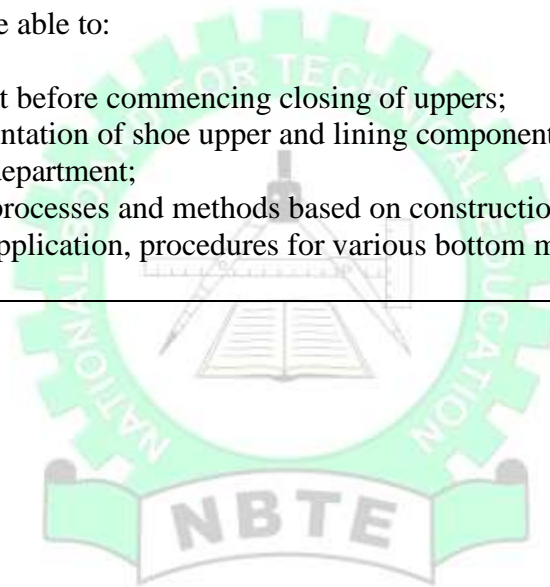
Test/Assignments: 20%

Examination: 60%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: FOOTWEAR PRODUCTION TECHNOLOGY I</b>	<b>COURSE CODE: LPT 123</b>	<b>Contact Hours: 3 Hours/Week</b>
<b>Year: I Semester: II</b>	<b>Credit Unit: 3</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 1 Hour/Week</b>
<b>GOAL: This course is designed to equip students with the knowledge and skill of footwear production</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Know the operations in closing department before commencing closing of uppers;</li> <li>2.0 Know the reinforcements, joining, ornamentation of shoe upper and lining components;</li> <li>3.0 Know finishing operations in the closing department;</li> <li>4.0 Know various types of bottom materials, processes and methods based on construction type;</li> <li>5.0 Understand different types of adhesives, application, procedures for various bottom materials.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: FOOTWEAR PRODUCTION TECHNOLOGY I</b>			<b>Course Code: LPT 123</b>		<b>Contact Hours: 3 Hours/Week</b>	
			<b>Credit Unit: 3</b>		<b>Theoretical: 2 Hours/Week</b>	
<b>Year: I Semester: II</b>			<b>Pre-requisite: -</b>		<b>Practical: 1 Hours/Week</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>						
<b>GOAL: This course is designed to equip students with the knowledge and skill of footwear production</b>						
<b>General Objective 1.0: Know the operations in closing department before commencing closing of uppers</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-3	1.1 Explain closing department. 1.2 Explain checking of pairs and identification marks before commencing major operation in closing department 1.3 Describe skiving, the purpose and its importance. 1.4 Mention the purpose and the types of edge treatment.	<ul style="list-style-type: none"> <li>Describe closing Department</li> <li>Explain checking of pairs and identification marks before commencing major operations in the closing department using demonstrations and examples.</li> <li>Describe skiving, its purpose, and importance using diagrams, samples, and practical demonstrations.</li> <li>Show the purpose and types of edge treatment using samples, pictures, and illustrations.</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc	1.1 Practice colouring/ marking - such as upper components for Beading, Stitching, Seam, underlay, overlapping, size, lot and code numbers. 1.2 Carry out skiving operation of uppers	Guide students to: <ul style="list-style-type: none"> <li>Practice colouring/ marking - such as upper components for Beading, Stitching, Seam, underlay, overlapping, size, Lot and code numbers.</li> <li>Carry out skiving operation of uppers</li> </ul>	Leather Adhesives Sewing machine Sewing threads Scissors Sole etc

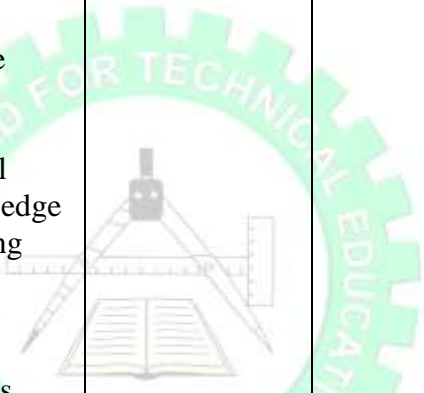
**• General Objective 2.0: Know the reinforcements, joining, ornamentation of shoe upper and lining components**

4-6	<p>2.1 Explain different kinds of ornamentation and their purpose.</p> <p>2.2 Explain reinforcements and their purpose.</p> <p>2.3 Describe jointing of upper and lining section for upper closing and different kinds of seam. plain close seam, silked or open stitched seam.</p> <p>2.4 Describe types of stitches</p> <p>2.5 Explain different types of threads used in closing</p>	<ul style="list-style-type: none"> <li>• Explain checking of pairs and identification marks before commencing major operations in the closing department using demonstrations and examples.</li> <li>• Describe skiving, its purpose, and importance using diagrams, samples, and practical demonstrations.</li> <li>• Show the purpose and types of edge treatment using samples, pictures, and illustrations.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Multimedia aids etc</li> </ul>	<p>2.1 Carry out different kinds of ornamentations</p> <p>2.2 Perform reinforcements such as quarter attachment with reinforcement function such as: Taping, Backing, Staying and stay stitching.</p>	<p>Assist students to carry out:</p> <ul style="list-style-type: none"> <li>• Different kinds of ornamentations</li> <li>• Perform reinforcements such as quarter attachment with reinforcement function such as Taping, Backing, Staying and stay stitching</li> </ul>	<p>Leather Adhesives Sewing machine Sewing threads Scissors Sole Trimmings such as buckles, eyelets, chains etc</p>
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**General Objective 3.0: Know finishing operations in the closing department**

7-9	<p>3.1 Explain finishing operations in the closing department such as cleaning, edge beating/beading, trimming and eyeleting</p> <p>3.2 Describe checking the quality of closed uppers.</p> <p>3.3 Describe the sequence of</p>	<ul style="list-style-type: none"> <li>• Explain finishing operations in the closing department, including cleaning, edge beating, trimming, and eyeleting, using demonstrations and examples.</li> <li>• Describe checking the quality of</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Pictures, Videos etc</li> </ul>	<p>3.1 Carry out upper finishing</p> <p>3.2 Carry out designing and Fabrication of shoe uppers</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Carry out upper finishing</li> <li>• Carry out designing and Fabrication of shoe uppers</li> </ul>	<p>Cleaning Brush Trimmer Mallet, Punch Eyelet Machine etc</p>
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	operations of upper closing of; court shoe, Moccasin shoe, Derby shoe and Oxford shoe, etc.	<p>closed uppers using samples and guided inspection exercises.</p> <ul style="list-style-type: none"> <li>• Demonstrate the sequence of operations for upper closing of court shoes, moccasin shoes, derby shoes, and Oxford shoes using diagrams, samples, and step-by-step demonstrations.</li> </ul>				
<b>GENERAL OBJECTIVE 4.0: Know the various types of bottom materials, processes and methods based on construction type.</b>						
10-12	<p>4.1 Explain the following footwear components and materials;</p> <ul style="list-style-type: none"> <li>i insole</li> <li>ii sole</li> <li>iii Shank</li> <li>iv heel,</li> <li>v fillers, etc.</li> </ul> <p>4.2 Explain the importance and desirable properties of the components and materials listed in 4.1 such as durability, flexibility, abrasion resistance, lightness</p> <p>4.3 Describe the following bottoming</p>	<ul style="list-style-type: none"> <li>• Explain footwear components and materials, including insole, sole, shank, heel, and fillers, using samples, diagrams, and demonstrations.</li> <li>• Explain the importance and desirable properties of the components and materials, such as durability, flexibility, abrasion resistance, and lightness, using examples and</li> </ul>	Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc	<p>4.1 Draw Sketches respecting upper and bottom proportion and Balances</p> <p>4.2 Carry out bottom filling with different materials like cork, saw dust, EVA, leather waste, etc.</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Draw Sketches respecting upper and bottom proportion and Balances</li> <li>• Carry out bottom filling with different materials like cork, saw dust, EVA,</li> </ul>	<p>Insole</p> <p>Sole</p> <p>Shank</p> <p>Heel</p> <p>Fillers</p> <p>Wedge</p> <p>Randing</p> <p>etc</p>

	<p>processes/methods based on construction type;</p> <ul style="list-style-type: none"> <li>i Shank placement</li> <li>ii Insole forming</li> <li>iii Bottom filling</li> <li>iv Pre-bonding</li> <li>v Bonding</li> <li>vi Sole attaching</li> <li>vii Sole press</li> <li>viii Sole stitching</li> <li>ix Heel attaching</li> <li>x Heel scouring</li> <li>vi Edge trimming</li> </ul>	<p>illustrations.</p> <ul style="list-style-type: none"> <li>• Demonstrate the bottoming processes based on construction type, including shank placement, insole forming, bottom filling, pre-bonding, bonding, sole attaching, sole pressing, sole stitching, heel attaching, heel scouring, and edge trimming, using samples, diagrams, and step-by-step demonstrations</li> </ul>			<p>leather waste, etc.</p>	
<p><b>GENERAL OBJECTIVE 5.0: Understand different types of adhesives, application, procedure for various bottom materials</b></p>						

<p>13-15</p>	<p>5.1 Describe the following types of adhesives and their characteristics;</p> <ul style="list-style-type: none"> <li>i. polyurethane adhesive</li> <li>ii. Neoprene adhesive</li> <li>iii. rubber latex adhesive, etc.</li> </ul> <p>5.2 Explain different adhesives application procedures for various bottom materials such as:</p> <ul style="list-style-type: none"> <li>i Wet stick</li> <li>ii Dry stick</li> </ul> <p>5.3 Explain the following:</p> <ul style="list-style-type: none"> <li>i Direct injection moulding;</li> <li>ii direct pouring,</li> <li>iii direct vulcanizing.</li> </ul> <p>5.4 Describe manufacturing processes of; PVC, PU, TPR, Rubber, EVA, TPU, TPE, Nitrile Rubbers, leather sole, etc.</p>	<ul style="list-style-type: none"> <li>• Describe types of adhesives, including polyurethane, neoprene, and rubber latex, and their characteristics using samples, charts, and demonstrations.</li> <li>• Explain adhesive application procedures for various bottom materials, such as wet stick and dry stick, using diagrams and practical demonstrations.</li> <li>• Explain direct injection moulding, direct pouring, and direct vulcanizing using charts, videos, and examples.</li> <li>• Describe manufacturing processes of PVC, PU, TPR, rubber, EVA, TPU, TPE, nitrile rubbers, and leather soles using diagrams, samples, and step-by-step demonstrations.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>5.1 Identify various types of adhesives for footwear Production</p> <p>5.2 Demonstrate the process of adhesive application</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Identify various types of adhesives for footwear Production</li> </ul> <p>Demonstrate the process of adhesive application</p>	<p>Adhesives Brushes Leather Clicking Knife etc</p>
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**Course Assessment:**

Course work: 10%

Test/Assignments: 10%

Practical: 40%

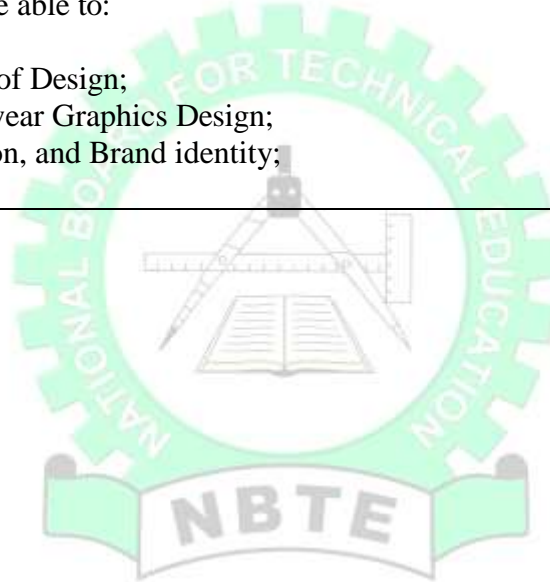
Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: FOOTWEAR GRAPHICS</b>	<b>COURSE CODE: LPT 124</b>	<b>Contact Hours: 2 Hours/Week</b>
<b>Year: I Semester: II</b>	<b>Credit Units: 2</b>	<b>Theoretical: 1 Hour/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 1 Hour/Week</b>
<b>GOAL: To equip students with knowledge and skills to develop visually appealing and effective design and also to build a strong portfolio showcasing expertise.</b>		
<b>GENERAL OBJECTIVES:</b>		
At the end of this course, the students should be able to:		
1.0 Understand Footwear Design;		
2.0 Understand Principles and Elements of Design;		
3.0 Know Technical Sketching for Footwear Graphics Design;		
4.0 Understand Marketing communication, and Brand identity;		
5.0 Understand Market Analysis.		

**B**

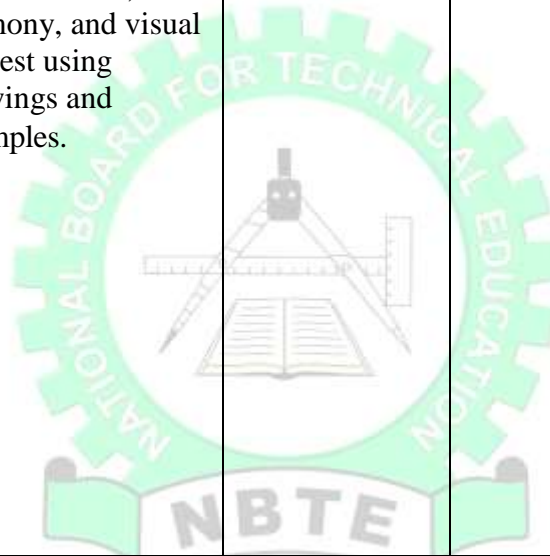


<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: FOOTWEAR GRAPHICS</b>		<b>Course Code: LPT 124</b>		<b>Contact Hours: 2 Hours/Week</b>		
		<b>Credit Unit: 2</b>		<b>Theoretical: 1 Hour/Week</b>		
<b>Year: I Semester: II</b>		<b>Pre-requisite: -</b>		<b>Practical: 1 Hour/Week</b>		
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: To equip students with knowledge and skills to develop visually appealing and effective design and also to build a strong portfolio showcasing expertise.</b>						
<b>General Objective 1.0: Understand Footwear Design</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-3	1.1 Define footwear design 1.2 Define graphic design 1.3 Discuss the history of footwear graphic design: Industrial revolution to digital age.	<ul style="list-style-type: none"> <li>Define footwear design using notes, examples, and illustrations.</li> <li>Define graphic design using diagrams, samples, and explanations.</li> <li>Discuss the history of footwear graphic design from the Industrial Revolution to the Digital Age using timelines, images, and case studies.</li> </ul>	<ul style="list-style-type: none"> <li>Laptop Computers, smart board, Projector, Writing Materials,</li> <li>Whiteboard, Markers, Internet etc</li> </ul>			
<b>General Objective 2.0: Understand Principles and Elements of Design</b>						

<p>4-6</p>	<p>2.1 Explain the basic elements of design:</p> <ul style="list-style-type: none"> <li>i line,</li> <li>ii shape,</li> <li>iii form,</li> <li>iv texture,</li> <li>v colour</li> <li>vi space.</li> </ul> <p>2.2 Explain the combination of elements to create visually appealing compositions.</p> <p>2.3 Explain the principles of design:</p> <ul style="list-style-type: none"> <li>i balance,</li> <li>ii contrast,</li> <li>iii emphasis,</li> <li>iv movement,</li> <li>v pattern,</li> <li>vi unity</li> </ul> <p>2.4 Explain usage of the principles in 2.3 above to create effective and aesthetically pleasing designs.</p> <p>2.5 Explain how to balance and prioritize principles in design</p>	<ul style="list-style-type: none"> <li>• Explain the basic elements of design—line, shape, form, texture, colour, and space—using diagrams, examples, and samples.</li> <li>• Demonstrate the combination of design elements to create visually appealing compositions using sketches and practical exercises.</li> <li>• Explain the principles of design—balance, contrast, emphasis, movement, pattern, and unity—using charts, examples, and illustrations.</li> <li>• Demonstrate the application of these principles to create effective and aesthetically pleasing designs using samples and guided exercises.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials,</li> <li>• White board, Markers, Internet etc</li> </ul>			
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		<ul style="list-style-type: none"> <li>• Explain how to balance and prioritize the principles in design using diagrams, case studies, and practical examples.</li> </ul>				
<b>General Objective 3.0: Know Technical Sketching for Footwear Graphics Design</b>						
9-11	<p>3.1 Explain perspective and proportion of footwear</p> <p>3.2 Discuss various drawing techniques (line, contour, value, texture) etc</p> <p>3.3 Explain shading and rendering techniques.</p> <p>3.4 Describe how to draw from life, observation and reference.</p> <p>3.5 Explain the colour wheel and colour theory</p> <p>3.6 Discuss how to create tints by adding white or black to a colour.</p> <p>3.7 Discuss uses of tints and shades to create contrast, harmony and visual interest.</p>	<ul style="list-style-type: none"> <li>• Explain perspective and proportion of footwear using diagrams, examples, and demonstrations.</li> <li>• Demonstrate various drawing techniques, including line, contour, value, and texture, using sketches and guided practice.</li> <li>• Explain shading and rendering techniques using samples, diagrams, and demonstrations.</li> <li>• Demonstrate drawing from life, observation, and reference using live models, objects, and images. Explain the colour wheel and colour theory using charts, diagrams, and</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Pictures, Videos etc</li> </ul>	<p>3.1 Sketch basic shoe silhouettes</p> <p>3.2 Apply colours to footwear designs</p> <p>3.3 Practice shading and rendering techniques</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Sketch basic shoe silhouettes</li> <li>• Apply colours to footwear designs</li> <li>• Practice shading and rendering techniques</li> </ul>	<p>Samples</p> <p>Software packages</p> <p>Computer Pictorials</p> <p>Auto-graphic footwear drawing templates</p> <p>Cardboard</p> <p>Cutting mat</p> <p>Portfolio folder</p> <p>Masking tape</p> <p>Marker (Different colours), Coloured pencils, T-square, French curves etc</p>

- examples.
- Demonstrate creating tints by adding white or black to a colour using practical exercises and samples.
  - Demonstrate the use of tints and shades to create contrast, harmony, and visual interest using drawings and examples.



**GENERAL OBJECTIVE 4.0: Understand marketing, communication, and brand identity.**

12-13	<p>4.1 Define the following:</p> <ul style="list-style-type: none"> <li>i Marketing</li> <li>ii Communication</li> <li>iii Brand identity</li> </ul> <p>4.2 Explain the importance of the following:</p> <ul style="list-style-type: none"> <li>i Marketing</li> <li>ii Communication</li> <li>iii Brand identity</li> </ul> <p>4.3 Design brand identity</p> <ul style="list-style-type: none"> <li>i logos,</li> <li>ii colour,</li> <li>iii pallet,</li> <li>iv typography</li> </ul> <p>4.4 Explain how to adapt brand messaging for different audience and channels.</p>	<ul style="list-style-type: none"> <li>• Define marketing, communication, and brand identity using notes, examples, and illustrations.</li> <li>• Explain the importance of marketing, communication, and brand identity using case studies and examples. Demonstrate designing brand identity, including logos, colour palette, and typography, using practical exercises and samples.</li> <li>• Explain how to adapt brand messaging for different audiences and channels using examples, case studies, and guided discussions.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials,</li> <li>• White board, Markers, Internet etc</li> </ul>	<p>4.1 Design a Logo</p> <p>4.2 Carryout advertisement for a footwear product</p>	<ul style="list-style-type: none"> <li>• Guide students to design a Logo</li> <li>• Supervise the students during advertisement of a footwear product</li> </ul>	<p>Samples</p> <p>Software packages</p> <p>Computer Pictorials</p> <p>Autographic footwear drawing templates etc</p>
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**GENERAL OBJECTIVE 5.0: Understand Market Analysis**

14-15	<p>5.1 Define Market Analysis</p> <p>5.2 Explain competitor analysis and market research.</p> <p>5.3 Explain unique selling points and key differentiators</p> <p>5.4 Define brand identity that differentiates from Competitors</p> <p>5.5 Discuss how to stay up-to-date with competitor activity and market trends</p>	<ul style="list-style-type: none"> <li>• Define market analysis using notes, examples, and illustrations.</li> <li>• Explain competitor analysis and market research using charts, case studies, and examples.</li> <li>• Explain unique selling points and key differentiators using examples and practical exercises.</li> <li>• Define brand identity that differentiates from competitors using samples, diagrams, and explanations.</li> <li>• Discuss how to stay up-to-date with competitor activity and market trends using case studies, reports, and examples.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>			
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**Course Assessment:**

Course work: 10%

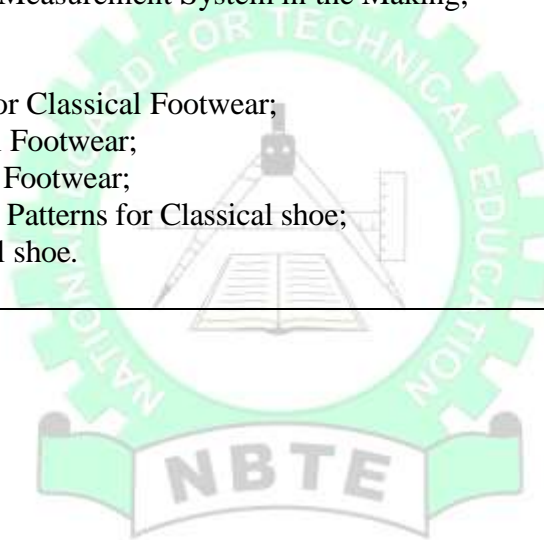
Test/Assignments: 10%

Practical: 40%

Examination: 40%

**Total: 100%**

<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: PATTERN PRODUCTION I</b>	<b>COURSE CODE: LPT 125</b>	<b>Contact Hours: 4 Hours/Week</b>
<b>Year: I Semester: II</b>	<b>Credit Unit: 4</b>	<b>Theoretical: 1 Hour/Week</b>
	<b>Pre-requisite: -</b>	<b>Practical: 3 Hours/Week</b>
<b>GOAL: This course is designed to equip students with basic practical knowledge and skills of pattern making.</b>		
<b>GENERAL OBJECTIVES:</b>		
At the end of this course, the students should be able to:		
1.0 Know the different types of Shoe Last Diagram and their Sizes;		
2.0 Know Measurement of The Foot and Measurement System in the Making;		
3.0 Know Tools for Pattern Making;		
4.0 Know Basic Pattern Making;		
5.0 Know Sequence of Pattern Making for Classical Footwear;		
6.0 Know Typical Back Part for Classical Footwear;		
7.0 Know Typical Fore Part for Classical Footwear;		
8.0 Know Typical Allowance for Making Patterns for Classical shoe;		
9.0 Know typical middle part for classical shoe.		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>							
<b>Course Title: PATTERN PRODUCTION I</b>				<b>Course Code: LPT 125</b>		<b>Contact Hours: 1 Hour/Week</b>	
				<b>Credit Unit: 4</b>		<b>Theoretical: 3 Hours/Week</b>	
<b>Year: I Semester: II</b>				<b>Pre-requisite: -</b>		<b>Practical: 0</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>							
<b>GOAL: This course is designed to equip students with basic practical knowledge and skills of pattern making.</b>							
<b>General Objective 1.0: Know the different types of Shoe Last Diagram and their Sizes</b>							
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>			
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	
1-3	1.1 Describe shoe last anatomy. 1.2 Explain type of and their sizes. 1.3 Explain required shoe lasts for different types of footwear construction.	<ul style="list-style-type: none"> <li>Describe shoe last anatomy using diagrams, samples, and illustrations.</li> <li>Show the types of shoe lasts and their sizes using charts, samples, and demonstrations.</li> <li>Explain the required shoe lasts for different types of footwear construction using examples and guided exercises.</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc	1.1 Carry out the following: <ol style="list-style-type: none"> <li>Foot measurement</li> <li>Last measurement</li> <li>Identification of materials used in last making</li> </ol> 1.2 Demonstrate last making 1.3 Carryout reshaping of last 1.4 Make foot models using	<ul style="list-style-type: none"> <li>Provide guidance to students to carry out the practical tasks</li> </ul>	Leather Tape Ruler Scissors Last Cardboard Skiving knife Epoxy Resin Hardener Adhesives Knife Pencil	

				<p>plaster of Paris, composite and cardboard/strawboard</p> <p>1.5 Prepare insole patterns from the foot prints and contour patterns from the lasts.</p> <p>1.6 Design shoe last anatomy</p>		
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**General Objective 2.0: Know Measurement of The Foot and Measurement System in the Making**

4-5	<p>2.1 Explain the anatomy point of the foot with the active role in the biometric.</p> <p>2.2 Explain the anthropometry parameter of the last</p> <p>2.3 Explain transposing foot measurement of last measurement.</p> <p>2.4 Describe heel pitch, toe spray, back height, instep and thread position.</p>	<ul style="list-style-type: none"> <li>• Explain the anatomy points of the foot with active roles in biometrics using diagrams, charts, and examples.</li> <li>• Explain the anthropometry parameters of the shoe last using measurements, diagrams, and demonstrations.</li> <li>• Demonstrate transposing foot measurements to last measurements using charts, examples, and</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>2.1 Demonstrate the point of foot with the active role in the biometric.</p> <p>2.2 Demonstrate the anthropometry parameter of the last</p> <p>2.3 Demonstrate transposing foot measurement of last measurement.</p> <p>2.4 Demonstrate heel pitch, toe spray, back height, instep</p>	<ul style="list-style-type: none"> <li>• Guide students to: <ul style="list-style-type: none"> <li>- Demonstrate the point of foot with the active role in the biometric.</li> <li>- Demonstrate the anthropometry parameter of the last</li> <li>- Demonstrate transposing foot measurement of last measurement.</li> </ul> </li> </ul>	<p>Measuring Tape Masking tape Pencil etc</p>
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		<p>practical exercises.</p> <ul style="list-style-type: none"> <li>Describe heel pitch, toe spring, back height, instep, and thread position using diagrams, samples, and guided demonstrations.</li> </ul>		and thread position.	<ul style="list-style-type: none"> <li>Demonstrate heel pitch, toe spray, back height, instep and thread position.</li> </ul>	
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**General Objective 3.0: Know Tools for Pattern Making**

6-7	<p>3.1 Explain the uses of a mechanical pencil in pattern making</p> <p>3.2 Discuss the uses of a protector in pattern making</p> <p>3.3 Describe the uses of dividers in pattern making</p> <p>3.4 Explain the uses of a flexible ruler in pattern making</p> <p>3.5 Discuss the uses of a measuring tape in pattern making</p> <p>3.6 Describe the uses of scissors in pattern making</p> <p>3.7 Explain the uses of a revolving punch in pattern making.</p>	<ul style="list-style-type: none"> <li>Use audio visual aids to explain the following tools and their uses in pattern making. <ul style="list-style-type: none"> <li>Mechanical pencil</li> <li>Protector</li> <li>Divides</li> <li>Flexible ruler</li> <li>Measuring tape</li> <li>Scissor</li> <li>Revolving punch</li> </ul> </li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet Pictures Videos etc</p>	<p>3.1 Demonstrate the use of the following tools in pattern making:</p> <ol style="list-style-type: none"> <li>Mechanical pencil</li> <li>Protector</li> <li>Divides</li> <li>Flexible ruler</li> <li>Measuring tape</li> <li>Scissor</li> <li>Revolving punch</li> </ol>	<ul style="list-style-type: none"> <li>Guide students to demonstrate the use of the following tools in pattern making: <ul style="list-style-type: none"> <li>Mechanical pencil</li> <li>Protector</li> <li>Divides</li> <li>Flexible ruler</li> <li>Measuring tape</li> <li>Scissor</li> <li>Revolving punch</li> </ul> </li> </ul>	<p>Mechanical pencil Protector Divides Flexible ruler Measuring tape Scissor Revolving punch Pencil</p>
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**GENERAL OBJECTIVE 4.0: Know Basic Pattern Making**

<p>8-9</p>	<p>4.1 Explain the following methods of pattern making: Masking tape method, Shell vacuum method, Computer method, Paper method</p> <p>4.2 State the advantage and disadvantage of each method mention above.</p> <p>4.3 Describe method of standard construction design</p> <p>4.4 Describe the method for making the net pattern, working pattern insole and sole patterns</p>	<ul style="list-style-type: none"> <li>• Explain the methods of pattern making, including masking tape, shell vacuum, computer, and paper methods, using diagrams, demonstrations, and examples.</li> <li>• Explain the advantages and disadvantages of each pattern making method using charts, case studies, and illustrations.</li> <li>• Describe the method of standard construction design using diagrams, samples, and demonstrations.</li> <li>• Demonstrate the method for making net patterns, working patterns, insoles, and sole patterns using step-by-step exercises and practical examples.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials,</li> <li>• White board, Markers, Internet etc</li> </ul>	<p>4.1 Demonstrate the following methods of pattern making</p> <ol style="list-style-type: none"> <li>i Masking tape method</li> <li>ii Shell vacuum method</li> <li>iii Computer method</li> <li>iv Paper method</li> <li>v Demonstrate standard construction design</li> </ol> <p>4.2 Demonstrate method for making the net pattern, working pattern insole and sole patterns</p>	<ul style="list-style-type: none"> <li>• Guide Students to Demonstrate the following methods of pattern making:             <ul style="list-style-type: none"> <li>- Masking tape method</li> <li>- Shell vacuum method</li> <li>- Computer method</li> <li>- Paper method</li> <li>- Demonstrate standard construction design</li> <li>- Demonstrate method for making the net pattern, working pattern insole and sole patterns</li> </ul> </li> </ul>	<p>Masking tape Shell vacuum Computer Paper Pencil</p>
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**GENERAL OBJECTIVE 5.0: Know Specialized Skill in Shoe Craftsman**

10	<p>5.1 Describe the following sequence in making pattern for classical shoe</p> <ol style="list-style-type: none"> <li>i. Taping last</li> <li>ii. Forme</li> <li>iii. Mean forme</li> <li>iv. Standard</li> <li>v. Net pattern</li> <li>vi. Working pattern</li> <li>vii. Lining pattern</li> <li>viii. Insole and sole pattern</li> </ol> <p>5.2 Describe digital design and pattern making using CAD</p>	<ul style="list-style-type: none"> <li>• Describe the sequence in making patterns for classical shoes, including taping last, form, mean form, standard, net pattern, working pattern, lining pattern, and insole and sole patterns using diagrams, samples, and demonstrations.</li> <li>• Explain digital design and pattern making using CAD software through demonstrations, screenshots, and practical exercises.</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts CAD Software etc</li> </ul>	<p>5.1 Demonstrate the use of CAD in pattern making</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Demonstrate the use of CAD in pattern making</li> </ul>	<p>Taping last Forme Mean forme Standard Net pattern Working pattern Lining pattern Insole and sole pattern CAD Software etc</p>
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**GENERAL OBJECTIVE 6.0: Know typical back part for Classical Footwear**

11	<p>6.1 Explain the back part in making classical shoes.</p> <p>6.2 Discuss the back strap of classical shoes</p> <p>6.3 Describe a Counter of classical shoes</p> <p>6.4 Explain dog tail of classical shoes</p> <p>6.5 Discuss stay of classical shoes</p>	<ul style="list-style-type: none"> <li>• Explain the back parts in making classical shoes, back strap, counter, dog tail, and stay using diagrams, samples, and demonstrations.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts</p>	<p>6.1 Identify the following back part in making classical</p> <ol style="list-style-type: none"> <li>i. Back strap</li> <li>ii. Counter</li> <li>iii. Dog tail</li> <li>iv. Stay</li> </ol>	<ul style="list-style-type: none"> <li>• Identify the following back part in making classical</li> <li>- Back strap</li> <li>- Counter</li> <li>- Dog tail</li> <li>- Stay</li> </ul>	<p>Pencil Last Masking Tape etc</p>
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**GENERAL OBJECTIVE 7.0: Know typical forepart of making classical shoe**

12	<p>7.1 Describe the fore part in making classical shoe.</p> <p>7.2 Explain the Plain part</p> <p>7.3 Discuss the toe cap</p> <p>7.4 Explain the wing cap</p> <p>7.5 Describe the Apron.</p>	<ul style="list-style-type: none"> <li>Describe the fore parts in making classical shoes— plain part, toe cap, wing cap, and apron—using diagrams, samples, and demonstrations.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts</p>	<p>7.1 Identify the following fore part in making classical shoe.</p> <ul style="list-style-type: none"> <li>i Plain part</li> <li>ii Toe cap</li> <li>iii Wing cap</li> <li>iv Apron</li> </ul>	<ul style="list-style-type: none"> <li>Identify the following fore part in making classical shoe.             <ul style="list-style-type: none"> <li>- Plain part</li> <li>- Toe cap</li> <li>- Wing cap</li> <li>- Apron</li> </ul> </li> </ul>	<p>Cardboard Pencil Scissors Clicking Knife Set square Owl etc</p>
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**GENERAL OBJECTIVE 8.0: Know typical allowance in making patterns for classical shoe**

13	<p>8.1 Explain the allowance in making classical shoe.</p> <p>8.2 Discuss Folding allowance in making patterns for classical shoe</p> <p>8.3 Explain underlay allowance in making patterns for classical shoe</p> <p>8.4 Explain Seam allowance in making patterns for classical shoe</p> <p>8.5 Discuss down edge in making patterns for classical shoe</p> <p>8.6 Explain Lasting allowance in making patterns for classical shoe</p>	<ul style="list-style-type: none"> <li>Explain allowances in making classical shoes, including folding allowance, underlay allowance, seam allowance, down edge, and lasting allowance, using diagrams, samples, and demonstrations.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts</p>	<p>8.1 Demonstrate the allowance in making classical</p> <ul style="list-style-type: none"> <li>i Folding allowance</li> <li>ii Underlay allowance</li> <li>iii Seam allowance</li> <li>iv Down edge</li> <li>v Lasting allowance</li> </ul>	<ul style="list-style-type: none"> <li>Identify the allowance in making classical</li> <li>Folding allowance</li> <li>Underlay allowance</li> <li>Seam allowance</li> <li>Down edge</li> <li>Lasting allowance</li> </ul>	<p>Cardboard Pencil Scissors Clicking Knife Set square Owl etc</p>
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**GENERAL OBJECTIVE 9.0: Know typical middle part for classical shoe**

14-15	<p>9.1 Describe oxford middle part</p> <p>9.2 Explain the Gibson middle part</p> <p>9.3 Describe such open and close trout</p> <p>9.4 Describe types of eyelet hole</p>	<ul style="list-style-type: none"> <li>• Explain the Oxford middle part and Gibson middle part, including open and closed throat, using diagrams, samples, and demonstrations.</li> <li>• Describe the types of eyelet holes using diagrams, samples, and practical examples.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts</p>	<p>9.1 Identify the following:</p> <ul style="list-style-type: none"> <li>- Oxford middle part</li> <li>- Gibson middle part such open and close trout</li> </ul> <p>9.2 Demonstrate the types of eyelet hole</p>	<p>Guide the students to perform the practical works.</p>	<p>Practical Manual, White Board, Marker, Charts, shoe materials, toolbox etc</p>
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**Course Assessment:**

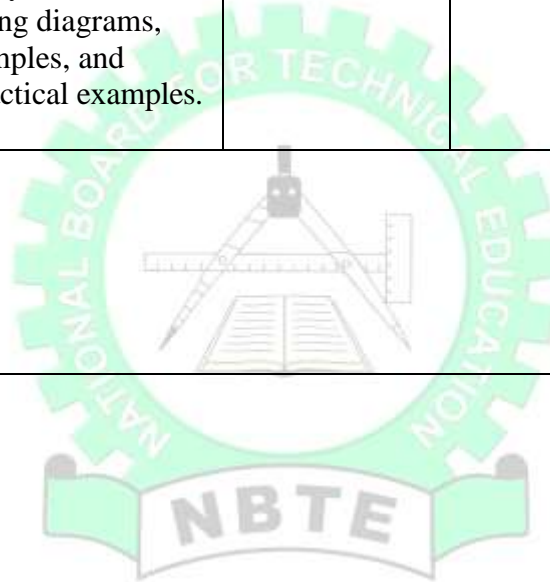
Course work: 10%

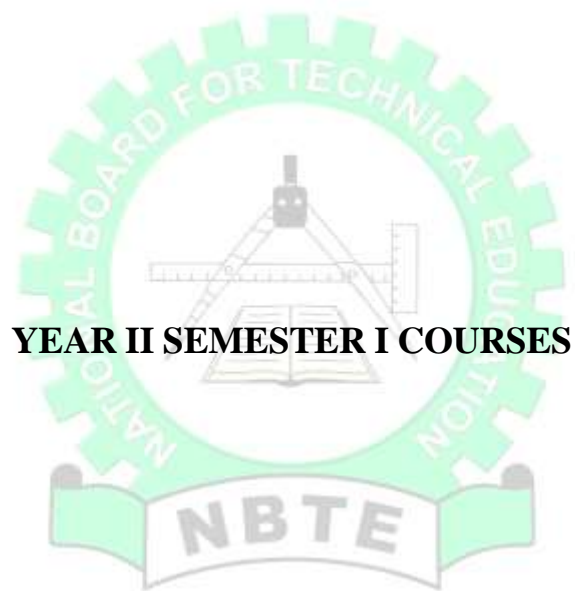
Test/Assignments: 10%

Practical: 40%

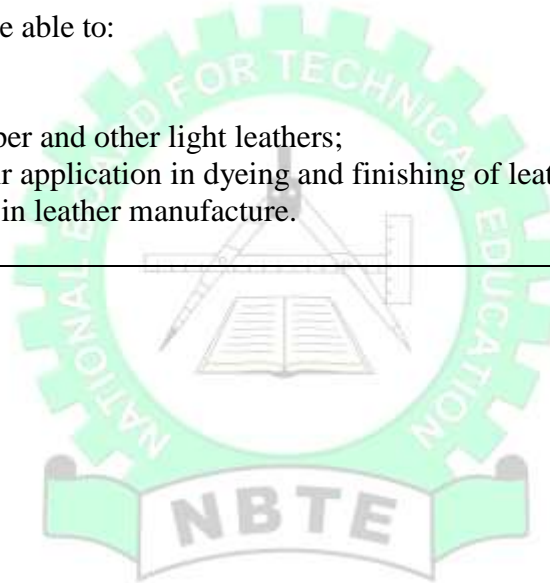
Examination: 40%

**Total: 100%**





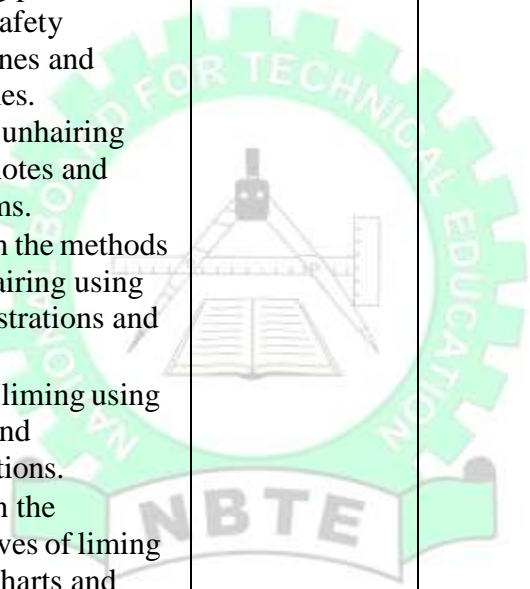
<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: INTRODUCTION TO LEATHER MANUFACTURE I</b>	<b>COURSE CODE: LPT 211</b>	<b>Contact Hours: 4 Hours/Week</b>
<b>Year: II Semester: I</b>	<b>Credit Unit: 4</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 2 Hours/Week</b>
<b>GOAL: This course is designed to provide the students with a general knowledge of the techniques of leather manufacture.</b>		
<b>GENERAL OBJECTIVES</b>		
At the end of this course, the students should be able to:		
<ol style="list-style-type: none"> <li>1.0 Know types of leather;</li> <li>2.0 Know manufacturing processes of upper and other light leathers;</li> <li>3.0 Know Dyestuff and pigments and their application in dyeing and finishing of leathers;</li> <li>4.0 Know the different drying techniques in leather manufacture.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: INTRODUCTION LEATHER MANUFACTURE I</b>			<b>Course Code: LPT 211</b>		<b>Contact Hours: 4 Hours/Week</b>	
			<b>Credit Unit: 4</b>		<b>Theoretical: 2 Hours/Week</b>	
<b>Year: II Semester: I</b>			<b>Pre-requisite: -</b>		<b>Practical: 2 Hours/Week</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>						
<b>GOAL: This course is designed to provide the students with a general knowledge of the techniques of leather manufacture.</b>						
<b>General Objective 1.0: Know types of leather.</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-2	1.1 Explain the different leather types such as: <ul style="list-style-type: none"> <li>i Shoe upper;</li> <li>ii Clothing;</li> <li>iii Upholstery;</li> <li>iv Belting;</li> <li>v Harness;</li> <li>vi Lining;</li> <li>vii Book binding etc.</li> </ul> 1.2 Explain properties of each type of leather mentioned in 1.1 above 1.3 Explain the proper use of leathers mentioned in 2.1 above	<ul style="list-style-type: none"> <li>• Explain the different leather types, including shoe upper, clothing, upholstery, belting, harness, lining, and bookbinding, using samples, diagrams, and demonstrations.</li> <li>• Explain the properties of each leather type mentioned above using charts, samples, and practical examples.</li> <li>• Discuss the proper use of each leather type using samples, case studies, and guided exercises.</li> </ul>	<ul style="list-style-type: none"> <li>• Textbook s,</li> <li>• Journals,</li> <li>• Internet,</li> <li>• Computer,</li> <li>• Projector</li> <li>• White Board,</li> <li>• Marker, Charts etc</li> </ul>	1.1 Identify the different types of leather mentioned in 1.1	<ul style="list-style-type: none"> <li>• Guide students to identify the different types of leather mentioned in 1.1</li> </ul>	Samples of Shoe upper leather, Clothing leather, Upholstery leather, Belting leather, Harness leather, Lining leather, Book binding leather etc

**General Objective 2.0: Know manufacturing processes of upper and other light leathers.**

<p>3-8</p>	<p>2.1 Explain upper and other light leathers                  2.2 Define unhairing                  2.3 Explain the methods of unhairing                  2.4 Describe the production of various upper leathers such as: Full grain leather; Corrected grain leather; Glaze kid's leather; Shrunken grain leather; Lining leather, etc.                  2.5 Formulate simple recipes for the production of the various leathers above.                  2.6 Define soaking.                  2.7 Explain the process of soaking.                  2.8 Explain the different methods of soaking                  2.9 Explain factors that affect leather while soaking.                  2.10 Explain the dangers associated with soaking process                  2.11 Define liming.                  2.12 Explain objectives of liming                  2.13 Explain the factors that affect leather</p>	<ul style="list-style-type: none"> <li>• Differentiate between upper and other light leathers</li> <li>• Describe unhairing</li> <li>• Explain the methods of unhairing</li> <li>• Describe the production of various upper leathers such as full grain, corrected grain, glaze kid, shrunken grain, and lining leather using flow charts, samples, and demonstrations</li> <li>• Demonstrate formulation and interpretation of simple recipes for producing the various leathers using worked examples and practical exercises.</li> <li>• Define soaking using notes and illustrations.</li> <li>• Explain the soaking process using diagrams and demonstrations.</li> <li>• Explain the different methods of soaking</li> </ul>	<p>Laptop computer s, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>2.1 Produce different types of upper leathers                  2.2 Soak the skin properly in a soaked liquor                  2.3 Unhair/de-hair skins using different methods                  2.4 Flesh the pelt using both the machine and manually                  2.5 Delime and adjust the pelt pH in accordance to the intended leather.                  2.6 Pickle and adjust the pH for tannage.                  2.7 Basify and age the tanned leather.                  2.8 Neutralize or strip and clear the tanned leather</p>	<ul style="list-style-type: none"> <li>• Guide students to carryout the following:</li> <li>• Produce different types of upper leathers</li> <li>• Soak the skin properly in a soaked liquor</li> <li>• Unhair/de-hair skins using different methods</li> <li>• Flesh the pelt using both the machine and manually</li> <li>• Delime and adjust the pelt pH in accordance to the intended leather.</li> <li>• Pickle and adjust the pH for tannage.</li> <li>• Basify and age the tanned leather.</li> </ul>	<ul style="list-style-type: none"> <li>• pH scale , Raw materials, Water Sodium carbonate , Sulfuric Acid, Formic Acid, Basic chromium, sulphate, Amonium salt, Vegetable, tannins, Syntans, Fatliquour, Fleshing knife, Fleshing machine, Lime, Sodium solphate, Soda ash, Table salt etc</li> </ul>
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	<p>while liming</p> <p>2.14 Explain the dangers associated with the liming process</p> <p>2.15 Explain the fleshing process.</p> <p>2.16 Describe deliming process</p> <p>2.17 Explain the objectives of deliming</p> <p>2.18 Explain the significance of partial and complete deliming.</p> <p>2.19 Describe bating and its significance in leather manufacture</p> <p>2.20 Define “Pickling”</p> <p>2.21 Explain the types Pickling.</p> <p>2.22 Explain the objectives of Pickling</p> <p>2.23 Explain defects associated with pickling</p> <p>2.24 Differentiate between vegetable and chrome tanning</p> <p>2.24 Explain the following:</p> <ol style="list-style-type: none"> <li>i Basification</li> <li>ii Ageing</li> <li>iii neutralization,</li> <li>iv stripping</li> </ol>	<p>using charts and examples.</p> <ul style="list-style-type: none"> <li>• Explain factors that affect leather during soaking using case studies and illustrations.</li> </ul> <p>Explain the dangers associated with the soaking process using safety guidelines and examples.</p> <p>Define unhairing using notes and diagrams.</p> <ul style="list-style-type: none"> <li>• Explain the methods of unhairing using demonstrations and charts.</li> <li>• Define liming using notes and illustrations.</li> <li>• Explain the objectives of liming using charts and examples.</li> <li>• Explain the factors that affect leather during liming using diagrams and case studies.</li> </ul> <p>Explain the dangers associated with</p>			<p>Neutralize or strip and clear the tanned leather</p>	
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	<p>v clearing.</p> <p>2.25 Explain fatliquoring</p> <p>2.26 Explain the different types of fatliquors</p> <p>2.27 Explain the process of fatliquoring .</p>	<p>the liming process using safety procedures and examples.</p> <ul style="list-style-type: none"> <li>• Demonstrate the fleshing process using samples and practical exercises.</li> <li>• Describe the delimiting process using diagrams and demonstrations.</li> <li>• Explain the objectives of delimiting using charts and examples.</li> <li>• Explain the significance of partial and complete delimiting using illustrations and discussions.</li> <li>• Describe bating and its significance in leather manufacture using charts and demonstrations.</li> <li>• Define pickling using notes and diagrams.</li> <li>• Explain the types of pickling using charts and examples.</li> <li>• Explain the objectives of</li> </ul>				
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		<p>pickling using illustrations and discussions.</p> <ul style="list-style-type: none"> <li>• Explain defects associated with pickling using samples and case studies.</li> <li>• Compare vegetable and chrome tanning using tables and examples.</li> <li>• Explain basification, ageing, neutralization, stripping, and clearing using diagrams and demonstrations.</li> <li>• Explain fatliquoring using charts and examples.</li> <li>• Explain the different types of fatliquors using samples and illustrations</li> <li>• Demonstrate the process of fatliquoring using practical sessions and step-by-step guidance.</li> </ul>				
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**GENERAL OBJECTIVE 3.0: Know Dyestuff and pigments and their application in dyeing and finishing of leathers**

<p>9-11</p>	<p>3.1 Define the following:                      i dyes                      ii pigments                      iii hue                      iv value                      v chroma                      vi colour, etc.</p> <p>3.2 Explain the basis for classification of dyes and pigments.</p> <p>3.3 List the commonly used dyes and pigments in leather industries.</p> <p>3.4 Explain how to identify and sort different types of leathers in different grades.</p> <p>3.5 Explain the following preparatory processes for dyeing and finishing:                      i Wetting back of the leather.                      ii Samming.                      iii Shaving.                      iv Weighing.                      v Stripping or neutralization depending on the</p>	<ul style="list-style-type: none"> <li>• Define dyes, pigments, hue, value, chroma, and colour using notes and illustrations.</li> <li>• Explain the basis for classification of dyes and pigments using charts and examples.</li> <li>• Show commonly used dyes and pigments in the leather industry using samples and displays.</li> <li>• Demonstrate identification and sorting of different types of leathers into grades using samples and practical exercises.</li> <li>• Explain preparatory processes for dyeing and finishing, including wetting back, samming, shaving, weighing, stripping or neutralization, and retanning, using demonstrations and diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>	<p>3.1 Select and grade the tanned crust accordingly.</p> <p>3.2 Samm, shave, weigh, neutralize or strip and clear depending on the leather to be produced.</p> <p>3.3 Retan the leather.</p> <p>3.4 Wash and dye the leather accordingly.</p> <p>3.5 Apply finishing on all the produced leather using different types of finishing pigment and aniline finishing.</p>	<ul style="list-style-type: none"> <li>• Guide students to carryout the following:</li> <li>• Select and grade the tanned crust accordingly.</li> <li>• Samm, shave, weigh, neutralize or strip and clear depending on the leather to be produced.</li> <li>• Retan the leather.</li> <li>• Wash and dye the leather accordingly.</li> <li>• Apply finishing on all the produced leather using different types of finishing</li> </ul>	<ul style="list-style-type: none"> <li>• Dyes, Pigments, Leather, Fatliquor, Formic Acid, Experimental drum, Binders, Wax, Plasticizer, Handle Modifiers, Pearlizers, Nitro-cellulose, Water, Solvents, Spraying gun etc</li> </ul>
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	<p>tannage. vi Retanning depending on the original tannage (i.e.) chrome retan or semi chrome).</p> <p>3.6 Explain dyeing process and the factors determining the choice of dyes.</p> <p>3.7 Explain finishing</p> <p>3.8 Explain the different types of finishing.</p> <p>3.9 Explain different types of finishes.</p>	<ul style="list-style-type: none"> <li>• Explain the dyeing process and factors determining the choice of dyes using charts and case studies.</li> <li>• Explain finishing using notes and examples.</li> <li>• Explain the different types of finishing using samples and illustrations.</li> <li>• Explain the different types of finishes using charts and demonstrations.</li> </ul>			e.g. pigment and aniline finishing.	
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**GENERAL OBJECTIVE 4.0: Know the different drying techniques in leather manufacture**

12-15	<p>4.1 Explain the drying process of leather</p> <p>4.2 List different drying techniques.</p> <p>4.3 Explain different drying techniques.</p> <p>4.4 State the advantages and disadvantages of each drying technique mentioned in 4.2 above.</p>	<ul style="list-style-type: none"> <li>• Explain the drying process of leather using diagrams and demonstrations.</li> <li>• Show different drying techniques using charts, pictures, and examples.</li> <li>• Explain the different drying techniques using illustrations and practical demonstrations.</li> <li>• Compare the advantages and disadvantages of</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>4.1 Dry the leathers at different levels of leather production.</p>	<ul style="list-style-type: none"> <li>• Full Supervision</li> </ul>	<p>Drying rack Drying frame etc</p>
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		each drying technique using tables and case studies.				
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**Course Assessment:**

Course work: 10%

Test/Assignments: 10%

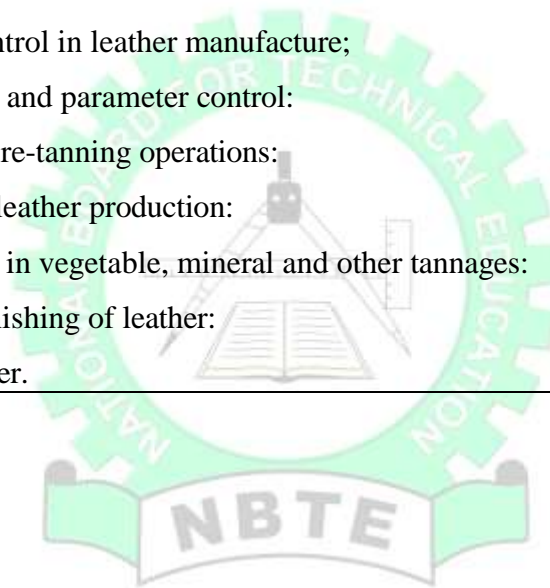
Practical: 40%

Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: PROCESS CONTROL</b>	<b>COURSE CODE: LPT 212</b>	<b>Contact Hours: 2 Hours/Week</b>
<b>Year: II Semester: I</b>	<b>Credit Unit: 2</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 0</b>
<b>GOAL: This course is designed to enhance the student's ability to control processes during leather manufacture</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand the objectives of process control in leather manufacture;</li> <li>2.0 Understand the technological procedure and parameter control:</li> <li>3.0 Understand the procedures involved in pre-tanning operations:</li> <li>4.0 Understand the role of pH as a factor in leather production:</li> <li>5.0 Understand the process control involved in vegetable, mineral and other tannages:</li> <li>6.0 Understand the processes involved in finishing of leather:</li> <li>7.0 Understand the types and sources of water.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: PROCESS CONTROL</b>		<b>Course Code: LPT 212</b>		<b>Contact Hours: 2 Hours/Week</b>		
		<b>Credit Unit: 2</b>		<b>Theoretical: 2 Hours/Week</b>		
<b>Year: II Semester: I</b>		<b>Pre-requisite: -</b>		<b>Practical: 0</b>		
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: This course is designed to enhance the student's ability to control processes during leather manufacture</b>						
<b>General Objective 1.0: Understand the objectives of process control in leather manufacture</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-2	1.1 Define process control 1.2 Outline the reasons for effective process control measures in leather manufacture 1.3 Outline the major areas of process control in leather manufacture	<ul style="list-style-type: none"> <li>Define process control using notes and examples.</li> <li>Explain the reasons for effective process control measures in leather manufacture using charts and illustrations.</li> <li>Outline the major areas of process control in leather manufacture using diagrams and flow charts.</li> </ul>	<ul style="list-style-type: none"> <li>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>			
<b>General Objective 2.0: Understand the technological procedure and parameter control</b>						
3-4	2.1 Explain technological procedures and parameter control using charts and demonstrations. 2.2 Demonstrate control of machinery used	<ul style="list-style-type: none"> <li>Explain technological procedure and parameter control                             <ol style="list-style-type: none"> <li>Control of machinery used.</li> <li>control of</li> </ol> </li> </ul>	Laptop computers, smart board, Projector etc			

	<p>through practical sessions and supervision.</p> <p>2.3 Explain control of workmanship using guidelines and examples.</p> <p>2.4 Explain control of orderliness using checklists and workplace demonstrations.</p>	<p>workmanship</p> <p>control of orderliness</p>				
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**General Objective 3.0: Understand the procedures involved in pretanning operations**

5-6	<p>3.1 Outline the process control involved in beam house operation viz</p> <p>i Curing</p> <p>ii Soaking</p> <p>iii Liming</p> <p>iv Deliming</p> <p>v Bating</p> <p>vi Pickling</p> <p>3.2 Explain the effect of the following factors (where applicable) on</p>	<ul style="list-style-type: none"> <li>Outline the process control involved in beam house operations, including curing, soaking, liming, deliming, bating, and pickling, using flow charts and demonstrations.</li> <li>Explain the effects of time, pH, temperature, concentration, and additives on beam</li> </ul>	<ul style="list-style-type: none"> <li>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Pictures, Videos etc</li> </ul>			
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	<p>beam house operations</p> <ul style="list-style-type: none"> <li>i Time</li> <li>ii pH</li> <li>iii Temperature</li> <li>iv Concentration</li> <li>v Additives</li> </ul> <p>3.3 Explain how the quality of leather is affected by the factors listed in 3.2 above</p>	<p>house operations using charts and practical examples.</p> <ul style="list-style-type: none"> <li>• Explain how leather quality is affected by these factors using case studies and illustrations.</li> </ul>				
<b>GENERAL OBJECTIVE 4.0: Understand the role of pH as a factor in leather production</b>						
7-8	<p>4.1 Explain the effect of pH change in pickling</p> <p>4.2 Explain the impact of pH change in drenching</p> <p>4.3 Explain the effect of pH change in tanning</p>	<ul style="list-style-type: none"> <li>• Explain the effect of pH change in pickling using charts and demonstrations.</li> <li>• Explain the impact of pH change in drenching using diagrams and practical examples.</li> <li>• Explain the effect of pH change in tanning using illustrations and case studies.</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>			
<b>General Objective 5.0: Know the process control involved in vegetable, mineral and other tannages.</b>						
9-10	<p>5.1 Outline the process control measures in the tan yard during vegetable tanning</p> <p>5.2 Explain the factors</p>	<ul style="list-style-type: none"> <li>• Outline the process control measures in the tan yard during vegetable tanning using flow charts and</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector,</li> </ul>			

	<p>that affect the quality of vegetable tanned leather</p> <ul style="list-style-type: none"> <li>i Time</li> <li>ii pH</li> <li>iii Concentration</li> <li>iv Temperature</li> <li>v Neutral salt content</li> <li>vi Mechanical action</li> </ul> <p>5.3 Outline the process control measures in the tan yard during mineral tanning</p> <p>5.4 Explain the factors that affect the quality mineral tanned leather</p> <ul style="list-style-type: none"> <li>i Time</li> <li>ii pH</li> <li>iii Concentration</li> <li>iv Temperature</li> <li>v Neutral salt content</li> <li>vi Mechanical action</li> <li>vii Chromium oxide content (<math>\text{Cr}_2\text{O}_3</math>)</li> <li>viii Ageing property etc.</li> </ul>	<p>demonstrations.</p> <ul style="list-style-type: none"> <li>• Explain the factors affecting the quality of vegetable tanned leather, including time, pH, concentration, temperature, neutral salt content, and mechanical action, using charts and case studies.</li> <li>• Outline the process control measures in the tan yard during mineral tanning using diagrams and practical examples.</li> <li>• Explain the factors affecting the quality of mineral tanned leather, including time, pH, concentration, temperature, neutral salt content, mechanical action, chromium oxide content, and ageing property, using charts and illustrations.</li> </ul>	<p>White Board, Marker, Charts</p>			
<p><b>General Objective 6.0: Understand the processes involved in finishing of leather.</b></p>						

<p>11-12</p>	<p>6.1 Explain the processes involved in neutralization while finishing of leather</p> <p>6.2 Explain the processes involved in retannage while finishing of leather</p> <p>6.3 Explain the processes involved in fatliquoring while finishing of leather</p> <p>6.4 Explain the processes involved in dyeing while finishing of leather</p> <p>6.5 Explain the processes involved in Pigmentation while finishing of leather</p> <p>6.6 Explain the processes involved in plating while finishing of leather</p> <p>6.7 Explain the processes involved in drying while finishing of leather</p>	<ul style="list-style-type: none"> <li>• Explain the processes involved in neutralization during leather finishing using charts and demonstrations.</li> <li>• Explain the processes involved in retannage during leather finishing using diagrams and examples.</li> <li>• Explain the processes involved in fatliquoring during leather finishing using samples and practical demonstrations.</li> <li>• Explain the processes involved in dyeing during leather finishing using illustrations and guided practice.</li> <li>• Explain the processes involved in pigmentation during leather finishing using charts and demonstrations.</li> <li>• Explain the processes involved in</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>			
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		<p>plating during leather finishing using diagrams and practical examples.</p> <ul style="list-style-type: none"> <li>• Explain the processes involved in drying during leather finishing using flow charts and demonstrations.</li> </ul>				
<b>General Objective 7.0: Understand the types and sources of water</b>						
13-15	<p>7.1 State the various sources of water</p> <ul style="list-style-type: none"> <li>i Rain water</li> <li>ii Spring water</li> <li>iii River water</li> <li>iv Sea water</li> </ul> <p>7.2 Explain types of water:</p> <ul style="list-style-type: none"> <li>i Hard water</li> <li>ii Soft water</li> </ul> <p>7.3 Explain the effect of hard water on the tannery processes</p> <ul style="list-style-type: none"> <li>i Soaking</li> <li>ii Liming</li> <li>iii Deliming</li> <li>iv Bating</li> <li>v Pickling</li> <li>vi Tanning</li> <li>vii Neutralization</li> <li>viii Dyeing</li> <li>ix Vegetable tanning</li> <li>x Fatliquoring</li> <li>xi Finishing</li> <li>xii Wax emulsion</li> </ul>	<ul style="list-style-type: none"> <li>• Show the various sources of water, including rain, spring, river, and sea water, using charts and illustrations.</li> <li>• Explain the types of water, including hard and soft water, using diagrams and examples.</li> <li>• Explain the effects of hard water on tannery processes such as soaking, liming, deliming, bating, pickling, tanning, neutralization, dyeing, vegetable tanning, fatliquoring, finishing, and wax emulsion using case studies and</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</p>			

demonstrations.

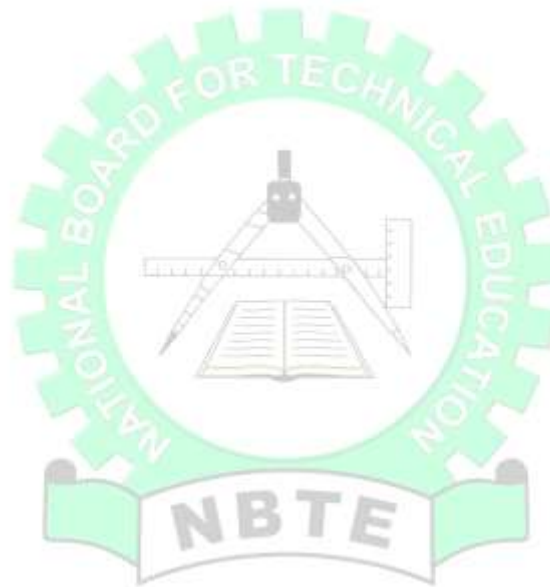
**Course Assessment:**

Course work: 20%

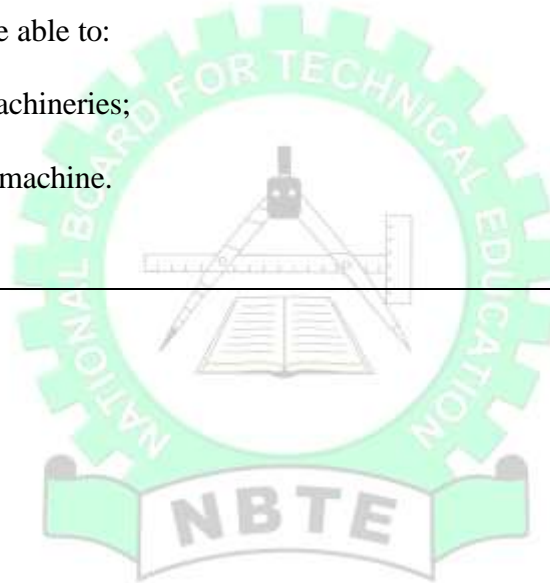
Test/Assignments: 20%

Examination: 60%

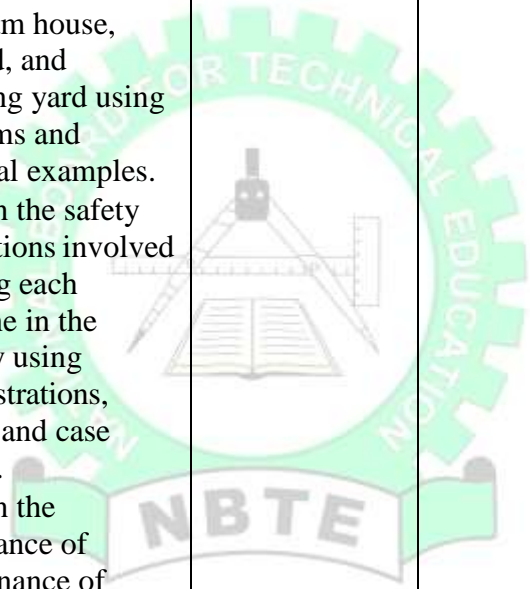
**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: TANNERY AND FOOTWEAR MACHINERY</b>	<b>COURSE CODE: LPT 213</b>	<b>Contact Hours: 2Hours/Week</b>
<b>Year: II Semester: I</b>	<b>Credit Unit: 2</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 0</b>
<b>GOAL: This course is designed to introduce the students to the principle of machines used in leather manufacture and tannery layout</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand the principles of tannery;</li> <li>2.0 Understand the principles of footwear machineries;</li> <li>3.0 Understand the basic layout of tannery;</li> <li>4.0 Understand the basic layout of footwear machine.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: TANNERY AND FOOTWEAR MACHINERY</b>			<b>Course Code: LPT 213</b>		<b>Contact Hours: 2 Hours/Week</b>	
			<b>Credit Unit: 2</b>		<b>Theoretical: 2 Hours/Week</b>	
<b>Year: II Semester: I</b>			<b>Pre-requisite: -</b>		<b>Practical: 0</b>	
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: This course is designed to introduce the students to the principle of machines used in leather manufacture and tannery layout</b>						
<b>General Objective 1.0: Understand the principles of tannery</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-3	1.1 Define the following terms: i Tannery; ii Machines; iii Tannery tools. 1.2 Identify all tannery machines and tools used in the beam house 1.3 Describe all the machines and tools used in tanyard 1.4 Describe all the machines and tools used in the finishing yard 1.5 Explain the working	<ul style="list-style-type: none"> <li>Define tannery, tannery machines, and tannery tools using notes, diagrams, and examples.</li> <li>Identify all tannery machines and tools used in the beam house using samples, charts, and demonstrations.</li> <li>Describe all the machines and tools used in the tanyard using diagrams, samples, and practical</li> </ul>	<ul style="list-style-type: none"> <li>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>			

	<p>principles of each of the machines and tools identified in the beam house, tanyard and finishing yard.</p> <p>1.6 Explain the safety precautions involved in the use of each machine in the tannery</p> <p>1.7 Explain the importance of maintenance of machines and tools.</p>	<p>demonstrations.</p> <ul style="list-style-type: none"> <li>• Describe all the machines and tools used in the finishing yard using charts, samples, and illustrations.</li> <li>• Explain the working principles of each machine and tool in the beam house, tanyard, and finishing yard using diagrams and practical examples.</li> <li>• Explain the safety precautions involved in using each machine in the tannery using demonstrations, charts, and case studies.</li> <li>• Explain the importance of maintenance of machines and tools using examples, diagrams, and practical guidance.</li> </ul>				
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**General Objective 2.0: Understand the principles of footwear machineries**

<p>4-6</p>	<p>2.1 Define the following terms:                      i Footwear                      ii Footwear machines                      iii Footwear tools.</p> <p>2.2 Identify all footwear machines and tools used in the footwear and leather goods workshop</p> <p>2.3 Describe all the machines and tools used in the finishing yard</p> <p>2.4 Explain the working principles of each of the machines and tools identified in the footwear and leather goods workshop and finishing yard.</p> <p>2.5 Explain the safety precautions involved in the use of each machine in the footwear and leather goods workshop</p> <p>2.6 Explain the importance of maintenance of machines and tools in the footwear and leather goods workshop.</p>	<ul style="list-style-type: none"> <li>• Define footwear, footwear machines, and footwear tools using notes, diagrams, and examples.</li> <li>• Identify all footwear machines and tools used in the footwear and leather goods workshop using samples, charts, and demonstrations.</li> <li>• Describe all the machines and tools used in the finishing yard using diagrams, samples, and illustrations.</li> <li>• Explain the working principles of each machine and tool in the footwear and leather goods workshop and finishing yard using diagrams and practical demonstrations. Explain the safety precautions involved in using each machine in the footwear and leather goods workshop</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts available.</p>			
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		<p>using charts, examples, and guided demonstrations.</p> <ul style="list-style-type: none"> <li>• Explain the importance of maintenance of machines and tools in the footwear and leather goods workshop using examples, diagrams, and practical guidance.</li> </ul>				
<b>General Objective 3.0: Understand the basic layout of tannery</b>						
9-11	<p>3.1 Describe the tannery layout.</p> <p>3.2 Explain the importance of adequate spacing and ventilation in the tannery.</p> <p>3.3 Explain statutory requirements for installation of industrial (tannery) machines.</p> <p>3.4 Explain the factors affecting the siting of a tannery.</p>	<ul style="list-style-type: none"> <li>• Describe the tannery layout using diagrams, charts, and models.</li> <li>• Explain the importance of adequate spacing and ventilation in the tannery using examples and illustrations.</li> <li>• Explain statutory requirements for installation of industrial tannery machines using regulations, charts, and case studies.</li> <li>• Explain the factors</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>			

		affecting the siting of a tannery using diagrams, examples, and guided discussions.				
<b>GENERAL OBJECTIVE 4.0: Understand the basic layout of footwear machines</b>						
12-15	<p>4.1 Describe the footwear and leather goods workshop</p> <p>4.2 Explain the importance of adequate spacing and ventilation in the footwear and leather goods workshop</p> <p>4.3 Explain statutory requirements for installation of industrial footwear and leather goods workshop machines.</p> <p>4.4 Explain the factors affecting the siting of a in the footwear and leather goods workshop</p>	<ul style="list-style-type: none"> <li>Describe the footwear and leather goods workshop using diagrams, charts, and models.</li> <li>Explain the importance of adequate spacing and ventilation in the footwear and leather goods workshop using examples and illustrations.</li> <li>Explain statutory requirements for installation of industrial footwear and leather goods workshop machines using regulations, charts, and case studies.</li> <li>Explain the factors affecting the siting of a footwear and leather goods workshop using diagrams, examples, and guided</li> </ul>	<ul style="list-style-type: none"> <li>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>			

discussions.

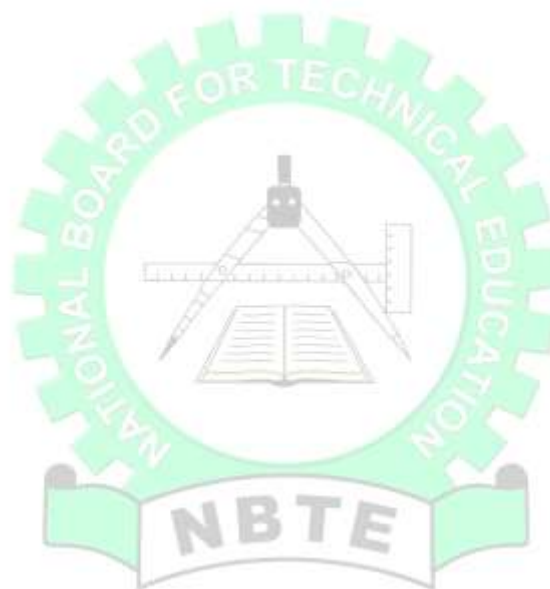
**Course Assessment:**

Course work: 20%

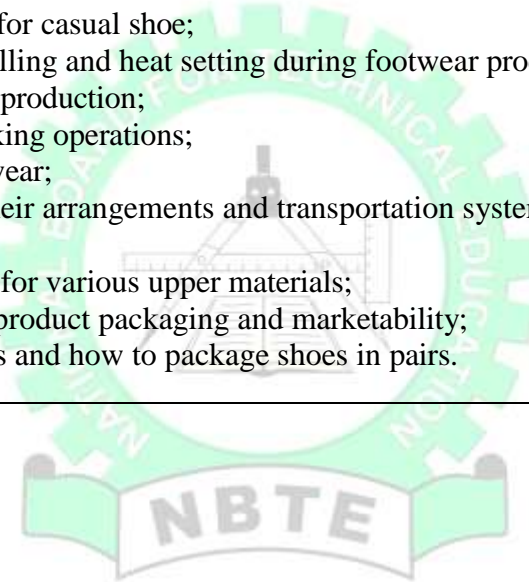
Test/Assignments: 20%

Examination: 60%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: PATTERN PRODUCTION II</b>	<b>COURSE CODE: LPT 214</b>	<b>Contact Hours: 4 Hours/Week</b>
<b>Year: II Semester: I</b>	<b>Credit Unit:4</b>	<b>Theoretical: 1 Hour/Week</b>
	<b>Pre-requisite: PATTERN PRODUCTION I</b>	<b>Practical: 3 Hours/Week</b>
<b>GOAL: This course is designed to provide students with the knowledge and skills of pattern making, methods and processes</b>		
<b>GENERAL OBJECTIVES:</b>		
At the end of this course, the students should be able to:		
1.0	Know the Sequence of making pattern for casual shoe;	
2.0	Understand conditioning, damping, mulling and heat setting during footwear production;	
3.0	Know finishing operations in footwear production;	
4.0	Understand the economic value in clicking operations;	
5.0	Know pre-stitching for Specialty Footwear;	
6.0	Know the types of sewing machines, their arrangements and transportation systems in closing room;	
7.0	Know the different types of seams;	
8.0	Understand the sequence of operations for various upper materials;	
9.0	Know and shoe finishing and enhance product packaging and marketability;	
10.0	Know final inspection of finished shoes and how to package shoes in pairs.	



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: PATTERN PRODUCTION II</b>		<b>Course Code: LPT 214</b>		<b>Contact Hours: 4 Hours/Week</b>		
		<b>Credit Unit: 4</b>		<b>Theoretical: 1 Hours/Week</b>		
<b>Year: II Semester: I</b>		<b>Pre-requisite: -</b>		<b>Practical: 3 Hours/Week</b>		
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: This course is designed to provide students with the knowledge and skills of pattern making, methods and processes</b>						
<b>General Objective 1.0: Know the Sequence of making pattern for casual shoe</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1	1.1 Explain the following modern methods of footwear construction: i direct mould; ii injection mould; iii cemented unit sole. 1.2 Mention the purpose and advantages of the various methods of footwear construction stated in 1.1 above. 1.3 Explain the principles of drafting and its importance in lasting of shoes of different constructions.	<ul style="list-style-type: none"> <li>Explain modern methods of footwear construction, e.g direct moulded, injection moulded and cemented unit sole.</li> <li>Describe in details adhesives and machines used in cemented construction.</li> <li>Mention the purpose and relative merits of the various methods of footwear</li> </ul>	Video clips, Charts, Marker, Board, shoe upper and projector Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts	1.1 Carry out direct mould, injection mould and cemented unit sole in footwear construction.	<ul style="list-style-type: none"> <li>Ensure that appropriate materials and equipment or tools are available for the students during practical works</li> </ul>	Upper, Last Adhesives, Tacking nails, Hammer, Punch, Scissors, Unit sole, Sole Welt

		<p>construction in relation to their use.</p> <ul style="list-style-type: none"> <li>• Explain the principles of drafting and its importance in lasting of shoes of different constructions (Weltd and veldt shoes) welt attaching by hand and machine (staples shank fitting, bottom filling, sole attaching by hand and machine, bottom levelling, sole nailing.)</li> </ul>				
<b>General Objective 2.0: Understand conditioning, damping, mulling and heat setting during footwear production</b>						
2	<p>2.1 Explain the following processes:</p> <ul style="list-style-type: none"> <li>i Conditioning</li> <li>ii Damping</li> <li>iii Mulling,</li> <li>iv Heat setting</li> </ul> <p>2.2 Explain the importance of each process mentioned in 2.1 above.</p>	<ul style="list-style-type: none"> <li>• Explain the following processes; conditioning, damping, mulling, heat setting and drying.</li> <li>• -Enumerates the importance of each process mention in 3.1 above.</li> </ul>	Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts			
<b>General Objective 3.0: Know finishing operations in footwear production</b>						
3	3.1 Explain heel attaching and top piece attaching by hand and machine.	<ul style="list-style-type: none"> <li>• Explain Heel attaching and top piece attaching by</li> </ul>	Textbooks, Journals, Internet,	3.1 Identify the various tools, equipment and	<ul style="list-style-type: none"> <li>• Support the students to conduct the</li> </ul>	Roughing machine Adhesives

	<p>3.2 Describe the relation between heel pairing and heel scouring.</p> <p>3.3 Explain the following:</p> <ol style="list-style-type: none"> <li>i. edge trimming</li> <li>ii. fore part</li> <li>iii. waist trimming</li> <li>iv. inking edge setting by hand and machine bottom</li> <li>v. buffing bottom</li> <li>vi. finishing upper</li> <li>vii. leather cleaning and dressing fitting and socking</li> <li>viii. shoe lacing</li> <li>ix. checking and packing for different types of footwear.</li> </ol> <p>3.4 Explain the use of heat setting for the elimination of wrinkles in footwear production.</p> <p>3.5 List various tools, equipment and machinery used for finishing.</p> <p>3.6 Outline the use and general maintenance of the various tools, equipment and machinery used for finishing stated in 3.5 above.</p>	<p>hand and machine.</p> <ul style="list-style-type: none"> <li>• Explain the relation between heel pairing and heel scouring.</li> <li>• Describe edge trimming, fore part and waist trimming, inking, edge setting by hand and machine, bottom buffing, bottom finishing, upper leather cleaning and dressing, fitting and socking, shoe lacing, checking and packing for different types of footwear.</li> <li>• Explain the use of heat for elimination of faults (such as wrinkles) in shoe processes.</li> <li>• -Mention various tools, equipment and machinery employed for finishing. Outline their use, general maintenance and minor adjustments.</li> </ul>	<p>Computer, Projector, White Board, Marker, etc Charts</p>	<p>machinery used for finishing.</p> <p>3.2 Carry out:</p> <ol style="list-style-type: none"> <li>i heel and top piece attachments by hand and machine.</li> <li>ii sole and heel trimming, heel pairing and heel scouring by hand or machine.</li> <li>iii heel front buffing, edge setting, heel colouring, waxing and setting by hand or machine.</li> <li>iv shoe lacing.</li> <li>v rectify finishing defects such as wrinkles.</li> <li>vi different types of finishing.</li> </ol>	<p>practical works in a safe environment.</p> <ul style="list-style-type: none"> <li>• Ensure that the students observe safety precautions during the practical works.</li> </ul>	<p>Knives Hammer Tacking nails Scissors Gloves PPE</p>
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**GENERAL OBJECTIVE 4.0: Understand the economic value in clicking operations**

4	<p>4.1 Explain general qualities and suitability of leather as an upper material.</p> <p>4.2 Explain different types of upper leather.</p> <p>4.3 Explain the basic clicking techniques</p> <p>4.4 List manufacturing requirements for upper, lining and socks.</p> <p>4.5 State common defects on leather surface</p>	<ul style="list-style-type: none"> <li>• Explain the general qualities and suitability of leather as an upper material using samples and illustrations.</li> <li>• Explain the different types of upper leather using charts and examples.</li> <li>• Demonstrate the basic clicking techniques using patterns and practical exercises.</li> <li>• List the manufacturing requirements for uppers, linings, and socks using charts and checklists. Show common defects on leather surfaces using</li> <li>• samples and pictures.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
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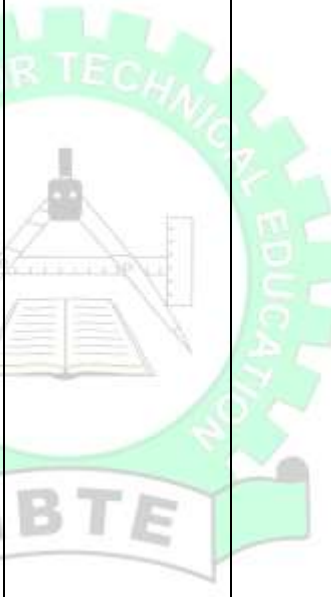
**GENERAL OBJECTIVE 5.0: Know pre-stitching operations**

<p>5-6</p>	<p>5.1 Explain the following pre-closing operations</p> <ul style="list-style-type: none"> <li>i Threading</li> <li>ii Needle fixing/replacing</li> <li>iii Bobbin fixing/replacing &amp; winding</li> <li>iv identification making</li> <li>v notch marking</li> <li>vi sizing marking</li> <li>vii stitch marking</li> <li>viii lining stamping</li> <li>ix punching/ perforation</li> <li>x gimping</li> <li>xi blocking</li> <li>xii performing</li> <li>xiii reinforcing</li> <li>xiv embossing</li> <li>xv crimping</li> <li>xvi edge coloring</li> <li>xvii burnishing</li> <li>viii folding</li> <li>xix binding</li> <li>xx top line treatment</li> <li>xxi eyeleting</li> <li>xxii punching</li> <li>xiii edge burnishing</li> </ul>	<ul style="list-style-type: none"> <li>• Explain the following preclosing operations;             <ul style="list-style-type: none"> <li>i. Threading</li> <li>ii. Needle fixing/replacing</li> <li>iii. Bobbin fixing/replacing &amp; winding</li> <li>iv. Safety precautions, etc</li> </ul> </li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>5.1 Carryout the following pre-closing operations:</p> <ul style="list-style-type: none"> <li>i Threading</li> <li>ii Needle fixing/replacing</li> <li>iii Bobbin fixing/replacing &amp; winding</li> <li>iv identification making</li> <li>v notch marking</li> <li>vi sizing marking</li> <li>vii stitch marking</li> <li>viii lining stamping</li> <li>ix punching/perforation</li> <li>x gimping</li> <li>xi blocking</li> <li>xii performing</li> <li>xiii reinforcing</li> <li>xiv embossing</li> <li>xv crimping</li> <li>xvi edge coloring</li> <li>xvii burnishing</li> <li>viii folding</li> <li>xix binding</li> <li>xx top line</li> </ul>	<ul style="list-style-type: none"> <li>• Guide students to carry out the closing operations</li> </ul>	<p>Thread Needle Scissors Punch Stitch marker Stitch pen Bobbin Dye Gimping scissors etc</p>
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	<p>xiv edge binding                  xxv upper assembling                  xvi lining assembling                  xvii upper lining attaching.                  5.2 Discuss safety precautions pre-stitching operations etc</p>			<p>treatment                  eyeleting                  punching                  edge                  burnishing                  edge binding                  upper assembling                  lining assembling                  upper lining attaching.</p>		
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**GENERAL OBJECTIVE 6.0: Know the types of sewing machines, their arrangements and transportation systems in closing room**

<p>7-8</p>	<p>6.1 Describe the following types of sewing machines and their functions; i. Flat bed, ii. Post bed, iii. Cylinder bed, iv. zig-zag, v. Embroidery, etc                  6.2 Sketch and explain parts and functions of sewing machine needle, classification of needles and needle broken policy.                  6.3 Explain transportation in closing room (e.g different types of conveyors, trolley,</p>	<ul style="list-style-type: none"> <li>Describe the types of sewing machines: flat bed, post bed, cylinder bed, zig-zag, and embroidery and their functions using samples and demonstrations.</li> <li>Sketch the parts of a sewing machine needle and explain their functions, classifications, and broken needle policy using diagrams and illustrations.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc                  Charts</p>	<p>6.1 Sketch and label sewing machine needle                  6.2 Assemble and dismantle sewing Machine.                  6.3 Practice pedaling. pedal adjustment and controlling of sewing machines</p>	<ul style="list-style-type: none"> <li>Instruct students to sketch and label sewing machine needle.</li> <li>Guide students to assemble and dismantle sewing machines.</li> <li>Guide students on pedaling, pedal Adjustment and controlling of sewing machines</li> </ul>	<p>Practical manual, sewing machines, toolboxes etc</p>
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	<p>etc).</p> <p>6.4 Describe machines arrangements in closing room, machine setup and line balancing,</p> <p>6.5 Explain cycle time in closing room, broken needle policy, etc</p> <p>6.6 Describe machines arrangements in closing room : Machine setup and line balancing,</p> <p>6.7 Explain cycle time in closing room, broken needle policy, etc</p>	<ul style="list-style-type: none"> <li>• Explain transportation methods in the closing room, including conveyors and trolleys, using charts and demonstrations.</li> <li>• Describe machine arrangements in the closing room using layouts and diagrams.</li> <li>• Explain machine setup and line balancing using examples and practical demonstrations.</li> <li>• Explain cycle time in the closing room and broken needle policy using charts and case studies.</li> </ul>				
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**GENERAL OBJECTIVE 7.0: Know the different types of seams**

9	<p>7.1 Explain the following types of seams such as:</p> <ul style="list-style-type: none"> <li>i closed seam</li> <li>ii open seam</li> </ul>	<ul style="list-style-type: none"> <li>• Explain the types of seams—closed seam, open seam, lapped seam, butted seam, Brooklyn seam,</li> </ul>	Textbooks, Journals, Internet, Computer, Projector,	<p>7.1 Carry out:</p> <ul style="list-style-type: none"> <li>i Various seam preparations.</li> <li>ii Stitching practice with Stitching card</li> </ul>	<ul style="list-style-type: none"> <li>• Guide students to carry out; - various seam preparations.</li> </ul>	Seams etc
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	<p>iii lapped seam                  iv butted seam                  v Brooklyn seam                  vi welted seam                  vii piped seam,                  7.2 Explain thread consumptions for different types of stitches.                  7.3 List the types of seam finishes, edge finishing, top seams, decorative stitching, edge treatment, binding operations</p>	<p>welted seam, and piped seam—using samples and demonstrations.</p> <ul style="list-style-type: none"> <li>• Explain thread consumption for different types of stitches using charts and practical calculations.</li> <li>• Show the types of seam finishes—edge finishing, top seams, decorative stitching, edge treatment, and binding operations—using samples and illustrations.</li> </ul>	<p>White Board, Marker, etc                  Charts</p>	<p>i Stitching practice with leather (upper)                  ii Stitching practice with lining leather.                  iii Stitching practice with non-leather materials.</p>		
<b>GENERAL OBJECTIVE 8.0: Understand the sequence of operations for various upper material</b>						
10-11	<p>8.1 List sequence of operations for various upper materials:</p> <p>i Derby,                  ii oxford,                  iii slip-on,                  iv Boot,                  v moccasin,                  vi court shoe, etc.                  8.2 List faults and remedies of closing room.                  8.3 Explain the causes</p>	<ul style="list-style-type: none"> <li>• Outline sequence of operations for various upper models such as Derby, oxford, slip-on, Boot, moccasin, court shoe,</li> <li>• Explain faults and remedies of closing room, causes of thread breakage, Needle breakage and their</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc                  Charts</p>			

	of thread and needle breakage	remedies,				
8.4	Explain the remedies of thread and needle breakage					

**GENERAL OBJECTIVE 9.0: Know shoe finishing and enhance product packaging and marketability.**

12-13	<p>9.1 Explain how to search for nails in the shoes.</p> <p>9.2 Explain socks insertion.</p> <p>9.3 Explain how defects can be corrected.</p> <p>9.4 Explain cleaning and using of appropriate proprietary cleaning agent if required.</p> <p>9.5 Explain waxing or gloss spray.</p>	<ul style="list-style-type: none"> <li>• Demonstrate how to search for nails in shoes using manual inspection and metal detection methods.</li> <li>• Demonstrate socks insertion using correct positioning and bonding techniques.</li> <li>• Explain how footwear defects can be corrected using appropriate repair and finishing methods.</li> <li>• Demonstrate cleaning procedures using suitable proprietary cleaning agents where required.</li> <li>• Demonstrate waxing or gloss spraying to achieve proper finishing and shine on footwear.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>9.1 Carry out a search for nails in the shoes.</p> <p>9.2 Carry out sock's insertion.</p> <p>9.3 Correct defect.</p> <p>9.4 Carry out cleaning, using appropriate proprietary cleaning agent if required.</p> <p>9.5 Carry out waxing or gloss spray.</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Carry out a search for nails in the shoes. carry out sock's insertion.</li> <li>• Correct defect.</li> <li>• Carry out cleaning, using appropriate proprietary cleaning agent if required.</li> <li>• Carry out waxing or gloss spray.</li> </ul>	<p>Nails Shoes Wax Cleaning agents Gloss spray Brush</p>
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**General Objective 10.0: Know final inspection of finished shoes and how to package shoes in pairs.**

14-15	<p>10.1 Explain final inspection.</p> <p>10.2 Define rejects</p> <p>10.3 Explain the criteria for sorting of rejects</p> <p>10.4 Explain packaging of shoes in pairs, using the shoe box and tissue, or using the polythene bags.</p> <p>10.5 Describe how to carton the shoes in twelve or strap the boxes in twelve.</p>	<ul style="list-style-type: none"> <li>• Explain final inspection procedures by checking size, shape, finishing, cleanliness, and overall quality of completed shoes.</li> <li>• Define rejects by identifying footwear that fails to meet required quality standards or specifications.</li> <li>• Explain the criteria for sorting rejects using visible defects, poor workmanship, wrong size, or material faults.</li> <li>• Demonstrate packaging of shoes in pairs using shoe boxes with tissue paper or polythene bags for protection.</li> <li>• Demonstrate how to carton shoes in groups of twelve or strap twelve boxes together for safe storage and transportation.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>10.1 Carryout final inspection</p> <p>10.2 Sort-out rejects</p> <p>10.3 Package of shoes in pairs, using the shoe box and tissue, or using the polythene bags.</p> <p>10.4 Pack the shoes in twelve or strap the boxes in twelve.</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Carryout final inspection</li> <li>• Sort-out rejects</li> <li>• Package of shoes in pairs, using the shoe box and tissue, or using the polythene bags.</li> <li>• Carton the shoes in twelve or strap the boxes in twelve.</li> </ul>	
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**Course Assessment:**

Course work: 10%

Test/Assignments: 10%

Practical: 40%

Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: FOOTWEAR PRODUCTION TECHNOLOGY II</b>	<b>Course Code: LPT 215</b>	<b>Contact Hours: 3 Hrs/Week</b>
	<b>Credit Unit: 3</b>	<b>Theoretical: 1 Hr/Week</b>
<b>Year: II Semester: I</b>	<b>Pre-requisite: LPT 123</b>	<b>Practical: 2 Hrs/week</b>
<b>GOAL: This course is designed to equip students with the knowledge and skills of modern methods of footwear manufacture</b>		
<b>GENERAL OBJECTIVES</b>		
<p>On completion of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand the principles of drafting and its importance in lasting of shoes of different constructions;</li> <li>2.0 Know Modern methods of footwear construction;</li> <li>3.0 Understand Conditioning, damping, mulling, heat setting and drying during shoe making;</li> <li>4.0 Know Finishing operations in footwear manufacture;</li> <li>5.0 Know how to Cut the material by machinery technology as well as traditional handmade technology;</li> <li>6.0 Understand materials economics in clicking;</li> <li>7.0 Know quality and sustainability of leather materials manufacturing Requirement and their common defects as upper materials;</li> <li>8.0 Know Pre- closing operations;</li> <li>9.0 Know Types of sewing machines and transportation systems in closing room;</li> <li>10.0 Know Different types of seams;</li> <li>11.0 Understand Sequence of operations for various upper models;</li> <li>12.0 Know Machines arrangement in closing room;</li> <li>13.0 Know how to finish the shoe and enhance product packaging and marketability;</li> <li>14.0 Know final inspection on the finished shoes and understand how to package the shoes in pairs.</li> </ol>		

<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>COURSE TITLE: FOOTWEAR PRODUCTION TECHNOLOGY II</b>		<b>Course Code: LPT 215</b>		<b>Contact Hours: 3 Hrs/Week</b>		
		<b>Credit Unit: 3</b>		<b>Theoretical: 1 Hr/Week</b>		
<b>Year: II Semester: I</b>		<b>Pre-requisite: LPT 123</b>		<b>Practical: 2 Hrs/Week</b>		
<b>COURSE SPECIFICATION: THEORETICAL AND PRACTICAL</b>						
<b>GOAL: This course is designed to equip students with the knowledge and skills of modern methods of footwear manufacture</b>						
<b>General Objective 1.0: Understand the Principles of drafting and its importance in lasting of shoes of different constructions</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcomes</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1	1.1 Explain the principles of drafting 1.2 Explain the importance in lasting of shoes of different constructions. 1.3 Describe the principles of drafting 1.4 Explain importance in lasting of shoes of different constructions	<ul style="list-style-type: none"> <li>Explain the principles of drafting and its importance in lasting of shoes of different constructions (Welted and veldt shoes) welt attaching by hand and machine (staples shank fitting, bottom filling, sole attaching by hand and machine, bottom levelling, sole nailing.)</li> </ul>	<ul style="list-style-type: none"> <li>Video clips, Charts, Marker, Board, shoe upper and projector</li> </ul>			
<b>General Objective 2.0: Know modern methods of footwear construction</b>						

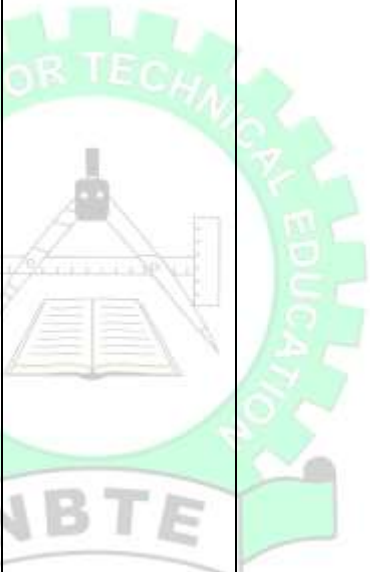
2	<p>2.1 Explain modern methods of footwear construction, e.g direct moulded, injection moulded and cemented unit sole.</p> <p>2.2 Mention the purpose and relative merits of the various methods of footwear construction in relation to their use.</p> <p>2.3 Describe modern methods of footwear construction, e.g. direct moulded, injection moulded and cemented unit sole</p>	<ul style="list-style-type: none"> <li>• Explain modern methods of footwear construction, e.g direct moulded, injection moulded and cemented unit sole.</li> <li>• Describe in details adhesives and machines used in cemented construction.</li> <li>• Mention the purpose and relative merits of the various methods of footwear construction in relation to their use.</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</li> </ul>	2.1 Carry out cemented footwear construction of different types of footwear's	<ul style="list-style-type: none"> <li>• Guide the students to carry out the procedures of footwear construction</li> </ul>	<p>Practical Manual, PPEs. Projector, White Board, Marker, Charts etc</p>
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**General Objective 3.0: Understand conditioning, damping, mulling, heat setting and drying during shoe making**

3	<p>3.1 Explain the following processes; conditioning, damping, mulling, heat setting and drying.</p> <p>3.2 Enumerates the importance of each process mentioned in 3.1 above.</p> <p>3.3 Describe the following processes; conditioning, damping, mulling,</p>	<ul style="list-style-type: none"> <li>• Explain the following processes; conditioning, damping, mulling, heat setting and drying.</li> <li>• Enumerates the importance of each process mention in 3.1 above.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, Charts etc</p>			
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	heat setting and drying. 3.4 List down the importance of the processes mentioned above					
<b>General Objective 4.0: Know finishing operations in footwear manufacture.</b>						
4	<p>4.1 Explain Heel attaching and top piece attaching by hand and machine.</p> <p>4.2 Describe the relation between heel pairing and heel scouring.</p> <p>4.3 Explain edge trimming, fore part and waist trimming, inking, edge setting by hand and machine, bottom buffing, bottom finishing, upper leather cleaning and dressing, fitting and socking, shoe lacing, checking and packing for different types of footwear.</p> <p>4.4 Explain the use of heat for elimination of faults (such as wrinkles) in shoe processes.</p> <p>4.5 List various tools, equipment and machinery employed for finishing.</p> <p>4.6 Outline the uses, general maintenance</p>	<ul style="list-style-type: none"> <li>• Explain Heel attaching and top piece attaching by hand and machine.</li> <li>• Explain the relation between heel pairing and heel scouring.</li> <li>• Describe edge trimming, fore part and waist trimming, inking, edge setting by hand and machine, bottom buffing, bottom finishing, upper leather cleaning and dressing, fitting and socking, shoe lacing, checking and packing for different types of footwear. Explain the use</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</li> </ul>	<p>4.1 Carry out the following:</p> <p>i Practice in heel attachments by hand and machine.</p> <p>ii Trimming sole and heel by hand and machine. scouring, heel front buffing, edge setting, heel colouring, waxing and setting by hand and machine, shoe lacing, etc</p> <p>iii Rectify finishing defects such as wrinkles.</p> <p>iv Different types of fancy finishing.</p>	<ul style="list-style-type: none"> <li>• Guide the students to perform the practical works</li> </ul>	<p>Waxing heel</p> <p>Heel front</p> <p>Heel colouring</p> <p>Shoe lacing machine etc</p>

	<p>and minor adjustments.</p> <p>4.7 Differentiate between heel pairing and heel scouring.</p> <p>4.8 Describe how to use heat to eliminate faults during footwear manufacture.</p> <p>4.9 Describe heel attaching and top piece attaching by hand and machine.</p>	<p>of heat for elimination of faults (such as wrinkles) in shoe processes.</p> <ul style="list-style-type: none"> <li>List various tools, equipment and machinery employed for finishing. Outline their use, general maintenance and minor adjustments.</li> </ul>				
<p><b>General Objective 5.0: Know material by machinery technology as well as traditional handmade technology</b></p>						
<p>5</p>	<p>5.1 Explain how to cut materials by machinery technology as well as traditional handmade technology: cutting of material by traditional handmade with knife and tin patterns</p> <p>5.2 Explain material economics in clicking: select the tools and machinery based on the materials.</p> <p>5.3 Explain costing and proper interlocking</p> <p>5.4 Explain clicking processes on the basis of positioning footwear component and footwear materials</p>	<ul style="list-style-type: none"> <li>Explain the following:             <ul style="list-style-type: none"> <li>The upper components (upper, lining and reinforcement)</li> <li>Materials used-man made</li> <li>Materials, leather basic characteristics</li> <li>Hand cutting and related tools and equipment</li> <li>Machine cutting and related equipment and dies</li> <li>Pattern lay out on plain materials</li> </ul> </li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>5.1 Properly interlock patterns on leather. The students will be taught how to click upper materials using knives</p>	<ul style="list-style-type: none"> <li>Instruct the students on how to economize leather uppers</li> </ul>	<p>Diagrams etc</p>

	<p>5.5 Describe the precautions to be taken in clicking.</p> <p>5.6 Describe different cutting methods and tools.</p> <p>5.7 Explain the clicking and product cost relationship</p>	<ul style="list-style-type: none"> <li>- Pattern lay on fabric materials</li> <li>- Characteristics of leather as per the upper cutting view.</li> <li>- The leather material quality variations in relation to different parts of the skin/hide (stretch-resistance-color-grain texture.</li> <li>- Defects marking up on leather</li> <li>- Leather grading</li> <li>- Leather sorting</li> <li>- Leather store and storage</li> <li>- Hand cutting pattern storage</li> <li>- Size marking (figure and codes)</li> <li>- The importance of economic cutting as required to reducing product cost.</li> <li>• Explain the advantage of press clicking for intricate patterns.</li> <li>• Highlight the</li> </ul>				
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		<p>importance of light in the clicking room</p> <ul style="list-style-type: none"> <li>• Quality control applied to upper clicking</li> <li>• Safety precautions applied to upper clicking</li> </ul>				
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**General Objective 6.0: Understand materials economics in clicking.**

6	<p>6.1 Explain qualities and suitability of leather as an upper material.</p> <p>6.2 Explain different types of leather upper.</p> <p>6.3 Explain basic clicking costing</p> <p>6.4 Explain Manufacturing requirements for upper, lining and socks</p> <p>6.5 Explain common defects found in leather</p>	<ul style="list-style-type: none"> <li>• Teach the students on:             <ul style="list-style-type: none"> <li>- Lines of tightness and stretch</li> <li>- Quality variance in skin</li> <li>- Defects in upper leather</li> <li>- Elasticity and plasticity</li> <li>- Permeability</li> <li>- Strength and stretch</li> <li>- Surface characteristics</li> <li>- Ease of working and maintenance.</li> <li>- Materials for shoe upper</li> <li>- Types of leather in common use</li> </ul> </li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>			
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		<ul style="list-style-type: none"><li>- Examination of leather</li><li>- Quality</li><li>- Purpose of different leathers</li><li>- Correct storage of leather</li><li>- Practice hand cutting of multi- pieced shoes, with special attention to making techniques</li><li>- Cutting allowances</li><li>- Clickers</li><li>- costing sheets</li><li>- Descriptive outline of leather production</li><li>- Descriptive outline of leather finishing treatments</li><li>- Descriptive outline of the production and classification, leather substitute, upper</li></ul>				
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		<p>materials and coated fabrics.</p> <ul style="list-style-type: none"> <li>- The qualities requirements for different parts of shoe depend on their functions during wear</li> <li>- Vamps</li> <li>- Toe caps</li> <li>- Quarters</li> <li>- Back straps</li> <li>- Facing</li> <li>- Tongues</li> <li>- Heel covers etc</li> <li>- Flay cuts</li> <li>- Growth mark</li> <li>- Salt stain</li> <li>- Scratches</li> <li>- Brand marks</li> <li>- Uneven dye absorption or coloring</li> <li>- discoloration from bad storage</li> </ul>				
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**General Objective 7.0: Know quality and sustainability of leather materials manufacturing Requirement and their common defects as upper material.**

7	<p>7.1 Explain qualities and suitability of leather as an upper material.</p> <p>7.2 Explain different types of leather upper.</p>	<ul style="list-style-type: none"> <li>• Explain the following:             <ul style="list-style-type: none"> <li>- Lines of tightness and</li> </ul> </li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board,</p>	<p>7.1 Identify defects in upper material</p>	<ul style="list-style-type: none"> <li>• Instruct the students on how to- identify defects in upper</li> </ul>	<p>Calf Hides Sides and grain splits etc</p>
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	<p>7.3 Explain basic clicking costing</p> <p>7.4 Explain Manufacturing requirements for upper, lining and socks.</p> <p>7.5 Explain Common defects found in leather</p>	<p>stretch</p> <ul style="list-style-type: none"> <li>- Quality variance in skin</li> <li>- Defects in upper leather</li> <li>- Elasticity and plasticity</li> <li>- Permeability</li> <li>- Strength and stretch</li> <li>- Surface characteristics</li> <li>- Ease of working and maintenance.</li> <li>- Materials for shoe upper</li> <li>- Types of leather in common use</li> <li>- Examination of leather</li> <li>- Quality</li> <li>- Purpose of different leathers</li> <li>- Correct storage of leather</li> <li>• Practice hand cutting of multi-pieced shoes, with special attention to making techniques</li> </ul>	<p>Marker, etc Charts</p>		<p>material</p>	
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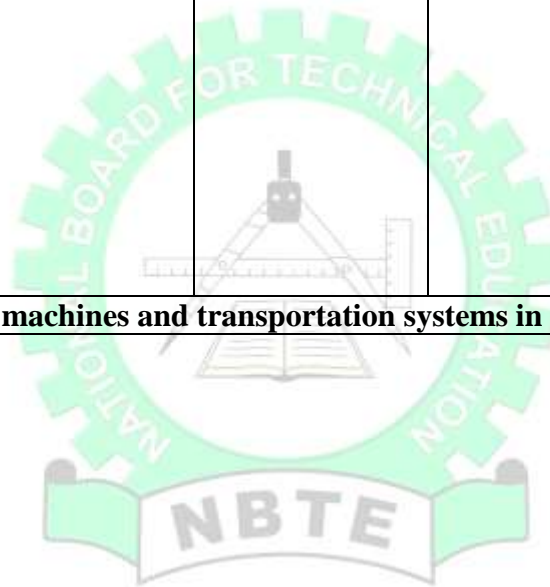
		<ul style="list-style-type: none"> <li>• Cutting allowances</li> <li>• Clickers costing sheets</li> <li>• -A descriptive outline of leather production</li> <li>• A descriptive outline of leather</li> <li>• finishing treatments</li> </ul>				
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**General Objective 8.0: Understand pre-closing operations**

8	<p>8.1 Explain the following pre-closing operations:</p> <ol style="list-style-type: none"> <li>Threading</li> <li>Needle fixing/ replacing</li> <li>Bobbin fixing/ replacing &amp; winding</li> <li>identification making,</li> <li>notch marking,</li> <li>sizing marking,</li> <li>stitch marking,</li> <li>lining stamping,</li> <li>punching/ perforation,</li> <li>gimping,</li> <li>blocking,</li> <li>performing,</li> <li>reinforcing,</li> <li>embossing,</li> </ol>	<ul style="list-style-type: none"> <li>• Explain the following pre-closing operations;             <ul style="list-style-type: none"> <li>- Threading</li> <li>- Needle fixing/ replacing</li> <li>- Bobbin fixing/ replacing &amp; winding</li> <li>- Safety precautions, etc</li> </ul> </li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>8.1 Sketch and label sewing machine</p>	<ul style="list-style-type: none"> <li>• Instruct students to sketch and label sewing machine.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>
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xv. crimping, xvi. edge xvii. coloring, xviii. burnishing, xix. folding, xx. binding, xxi. top line xxii. treatment, xxiii. eyeleting, xxiv. punching, xxv. edge burnishing, xxvi. edge binding, xxvii. upper assembling ,lining assembling, xxviii. upper and lining attaching. xxix. Safety precautions, etc					
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**General Objective 9.0 : know types of sewing machines and transportation systems in closing room**



9	<p>9.1 Describe the following types of sewing machines and their functions;</p> <ol style="list-style-type: none"> <li>i. Flat bed</li> <li>ii. Post bed</li> <li>iii. Cylinder bed,</li> <li>iv. zig-zag,</li> <li>v. Embroidery etc</li> </ol> <p>9.2 Explain parts and functions of sewing machine needle, classification of needles and needle broken policy.</p> <p>9.3 Explain transportation in closing room (e.g different types of conveyor, trolley, etc).</p>	<ul style="list-style-type: none"> <li>• Explain types of sewing machines and their functions;.</li> <li>• Sketch and explain parts and functions of sewing machine needle, classification of Needles and needle broken policy.</li> <li>• Explain transportation in closing room (e.g different types of conveyor, trolley, etc).</li> <li>•</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>9.1 Sketch a well labeled sewing machine.</p> <p>9.2 Assemble and dismantle sewing Machine.</p> <p>9.3 Practice pedaling. pedal adjustment and controlling of sewing machines</p>	<ul style="list-style-type: none"> <li>• Instruct students to sketch and label sewing machine needle.</li> <li>• Guide students to assemble and dismantle sewing machines.</li> <li>• Guide students on pedaling, pedal Adjustment and controlling of sewing machines</li> </ul>	<p>Paper Pencil Sewing machine Needle thread etc</p>
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**General Objective 10: Know different types of seams**

10	<p>10.1 Explain the following: types of seams, closed seam, open seam, lapped seam, butted seam, Brooklyn seam, welted seam, piped seam, thread consumptions for different types of stitches, types of seam finishes, iii. edge finishing, top</p>	<ul style="list-style-type: none"> <li>• Explain the following g;</li> <li>- types of seams,</li> <li>- types of seam finishes,</li> <li>- edge finishing,</li> <li>- top seams,</li> <li>- Decorative stitching.</li> <li>- Edge treatment</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>10.1 Carry out:</p> <ol style="list-style-type: none"> <li>i various seam preparations.</li> <li>ii stitching practice with Stitching card (paper).</li> <li>iii stitching practice with leather (upper) - stitching practice with lining leather. stitching practice with non-leather materials.</li> </ol>	<p>Supervise the students to carry out the practical works.</p> <ul style="list-style-type: none"> <li>• Assess the students practical reports with feedback or comments where necessary</li> </ul>	<p>Paper Needl, Thread</p>
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	seams, Decorative stitching. Edge 10.2 treatment, Binding operations	- Binding operations				
<b>General Objective 11.0: Understand sequence of operations for various upper models and sewing faults and remedies</b>						
11	11.1 Outline sequence of operations for various upper models such as Derby, oxford, slip-on, Boot, moccasin, court shoe, etc. 11.2 Outline faults and remedies of closing room. Causes of thread breakage, Needle breakage and their remedies,	<ul style="list-style-type: none"> <li>• Outline sequence of operations for various upper models such as Derby, oxford, slip-on, Boot, moccasin, court shoe,</li> <li>• Mention and explain faults and remedies of closing room, causes of thread breakage, Needle breakage and their remedies,</li> </ul>	Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts			
<b>General Objective 12.0: Understand machines arrangement in closing room</b>						
12	12.1 Describe machines arrangements in closing room 12.2 Explain Machine setup and line balancing, 12.3 12.3 Explain cycle time in closing room, broken needle policy, etc	<ul style="list-style-type: none"> <li>• Describe machines arrangements in closing room</li> <li>• Explain Machine setup and line balancing,</li> <li>• Explain cycle time in closing room. Broken Needle policy, etc</li> </ul>	Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts			

• **General Objective 13: Know how to finish the shoe and enhance product packaging and marketability.**

13	<p>13.1 Explain how to carry out a search for nails in the shoes.</p> <p>13.2 Explain how to carry out socks insertion.</p> <p>13.3 Explain how to correct defect.</p> <p>13.4 Explain how to carry out cleaning, using appropriate proprietary cleaning agent if required.</p> <p>13.5 Explain waxing or gloss spray.</p> <p>13.6 Explain how search for nails in the shoes, socks insertion, how to correct defect.</p> <p>13.7 Describe how to carry out cleaning, using appropriate proprietary cleaning agent if required</p> <p>13.8 Explain how to carry out waxing or gloss spray.</p>	<ul style="list-style-type: none"> <li>• Explain how search for nails in the shoes.</li> <li>• Explain how to carry out socks insertion.</li> <li>• Describe how to correct defect.</li> <li>• Explain how to carry out cleaning, using appropriate proprietary cleaning agent if required.</li> <li>• Describe how to carry out waxing or gloss spray.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>13.1 Carry out a search for nails in the shoes.</p> <p>13.2 Carry out socks insertion.</p> <p>13.3 Correct defect.</p> <p>13.4 Carry out cleaning, using appropriate proprietary cleaning agent if required.</p> <p>13.5 Carryout waxing or gloss spray.</p> <p>13.6 Search for nails in the shoes, socks insertion, how to correct defect.</p> <p>13.7 Carry out cleaning, using appropriate proprietary cleaning agent if required</p> <p>13.8 Carry out waxing or gloss spray</p>	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Carry out a search for nails in the shoes.</li> <li>• Carry out socks insertion.</li> <li>• Correct defect.</li> <li>• Carry out cleaning, using appropriate proprietary cleaning agent if required.</li> <li>• Carryout waxing or gloss spray.</li> <li>• Search for nails in the shoes, socks insertion, how to correct defect.</li> </ul> <p>Carry out cleaning, using appropriate</p>	Shoes
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					<p>proprietary cleaning agent if required</p> <ul style="list-style-type: none"> <li>• Carry out waxing or gloss spray.</li> </ul>	
<b>General Objective 14.0: Know final inspection on the finished shoes and understand how to package the shoes in pairs.</b>						
14-15	<p>14.1 Explain how to carry out final inspection.</p> <p>14.2 Explain how to sort out the rejects</p> <p>14.3 Explain how to package the shoes in pairs, using the shoe box and tissue, or using the polythene bags.</p> <p>14.4 Explain how to pack the shoes in twelve or strap the boxes in twelve.</p> <p>14.5 Explain how to carry out final inspection and sorting out the rejects</p> <p>14.6 Describe how to package the shoes in pairs, using the shoe box and tissue, or using the polythene bags.</p>	<ul style="list-style-type: none"> <li>• Explain how to carry out final inspection. Explain how to sort out the rejects</li> <li>• Describe how to package the shoes in pairs, using the shoe box and tissue, or using the polythene bags.</li> <li>• Describe how to carton the shoes in twelve or strap the boxes in twelve.</li> </ul>	<p>Textbooks, Journals, Internet, Computer, Projector, White Board, Marker, etc Charts</p>	<p>14.1 Carry out final inspection.</p> <p>14.2 Sort out the rejects</p> <p>14.3 Package the shoes in pairs, using the shoe box and tissue, or using the polythene bags.</p> <p>14.4 Pack the shoes in twelve or strap the boxes in twelve.</p> <p>14.5 Carry out final inspection and sorting out the rejects</p> <p>14.6 Package the shoes in pairs, using the shoe box and tissue, or using the polythene bags.</p>	<ul style="list-style-type: none"> <li>• Carry out final inspection.</li> <li>• Sort out the rejects</li> <li>• Package the shoes in pairs, using the shoe box and tissue, or using the polythene bags.</li> <li>• Carton the shoes in twelve or strap the boxes in twelve.</li> <li>• Carry out final inspection and sorting out the rejects</li> <li>• Package the shoes in pairs, using the shoe box and tissue, or</li> </ul>	<p>Shoes Boxes</p>

					using the polythene bags. Carton the shoes in twelve or strap the boxes in twelve	
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**Course assessment**

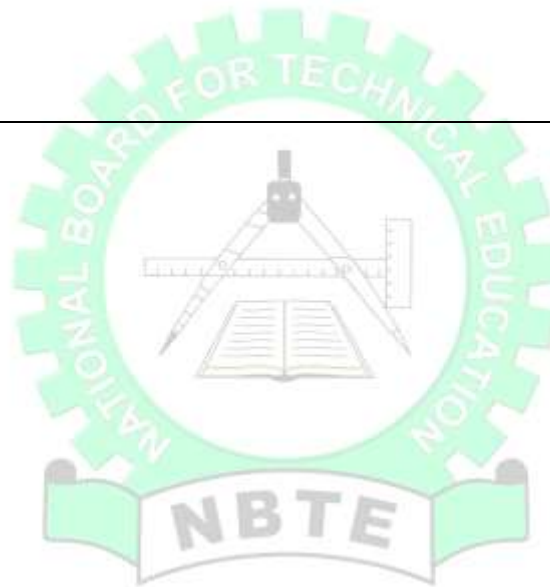
Course work: 10%

Tests: 10%

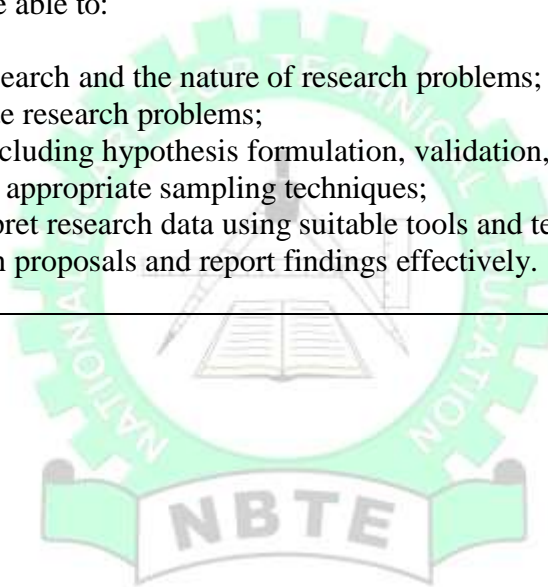
Practical: 40%

Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE: RESEARCH METHODOLOGY</b>	<b>COURSE CODE: LPT 216</b>	<b>Contact Hours: 2 Hours/Week</b>
<b>Year: II Semester: I</b>	<b>Credit Unit: 2</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 0</b>
<b>GOAL: This course is to equip students with essential research skills and methodologies to collect and interpret data, review relevant literatures, and prepare structured research proposals and reports.</b>		
<b>GENERAL OBJECTIVES</b>		
At the end of this course, the students should be able to:		
<ul style="list-style-type: none"> <li>1.0 Understand the scientific approach to research and the nature of research problems;</li> <li>2.0 Understand how to identify and formulate research problems;</li> <li>3.0 Know how to design a research study, including hypothesis formulation, validation, and variables;</li> <li>4.0 Understand Literature Review and apply appropriate sampling techniques;</li> <li>5.0 Know how to collect, analyze, and interpret research data using suitable tools and techniques, including data analytic software;</li> <li>6.0 Know how to prepare structured research proposals and report findings effectively.</li> </ul>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: RESEARCH METHODOLOGY</b>			<b>Course Code: LPT 216</b>		<b>Contact Hours: 2 Hours/Week</b>	
			<b>Credit Unit: 2</b>		<b>Theoretical: 2 Hours/Week</b>	
<b>Year: II Semester: I</b>			<b>Pre-requisite:</b>		<b>Practical: 0</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>						
<b>GOAL: This course is to equip students with essential research skills and methodologies to collect and interpret data, review relevant literatures, and prepare structured research proposals and reports.</b>						
<b>General Objectives 1.0: Understand the scientific approach to research and the nature of research problems</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-2	1.1 Explain the meaning and importance of research. 1.2 Describe the characteristics of scientific research. 1.3 Differentiate research from routine operational inquiry. 1.4 Discuss research ecosystem.	<ul style="list-style-type: none"> <li>Lecture, class discussion with examples</li> <li>Use real-life situations where research can improve operations.</li> <li>Case study discussion, group activity.</li> </ul>	Journals, ship operation reports etc.			
<b>General Objective 2.0: Understand how to identify and formulate research problems.</b>						
3-5	2.1 Define a research problem. 2.2 Identify research problems related to the fields. 2.3 Explain how to identify research gap in related fields. 2.4 Prioritize problems	<ul style="list-style-type: none"> <li>Brainstorming, guided discussion, case studies.</li> <li>Select research problems for mini-study Group exercises, peer discussion.</li> </ul>	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi Media etc			

	based on relevance and feasibility.					
<b>General Objective 3.0: Understand research design, including hypothesis formulation, validation, and variables</b>						
6-8	3.1 Explain the meaning and types of hypotheses in research. 3.2 Formulate testable hypotheses . 3.3 Identify independent, dependent, and control variables	<ul style="list-style-type: none"> <li>Lecture, real-life examples</li> <li>Explain how to formulate hypotheses and identify variables</li> <li>Group exercises, guided practice.</li> </ul>	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media etc ,.			
<b>GENERAL OBJECTIVE 4.0: Understand literature review and apply appropriate sampling techniques.</b>						
9-11	4.1 Explain the importance of reviewing research literature. 4.2 Conduct literature search on maritime and related field.. Explain sample and sampling techniques suitable for maritime and related field. 4.3 4.4 Select sampling method for a small-scale study.	<ul style="list-style-type: none"> <li>Lecture, demonstration, library, online search. Explain how to Conduct a mini literature review and select sampling method maritime and related field.</li> <li>Practical library/online search, group work study</li> </ul>	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media etc	4.1 Conduct literature search on multi-media resources.	<ul style="list-style-type: none"> <li>Guide students to use to download papers.</li> </ul>	Computers, Multi-media resources. Practical manuals etc.
<b>General Objective 5.0: Know how to collect, analyze, and interpret research data using suitable tools and techniques.</b>						
12-13	5.1 Explain data collection methods for research (Questionnaires, interviews, logs, surveys, and instruments).	<ul style="list-style-type: none"> <li>Lecture with examples.</li> <li>Demonstration, guided practice.</li> <li>Explain data collection from fields to perform basic</li> </ul>	SPSS, Excel, Laptop Computers, Smart Board, Projector, Writing Materials,	5.1 Use software package to collect, process and analyse data.	<ul style="list-style-type: none"> <li>Guide students to collect data.</li> <li>Assist student to use software</li> </ul>	Computer, Data, Practical manual etc

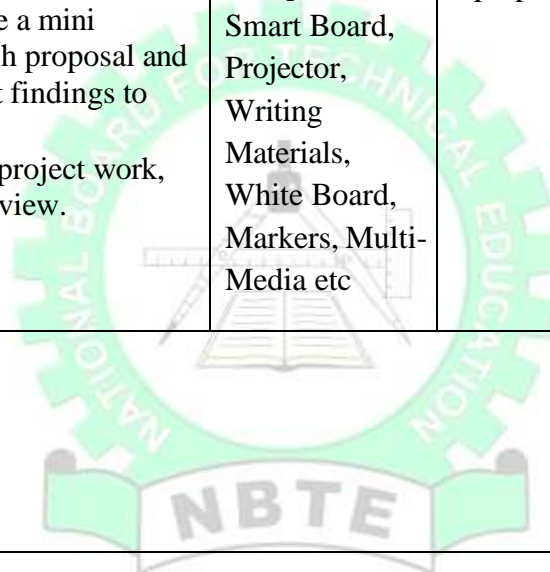
	5.2 Explain data analysis techniques applicable to maritime and related field. 5.3 Interpret results from data analysis.	analysis.	White Board, Markers, Multi-Media etc		package.	
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**General Objective 6.0: Understand application of basic research methods to prepare structured research proposals and report findings.**

14-15	6.1 Outline components of research proposal. 6.2 Prepare a structured research proposal on maritime and related field problems. 6.3 Present research findings in written and oral form relevant to maritime and related field.	<ul style="list-style-type: none"> <li>Lecture, review of sample</li> <li>Prepare a mini research proposal and present findings to class.</li> <li>Guide project work, peer review.</li> </ul>	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media etc	<ul style="list-style-type: none"> <li>Write a research proposal.</li> </ul>	<ul style="list-style-type: none"> <li>Guide students to research proposal</li> </ul>	Computer, Data, Practical manual etc.
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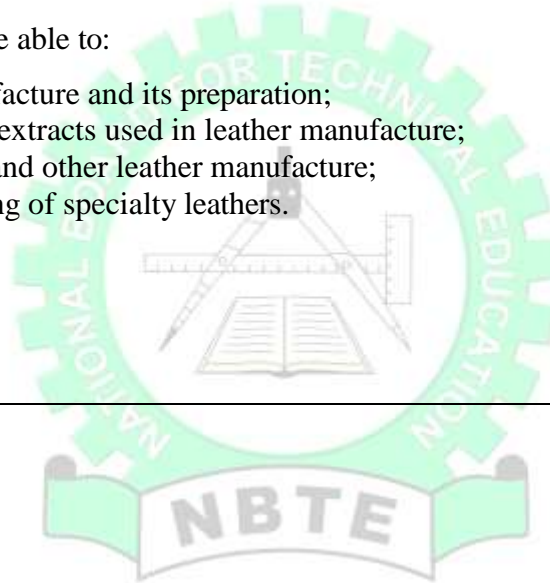
**Course Assessment:**

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
<b>Total:</b>	<b>100%</b>





<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: INTRODUCTION TO LEATHER MANUFACTURE II</b>	<b>COURSE CODE: LPT 221</b>	<b>Contact Hours: 4 Hours/Week</b>
<b>Year: II Semester: II</b>	<b>Credit Unit: 4</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite: INTRODUCTION TO LEATHER MANUFACTURE I</b>	<b>Practical: 2 Hours/Week</b>
<b>GOAL: This course is designed to equip students with the knowledge and skills of leather manufacture</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Know the raw materials for leather manufacture and its preparation;</li> <li>2.0 Know the sources and types of vegetable extracts used in leather manufacture;</li> <li>3.0 Understand the processes of sole leather and other leather manufacture;</li> <li>4.0 Understand the processes of manufacturing of specialty leathers.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>							
<b>Course Title: INTRODUCTION TO LEATHER MANUFACTURE II</b>				<b>Course Code: LPT 221</b>		<b>Contact Hours: 4 Hours/Week</b>	
				<b>Credit Unit: 4</b>		<b>Theoretical: 2 Hours/Week</b>	
<b>Year: II Semester: II</b>				<b>Pre-requisite: -</b>		<b>Practical: 2 Hours/Week</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>							
<b>GOAL: This course is designed to equip students with the knowledge and skills of leather manufacture</b>							
<b>General Objective 1.0: Know the raw materials for leather manufacture and its preparation</b>							
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>			
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	
1-3	1.1 Explain rounding process in leather manufacture. 1.2 Explain its importance in leather manufacture 1.3 Explain the advantages of rounding in leather manufacture	<ul style="list-style-type: none"> <li>• Explain the rounding process in leather manufacture using definitions and process flow descriptions.</li> <li>• Explain the importance of rounding in leather manufacture in relation to quality improvement and uniform thickness.</li> <li>• Explain the</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop Computers, smart board, Projector, Writing Materials,</li> <li>• White board, Markers, Internet etc</li> </ul>	1.1 Round a whole hide for the purpose of producing different leathers	<ul style="list-style-type: none"> <li>• Guide the students to a whole hide for the purpose of producing different Leathers</li> </ul>	Hides and skins Knives	

		advantages of rounding in leather manufacture with reference to material utilization, appearance, and processing efficiency.				
<b>General Objective 2.0: Know the sources and types of vegetable extracts used in leather manufacture</b>						
4-6	<p>2.1 Explain vegetable tannage</p> <p>2.2 Explain vegetable tannin extract.</p> <p>2.3 Explain the classification of vegetable tannins</p> <p>2.4 Explain the types and sources of vegetable tannin extracts used in leather manufacture</p>	<ul style="list-style-type: none"> <li>• Explain the concept and principles of vegetable tannage.</li> <li>• Describe the composition and characteristics of vegetable tannin extracts.</li> <li>• Classify vegetable tannins according to their chemical structure and properties.</li> <li>• Outline the types and sources of vegetable tannin extracts</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>	2.1 Carry out tanning of leather	<ul style="list-style-type: none"> <li>• Guide students to carry out tanning of leather</li> </ul>	Water Reaction vessel Vegetable tannin extract Bated pelts

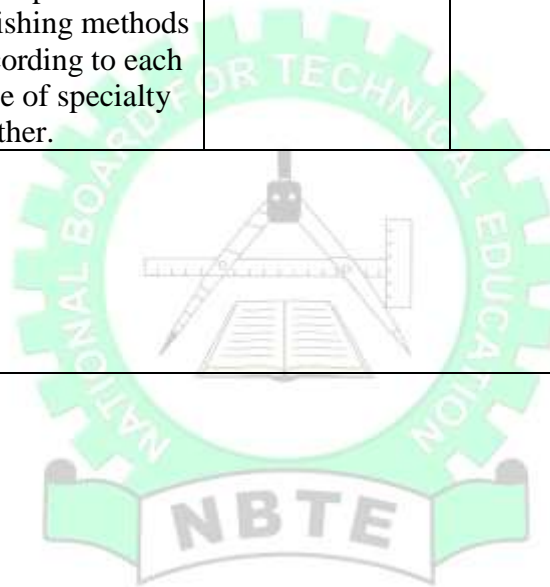
		used in leather manufacture. Discuss the applications and significance of each vegetable tanning source in leather processing.				
<b>General Objective 3.0: Understand the processes of sole leather and other leather manufacture</b>						
9-11	<p>3.1 Explain leather and sole leather manufacture</p> <p>3.2 Explain the processes for the manufacture of the following leathers: i Sole leather ii Belting leather iii Upholstery leather</p> <p>3.3 Explain the processes of finishing leathers</p>	<ul style="list-style-type: none"> <li>• Explain the concept and stages involved in leather and sole leather manufacture.</li> <li>• Describe the processes used in the manufacture of sole leather.</li> <li>• Describe the processes used in the manufacture of belting leather.</li> <li>• Describe the processes used in the manufacture of upholstery leather.</li> <li>• Outline the sequential steps involved in</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Pictures, Videos etc</li> </ul>	3.1 Demonstrate the process of leather production	<p>Guide students to:</p> <ul style="list-style-type: none"> <li>• Demonstrate the manufacture of the following:</li> <li>• Sole leather</li> <li>• Belting leather</li> <li>• Upholstery leather</li> </ul>	<p>Hides</p> <p>Tannins</p> <p>Lime Basic chromium sulphate</p> <p>Roller</p> <p>Setting out machine</p> <p>Pleating machine</p> <p>Rotor press</p> <p>Buffing machine</p> <p>Glazing machine</p>

		<p>finishing different types of leather.</p> <ul style="list-style-type: none"> <li>• Discuss the objectives and importance of finishing operations in leather manufacture.</li> </ul>				
<b>GENERAL OBJECTIVE 4.0: Understand the processes of manufacturing specialty leathers</b>						
12-15	<p>4.1 Explain specialty leather</p> <p>4.2 Describe the types of specialty leather</p> <p>4.3 Describe the characteristics of specialty leather</p> <p>4.4 Explain the production of the following types of specialty leathers;</p> <ol style="list-style-type: none"> <li>i. Reptile leathers</li> <li>ii. Clothing leather</li> <li>iii. Gloving leather</li> <li>iv. Hair-on leather</li> <li>v. Basil leather etc</li> </ol> <p>4.5 Explain a simple formulation for the production of the specialty leathers stated in 4.4 above.</p> <p>4.6 Explain the various</p>	<ul style="list-style-type: none"> <li>• Explain the concept and meaning of specialty leather.</li> <li>• Describe the different types of specialty leather.</li> <li>• Discuss the characteristics and properties of specialty leather.</li> <li>• Explain the production processes of Reptile leathers, clothing leather, gloving leather, hair-on leather, and basil leather.</li> <li>• Outline simple formulations used in the production</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>			

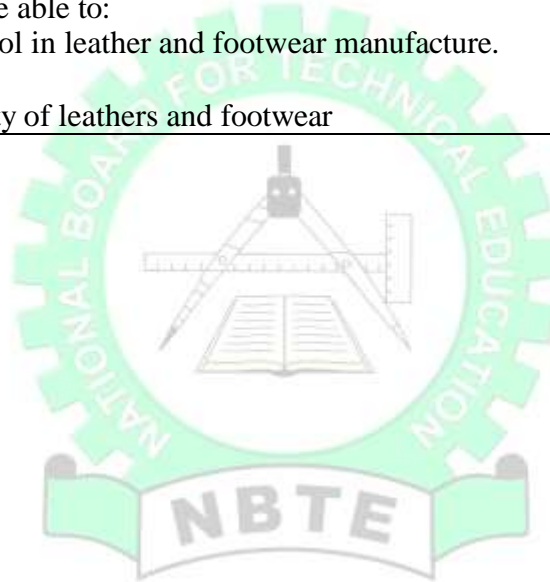
	<p>processes in leather manufacture as stated in 4.4 above.</p> <p>4.7 Explain finishing according to the types of the leathers stated in 4.4 above.</p>	<p>of the stated specialty leathers.</p> <ul style="list-style-type: none"> <li>Describe the manufacturing stages involved in processing the stated specialty leathers.</li> </ul> <p>Discuss the appropriate finishing methods according to each type of specialty leather.</p>				
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**Course Assessment:**

Course work: 10%  
 Test/Assignments: 10%  
 Practical: 40%  
 Examination: 40%  
**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: QUALITY CONTROL</b>	<b>COURSE CODE: LPT 222</b>	<b>Contact Hours: 2 Hours/Week</b>
<b>Year: II Semester: II</b>	<b>Credit Units: 2</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 0</b>
<b>GOAL: This course is designed to enhance the student's ability to carry out quality control during the manufacture of leathers.</b>		
<b>GENERAL OBJECTIVES</b>		
At the end of this course, the students should be able to:		
1.0 Understand the objectives of quality control in leather and footwear manufacture.		
2.0 Understand the sampling of leather.		
3.0 Know the various tests to assess the quality of leathers and footwear		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: QUALITY CONTROL</b>		<b>Course Code: LPT 222</b>		<b>Contact Hours: 2 Hours/Week</b>		
		<b>Credit Unit: 2</b>		<b>Theoretical: 1 Hour/Week</b>		
<b>Year: II Semester: II</b>		<b>Pre-requisite: -</b>		<b>Practical: 1 Hour/Week</b>		
<b>COURSE SPECIFICATION: Theoretical</b>						
<b>GOAL: This course is designed to enhance the student's ability to carry out quality control during the manufacture of leathers.</b>						
<b>General Objective 1.0: Understand the objectives of quality control in leather and footwear manufacture.</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-5	1.1 Define quality control. 1.2 Outline the reasons for effective quality control measures in leather manufacture. 1.3 Outline the major areas of quality control in leather manufacture.	<ul style="list-style-type: none"> <li>Define quality control in leather manufacture.</li> <li>Outline the reasons for implementing effective quality control measures in leather production.</li> <li>Explain the importance of maintaining consistent product standards and customer satisfaction.</li> <li>List the major areas of quality control in leather manufacture such as raw materials inspection, beam</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc			

		<p>house operations, tanning processes, finishing processes, and final leather testing.</p> <ul style="list-style-type: none"> <li>Describe the control measures applied at each production stage to ensure uniform quality.</li> <li>Discuss the role of monitoring, testing, and documentation in achieving effective quality control.</li> </ul>				
<b>General Objective 2.0: Understand the sampling of leather</b>						
6-10	<p>2.1 Explain variations in the properties of hides and skins (intra/inter hides and skins variations).</p> <p>2.2 Explain sampling Positions in leather.</p> <p>2.3 Draw the leather to indicate the physical and chemical test sampling positions.</p> <p>2.4 Explain preparation of leather for physical and chemical tests.</p>	<ul style="list-style-type: none"> <li>Explain variations in the properties of hides and skins, including intra-hide/skin variations (differences within the same hide or skin) and inter-hide/skin variations (differences between different hides or skins).</li> <li>Explain causes of variation such as animal age, breed, sex, nutrition, flaying methods, preservation, and processing</li> </ul>	<p>Videos and illustrations of microscopic inter/intra fibres views of hides and skins for demonstration</p> <p>Class room resources for demonstration</p>	<p>2.1 Identify the differences between hides and skins' properties.</p> <p>2.2 Demonstrate how sampling positions can be determined on real leather.</p> <p>2.3 Demonstrate the official sampling positions on leather for physical and chemical analysis.</p> <p>2.4 Demonstrate how to prepare a</p>	<p>Guide students on:</p> <ul style="list-style-type: none"> <li>How to identify the differences between hides and skins.</li> <li>Identify sampling positions on real leather. prepare a sample for physical and chemical analysis</li> </ul>	<p>Microscopes, samples of hide and skins, practical manuals etc</p>

		<p>conditions.</p> <ul style="list-style-type: none"><li>• Define sampling positions in leather.</li><li>• Explain the importance of standard sampling positions for obtaining reliable and comparable test results.</li><li>• Illustrate the standard leather sampling positions for physical tests (such as tensile strength, tear strength, and elongation) and chemical tests (such as moisture, fat, ash, and chrome content).</li><li>• Explain why areas such as butt, shoulder, and belly are selected or avoided for specific tests.</li><li>• Explain the preparation of leather samples for physical tests, including conditioning, cutting to standard dimensions, and orientation of</li></ul>		<p>sample for physical and chemical analysis.</p>		
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		<p>samples.</p> <p>Explain the preparation of leather samples for chemical tests, including trimming, grinding, weighing, and conditioning to avoid contamination.</p>				
<b>General Objective 3.0: Know the various tests to assess the quality of leathers and footwear</b>						
11-15	<p>3.1 Explain chemical testing in quality control</p> <p>3.2 List the chemical test involved in leather quality control.</p> <p>i. Volatile matter</p> <p>ii. Fat content</p> <p>iii. Water soluble substances</p> <p>iv. Chromium oxide (Cr<sub>2</sub>O<sub>3</sub>) content</p> <p>v. pH</p> <p>vi. Acidity of vegetable tannins (Innes difference</p> <p>vii. figure)</p> <p>viii. Insoluble ash</p> <p>ix. Total ash</p> <p>x. Degree of tannage</p> <p>3.3 Explain the significance of the parameters listed in above.</p> <p>3.4 Explain physical testing in quality control.</p> <p>3.5 List the physical test involved in leather</p>	<ul style="list-style-type: none"> <li>• Explain chemical testing in quality control as the analysis of chemical composition to ensure leather meets required standards of safety, durability, and performance.</li> <li>• List the chemical tests involved in leather quality control.</li> <li>• Explain the significance of each chemical parameter:</li> <li>• Discuss volatile matter that indicates moisture level and drying condition</li> <li>• Explain fat content that</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet Pictures Videos etc</p>	<p>3.1 Identify the chemical tests involved in leather quality control.</p> <p>3.2 Carry out chemical tests identify physical analysis involved in leather quality control.</p> <p>3.3 Carry out physical analysis involved in leather quality control</p>	<p>Guide students on how to:</p> <ul style="list-style-type: none"> <li>• Identify various chemical tests involved in leather quality control.</li> <li>• Carry out chemical tests</li> <li>• Identify physical analysis involved in leather quality control.</li> <li>• Carry out physical analysis involved in the leather quality control as</li> </ul>	<p>Leather materials, Physical and chemical testing machines and equipment in the quality control laboratory eg Tensometer; Wet and dry rubbing Water permeability; Ruler, Conditioning machine; cutting/press knives etc</p>

	<p>quality control.</p> <p>3.6 Explain strength Properties: Tensile strength, Tearing load, Buckle tear strength, Grain crack resistance, Shape retention</p> <p>3.7 Explain Wear Properties: Abrasion resistance, Scuff resistance</p> <p>3.8 Discuss Comfort Properties: Perspiration resistance</p> <p>3.9 Explain the significance of the parameters listed in 3.5 above.</p>	<p>shows lubrication and softness of leather</p> <ul style="list-style-type: none"> <li>• Discuss water soluble substances that reveals presence of excess salts and unfixed materials</li> <li>• Explain Chromium oxide (<math>Cr_2O_3</math>) that measures chrome fixation and tanning efficiency</li> <li>• Discuss pH that shows the degree of acidity/alkalinity affecting stability and ageing</li> <li>• Explain acidity of vegetable tannins that evaluates vegetable tannin fixation and potential acid damage</li> <li>• Discuss insoluble ash that indicates dirt or mineral</li> </ul>			<p>outlined in 3.5</p>	
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		<p>contamination</p> <ul style="list-style-type: none"><li>• Describe total ash that measures total mineral matter in leather</li><li>• Explain the degree of tannage that shows completeness of tanning process</li><li>• Explain physical testing in quality control as the assessment of mechanical and performance properties to determine strength, durability, and comfort.</li><li>• List the physical tests involved in leather quality control:</li><li>• Discuss strength properties<ul style="list-style-type: none"><li>- Tensile strength</li><li>- Tearing load</li><li>- Buckle tear strength</li><li>- Grain crack resistance</li><li>- Shape retention</li></ul></li><li>• Describe wear properties<ul style="list-style-type: none"><li>- Abrasion resistance</li></ul></li></ul>				
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		<ul style="list-style-type: none"><li>- Scuff resistance</li><li>• Comfort properties<ul style="list-style-type: none"><li>• Perspiration resistance</li></ul></li><li>• Explain the significance of each physical parameter: Tensile strength – measures resistance to pulling forces</li><li>• Discuss tearing load that indicates resistance to tearing during use</li><li>• Explain Buckle tear strength shows durability under flexing stress</li><li>• Grain crack resistance – evaluates surface strength and flexibility</li><li>• Shape retention – measures ability to maintain original form</li><li>Abrasion resistance – indicates resistance to rubbing and wear</li><li>• Scuff resistance – shows resistance to surface damage</li><li>• Perspiration resistance –</li></ul>				
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		evaluates resistance to sweat and comfort during wear				
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**Course Assessment:**

Course work: 10%

Test/Assignments: 10%

Practical: 40%

Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: LEATHER GOODS AND FOOTWEAR ACCESSORIES</b>	<b>COURSE CODE: LPT 223</b>	<b>Contact Hours: 3 Hours/Week</b>
<b>Year: II Semester: II</b>	<b>Credit Units: 3</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite: -</b>	<b>Practical: 1 Hour/Week</b>
<b>Goal: This course is designed to teach students how to create effective and visually appealing designs to stay current with fashion trends and forecasting</b>		
<b>GENERAL OBJECTIVES</b>		
At the end of this course, the students should be able to:		
<ol style="list-style-type: none"> <li>1.0 Understand the source and alternative materials used for leather and footwear accessories</li> <li>2.0 Understand the selection criteria of leather for various leather articles</li> <li>3.0 Understand the types of thread used for machine and hand stitching, grinders and fittings</li> <li>4.0 Understand the adhesives, lacquer, polishes and anti-fungal used in leather goods fashion and accessories</li> <li>5.0 Know the use of cardboard and other materials for leather goods fashion and accessories</li> <li>6.0 Know the sequence of operations for manufacture of selected items of leather goods fashion and accessories.</li> </ol>		

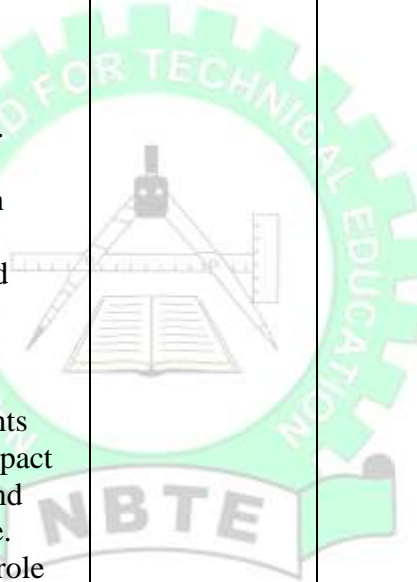


<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>						
<b>Course Title: LEATHER GOODS AND FOOTWEAR ACCESSORIES</b>			<b>Course Code: LPT 223</b>		<b>Contact Hours: 3 Hours/Week</b>	
<b>Year: II Semester: II</b>			<b>Credit Unit: 3</b>		<b>Theoretical: 2 Hours/Week</b>	
			<b>Pre-requisite: -</b>		<b>Practical: 1 Hour/Week</b>	
<b>COURSE SPECIFICATION: Theoretical and Practical</b>						
<b>GOAL: This course is designed to teach students how to create effective and visually appealing designs to stay current with fashion trends and forecasting</b>						
<b>General Objective 1.0: Understand the source and alternative materials used for leather and footwear accessories</b>						
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>		
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>
1-3	1.1 Explain the history of leather goods and footwear accessories 1.2 Describe the various sections of the leather goods industry 1.3 Explain the basic principles of industrial design 1.4 Discuss the concept of innovation and creativity in the leather and footwear industries	<ul style="list-style-type: none"> <li>Explain the historical development of leather goods and footwear accessories from early hand-crafted products to modern industrial production, referencing early civilizations, the Roman Empire use of leather for sandals and armor, mechanization during the Industrial Revolution, and present-day automated and digital manufacturing.</li> <li>Describe the various sections of the</li> </ul>	<ul style="list-style-type: none"> <li>Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			

		<p>leather goods industry, including raw material processing, tanning, footwear production, bags and luggage manufacture, small leather goods, accessories, finishing, marketing, and distribution.</p> <ul style="list-style-type: none"><li>• Explain the basic principles of industrial design, including functionality, ergonomics, aesthetics, safety, durability, material selection, cost efficiency, and sustainability in product development.</li><li>• Discuss the concept of innovation and creativity in the leather and footwear industries, including new materials, modern production technologies, improved designs, customization,</li></ul>				
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		branding strategies, and digital tools for product development.				
<b>General Objective 2.0: Understand the selection criteria of leather for various leather articles</b>						
4-6	<p>2.1 Explain leather and non-leather materials.</p> <p>2.2 Describe the preparation and suitability for the various types of construction of leather goods .</p> <p>2.3 Explain the following in the selection of leather and other materials:</p> <ol style="list-style-type: none"> <li>i. reinforcements</li> <li>ii. types</li> <li>iii. weight</li> <li>iv. gauges</li> <li>v. function</li> </ol>	<ul style="list-style-type: none"> <li>• Explain leather and non-leather materials, including their composition, characteristics, and common applications in leather goods and footwear.</li> <li>• Describe the preparation and suitability of different materials for various types of leather goods construction, considering flexibility, strength, durability, and finishing requirements.</li> <li>• Explain the selection criteria for leather and other materials,</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			

- including:
- Reinforcement purpose and types used to strengthen areas of products.
  - Types – different material categories (natural, synthetic, composites).
  - Weight – influence on durability, comfort, and handling.
  - Gauges – thickness measurements and their impact on design and performance.
  - Function – role of each material in overall product structure and quality.



**General Objective 3.0: Understand the types of thread used for machine and hand stitching, grinders and fittings**

7-9	<p>3.1 Explain types of thread used for the following:</p> <ul style="list-style-type: none"> <li>i machine</li> <li>ii hand stitching</li> <li>iii grindies</li> <li>iv fittings</li> </ul> <p>3.2 Explain mechanization</p> <p>3.3 Explain tools and special equipment employed for mechanization</p>	<ul style="list-style-type: none"> <li>• Explain the types of thread used in leather goods and footwear, including machine thread, hand stitching thread, grindies, and threads for fittings, with reference to strength, thickness,</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet Pictures Videos etc</li> </ul>			
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**GENERAL OBJECTIVE 4.0: Understand the adhesives, lacquer, polishes and anti-fungal used in leather goods fashion and accessories**

10-11	<p>4.1 Explain adhesives used in leather goods</p> <p>4.2 Explain polishes used in leather goods</p> <p>4.3 Explain lacquer used in leather goods</p> <p>4.4 Explain emulsions used in leather goods</p> <p>4.5 Explain Anti-fungal treatment for leather goods and their specifications</p>	<ul style="list-style-type: none"> <li>• Explain adhesives used in leather goods, including types, properties, and applications for bonding leather and other materials.</li> <li>• Explain polishes used in leather goods, including their composition, purpose, and effects on appearance and protection.</li> <li>• Explain lacquer used in leather goods, including its types, chemical composition, and finishing purpose.</li> <li>• Explain emulsions</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>			
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		<p>used in leather goods, including water- or oil- based formulations and their protective or finishing functions.</p> <ul style="list-style-type: none"> <li>• Explain anti- fungal treatments for leather goods, including types, specifications, and importance for preventing microbial damage</li> </ul>				
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**General Objective 5.0: Know the use of cardboard and other materials for leather goods fashion and accessories**

12-13	<p>5.1 Explain the use of cardboard and other boards in leather goods manufacture.</p> <p>5.2 Explain the use of materials like synthetic, foam, etc. in leather goods,</p>	<ul style="list-style-type: none"> <li>• Explain the use of cardboard and other boards in leather goods manufacture, including their role in structure, reinforcement, and shape retention.</li> <li>• Explain the use of materials such as synthetic fabrics, foam, and padding in leather goods, highlighting their purpose, properties, and suitability for different product types.</li> </ul>	<ul style="list-style-type: none"> <li>• Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>	<p>5.1 Produce a bag/ wallet using the following: Cardboard; synthetic foam ; straw board</p>	<ul style="list-style-type: none"> <li>• Guide Students to produce bags, wallets using the following: cardboard, synthetic foam, straw board</li> </ul>	<p>Cardboard Synthetic foam Straw board Adhesives Clicking knife Ruler Brush French curves</p>
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**General Objective 6.0: Know the sequence of operations for manufacture of selected items of leather goods fashion and accessories**

14-15	<p>6.1 State the sequence of operations for manufacture of selected items of leather goods.</p> <p>6.2 Explain the following processes with emphasis on method, influence and effects of construction:</p> <ol style="list-style-type: none"> <li>i. Skiving</li> <li>ii. Adhesive application</li> <li>iii. Folding</li> <li>iv. Lining</li> <li>v. Stitching</li> <li>vi. Finishing</li> </ol> <p>6.3 Explain the purpose of the processes mentioned in 6.2 above</p>	<ul style="list-style-type: none"> <li>• State the sequence of operations for manufacturing selected leather goods, from material preparation to final finishing.</li> <li>• Explain the processes of skiving, adhesive application, folding, lining, stitching, and finishing, emphasizing methods, influence on structure, and effects on product quality.</li> <li>• Explain the purpose of each process in leather goods manufacture, highlighting its role in durability, appearance, and functionality.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>	<p>6.1 Produce selected items of leather goods, e.g. cell phone case, ladies' handbag, men's belt etc.</p>	<ul style="list-style-type: none"> <li>• Guide students to: manufacture selected items of leather goods, e.g. cell phone case, ladies' handbag, men's belt etc</li> </ul>	<p>Leather Adhesives Clicking knife Ruler Brush French curves Heavy thread Needle Sewing machine Nylon bonded 60</p>
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**Course Assessment:**

Course work: 10%

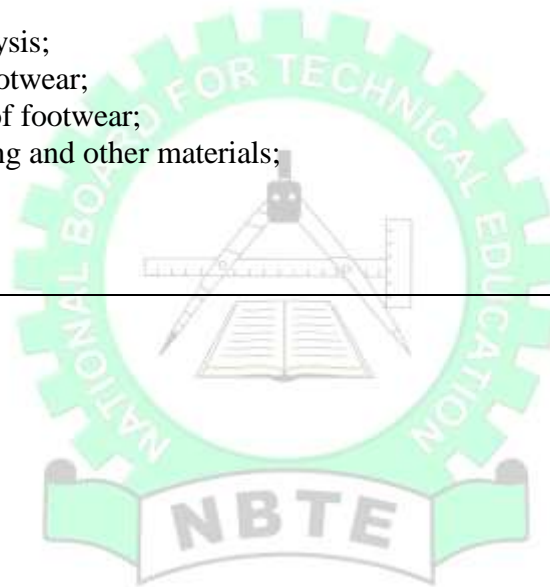
Test/Assignments: 10%

Practical: 40%

Examination: 40%

**Total: 100%**

<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: FOOTWEAR COSTING</b>	<b>COURSE CODE: LPT 224</b>	<b>Contact Hours: 3 Hours/Week</b>
<b>Year: II Semester: II</b>	<b>Credit Units: 3</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 1 Hour/Week</b>
<b>GOAL: This course is designed to provide students the knowledge, skills, and attitude required to calculate and establish cost for footwear and footwear materials</b>		
<b>GENERAL OBJECTIVES:</b>		
At the end of this course, the students should be able to:		
<ol style="list-style-type: none"> <li>1.0 Understand basic terms in costing analysis;</li> <li>2.0 Understand production Activities of footwear;</li> <li>3.0 Understand production Plan Analysis of footwear;</li> <li>4.0 Know Costing Analysis for upper, lining and other materials;</li> <li>5.0 Understand Material Control.</li> </ol>		



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>							
<b>Course Title: FOOTWEAR COSTING</b>			<b>Course Code: LPT 224</b>			<b>Contact Hours: 3 Hours/Week</b>	
			<b>Credit Unit: 3</b>			<b>Theoretical: 2 Hours/Week</b>	
<b>Year: II Semester: II</b>			<b>Pre-requisite: -</b>			<b>Practical: 1 Hour/Week</b>	
<b>COURSE SPECIFICATION: Theoretical</b>							
<b>GOAL: This course is designed to provide students the knowledge, skills, and attitude required to calculate and establish cost for footwear and footwear materials</b>							
<b>General Objective 1.0: Understand basic terms in costing analysis</b>							
<b>THEORETICAL CONTENT</b>				<b>PRACTICAL CONTENT</b>			
<b>Week</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	<b>Specific Learning Outcome</b>	<b>Teacher's Activities</b>	<b>Resources</b>	
1-3	1.1 Define costing. 1.2 Explain the need for Costing of footwear materials. 1.3 State the advantages of costing. 1.4 Explain different methods of cost finding.	<ul style="list-style-type: none"> <li>Define costing and its role in footwear production and business management.</li> <li>Explain the need for costing of footwear materials, including budgeting, price setting, and resource allocation.</li> <li>State the advantages of costing, such as cost control, profitability analysis, and</li> </ul>	<ul style="list-style-type: none"> <li>Laptop</li> <li>Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</li> </ul>				

		<p>efficient material usage.</p> <ul style="list-style-type: none"> <li>• Explain different methods of cost finding, including direct costing, absorption costing, and activity-based costing, with reference to footwear production.</li> </ul>				
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**General Objective 2.0: Understand production activities of footwear**

4-7	<p>2.1 Explain the activities of footwear production.</p> <p>2.2 List the steps of footwear production:</p> <ul style="list-style-type: none"> <li>i Clicking</li> <li>ii Skiving</li> <li>iii Folding</li> <li>iv Stitching</li> <li>v Lasting</li> <li>vi Finishing</li> <li>vii Packaging</li> </ul> <p>2.3 Give the cost analysis of materials for each activity listed in 2.2 above</p>	<ul style="list-style-type: none"> <li>• Explain the activities involved in footwear production, from raw material preparation to final packaging.</li> <li>• List the steps of footwear production, including clicking, skiving, folding, stitching, lasting, finishing, and packaging.</li> <li>• Explain the cost analysis of materials for each production activity, highlighting material usage, wastage, and economic implications.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc aids etc</p>			
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**General Objective 3.0: Understand production plan analysis of footwear**

8-10	<p>3.1 Identify the time frame for each activity in 2.1 above</p> <p>3.2 List materials to be used for each activity in 2.1 above</p> <p>3.3 List machine/tools to be used for each activity in 2.1 above</p>	<ul style="list-style-type: none"> <li>Identify the time frame required for each footwear production activity, including clicking, skiving, folding, stitching, lasting, finishing, and packaging.</li> <li>List the machines used for each activity in footwear production, specifying type and function.</li> <li>List the tools required for each activity in footwear production, including hand tools and measuring instruments.</li> </ul>	<ul style="list-style-type: none"> <li>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet, Pictures, Videos etc</li> </ul>			
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**GENERAL OBJECTIVE 4.0: Know Costing Analysis for upper, lining and other materials**

11-12	<p>4.1 Explain costing analysis of upper materials</p> <p>4.2 Explain costing analysis of lining materials</p> <p>4.3 Explain costing analysis of other materials</p>	<ul style="list-style-type: none"> <li>Explain the costing analysis of upper materials, including leather, synthetic materials, and reinforcements.</li> <li>Explain the costing analysis of lining materials, considering fabric type, quality, and quantity.</li> </ul> <p>Explain the costing</p>	Laptop computers, smart board, Projector, Writing Materials,	<p>4.1 Carry out costing analysis of upper materials</p> <p>4.2 Carry out costing analysis of lining materials</p> <p>4.3 Carry out costing analysis of other</p>	<p>Guide students to</p> <ul style="list-style-type: none"> <li>Carry out costing analysis of upper materials</li> </ul>	
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		analysis of other materials, such as threads, adhesives, boards, foams, and accessories used in footwear production		materials		
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**General Objective 5.0: Understand material control**

13-15	<p>5.1 Define material control</p> <p>5.2 State the importance of material control</p> <p>5.3 List objects of materials and material control,</p> <p>5.4 Explain the following:</p> <p>i Purchasing</p> <p>ii Storing of materials</p> <p>iii Recipe of materials</p> <p>iv Issues and returns/transfer of materials</p> <p>v method of pricing of materials LIFO and FIFO methods</p> <p>vii Inventory system</p> <p>viii Inventory control</p> <p>ix Stock levels</p> <p>vi Economic order</p>	<ul style="list-style-type: none"> <li>• Discuss material control</li> <li>• Itemize the importance of material control</li> <li>• Describe objects of materials and material control,</li> <li>• Explain the following: Purchasing</li> <li>• Storing of materials Recipe of materials Issues and returns/transfer of materials method of pricing of materials LIFO and FIFO methods.</li> <li>• Inventory system Inventory control Stock levels Economic order</li> </ul>	Board, marker, projector, computer			
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**Course Assessment:**

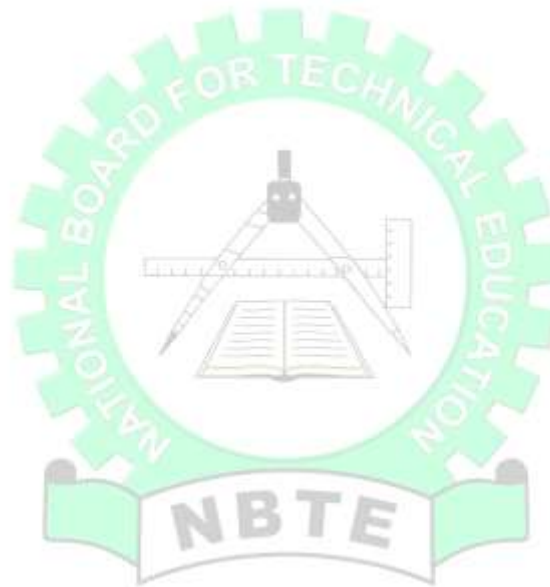
Course work: 10%

Test/Assignments: 10%

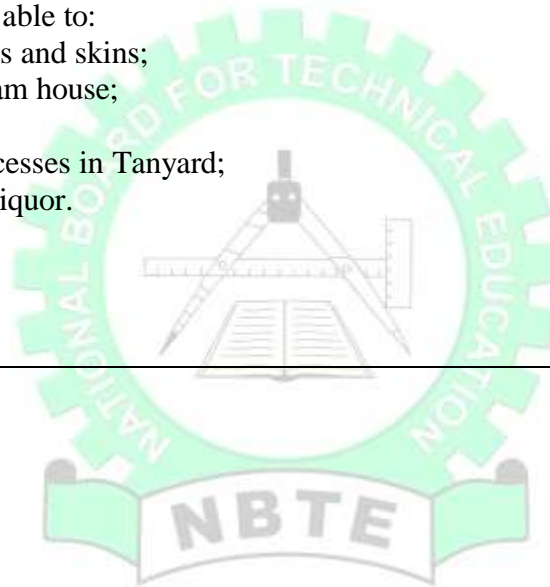
Practical: 40%

Examination: 40%

**Total: 100%**



<b>PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY</b>		
<b>COURSE TITLE: INTRODUCTION TO LEATHER CHEMISTRY I</b>	<b>COURSE CODE: LPT 225</b>	<b>Contact Hours: 2 Hours/Week</b>
<b>Year: II Semester: II</b>	<b>Credit Unit: 2</b>	<b>Theoretical: 2 Hours/Week</b>
	<b>Pre-requisite:</b>	<b>Practical: 0</b>
<b>GOAL: This course is designed to introduce the student to chemical processes involved in leather manufacture.</b>		
<b>GENERAL OBJECTIVES</b>		
<p>At the end of this course, the students should be able to:</p> <ol style="list-style-type: none"> <li>1.0 Understand the biochemistry of raw hides and skins;</li> <li>2.0 Understand the chemical reactions in beam house;</li> <li>3.0 Understand the chemistry of tanning;</li> <li>4.0 Understand the chemical reaction of processes in Tanyard;</li> <li>5.0 Understand the concept of Dyes and Fatliquor.</li> </ol>		



PROGRAMME: NATIONAL DIPLOMA IN LEATHER AND LEATHER PRODUCTS TECHNOLOGY							
Course Title: INTRODUCTION TO LEATHER CHEMISTRY I			Course Code: LPT 225		Contact Hours: 2 Hours/Week		
			Credit Unit: 2		Theoretical: 2 Hours/Week		
Year: II Semester: II			Pre-requisite: -		Practical: 0		
COURSE SPECIFICATION: Theoretical							
GOAL: This course is designed to introduce the student to chemical processes involved in leather manufacture.							
General Objective 1.0: Understand the biochemistry of raw hides and skins							
THEORETICAL CONTENT				PRACTICAL CONTENT			
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources	
1-3	1.1 Define amino acids. 1.2 Explain different types of amino acids. 1.3 Describe the amino acids that constitute collagen matrix. 1.4 Explain the hierarchy of collagen structure	<ul style="list-style-type: none"> <li>Explain general introduction of the subject matter, give notes and lecture student.</li> <li>Explain the chemical reactions of each process in 1.3 e.g.</li> <li>Soaking is the hydrolysis of salt links and short links. (<math>\text{---COONH}_3^+ + \text{H}^+ + \text{OH}^- \text{----- COOH} + \text{NH}_2 + \text{H}_2\text{O}</math>)</li> <li>Explain each process in 1.2,</li> <li>State the importance of the chemicals, describe the reaction of the chemical with the raw skin, give chemical equation and explain the reaction to the student</li> </ul>	Laptop Computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc				
General Objective 2.0: Understand the chemical reactions in beam house							

<p>4-6</p>	<p>2.1 Explain the processes involved in the beam house/pre-tanning viz:</p> <ol style="list-style-type: none"> <li>i. Drying/Preservation</li> <li>ii. Soaking</li> <li>iii. Unhairing</li> <li>iv. Liming</li> <li>v. Deliming</li> <li>vi. Bating</li> <li>vii. Pickling</li> <li>viii. Drenching</li> <li>ix. Degreasing.</li> </ol> <p>2.2 List all the chemicals involved in each of the processes mentioned in 2.1above</p> <p>2.3 Explain the properties of each of the chemicals involved in the processes in 2.1 above</p>	<ul style="list-style-type: none"> <li>• Explain the processes involved in the beam house/pre- tanning, including drying/preservation, soaking, unhairing, liming, deliming, bating, pickling, drenching, and degreasing, using diagrams and notes.</li> <li>• List all the chemicals involved in each of the processes mentioned above using tables and charts.</li> <li>• Explain the properties of each chemical used in the beam house/pre-tanning processes using notes, charts, and examples.</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc Ship construction diagrams Multimedia aids etc</p>			
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<b>General Objective 3.0: Understand the chemistry of Tanning</b>						
7-9	<p>3.1 Describe the Tanning process.</p> <p>3.2 List the steps involved in the following tanning processes:</p> <p>i Vegetable Tanning</p> <p>ii Mineral Tanning such as Chrome, Aluminum</p> <p>iii Aldehyde Tanning</p> <p>iv Synthetic Tanning</p> <p>v Oil Tanning</p> <p>vi Other Tannages</p> <p>3.3 List the chemicals involved in different tanning</p> <p>3.4 Explain the functions of 3.3 above.</p> <p>3.5 Explain the properties of chemicals involved in different tanning processes.</p> <p>3.6 Define IEP (Iso Electric Point)</p> <p>3.7 Explain the importance of tanning. Explain the chemical reaction involved in each of the tanning Processes in 3.2 above</p> <p>3.9 List the chemicals for Basification</p> <p>3.10 Explain the process of Basification.</p>	<ul style="list-style-type: none"> <li>Describe the tanning process using notes, diagrams, and flow charts.</li> <li>List the steps involved in vegetable tanning, mineral tanning (chrome, aluminum), aldehyde tanning, synthetic tanning, oil tanning, and other tannages using tables and charts.</li> <li>List the chemicals involved in different tanning processes using charts and examples.</li> <li>Explain the functions of the chemicals used in tanning processes using diagrams and notes.</li> </ul> <p>Explain the properties of chemicals involved in different tanning processes using charts and illustrations.</p> <ul style="list-style-type: none"> <li>Define IEP (Iso Electric Point) using notes and examples.</li> <li>Explain the</li> </ul>	<p>Textbooks</p> <p>Journals</p> <p>Internet</p> <p>Computer</p> <p>Projector</p> <p>White Board</p> <p>Marker</p> <p>Charts</p>			

	<p>3.11 Define basicity</p> <p>3.12 Explain the importance of basicity in chrome tanning.</p> <p>3.13 List the chemicals for Masking</p> <p>3.8 Explain the process of Masking.</p>	<p>importance of tanning using case studies and illustrations.</p> <ul style="list-style-type: none"> <li>• Explain the chemical reactions involved in each tanning process mentioned above using diagrams and flow charts.</li> <li>• List the chemicals used for basification using charts and tables.</li> <li>• Explain the process of basification using notes and illustrations.</li> <li>• Define basicity using notes and examples.</li> <li>• Explain the importance of basicity in chrome tanning using diagrams and case studies.</li> </ul> <p>List the chemicals used for masking using charts and examples.</p> <ul style="list-style-type: none"> <li>• Explain the masking process using diagrams, flow charts, and notes.</li> </ul>				
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**GENERAL OBJECTIVE 4.0: Understand the chemical reaction of processes in Tan-yard**

10-12	<p>4.1 Define Neutralization.</p> <p>4.2 Explain the process of Neutralization.</p> <p>4.3 List the Chemicals used in Neutralization</p> <p>4.4 Discuss the problem associated with incomplete neutralization of Wet-blue Leathers.</p> <p>4.5 Define Stripping and clearing of vegetable Tanned Leather.</p> <p>4.6 List types of stripping and clearing</p> <p>4.7 List the Chemicals used in Stripping and Clearing.</p> <p>4.8 Explain the reaction of tannic acid in stripping Explain the chemical reaction in Clearing</p> <p>4.10 Explain the importance of Stripping and Clearing process of vegetable Tanned Leather,</p> <p>4.11 Define Combination Tannage.</p> <p>4.12 List types of Combination Tannage.</p> <p>4.13 Explain the purpose of</p>	<ul style="list-style-type: none"> <li>• Define neutralization using notes and examples.</li> <li>• Explain the process of neutralization using diagrams and flow charts.</li> <li>• List the chemicals used in neutralization using charts and tables.</li> <li>• Discuss the problems associated with incomplete neutralization of wet-blue leathers using examples and case studies.</li> <li>• Define stripping and clearing of vegetable-tanned leather using notes and illustrations.</li> <li>• List types of stripping and clearing using charts and examples.</li> <li>• List the chemicals used in stripping and clearing using tables and diagrams.</li> <li>• Explain the reaction of</li> </ul>	<p>Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc</p>			
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	<p>Combination Tannage</p> <p>4.14 Explain the properties of Combination Tannage.</p> <p>4.15 Explain the interaction of collagen and the chemicals.</p>	<p>tannic acid in stripping using flow charts and illustrations.</p> <ul style="list-style-type: none"> <li>• Explain the chemical reactions in clearing using diagrams and notes.</li> <li>• Explain the importance of stripping and clearing in vegetable-tanned leather using examples and illustrations.</li> <li>• Define combination tannage using notes and examples. List types of combination tannage using charts and tables.</li> <li>• Explain the purpose of combination tannage using diagrams and notes.</li> <li>• Explain the properties of combination tannage using charts and illustrations.</li> <li>• Explain the interaction of collagen with</li> </ul>				
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		chemicals using diagrams and flow charts.				
<b>General Objective 5.0: Understand the concept of Dyes and Fatliquor</b>						
13-15	<p>5.1 Define Dyes</p> <p>5.2 Explain the chemical constitution of Dyes.</p> <p>5.3 List the different classes of Dyes.</p> <p>5.4 Differentiate between Natural and Synthetic Dyes.</p> <p>5.5 Describe the chemistry of dye application</p> <p>5.6 Define Fatliquor</p> <p>5.7 List different types of Fatliquors</p> <p>5.8 Explain the chemical constitution of Fatliquor</p> <p>5.9 Describe the chemistry of Fatliquor application.</p>	<ul style="list-style-type: none"> <li>• Define dyes using notes and examples.</li> <li>• Explain the chemical constitution of dyes using diagrams and charts.</li> <li>• List the different classes of dyes using tables and examples. Differentiate between natural and synthetic dyes using charts and illustrations.</li> <li>• Describe the chemistry of dye application using diagrams and flow charts.</li> <li>• Define fatliquor using notes and examples.</li> <li>• List different types of fatliquors using charts and tables.</li> <li>• Explain the chemical constitution of fatliquors using diagrams and examples.</li> <li>• Describe the chemistry of fatliquor application using flow charts and</li> </ul>	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Internet etc			

illustrations.

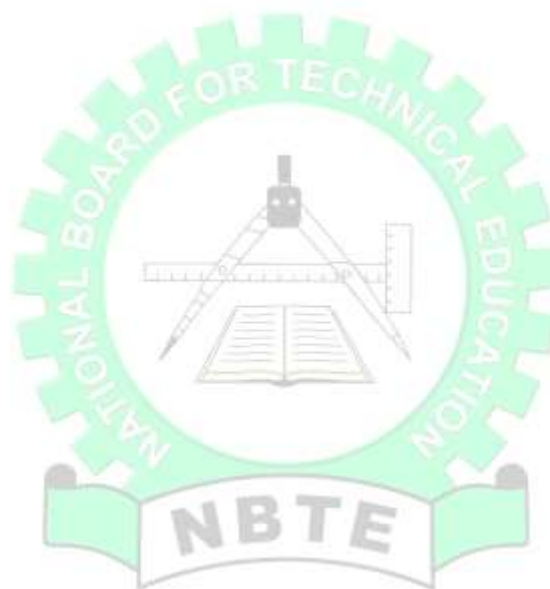
**Course Assessment:**

Course work: 20%

Test/Assignments: 20%

Examination: 60%

**Total: 100%**



## LIST OF MINIMUM RESOURCES

## A. Footwear Workshop

S/No	Description of Equipment/Machines	Quantity
1	Flat Bed Industrial Sewing Machine	10
2	Roughing Filling Machine	2
3	Sole attaching Machine	4
4	Arm Cylinder stitching Machine	4
5	Shoe Lasts	200
6	Heat Setting Machine	2
7	Stamping Machine	2
8	Lasting Pincers	60
9	Mallets	60
10	Scissors	60
11	Pinches sets	60
12	Cutting Knives	60
13	Skiving Knives	60
14	Skiving Machines	2
15	Clicking Machines	2
16	Back part Molding Machine	2
17	Fore Part Lasting Machine	2
18	Hammer	60
19	Insole Molding Machine	2
20	Zig-Zag Sewing Machine	2

## B. Tannery Workshop

S/No	Description of Equipment/Machines	Quantity
1	Tanning drum	4
2	Beam	4
3	Fleshing Machine	1
4	Setting out Machine	1
5	Togglng frame	1
6	Buffing machine	1

7	Glazing machine	1
8	Plating/Embossing Machine	1
9	Roto-press	1
10	Spray gun	3
12	Compressor	2
13	Spray Cabin	1
14	Drying Cabin	1
15	Togglng Pegs	200
15	Weighing scale 100kg	1
17	Weighing scale 1000kg	1
18	Fleshng Knives	5
19	Plastic bowls 30 Liters	20
20	Measuring cylinder 1000mls	5
21	Trimming knives	20
22	Thickness gauge	3
23	Roll of summon paper	1

### C. Quality Control Laboratory

S/No	Description of Equipment/Machines	Quantity
1	Tensometer	1
2	Flexometer	2
3	Lasso meter	2
4	Kubelka (water absorption )	3
5	Rub fastness tester	2
6	Thickness gauge	2
7	Kjeldal apparatus	2
8	Ovens	2
9	Water baths	2
10	Water Vapor testing apparatus	1
11	Milling machine	1
12	Distiller	1
13	Soxhlet extraction set	1
14	Shrinkage measurement apparatus	2

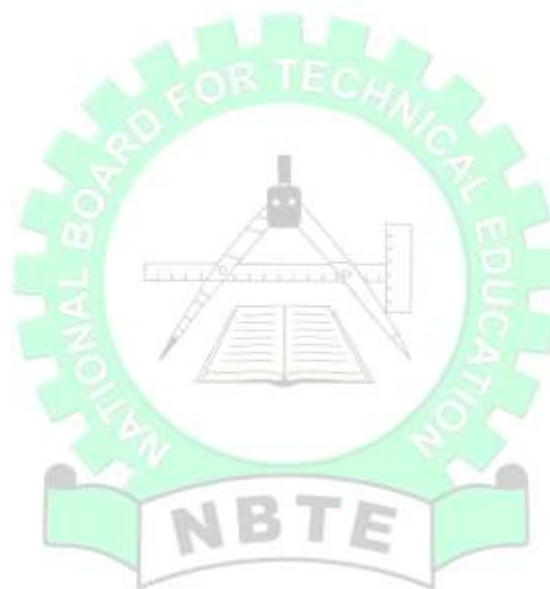
15	Furnace	1
16	Form extractor	1
17	Digital weighing balance	4
18	Vacuum pump	1
19	Glass wares	
	100ML Conical Flask	30
	250mls	30
	500mls	30
	100ml Beakers	30
	250ml	30
	500ml	30
	100ml measuring cylinders	30
	250ml	30
	500ml	30
	Test tubes	60
	Round button flask (250)	10
	Round button flask (500)	10
	Burettes	30
	Mechanical shakers	4
	Burcher funnel	4
	Fumes Assorted	20
	Separating Flask	5
	Mechanical Stirrer100	5
	Thermometers	4
	Fire Extinguishers	5



**D. Hides and Skins Improvement Laboratory**

S/No	Description of Equipment/Machines	Quantity
1	Slaughter Hanger	2
2	Flaying Knives	20
3	Steel Sharpener	20
4	Filling Machine	1
5	Compressor (mobile)	1
6	Manual Pump	2

7	Dressing Tables	2
8	Initial Ripping Knives	20
9	Dagger/Cutlass	5



**LIST OF WORKSHOP PARTICIPANTS**

S/N	Name	Contact Address	Email Address
1.	Prof. Paul Mamza	Ahmadu Bello University, Zaria	pmamza@abu.edu.ng
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