

PHARMACISTS COUNCIL OF NIGERIA (PCN)



PHARMACY TECHNICIANS TRAINING MANUAL

REVIEWED YEAR 2005

1.0 **INTRODUCTION:**

- 1.1 Pharmacists Council of Nigeria (PCN) is empowered by the PCN Decree 91 of 1992 to determine the standards of knowledge to be attained by persons seeking to practice pharmacy. PCN also has the right to make rules for the training and practice of suitable persons in pharmaceutical methods (sections 1 (1) (a) and 21 (1), PCN Decree 91 of 1992).
- 1.2 The training and practice of Pharmacy Technicians is further covered by the provision of section 1 (1) (d) which empowers PCN to regulate and control the practice of the profession in all aspects and ramifications.
- 1.3 Over the years, PCN has been responsible for the development of guidelines and curriculum for the training of this sub-cadre, accreditation of the training institutions and supervision of the final qualifying examinations. With the creation of Education and Training Department by the PCN, the curriculum has been reviewed first in 2002, and being an on going process, is now being reviewed in 2004.
- 1.4 In reviewing the last edition of the PTTM, the following has been recorded as landmark progress:
 - a) Only one sub-cadre-**Pharmacy Technician** is recognized in the profession; (all the Pharmacy Assistants are expected to have taken the conversion course by 2007).
 - b) Council had conducted accreditation and re-accreditation exercise of all schools handling Pharmacy Technicians training.
 - c) Ten (10) schools have been fully accredited, eight (8) suspended while seven (7) have provisional status.
 - d) Have a policy for the review of the guidelines from time to time.
 - e) Council had developed conversion course guidelines for the Pharmacy Assistants.
 - f) Qualified Pharmacy Technicians are now being registered by PCN and their practice monitored as appropriate;

- g) Council had organized a national training workshop for trainers/supervisors of Pharmacy Technicians with the aim of harmonizing the training programme.
- h) Council had stipulated a dress-code for this sub-cadre.

This Training Manual is the product of intensive and extensive work by the Council's Education Committee in sustenance of the above achievement and improving on them.

2.0 **Training Objectives:**

- (i) To train suitably qualified persons in the basic knowledge of handling simple medicines for use at grass-root level under the supervision of a registered Pharmacist.
- (ii) To train suitable persons to the level of rendering assistance to registered pharmacists.

3.0 **GUIDELINES FOR ESTABLISHMENT OF PTPP:**

- 3.1 No Pharmacy Technicians Training Programme shall be established without reference to the Council.
- 3.2 Any School of Health Technology or other training Institution wishing to embark on the Pharmacy Technicians Training Programme shall apply for the accreditation using form PT1 along with the prescribed fee and shall have the following minimum standards:
 - i) A dispensing laboratory with adequate stock of chemicals, suitably equipped with balances, facilities for heating, potable water, supply of electricity etc, (list of equipment required are shown in Form PT2).
 - ii) A complete set of Computer with relevant software in stock keeping and patient records.
 - iii) At least three (3) full time pharmacists, to teach **Actions and uses of Drugs, Elementary Dispensing (Theory and Practical) and Principles of Pharmacy Technician Practice;**
 - iv) A full fledged department for Pharmacy Technicians training with **a registered Pharmacist as the head of the department.**

3.3 An accreditation Panel appointed by the Pharmacists Council of Nigeria shall visit each School of Health Technology or any other training Institution to ensure that the minimum standards prescribed by the Council have been met, after which an approval for the use of this manual shall be given.

3.4 After accreditation by the Council, the Schools of Health Technology or other training Institutions will be monitored from time to time to ensure compliance to the application of the training manual.

3.5 **Admission Guidelines**

3.5.1 **Entry Requirement**

3.5.1.1 **For New Students**

For admission, a candidate should have at least four (4) credits which must include chemistry, biology, mathematics and English at GCE, WASC or SSSC of WAEC or NECO at not more than three (3) sittings.

3.5.1.2. **Holders of Pharmacy Assistant Certificate**

3.5.1.2.1. Holders of Pharmacy Assistant certificate shall undergo at least two (2) years work experience post-graduation before applying for the Pharmacy Technicians Conversion Programme.

3.5.2 **Duration of Course**

3.5.2.1 This shall be three (3) years.

Comprising of first one and half years in classroom, next six months in Hospital for a practical experience and the last one year in class and laboratory.

3.5.2.2 The Conversion Programme shall be for a duration of one (1) year.

3.5.3 Admission Quota

3.5.3.1 Normally a maximum number of ten (10) students shall be admitted annually.

3.5.4 Indexing Procedure

Schools shall verify their students' entry qualification(s) not later than six months after admission and present the students for indexing by Council using the approved forms and paying the prescribed fees.

4.0 Registration and Annual Permit

4.1 A qualified Pharmacy Technician shall apply using the approved form, immediately after the release of approved examination result, for registration with Council and obtain a certificate of registration, and an annual permit.

4.2 Annual Permit is issued annually to Pharmacy Technician to qualify him to work in that particular year.

4.3 The Certificate of registration and annual permit are issued subject to payment of prescribed fees as may be determined by Council from time to time.

4.4 The Council shall maintain a register for these pharmacy technicians.

5.0 CURRICULUM

Subjects

- 1) Introduction to Basic Human Biology
- 2) Actions and Uses of Common Medicines
- 3) Elementary Dispensing – Theory
- 4) Elementary Dispensing – Practical
- 5) Principles of Pharmacy Technician Practice
- 6) Introduction to Components of Primary Health Care
- 7) Six (6) months Hospital Work Experience

Note: Each school may develop and teach the basic science subjects, Mathematics and English Language in the first year of admission.

5.1 Introduction to Basic Human Biology

5.1.1 Objectives

- 5.1.1.1 At the end of the course, the students should have a good understanding of how the human body works;
- 5.1.1.2 He should be able to distinguish between a living and a non-living thing;
- 5.1.1.3 He should be able to describe and differentiate plant cells from animals cells;
- 5.1.1.4 He should be able to understand elementary metabolic principles;
- 5.1.1.5 He should be able to understand essential features of human organs and related functions.

5.1.2 Course Content

5.1.2.1 **Cell structure and functions;** of plants and animals

- 5.1.2.1.1 The cell as a unit (different types of cells from plants and animals);
- 5.1.2.1.2 Tissues (different types of tissues from different organs; (all this should be treated from plant and animal kingdoms);
- 5.1.2.1.3 Cell constituents;
- 5.1.2.1.4 The importance of water to all living things;
- 5.1.2.1.5 Photosynthesis, osmosis, diffusion, absorption;
- 5.1.2.1.6 Elementary consideration of the general anatomy of leaves, roots, stems and flowers;
- 5.1.2.1.7 Respiration, transpiration and general excretion.

5.1.2.2 **Animal Organs**

5.1.2.2.1 **The Alimentary Canal;**

An elementary treatment of its anatomy and physiology.
Food digestion, absorption and excretion; functions of the kidney and the bladder.

5.1.2.2.2 **Heart and Blood Vessels**

Structures and functions, of the heart circulation of blood, elementary consideration of blood pressure controls. Blood composition and functions. The blood as the transport medium in the body. Blood cells and their functions. Other components of the blood.

5.1.2.2.3 **Central Nervous Systems**

Elementary consideration of the nerve as a unit, reflex control, autonomic nervous system, sensation, different parts of the brain.

5.1.2.2.4 **Endocrine System (Ductless Organs)**

The different types of endocrine organs, elementary consideration of the functions of endocrine organs e.g. pancreas and thyroid glands.

5.1.2.2.5 **Reproduction in Animals**

Elementary consideration of human embryology, functions of the reproductive organs, cycle e.tc.

5.1.2.2.6 **Nutrition**

Balanced and unbalanced diets. Sources of different foods. Malnutrition and under-nutrition. Causes and prevention of such conditions (malnutrition and under-nutrition).

5.1.2.3 **Some Common Diseases**

5.1.2.3.1 **Diseases Caused by Housefly and Mosquito**

Feeding and life cycle of the housefly and mosquito with emphasis on spread of diseases, such as typhoid, dysentery and malaria.

5.1.2.3.2 **Water Borne Diseases**

E.g. Guinea worm, schistosomiasis, amoebic dysentery, etc.

5.2 **Actions and Uses of Common Medicines**

5.2.1 **Objectives**

At the end of the course, the students should be able to:

5.2.1.1 Describe the main sources of crude and derived medicines;

5.2.1.2 Discuss the elementary uses and actions of commonly used medicines;

5.2.1.3 Have a good understanding of the essential drug concept;

5.2.1.4 Describe common medicines used in the various body system e.g. Anti-diarrhea and anti-malaria;

5.2.1.5 Discuss elementary concepts of drug stability and expiration vis-à-vis the effect of environmental factors such as – temperature, light, humidity etc. and also the life of re-constituted medicines and vaccines.

5.2.1.6 Detect changes in colour, odour, taste and texture of common medicines.

5.2.1.7 Describe the side effects of common medicines.

Note: The student should acquire a basic knowledge of the actions and uses of medicines in the Essential Drug List.

5.2.2 **Course Content**

5.2.2.1 **Introduction**

Definition of the term “medicine”. Main sources of common medicines with examples from animal, plant and mineral origin. An elementary consideration of the fate of common medicines in the body.

5.2.2.2 **Classification of Drugs**

An elementary consideration of the classification of common medicines according to their uses e.g. antimalarias.

5.2.2.3 **Routes of Administration**

The following should be taught with examples: Disadvantages and Advantages of oral and parenteral routes (i.m., i.v., s.c.) topical, sublingual, rectal etc.

5.2.2.4 **Classification of Medicines Based on Action on Body**

Systems

In this section, the students shall be exposed to the effects of common medicines in the following systems:

5.2.2.4 .1 **Alimentary System**

Antacids, antispasmodics, purgatives, adsorbents and anti-diarrheas.

5.2.2.4.2 **Cardiovascular System**

Antihypertensives including diuretics.

5.2.2.4.3 **Respiratory System**

Stimulants, expectorants and cough suppressants. Common medicines used in the treatment of asthma and other bronchial disorders.

5.2.2.4.4 **The Eye**

Anti-inflammatory and anti-microbial eye preparations.

5.2.2.4.5 **The Nervous System**

General and local anaesthetics, hypnotics, sedatives, tranquilizers, anticonvulsants, analgesics and antidepressants.

5.2.2.5 **Rational Use of Common Medicines**

Objectives

At the end of this programme, the trainee should be able to list the causes of irrational medicines use of common medicines and how to address these in their practice.

Course Content

5.2.2.5.1 Knowledge of the use of medicines in Essential

Drugs List;

5.2.2.5.2 Appropriate selection of common medicines based on accurate diagnosis.

5.2.2.5.3 Choice of common medicines relevant to each problem by their generic names;

5.2.2.5.4 Factors promoting effective dispensing e.g. dosage regimen, route and regimen administration, quantity prescribed and duration of treatment, retrieval of common medicines and labeling.

5.2.2.5.5 Economic consideration in the common medicines selection.

5.2.2.5.6 Factors affecting compliance e.g. patient characteristics, patient-health cares interaction, the disease, the medication.

5.2.2.6 **Selection of Essential Drugs**

- I. Common Medicines adequate for each problem by their generic names;
- II. Use of the Nigerian Essential Drug List (EDL)
- III. Collection of Data for the EDL

5.3 **Elementary Dispensing - Theory**

5.3.1 **Objectives**

5.3.1.1 The objective of the course is to equip the students with basic requirements for practical dispensing;

5.3.1.2 The students should also be familiar with terminology used in prescribing and dispensing.

- 5.3.1.3 He should have a working knowledge of simple arithmetic calculations.
- 5.3.1.4 He should have a working knowledge of the procedures and operations relating to packaging of medicines.
- 5.3.1.5 He should, also, at the end of the course be able to keep records of medicines.

5.3.2 **Course Contents**

5.3.2.1 **Dispensing**

- 5.3.2.1.1 General description of common pharmaceutical terms and abbreviations;
- 5.3.2.1.2 Prescription concepts and reading of prescriptions;
Essential components of prescriptions;
- 5.3.2.1.3 Simple calculations in dispensing;
- 5.3.2.1.4 Types of equipment used in dispensing;
- 5.3.2.1.5 Storage and storage facilities.

5.3.2.2 **Drug Revolving Funds (DRF)**

- 5.3.2.2.1 **The Concept of Drug Revolving Fund (DRF)**
- 5.3.2.2.2 **Advantages of the Drug Revolving Fund**
- 5.3.2.2.3 **Some Reasons Why Drug Revolving Funds May Fail**
- 5.3.2.2.4 **Steps for Setting Up A Drug Revolving Fund**
- 5.3.2.2.5 **Operation of Drug Revolving Fund**

5.3.2.3 **Steps for Ordering common medicines**

5.3.2.4 **Steps for Stocking common medicines**

5.3.2.5 **Storage**

5.3.2.6 **Steps Involved in Issuing common medicines**

5.3.2.7 **Quantifying Common Medicines Needed by Requesting Units:**

5.3.2.8 **Steps Involved in Supplies Management**

5.4 **Elementary Dispensing-Practical**

5.4.1 **Objective**

- To expose the students to the different types of preparations in pharmaceuticals and be able to differentiate them i.e. solutions, syrups, suspensions, tablets, creams, ointments, etc.
- To expose them to the use of common equipment use in pharmacy.
- To expose them to use of measurements to obtain accurate weighing/filling.
- To prepare them for safe dispensing of medicines.
- To improve their communication skill
- To expose them to the use of Computer.

5.4.2 **Course Content**

- (I) Measuring and weighing of galenicals.
- (II) Preparation of simple syrups, solutions, ointments.
- (III) Identification of the various preparations available using registered products from Coys.
- (IV) Labeling for external and oral use.
- (V) Exposure to use of dispensing materials.
- (VI) Identifying the various packaging materials available for different preparations.
- (VII) Cleaning and washing of Pharmaceutical containers for sterile and non-sterile products.
- (VIII) Laboratory Dispensing of Medicines on Essential Drugs List for Primary Health Care.
- (IX) Mode of addressing patients.
- (X) Use of Computer in store-keeping, and keeping of patient records.

5.5 Principles of Pharmacy Technician Practice

5.5.1 Objectives

5.5.1.1 To educate the student on the roles and functions of Pharmacists, Pharmacy Technicians and other healthcare personnel in the health care delivery system and interpersonal relation.

5.5.1.2 To emphasize the implication of violating the rules.

5.5.2 Course Content

- 5.5.2.1 Definition of Pharmacist (functions and roles of Pharmacists);
- 5.5.2.2 Definition of a Pharmacy Technician (functions and roles vis-à-vis his relationship to the Pharmacist);
- 5.5.2.3 Legal limitations of a Pharmacy Technician;
- 5.5.2.4 Legal definition of poison as it relates to pharmacy.
- 5.5.2.5 Relationship between the Pharmacy Technician and other Health Workers;
- 5.5.2.6 Relationship between the Pharmacy Technician and the patient.
- 5.5.2.7 A general discussion on the need for maintenance of good conduct and ethics.
- 5.5.2.8 Presentation of good image and self-discipline e.g. **NO Smoking in the Pharmacy.**

Note: The need to be neat and properly dressed in white short-sleeved, overalls (white coat) with blue collar, a name-tag and designation (e.g. Mr. O. Joe, P. Technician) to be made, compulsory in training and practice.

5.6 Introduction To Components Of Primary Health Care (PHC)

5.6.1 Objectives

At the end of this programme the trainee shall be able to demonstrate in his/her practice, an understanding of the health problems common in the community and to make appropriate referrals to secondary health institutions.

5.6.2 **Course Content**

5.6.2.1 Introduction to components of Primary Health Care should include:

- I. Health Education
- II. Water and Sanitation
- III. Maternal and Child Welfare and Family Planning
- IV. Treatment of Common Ailments
- V. Mental Health
- VI. Dental Health
- VII. Care for the aged
- VIII. ORT

5.6.2.2 **First Aid**

- I. Elementary working knowledge of first aid;
- II. Drugs used in first aid;
- III. Antidotes used in first aid.

6.0 **CONDUCT OF EXAMINATIONS**

6.1 **Procedure For Appointing External Examiners**

6.1.1 A data bank of External Examiners shall be maintained by Council. An External Examiner shall be assigned to a school and he/she shall be informed about the examination details well in advance. No Examiner shall examine in his State of Origin or where he or she works or had worked.

6.1.2 It shall be the duty of each school to apply to Council for an External Examiner not later than four (4) weeks to the scheduled final examinations.

6.2 **Qualifications of External Examiners**

He or she shall be a Pharmacist, of not less than 10 years post registration with experience in training programme. He/she shall possess high integrity and wide experience. However, Pharmacists who teach in Schools of Health Technology with not less than five (5) years experience in teaching shall be given preference.

6.3 **Functions for External Examiner**

The external examiner shall;

- 6.3.1 Moderate the questions;
- 6.3.2 Be provided with marking schemes;
- 6.3.3 A report of the examination shall be sent to the Council not later than two (2) weeks after the examinations;
- 6.3.4 Have access to all answer scripts;
- 6.3.5 Conduct oral examinations;
- 6.3.6 Examine the qualifications of students;
- 6.3.7. Report on the structure of the school and its staff vis-à-vis the number of students;
- 6.3.8 No External Examiner may conduct more than one examination for the school (rotation rule shall be applied).
- 6.3.9 Act as Chief Invigilator.

6.4 **Remuneration of External Examiners**

- 6.4.1 The Training Institution shall be responsible for the Examiner's accommodation/feeding throughout his stay;
- 6.4.2 PCN shall be responsible for the transportation and the honorarium of the External Examiner.

6.5 **Pass Marks**

- 6.5.1 Elementary Dispensing Practical - 50%
- 6.5.2 Other Subjects - 40%

6.6 **Resit/fail/withdraw**

- 6.6.1 Any student who fails three subjects or less shall resit the examinations in the subjects failed.
- 6.6.2 Any student who fails more than three (3) subjects shall repeat the entire examination.
- 6.6.3 Any student who repeats more than two (2) times shall be asked to withdraw from the programme.

6.7 Data Bank for External Examiners

- 6.7.1 All Directors of pharmaceutical Services or their representatives not below the rank of Principal Pharmacist;
- 6.7.2 Deputy or Asst. Directors in University Teaching/Specialist Hospitals;
- 6.7.3 Fellows of PSN with experience in training programme;
- 6.7.4 Pharmacists in the academia not below the rank of Lecturer 1
- 6.7.5 Teachers in Schools of Health Technology.

7.0 ACCREDITED SCHOOLS OF HEALTH TECHNOLOGY

S/NO	SCHOOL	STATUS
1.	School of Health, Zawan, Jos, Plateau State	Full Accreditation
2.	School of Health Technology, Offa, Kwara State	Full Accreditation
3.	School of Health Technology, Yaba, Lagos State	Full Accreditation
4.	School of Health Technology, Aba, Abia State	Full Accreditation
5.	School of Hygiene, Eleyele, Ibadan, Oyo State	Full Accreditation
6.	School of Health Technology, Port Harcourt, Rivers State	Full Accreditation
7.	School of Health Technology, Oji River, Enugu State	Full Accreditation
8.	School of Health Technology, Tudun Wada, Kaduna State	Full Accreditation
9.	School of Health Technology, Ijero-Ekiti, Ekiti State	Full Accreditation
10.	School of Health Technology, Kano, Kano State	Provisional Accreditation
11.	School of Health Technology, Minna, Niger State	Provisional Accreditation
12.	School of Health Technology, Gwadabawa, Sokoto State	Provisional Accreditation
13.	School of Health Technology, Kankia, Katsina State	Provisional Accreditation
14.	School of Health Technology, Jega, Kebbi State	Provisional Accreditation
15.	Nigerian Army Medical Corps/School, Ojo, Lagos State	Full Accreditation
16.	School of Health Technology, Tsafe, Zamfara State	Provisional Accreditation
17.	N.K.S.T College of Health Technology, Mkar, Gboko, Benue State	Provisional Accreditation
18.	School of Health Technology, Ughelli, Delta State	Full Accreditation
19.	School of Health Technology, Calaber, Cross Rivers State	Provisional Accreditation

LIST OF LABORATORY EQUIPMENT REQUIRED FOR
PHARMACY TECHNICIANS PROGRAMME (FORM PT2)

S/NO	ITEMS	MIN. QTY.	QTY AVAILABLE
1.	Water Baths	4	
2.	Bunsen Burners	15	
3.	Tripod Stands	10	
4.	Mortars and Pestles (Glass and Porcelain types)	20 each	
5.	Porcelain Tiles	40	
6.	Spatulae (Stainless Steel, various sizes)	5 each	
7.	Weighing Balances	4	
8.	Glass Rods	15	
9.	Glass Funnels (various sizes)	20	
10.	Shaker	3	
11.	Drying Ovens	2	
12.	Refrigerations/Deep Freezers	2	
13.	Microscopes	2	
14.	Hand Dryers	2	
15.	Evaporating Dishes (various sizes)	20	
16.	Measuring Cylinders (Metric System Calibration) 10ml, 50ml, 1ltr.	5 each	
17.	Beakers 250ml, 500ml, 1ltr.	20	
18.	Conical Flasks (various sizes)	20	
19.	Test Tubes and Racks	20	
20.	Burettes	20	
21.	Pipettes (small, medium, large)	10 each	
22.	Retort Stands	20	
23.	Retort Clamps	20	
24.	Dispensing Bottles (60ml, 100ml, 200ml)	20 each	
25.	Ointment Jars	15	
26.	Powder Boxes	15	
27.	Filter Papers (various sizes)	5 Pkts each	
28.	Glass Dispensing Measures (various sizes and in metric calibration)	10	
29.	Wooden Spatulae	10	
30.	Plastic Spatulae	15	
31.	Grease Proof Paper (various sizes)	4 Pkts	
32.	Water Distilling Kit	1	
33.	P H Meter	1	
34.	Flat Bottom Flasks (various sizes)	15	

35.	Round Bottom Flasks (various sizes)	10	
36.	Dissection Set	3	
37.	Dissection Boards	5	
38.	Porcelain Dispensing Sinks	4	
39.	Organic Reagent Disposal Jar	2	
40.	Counting Trays	5	
41.	Hand-gloves	1 Pkts	
42.	Gas Cooker	1	
43.	Mixers (various types)	1 each	
44.	Metric System Calibrated Stainless Steel Buckets	3	
45.	Stainless Steel Cooking Utensils (various sizes) 5, 10 and 15 Litres	2 each	
46.	Sieves (various sizes)	2 each	
47.	First Aid Box	1	
48.	Recommended Laboratory Overalls for each student and staff		
49.	Drug Transfer Trolley	2	
50.	OFFICIAL BOOKS/REFERENCES – B.P, B.P.C, U.S.P, B.N.F, EMDEX, TUTORIAL PHARMACY, DISPENSING FOR PHARMACY STUDENTS, MIMS AFRICA, MARTINDALE, PHARMACY AND DRUG LAWS IN NIGERIA		

80 **PCN OFFICES:**

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|-----|--|--|
| 8.1 | Pharmacists Council of Nigeria, 8.2
Medical Compound,
Off Edmund Crescent,
Yaba,
Lagos State.
Telephone: 01-7740894 | Pharmacists Council of Nigeria,
Rooms 815-818, Floor 8,
Federal Secretariat,
Katsina Road,
Kano State.
Telephone: 08033276959 |
| 8.3 | Pharmacists Council of Nigeria, 8.4
Plot 7 & 9 Idu Industrial Area,
Abuja.
Telephone: 08033053467 | Pharmacists Council of Nigeria,
8, Temple Avenue,
Off, Michael Okpara Avenue,
Enugu State.
Telephone: 08033276958 |

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PHARMACY TECHNICIANS PROGRAMME (FORM PT2)

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2.	Bunsen Burners	15	
3.	Tripod Stands	10	
4.	Mortars and Pestles (Glass and Porcelain types)	20 each	
5.	Porcelain Tiles	40	
6.	Spatulae (Stainless Steel, various sizes)	5 each	
7.	Weighing Balances	4	
8.	Glass Rods	15	
9.	Glass Funnels (various sizes)	20	
10.	Shaker	3	
11.	Drying Ovens	2	
12.	Refrigerations/Deep Freezers	2	
13.	Microscopes	2	
14.	Hand Dryers	2	
15.	Evaporating Dishes (various sizes)	20	
16.	Measuring Cylinders (Metric System Calibration) 10ml, 50ml, 1ltr.	5 each	
17.	Beakers 250ml, 500ml, 1ltr.	20	
18.	Conical Flasks (various sizes)	20	
19.	Test Tubes and Racks	20	
20.	Burettes	20	
21.	Pipettes (small, medium, large)	10 each	
22.	Retort Stands	20	
23.	Retort Clamps	20	
24.	Dispensing Bottles (60ml, 100ml, 200ml)	20 each	
25.	Ointment Jars	15	
26.	Powder Boxes	15	
27.	Filter Papers (various sizes)	5 Pkts each	
28.	Glass Dispensing Measures (various sizes and in metric calibration)	10	
29.	Wooden Spatulae	10	
30.	Plastic Spatulae	15	
31.	Grease Proof Paper (various sizes)	4 Pkts	
32.	Water Distilling Kit	1	
33.	P H Meter	1	
34.	Flat Bottom Flasks (various sizes)	15	

35.	Round Bottom Flasks (various sizes)	10	
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38.	Porcelain Dispensing Sinks	4	
39.	Organic Reagent Disposal Jar	2	
40.	Counting Trays	5	
41.	Hand-gloves	1 Pkts	
42.	Gas Cooker	1	
43.	Mixers (various types)	1 each	
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45.	Stainless Steel Cooking Utensils (various sizes) 5, 10 and 15 Litres	2 each	
46.	Sieves (various sizes)	2 each	
47.	First Aid Box	1	
48.	Recommended Laboratory Overalls for each student and staff		
49.	Drug Transfer Trolley	2	
50.	Official Books/References – B.P, B.P.C, U.S.P, B.N.F, Emdex, Tutorial Pharmacy, Dispensing for Pharmacy students, MIMS Africa, Martindale, Pharmacy and Drug Laws in Nigeria.		

1.0 **CURRICULUM**

1.1 **Subjects**

- 1.1.1 Introduction to Basic Human Biology
- 1.1.2 Actions and Uses of Common Medicines
- 1.1.3 Elementary Dispensing – Theory
- 1.1.4 Elementary Dispensing – Practical
- 1.1.5 Principles of Pharmacy Technician Practice
- 1.1.6 Introduction to Components of Primary Health Care
- 1.1.7 Six (6) months Hospital Work Experience

Note: Each school may develop and teach the basic science subjects, Mathematics and English Language in the first year of admission.

1.2 **Basic Human Biology**

1.2.1 **Objectives**

- 1.2.1.1 At the end of the course, the students should have a good understanding of how the human body works;
- 1.2.1.2 He should be able to distinguish between a living and a non-living thing;
- 1.2.1.3 He should be able to describe and differentiate plant cells from animals cells;
- 1.2.1.4 He should be able to understand elementary metabolic principles;
- 1.2.1.5 He should be able to understand essential features of human organs and related functions.

1.2.2 **Course Content**

1.2.2.1 **Cell structure and functions;** of plants and animals

- 1.2.2.1.1 The cell as a unit (different types of cells from plants and animals);

1.2.2.1.2 Tissues (different types of tissues from different organs; (all this should be treated from plant and animal kingdoms);

1.2.2.1.3 Cell constituents;

1.2.2.1.4 The importance of water to all living things;

1.2.2.1.5 Photosynthesis, osmosis, diffusion, absorption;

1.2.2.1.6 Elementary consideration of the general anatomy of leaves, roots, stems and flowers;

1.2.2.1.7 Respiration, transpiration and general excretion.

1.2.2.2 **Animal Organs**

1.2.2.2.1 **The Alimentary Canal;**

An elementary treatment of its anatomy and physiology. Food digestion, absorption and excretion; functions of the kidney and the bladder.

1.2.2.2.2 **Heart and Blood Vessels**

Structures and functions, of the heart circulation of blood, elementary consideration of blood pressure controls. Blood composition and functions. The blood as the transport medium in the body. Blood cells and their functions. Other components of the blood.

1.2.2.2.3 **Central Nervous Systems**

Elementary consideration of the nerve as a unit, reflex control, autonomic nervous system, sensation, different parts of the brain.

1.2.2.2.4 **Endocrine System (Ductless Organs)**

The different types of endocrine organs, elementary consideration of the functions of endocrine organs e.g. pancreas and thyroid glands.

1.2.2.2.5 **Reproduction in Animals**

Elementary consideration of human embryology, functions of the reproductive organs, cycle e.tc.

1.2.2.2.6 **Nutrition**

Balanced and unbalanced diets. Sources of different foods. Malnutrition and under-nutrition. Causes and prevention of such conditions (malnutrition and under-nutrition).

1.2.2.3 **Some Common Diseases**

1.2.2.3.1 **Diseases Caused by Housefly and Mosquito**

Feeding and life cycle of the housefly and mosquito with emphasis on spread of diseases, such as typhoid, dysentery and malaria.

1.2.2.3.2 **Water Borne Diseases**

E.g. Guinea worm, schistosomiasis, amoebic dysentery, etc.

1.3 **Actions and Uses of Common Medicines**

1.3.1 **Objectives**

At the end of the course, the students should be able to:

1.3.1.1 Describe the main sources of crude and derived medicines;

1.3.1.2 Discuss the elementary uses and actions of commonly used medicines;

1.3.1.3 Have a good understanding of the essential drugs concept;

- 1.3.1.4 Describe common medicines used in the various body system e.g. Anti-diarrhea and anti-malaria drugs;
- 1.3.1.5 Discuss elementary concepts of medicines stability and expiration vis-à-vis the effect of environmental factors such as – temperature, light, humidity etc. and also the life of re-constituted medicines and vaccines.
- 1.3.1.6 Detect changes in colour, odour, taste and texture of common medicines;
- 1.3.1.7 Describe the side effects of common medicines.

Note: The student should acquire a basic knowledge of the actions and uses of medicines the Essential Drug List.

1.3.2 **Course Content**

1.3.2.1 **Introduction**

Definition of the term “medicines”. Main sources of common medicines with examples from animal, plant and mineral origin. An elementary consideration of the fate of common medicines in the body.

1.3.2.2 **Classification of Drugs**

An elementary consideration of the classification of medicines according to their uses e.g. anti-malarial.

1.3.2.3 **Routes of Administration**

The following should be taught with examples:
Disadvantages and Advantages of oral and parenteral routes (i.m., i.v., s.c.) topical, sublingual, rectal etc.

1.3.2.4 **Classification of Drugs Based on Action on Body Systems**

In this section, the students shall be exposed to the effects of common in the following system:

1.3.2.4 .1 **Alimentary System**

Antacids, antispasmodics, purgatives, adsorbents and anti-diarrhea.

1.3.2.4.2 **Cardiovascular System**

Antihypertensives including diuretics.

1.3.2.4.3 **Respiratory System**

Stimulants, expectorants and cough suppressants. common medicines used in the treatment of asthma and other bronchial disorders.

1.3.2.4.4 **The Eye**

Anti-inflammatory and anti-microbial eye reparations.

1.3.2.4.5 **The Nervous System**

General and local anaesthetics, hypnotics, sedatives, tranquilizers, anticonvulsants, analgesics and antidepressants.

1.3.3 **Rational Use of Common Medicines**

1.3.3.1 **Objectives**

At the end of this programme, the trainee should be able to list the causes of irrational use of common medicines and how to address these in their practice.

1.3.3.1.1 **Course Content**

1.3.3.1.1.1 Knowledge of the use of common medicines in Essential Drugs List;

1.3.3.1.1.2 Appropriate selection of common medicines based on accurate diagnosis.

1.3.3.1.1.3 Choice of common medicines relevant to each problem by their generic names;

1.3.3.1.1.4 Factors promoting effective dispensing e.g. dosage regimen route and regimen administration, quantity prescribed and duration of treatment, retrieval of common medicines and labeling.

1.3.3.1.1.5 Economic consideration in the of common medicines selection.

1.3.3.1.1.6 Factors affecting compliance e.g. patient characteristics, patient-health cares interaction, the disease, the medication.

1.3.3.2 **Selection of Essential Drugs**

- i) Common medicines adequate for each problem by their generic names;
- ii) Use of the Nigerian Essential Drugs List (EDL)
- iii) Collection of Data for the EDL

1.4 **Elementary Dispensing - Theory**

1.4.1 **Objectives**

1.4.1.1 The objective of the course is to equip the students with basic requirements for practical dispensing;

1.4.1.2 The students should also be familiar with terminology used in prescribing and dispensing.

1.4.1.3 He should have a working knowledge of simple arithmetic calculations.

1.4.1.4 He should have a working knowledge of the procedures and operations relating to packaging of medicines.

1.4.1.5 He should, also, at the end of the course be able to keep records of medicines.

1.4.2 **Course Contents**

1.4.2.1 **Dispensing**

1.4.2.1.1 General description of common pharmaceutical terms and abbreviations;

1.4.2.1.2 Prescription concepts and reading of prescriptions;
Essential components of prescriptions;

1.4.2.1.3 Simple calculations in dispensing;

1.4.2.1.4 Types of equipment used in dispensing;

1.4.2.1.5 Storage and storage facilities.

1.5 **Drug Revolving Funds (DRF)**

The trainee will be able to demonstrate understanding of the concept of Drug Revolving Funds, the rationale and operations in sustaining regular supply of drugs;

1.5.1 **The Concept of Drug Revolving Fund (DRF)**

This scheme assumes that the cost of common medicines will be recovered and put in a separate revolving fund, and its proceeds ploughed back for the purchase of more medicines to sustain the system.

1.5.1.1 **Advantages of The Drug Revolving Fund**

- I. Theoretically self-accounting;
- II. It facilitates community participation and self-reliance in health care;
- III. Serves as incentive for rational use of common medicines by community members.

- IV. Promotes accountability in common medicines management;
- V. Facilities availability of common medicines;

1.5.1.2 **Some Reasons Why Drug Revolving Funds May Fail**

- I. Initial (seed) capital is underestimated;
- II. Prices are below replacement costs;
- III. Failure to collect payment for common medicines without equivalent subsidy (e.g. from children, aged or handicapped);
- IV. Delays in cash flow making money received from sales not easily available for subsequent purchase;
- V. Rapid programme expansion for which additional capital funds are not available;
- VI. Losses due to theft of medicines or money, and also due to deterioration of medicines by expiry or spoilage;
- VII. Price increases (i.e. inflation) outstrips expectation;
- VIII. Lack of business orientation to common medicines revolving fund, e.g. money tied-down on medicines, which are not prescribed frequently;
- IX. Lack of careful financial planning and management;

1.5.1.3 **Steps For Setting Up A Drug Revolving Fund**

- I. Discussing with the District or Village Health Committee the potentials of the common medicines revolving fund;
- II. Listing the essential medicines required for the health unit;
- III. Determination of the ordering interval;
- IV. Quantifying the amount of each common medicines needed in an ordering interval;

- V. Costing the common medicines to be ordered;
- VI. Identifying the source(s) of funds to capitalize the fund, i.e. for initial seed stock;
- VII. Explaining to the community the advantages and disadvantages of specific levels of cost recovery (e.g. partial cost recovery, full cost recovery and full plus other cost recovery), and letting the community decide the level of cost they will use.
- VIII. Opening an account book and a separate bank account for the common medicines revolving fund.
- IX. Facilitating the nomination of signatories to the Common Medicines revolving fund account;

1.5.1.4 **Operation of Drug Revolving Fund**

- I. Keeping accurate records, which will include:
 - a) Receipt of medicines;
 - b) Cash sales
 - c) Bank tellers
- II. Lodgment of cash receipts into the safe or bank;
- III. Maintaining petty cash expenses if any;
- IV. Filing receipts;
- V. Filing Issue Vouchers;
- VI. Maintaining cash receipt books;
- VII. Steps involved in opening a bank account;
- VIII. Steps involved in pricing of medicines;

1.5.1.5 **Steps For Ordering Drugs**

- (i) Data collection for estimating medicine requirements;
- (ii) The ordering intervals, i.e. how often to order;
- (iii) The common medicines needed;

- (iv) Calculation of the amount of common medicines needed within a specified ordering interval based on local and seasonal usage (e.g. measles vaccine prior to measles outbreak).
- (v) Completion of medicines requisition form;
- (vi) Calculation of the cost of the medicines ordered.

1.5.1.6 **Steps For Stocking Common Medicines**

- i. Receipt of medicines;
- ii. Keeping record of medicines received;
- iii. Completion of a ledger form for each item (adding the new quantity received to that already in stock).
- iv. Stacking medicines on shelves or in refrigerators as appropriate for each

1.5.1.7 **Storage**

- i. Storage of mixtures, galenicals, ointments, creams;
- ii. Conditions governing storage – temperature, heat and light;
- iii. Labelling of preparations for all purposes;
- iv. First-In-First – Out principles. Use of expiry dates.

1.5.1.8 **Steps Involved In Issuing Common Medicines**

- i. Filing of requisition from requesting unit;
- ii. Evaluating of requisition;
- iii. Issuing of common medicines;
- iv. Balancing ledger-book for each item by subtracting the issued from previous balance;
- v. Ensuring that the receiving unit signs receipt voucher;

1.5.19 **Quantifying Essential Drugs Needed By Requesting Units:**

- i. Determining how often to order common medicines (i.e. ordering intervals)
- ii. Identifying how many people are treated with within the ordering intervals.
- iii. Keeping records of the quantity of medicines used for treatment.

1.6 **Steps Involved In Supplies Management**

- i. Listing the supplies required;
- ii. Ordering the supplies;
- iii. Receiving and stocking supplies;
- iv. Maintaining equipment using a routine maintenance schedule; I
- v. Issuing supplies;
- vi. Maintaining an inventory of expendable and non-expendable material;

1.6.1 **Elementary Dispensing-Practical**

1.6.1.1 **Objective**

- i. To expose the students to the different types of preparations in pharmaceuticals and be able to differentiate them i.e. solutions, syrups, suspension, tablets, cream, ointment, etc.
- ii. To expose them to the use of common equipment use in pharmacy.
- iii. To expose them to use of measurements to obtain accurate weighing/filling.
- iv. To prepare them for safe dispensing of medicines.
- v. To improve their communication skill
- vi. To expose them to the use of Computer.

1.6.1.2 **Course Content**

- (I) Measuring and weighing of galenicals.
- (II) Preparation of simple syrup, solutions, ointment.

- (III) Identification of the various preparations available using registered products from Coys.
- (IV) Labeling for external and oral use.
- (V) Exposure to use of dispensing materials.
- (VI) Identifying the various packaging materials available for different preparations.
- (VII) Cleaning and washing of Pharmaceutical containers for sterile and non-sterile products.
- (VIII) Laboratory Dispensing of Medicines on Essential Drugs List for Primary Health Care.
- (VIII) Mode of addressing patients.
- (IX) Use of Computer in store-keeping, and keeping of patient records.

1.6.1.3 **Principles of Pharmacy Technician Practice**

1.6.1.3.1 **Objectives**

1.6.1.3.1 To educate the student on the roles and functions of Pharmacists, Pharmacy Technicians and other healthcare personnel in the health care delivery system and interpersonal relation.

1.6.1.3.2 To emphasize the implication of violating the rules.

1.6.1.3.2 **Course Content**

1.6.1.3.2.1 Definition of Pharmacist (functions and roles of Pharmacists);

1.6.1.3.2.2 Definition of a Pharmacy Technician (functions and roles vis-à-vis his relationship to the Pharmacist);

1.6.1.3.2.3 Legal limitations of a Pharmacy Technician;

1.6.1.3.2.4 Legal definition of poison as it relates to pharmacy.

1.6.1.3.2.5 Relationship between the Pharmacy Technician and other Health Workers;

1.6.1.3.2.6 Relationship between the Pharmacy Technician and the patient.

1.6.1.3.2.7 A general discussion on the need for maintenance of good conduct and ethics.

1.6.1.3.2.8 Presentation of good image and self-discipline e.g. **NO Smoking in the Pharmacy.**

Note: The need to be neat and properly dressed in white short-sleeved, overalls (white coat) with blue collar, a name-tag and designation (e.g. Mr. O. Joe, P. Technician) to be made, compulsory in training and practice.

1.7 **Introduction To Components Of Primary Health Care (PHC)**

1.7.1 **Objectives**

At the end of this programme the trainee shall be able to demonstrate in his/her practice, an understanding of the health problems common in the community and to make appropriate referrals to secondary health institutions.

1.7.2 **Course Content**

1.7.2.1 Introduction to components of Primary Health Care should include:

- I. Health Education
- II. Water and Sanitation
- III. Maternal and Child Welfare and Family Planning
- IV. Treatment of Common Ailments
- V. Mental Health
- VI. Dental Health
- VII. Care for the aged
- VIII. ORT

1.7.2.2 **First Aid**

- i) Elementary working knowledge of first aid;
- ii) Drugs used in first aid;
- iii) Antidotes used in first aid.

1.8 **Hospital Experience**

This posting is to acquaint the students with the practice in the hospital. They shall be rotated round the various sections of Pharmacy Departments.

1.8.1 **Objective**

1.8.1.1 **Posting**

At the end of the posting, the student should be able to

1.8.1.1.1 Understand her responsibility in the hospital

1.8.1.1.2 Use Computer for data entry on patients

1.8.1.1.3 Use Computer for keeping records in the store
in addition to manual i.e. use of ledger.

1.8.1.1.4 Acquire good communication skill and manners

1.8.1.1.5 Identify common medicines in use

1.8.1.1.6 Label common medicines in use

1.8.1.1.7 Arrangement of medicines in the store