

PROSPECTUS

***DOCTOR OF PHARMACY (PHARMD)
PROGRAM***



***FACULTY OF PHARMACY
UNIVERSITY OF BENIN
BENIN CITY, NIGERIA***

JULY 2023

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PREFACE

The undergraduate pharmacy program commenced in 1970 in the then Department of Pharmacy and Pharmacology, which was part of Faculty of Medicine and Pharmacy of the University of Benin. In December, 1975 it became a School in the College of Medical Sciences. The Senate of the University upgraded the School into a Faculty in October, 1981 but was reverted to the status of a School in October, 1988.

In October 1991, Faculty status was once again restored as a result of the Collegiate System whereby related disciplines in the University were grouped into Colleges on the advice of the National Universities Commission (NUC). The Faculty thus became part of the College of Health Sciences, as the new College was then called. In December 1993, the Collegiate System of the University was scrapped and consequently, the Faculty of Pharmacy emerged as an independent Faculty.

Currently, the Faculty comprises the following Departments which award Master's and Doctorate degrees at postgraduate level:

- Pharmaceutical Chemistry
- Pharmacognosy
- Pharmaceutics and Pharmaceutical Technology
- Pharmaceutical Microbiology and Biotechnology
- Pharmacology and Toxicology
- Clinical Pharmacy & Pharmacy Practice

The Faculty started with a five-year program leading to the award of Bachelor of Pharmacy (BPharm) degree. The Faculty pioneered the six-year Doctor of Pharmacy Degree and three-year Doctor of Pharmacy (Conversion) Program for pharmacists in 2000/2001; there were some procedural set-backs that led to the Faculty to award dual degrees

(BPharm & PharmD) to the regular students after completion of six years. As part of the collaboration between the University, PCN and NAPPSA, the Faculty of Pharmacy was the only centre for the Special Doctor of Pharmacy Degree Program towards capacity building for pharmacy lecturers and preceptors; produced 171 and 244 PharmD graduates in 2017/2018 and 2018/2019 academic sessions respectively.

The National Universities Commission initially approved the Doctor of Pharmacy degree to replace the Bachelor of Pharmacy degree in Nigerian universities in 2007 (NUC/DQA/66 of 10th April 2007) but unexpectedly withdrew it in 2014. The Management Committee of NUC during its 492nd meeting again approved the establishment of Doctor of Pharmacy degree program in Nigerian universities with effect from 2016/2017 academic session (NUC/AS/F04/Vol.1/104 of 1st August 2016). Consequently, following successful NUC resource verification, the Faculty officially got approval for Doctor of Pharmacy degree in 2019/2020 academic session and later full NUC accreditation in March 2023.

This Prospectus contains the Personnel, Regulations, Curriculum, and Quality Assurance tools for the Doctor of Pharmacy six-year program to guide staff, students and other stakeholders. The curriculum is based on NUC/PCN BMAS and will be reviewed when the new NUC CCMAS takes effect. However, students admitted into the PharmD program with this curriculum will also graduate with it.

*Professor Azuka C Oparah, FPCPharm, FPSN, FNAPharm
Dean, Faculty of Pharmacy*



PROF. AZUKA C. OPARAH
Dean, Faculty of Pharmacy

DEAN'S OFFICE



Dr. Jeffrey S. Soni
Assistant Dean



Mr. Christopher I. Iyoha
Faculty Officer



Dr. Vincent O. Imieje
Faculty Exam. Officer



Dr. Monday I. Osarenwinda
PharmD Conv. Coordinator



Dr. Osamuyi H. Uwumarongie
Faculty Admission Officer



Dr. Uyi. M Ogbeide
Faculty Timetable Officer

HEADS OF DEPARTMENT



Prof. Florence
E. Eichie
Pharmaceutics &
Pharmaceutical
Technology



Prof. Stella F.
Usifoh
Clinical Pharmacy &
Pharmacy Practice



Dr. Josephine O.
Ofeimun
Pharmacognosy



Dr. Fabian C.
Amaechina
Pharmacology &
Toxicology



Dr. Emmanuel
E. Odion
Pharmaceutical
Chemistry



Dr. Nosakhare
Oloton
Pharmaceutical
Microbiology &
Biotechnology

Mission

Our mission is to provide innovative pharmacy education, training, research, and professional development.

Vision

Our vision is to be the leading Faculty of Pharmacy for education, research, and innovation in Africa

Core Values

Our core values are excellence, innovation, integrity, professionalism and leadership

OBJECTIVES OF THE FACULTY

The philosophy of the Faculty is to prepare students for responsible and useful lives as educated citizens worthy in character and knowledgeable in the practice of Pharmacy with a flair for excellence. To this end, the educational objectives of the Faculty are:

- i. To offer students the opportunity to study pharmaceutical sciences & pharmacy practice in various departments;
- ii. To conduct undergraduate teaching program that will provide a University experience. These courses will achieve a close relationship between university experience and industrial practice and will produce a more immediately useful entrant to pharmaceutical pursuits. Besides, such a program possesses wider educational and social advantages without conflicting with the broader objectives of university education;
- iii. To conduct research over a wide field and to contribute through research, seminars and symposia to knowledge and application of science to pharmaceutical advancement;

- iv. To conduct postgraduate and continuing education programs;
- v. To render relevant services to the community and to collaborate with other institutions of Pharmacy and other Research institutes both within and outside the country.

DOCTOR OF PHARMACY PROGRAM

NOMENCLATURE

The name of the degree to be awarded under the program shall be Doctor of Pharmacy (PharmD).

PHILOSOPHY

The philosophy of the of the Doctor of Pharmacy degree program is to produce well educated and competent pharmacists that are responsive to social needs.

OBJECTIVES

General Objective

The goal of the program is to produce pharmacists with the right knowledge, skills and attitudes to provide comprehensive pharmaceutical services

Specific Objectives

- At the end of the training, the graduates should be able to:
 - I. Provide comprehensive pharmaceutical care
 - II. Design, develop, formulate safe and effective medicines
 - III. Ensure access to medicines, health related products & devices
 - IV. Promote public health
 - V. Contribute to the development and implementation of national and regional health and medicine policies
 - VI. Manage production and quality assurance of medicines

- VII. Promote rational use of herbal and alternative medicines
- VIII. Function as a leader, manager and entrepreneur
- IX. Engage in operational research
- X. Collaborate with other healthcare professionals
- XI. Become a lifelong learner.

ADMINISTRATION OF THE FACULTY

The Faculty is administered by the Dean who is elected by the Faculty Board of Studies. The Dean holds office on election for tenure of two years and may be re-elected. The main administrative setup consists of the Dean, Assistant Dean, Heads of Departments, Faculty Officer and Chairmen of Committees of the Faculty. The highest decision-making body in the Faculty is the Faculty Board of Studies of which the Dean is the Chairman.

The Assistant Dean is nominated by the Dean and ratified by the Faculty Board for approval of the Vice-Chancellor. The Vice-Chancellor on the recommendation of the Dean appoints Heads of Department. The Head of Department in the Faculty is normally a Professor and is appointed for a three-year term. Acting Heads of Departments (normally those below the rank of a Professor) are usually appointed on a yearly basis.

REGULATIONS GOVERNING THE DOCTOR OF PHARMACY DEGREE

STRUCTURE OF THE PROGRAM

The PharmD degree program consists of 238 credits spread over a six-year period of two semesters per year. The program requires successful completion of

- Didactic (classroom) lectures
- Laboratory practicals
- Blended learning
- Experiential learning (clinical clerkship and industrial training), and
- Project

Clinical Clerkship shall take in selected tertiary and specialist hospitals in Benin City and community pharmacies.

Admission Requirements

In order to be admitted to the Doctor of Pharmacy (PharmD) degree program, a candidate shall satisfy the minimum entry requirements of the University. In addition, the following requirements apply to the Faculty of Pharmacy:

1. 100 level

Candidates must pass English Language, Mathematics, Chemistry, Physics and Biology at credit level in the West African School Certificate (WASC), Senior Secondary School Certificate Examination (SSCE) or its equivalent at not more than two sittings. This is in addition to an acceptable pass in the University Tertiary Matriculation Examination (UTME) and another prescribed assessment by the University.



2. 200 level (Direct Entry)

The following may be admitted:

- a) Candidates with A' Level credits in three science subjects which are Chemistry, Physics (or Mathematics) and Zoology (or Botany or Biology), in addition to the University Tertiary Matriculation Examination (UTME) requirements.
- b) Candidates with acceptable Pharmacy Technician Certificates from institutions accredited by the Pharmacy Council of Nigeria (PCN), in addition to O' Level requirements of passes in Chemistry, Physics, Biology, Mathematics and English Language at, at least credit level in the Senior Secondary School Certificate Examination (SSCE).
- c) Candidates must hold at least a Bachelor's degree (Second Class Hons) from a recognized university in chemistry or the biological sciences or related health related disciplines in addition to UTME requirements may be considered in line with the University policy.

Degree Requirements

Candidates admitted to the PharmD degree course must:

- i) Follow an approved course of study for a minimum of six academic sessions (for those admitted to 100 level) or five academic sessions (for those admitted to 200 level); pharmacy undergraduates of other universities with qualifications approved by the Senate may be permitted to complete the requirements for graduation in the faculty over a period of not less than three academic sessions subsequent to matriculation;
- ii) Comply with such other regulations and requirements as may be prescribed.



All candidates are normally required to attend a minimum of 75% of each prescribed course.

Examination Arrangements

All end-of-course examinations shall take place at the end of the semester. In addition to written examination, course examinations may involve orals and/or practicals.

Exemptions:

- 1□ **Mathematics:** Candidates who have passed Mathematics at Advanced Level (G.C.E.) or H.S.C. or the University 100 level Mathematics courses may be exempted from the Mathematics courses at the 200 level.
- 2□ **Physiology, Anatomy and Biochemistry:** Candidates who have passed these courses at 200 level in the University of Benin, Benin City or degree holders in these subjects may be exempted from these courses as appropriate.
- 3 **General Studies:** Candidates who have already passed the General Studies courses of the University of Benin, Benin City may not be required to register for these courses.

Continuous Assessment

Continuous assessment during the semester should form part of the end-of-course grading. Its overall contribution should be from 30 – 40%. For each credit workload, the continuous assessment test should be at least one. The minimum contribution of practicals and continuous assessment for a course with both practicals and theory should not be more than 40%.

Minimum Pass Mark

The minimum pass mark in all courses at 200 – 600 levels shall be 50% except for Pharmacy Law and Dispensing where the pass mark shall be 60% (requirements of the Pharmacy Council of Nigeria) or CED where the pass mark shall be 40%. The pass mark for all 100 level courses shall be 40%.

Progress throughout the Program

The suitability of students to progress from one year of the program to the next, and to graduation, will be determined by a satisfactory standard of course work and examinations. All decisions concerning the progress of a student shall be subject to the approval of Senate on the recommendation of the Board of Studies of the Faculty of Pharmacy.

The following are the minimum number of credits a student must accumulate at the end of an academic session in order to proceed to the next level.

Level	□	□	Minimum
100	□	□	40
200	□	□	28 (38 for Direct Entry)
300	□	□	30
400	□	□	27
500	□	□	32

Students who accumulate the minimum number of credits as stated above may carry the failed courses over to the next level.



Final year (600 Level) students are required to repeat all failed courses as a pass in all the courses of the PharmD degree program is mandatory before a student can graduate. Normally, however, no student shall be allowed to take more than **nine** academic sessions to complete the PharmD degree program if he/she were admitted into the program at the 100 level or **eight** academic sessions for those admitted at the 200 level.

Probation/Withdrawal

Students, who fail to accumulate the minimum number of credits required to move to the next level but have at least 50% of the stipulated minimum number of credits, will be placed on probation for one year. Alternatively, they may opt for Inter-Faculty transfer. A student on probation is required to repeat the level and register and repeat only failed courses. A student is allowed to go on probation once during the program. Where he/she fails at any other time during the program to accumulate the minimum number of credits required to move to the next level, such a student shall withdraw from the Faculty and may seek transfer to another Faculty.

Students who are unable to accumulate 50% of the minimum number of credits required to move to the next level shall withdraw from the Faculty.

Distribution of Credit Load

<i>Level</i>	<i>100</i>	<i>200</i>	<i>300</i>	<i>400</i>	<i>500</i>	<i>600</i>	<i>Total</i>
PHM	-	4	-	-	-	-	4
PHS	-	9	-	-	-	-	9
BCH	-	6	-	-	-	-	6
PCH	-	5	8	4	6	-	23
PCN/P PR	-	-	3	12	14	27	56
PCO	-	-	10	6	5	6	27
PCG	-	3	5	4	2	-	14
PMB	-	3	4	3	7	-	17
PCT/PIT	-	3	7	8	6	-	24
ANT	-	4	-	-	-	-	4
CED	-	-	2	-	-	-	2
PP	-	-	-	-	-	4	4
PHY	12	-	-	-	-	-	12
CHM	12	-	-	-	-	-	12
BOO/RBB	8	-	-	-	-	-	8
GST	10	-	-	-	-	-	10
Total	48	37	39	37	40	37	238

A student shall normally in any academic year (of two semesters) be allowed to register for and take a minimum of 30 credits and a maximum of 50 credits. A student who is on probation may register for failed courses only.

Students Results

Students shall be given their results in terms of the following letters grade:

<i>Score (%)</i>	<i>Letter grade</i> □	<i>Grade point</i> □
70-100	A	5
60-69	B	4
50-59	C □	3 (0 for Pharmacy Law & Dispensing courses)
45-49	D □	0 (2 for courses at 100 Level) & CED
0-44	F	0

Degree Format

The PharmD degree is unclassified, i.e., no classification into 1st, 2nd, 3rd Class Honors.

From each level (year), a Grade Point Average shall be calculated. Weighting shall be determined by the contribution of each level as stated below:

Level	Students admitted at 100 level	Students admitted at 200 level
100	5%	-
200	10%	15%
300	15%	15%
400	20%	20%
500	20%	20%
600	30%	30%

The students' final grade point average shall be calculated from the sum of the weighted grade point for a PharmD degree when his/her final cumulative weighted grade point average is 3.0 and above.

Distinction

A candidate shall earn a distinction in any pharmacy subject area when his/her average score in the pharmacy subject area (over the duration of the entire degree program) is not less than 70%. Distinction(s) shall be reflected in the transcript. The pharmacy subject areas are:

- i. Clinical Pharmacy and Pharmacy Practice
- ii. Pharmaceutics and Pharmaceutical Technology
- iii. Pharmaceutical Microbiology & Biotechnology
- iv. Pharmaceutical Chemistry
- v. Pharmacology & Toxicology
- vi. Pharmacognosy

Course Codes

ANT – Anatomy
BCH – Biochemistry
BOT/PBB – Botany/Plant Biology
CED – Entrepreneurship Development
CHM – Chemistry
GST – General Studies
PCG – Pharmacognosy
PCH – Pharmaceutical Chemistry
PCN – Clinical Pharmacy
PCO – Pharmacology
PCT – Pharmaceutics and Pharmaceutical Technology
PHM – Ancillary Mathematics□
PHS – Physiology
PHY – Physics
PIT – Industrial Training (Student Industrial Work Experience, SIWES)
PMB – Pharmaceutical Microbiology
PPJ – Project
PPR – Pharmacy Practice
PTX – Clinical Toxicology
PHV – Veterinary Pharmacy
ZOO/AEB – Zoology/Animal & Environmental Biology

Subject by Level□

i) 100 Level

PHY□ □ - Physics
CHM□□ - Chemistry
ZOO/AEB□ - Zoology/Animal & Environmental
Biology
BOT/PBB□ - Botany/Plant Biology
GST□ □ - General Studies

ii) 200 Level

- PCT□ - Pharmaceutics and Pharmaceutical Technology
- PMB□ - Pharmaceutical Microbiology
- PHS□ - Physiology
- BCH□ - Biochemistry
- PCH□ - Pharmaceutical Chemistry
- ANT□ - Anatomy
- PCG□ - Pharmacognosy

iii) 300 and 400 Levels

- PMB□ - Pharmaceutical Microbiology
- PCT□ - Pharmaceutics and Pharmaceutical Technology
- PCO□ - Pharmacology
- PCH□ - Pharmaceutical Chemistry
- PCN□ - Clinical Pharmacy
- PPR□ - Pharmacy Practice
- PCG□ - Pharmacognosy
- CED □ - Entrepreneurship Development

iv) 500 Level

- PCG□ - Pharmacognosy
- PCT□ - Pharmaceutics and Pharm. Technology
- PCO□ - Pharmacology
- PTX□ - Toxicology
- PCH□ - Pharmaceutical Chemistry
- PCN□ - Clinical Pharmacy
- PPR□ - Pharmacy Practice
- PMB□ - Pharmaceutical Micro biology
- PPJ□ - Project

v) 600 Level

- PCN□ - Clinical Pharmacy
- PPR□ - Pharmacy Practice
- PHV□ - Veterinary Pharmacy
- PPJ□ - Project

Index for Course Coding

Each course code is made up of three letters representing the subject area, followed by a three-digit number. For courses in pharmacy subject areas, the three-digit number indicates as follows:

First Digit

This refers to the level of course, i.e. 5 for 500 level, 4 for 400 level, 3 for 300 level, 2 for 200 level, and 1 for 100 level.

Second Digit

This digit indicates the semester in which the course is taken:

- 0 Combined first and second semester
- 1 First Semester course.
- 2 Second Semester course.

Third Digit

This indicates the type of course, i.e. theory or practical.

- 0 Combined theory and practical course.
- 1 Practical course
- 2 Theory course (numbered serially for any one level beginning from the first semester).

***REGULATIONS GOVERNING THE CONDUCT
OF EXAMINATIONS & DISCIPLINE DURING
EXAMINATIONS***

a. Instruction to the Invigilators

- i. Invigilator: refers to any Senior Staff member officiating during an examination and must not be one of the candidates to be examined. Course Teachers are invigilators of their courses and shall remain in the Examination Hall throughout the examination and collect the Scripts.
- ii. There shall be a Chief Invigilator appointed by the Head of Department or the Dean, preferably of the rank of Senior Lecturer and above. The role of the Chief Invigilator is to supervise and ensure that the conduct of the examinations follows the laid down regulations. He/she shall -make a report after the examination using the approved format (see *Annexure 1*). The Course Teacher shall not be the Chief Invigilator of the examination on his/her Course.
- iii. It shall be the first duty of the invigilators to exercise constant and vigilant supervision over the Candidates. The Chief invigilator shall use his discretion when handling cases of misconduct and ill health. They shall send a report: on each to the Head of-Department' and the Dean of the Faculty immediately after the examinations and definitely not more, than 24-hours.

- iv. An Invigilator shall report to the Examination Hall 30 minutes before the examination is due to start. There shall be a minimum of one (1) Invigilator-per 50 Candidates.
- v. The Chief Invigilator or his assistant shall sign each Examination Answer Booklet before the commencement of each examination. This is to prevent illegal issuance of booklets for illicit examinations.
- vi. Before the examination begins, the Chief Invigilator shall announce to the Students that all foreign and forbidden materials should be removed from their persons and from the Hall.
- vii. While the examination is in progress, no person other than the invigilators, the Attendant, Dean of the Faculty or his representative, Head of Department, the Registrar's representative (Exams & Records) and the Medical Personnel shall be allowed to enter the Hall.
- viii. The time allowed for an examination paper, as indicated in the Time-Table, must be strictly obeyed.
- ix. Each of the sealed packets of Examination Paper must be opened in the presence of the Candidates.
- x. Immediately after a paper has been distributed to all Candidates, the Chief Invigilator shall ask the Candidates to see that they have the papers for

which they have been entered. Then and only then shall the Chief Invigilator give a signal for the examination to start.

- xi. Candidates shall be admitted into an examination up to the first half-hour after the start of the examination on the permission of the Chief Invigilator. Cases of admittance after the first half hour of the examination shall be reported to the Chief Examiner and the Faculty/School Examination Officer who shall inform the Board of Examiners which shall decide on the cases.
- xii. It is essential that Candidates enter and leave the Hall through one entrance to enable the Invigilators satisfy themselves that nothing which is unauthorized is brought in or taken out.
- xiii. No candidate may leave the examination hall without the express permission of the chief invigilator. Candidates wishing to go to the Toilet or to the First-Aid Room must be accompanied by an Invigilator/Attendant.
- xiv. Reasonable silence shall be maintained throughout an examination by both the invigilators, other Officials and the candidates.
- xv. Invigilators shall tell candidates the time at appropriate intervals during the period of an examination.
- xvi. At the close of each examination, candidates shall be asked to hand over their scripts to the invigilators while standing. The chief invigilator with the

assistance of invigilators shall count these over and add four copies of the question paper to the packet of Scripts. The packets shall then be handed over to the Course Teacher who shall verify and sign the receipt.

- xvii. The Attendant shall be responsible for the circulation of the Attendance Register, which shall be collected by the Chief Invigilator at the end of each examination; one copy is to be returned to the Internal Examiner and one copy to Exams and Records Division.
- xviii. No Candidate shall be allowed to depart from the Examination Hall without handing in his Scripts. The Chief Invigilator shall assign Invigilators the responsibility for collecting the Scripts from the Candidates who shall remain standing.
- xix. Any Candidate found to be or is suspected of." infringing the provisions of the regulations or in any way cheating shall immediately be given three (3) copies of Examination Misconduct Forms for completion. The original copy with relevant exhibits shall be handed over to the Dean through the Head of Department for further action while the duplicate and triplicate copies shall be retained by the Candidate and Examinations and Records Office, respectively. The Chief Invigilator shall submit the report immediately on the prescribed Examination Misconduct Form to the Faculty Examinations Officer and the Dean. The Candidate concerned shall be allowed to continue with the examination provided that he causes no disturbance. The Dean shall cause the circumstances to be investigated and report to the Vice-Chancellor (*through the Provost of the College*

of Medical Sciences) for a final determination of the case.

- xx. The Panel to investigate the alleged misconduct shall be *ad hoc*, to give the Dean a free hand in selecting members who would be immediately available for the assignment in view of the urgency. The Investigating Panel must reach the Vice-Chancellor not later than two (2) weeks after the conclusion of the Semester Examination. The Vice-Chancellor shall in turn inform the Faculty/School and College of his/her decision on the misconduct within two (2) weeks.

 - xxi. All students involved in irregular assistance or cheating during examination shall write statements on the spot before being allowed to continue with the examination. Refusal, of a student to write a statement on the spot shall be regarded as an examination misconduct
- b. Duties of Attendants:** Attendants shall be responsible for:
- I. Distribution of examination Answer Booklets, Strings, and any other materials specified.
 - ii. During the examination, attendants shall be present to supply- supplementary Answer Booklets, Strings, Graph Sheets, *etc.* to candidates.
 - iii. Accompany Candidates to Toilet or to the First-Aid Room.
 - iv. Going for a member of the University Health Services when instructed by the Invigilator.

- v. Any other duty assigned by the Registrar (*or his representative*) or Chief Invigilator.

c. Instructions to Students

- i. Only duly Matriculated/Registered Students are eligible to take examinations.
- ii. Candidates must attend punctually at the times assigned for their papers and they must be in the Examination Hall at least (30) minutes before the time that the examination due to start. Candidates shall not be allowed to enter the Examination Hall until invited by the Invigilator. Candidates arriving more than 30 minutes after the examination has started shall be admitted only at the discretion of the Chief Invigilator.
- iii. A Candidate is required to deposit any Handbag, Briefcase, or any other prohibited material at the Chief invigilator's-Desk (*or a desk provided for that purpose*) before the start of an examination.
- iv. Candidates shall bring, with them to the Examination Hall, their own Ink, Pens and Pencils and any materials which are permitted by these regulations. Absolutely no book, printed or written document or other communication gadgets or unauthorized aid shall be taken into an Examination Room by any Candidate.
- v. A Candidate shall bring his Identity Card to each examination and display it in a prominent position on his desk.
- vi. A Candidate shall write his Examination Number, not

his name distinctly at the top of the cover of every Answer Book and every separate sheet of Paper.

- vii. Each Candidate shall complete the Attendance Register in triplicate.
- viii. During the examination, a Candidate may leave the room temporarily, with the permission of the Invigilator only if accompanied by an Attendant. A Candidate who leaves the Examination Hall shall not be readmitted unless throughout the period of absence he has been continually under supervision of an Invigilator or - an Examination Attendant.
- ix. A Candidate shall not leave the Examination Hall until the first 30 minutes has elapsed and must be with the special permission of the Chief Invigilator. Such candidate must drop his/her Question Paper and Answer Booklet before leaving.
- x. A Candidate must not give assistance to any other Candidate or permit any other Candidate to copy from or use -his papers. Similarly, a candidate must not directly or indirectly accept assistance from any other Candidate or use any other Candidate's papers.
- xi. Any Candidate involved in irregular assistance or cheating during examination shall write a statement on the spot before being allowed to continue with the examination. Refusal of a Student to write a statement on the spot shall be regarded as examination misconduct and will be subject to the University disciplinary action.
- xii. Silence shall be observed in the Examination Hall.

The only permissible way of attracting the attention of an Invigilator is by a Candidate raising his hand.xiii. Candidates are not allowed to smoke, eat or drink in the Examination Hall.

xiv. The use of Scrap Paper is not permitted. All rough work must be done in the Answer Booklets. Even if they contain only rough work, they shall be tied inside the main booklet and crossed out neatly.

xv. Candidates are advised in their own interest to write legibly and to avoid, using faint ink. - Answers must be written in English, except as otherwise instructed.

xvi. On finishing each examination, Students should draw a line through any blank space or page of each answer sheet.

xvii. Before handing in their Scripts at the end of the examination, Candidates must satisfy themselves that they have inserted the title of the examination, their Matriculation Numbers and the numbers of the question they answered, in the appropriate places.

xviii. At the end of the time allotted, Candidates shall stop writing and stand up when instructed to do so, remain standing, and hand in their Scripts to the Invigilator before leaving the Examination Hall. Except for the Question Papers (where permitted) and any materials that they brought into the Hall with them, Candidates are not allowed to remove or mutilate any paper or materials supplied by the University.

xix. Cell phones, smart wristwatches and other similar devices are not allowed into the examination hall.1

**EXAMINATION MISCONDUCT AND
PENALTIES**

The following .sanctions shall apply to cases of examination misconduct as stipulated below:

S/N	MISCONDUCT	SANCTION
1	Proven cases of fore-knowledge of Examination Questions (Leakage)	Expulsion of all involved.
2	Coming into Examination Hall With extraneous materials	Rustication for a minimum period of 4 Semesters or expulsion if 'fore-knowledge of Questions if proven.
3	Writing on any materials in the Examination Hall, other than the Answer Booklet	Letter of warning
4	Non production of identity Card or authorized Letter of Identification before and during examination	To leave the Examination Hall immediately
5	Any form unauthorized communication between and among Students during examination	To lose 10 minutes of examination time: "if it persists, relocate the Student; further persistence cancel the paper,
6	Impersonation at Examination	Expulsion of all involved
7	Refusal to fill Examination Misconduct Form	Rustication for two (2) Semesters plus" penalty for the original offence

S/N	MISCONDUCT	SANCTION
8	Attempt to destroy, or actually destroying materials of proof of cheating	Rustication for two (2) Semesters plus penalty for the original offence ⁹
9	.Refusal to obey Invigilator's instructions such as (I)Writing after the examination Has been stopped (ii) Non-compliance With the invigilator's sitting arrangements	(I) Letter of warning. (ii) To leave the Hall and carryover the course
10	Refusal to submit Answer Scripts (<i>used and unused</i>) at close of examination	Rustication -for a minimum' period of two (2) Semesters
11	Smuggling of Question Papers and Answer Booklets out of the Hall for help and returning with Answer Scripts	Expulsion
12	Failure to write Matriculation Numbers on Answer Booklet or to sign Attendance Sheet	Letter of warning
13	Writing of Candidates' names on Answer Booklets	Letter of warning
14	Leaving Examination Hall without permission	To carry over the Course and letter of warning
15	Failure to draw a line through each blank space at the end of each answer	Letter of warning

S/N	MISCONDUCT	SANCTION
16	Unruly behaviour in the Examination Hall such as smoking, drinking of liquor, noise etc	Verbal warning by invigilator, If unruly behaviour persists, to leave the Hall and carry over the course
17	.Proven cases of physical assault	Expulsion
18	Failure to appear before Misconduct Panel	Guilty as charged, indefinite suspension pending appearance before the Panel.
19	Any student with three (3) letters of warnings	Rustication for a minimum period of one (1) Session.
20	Any other cases of Examination Malpractice not specified	Punishment as appropriate.

EXAMINATION MISCONDUCT FORM

Any candidate found cheating shall immediately be given three (3) copies of this form for completion. The original copy with relevant exhibits shall be handed over to the Dean for further action while the duplicate and triplicate copies shall be retained by the Candidate and the Examinations and Records Office, respectively. It shall be imperative for a Student found cheating during an Examination to write this statement on the spot before being allowed to continue the examination.

a. STUDENT IDENTIFICATION:

- a. Name _____
(First Name) (Middle) (Surname)
- b. Mat No: _____
- c. Department: _____
- d. Degree/DiplomaLevel: _____

A. Statement by the student

I, Mr./Mrs./Miss/Ms: _____

of _____

Voluntarily declare as follows:

Signature of the Invigilator

Signature of Student

Signature of Exam Attendant

Signature of Registrar's

You are hereby summoned to appear before the Faculty/School/institute Disciplinary Committee within seven {7} days of the completion of your last Examination Paper Failure to adhere to the above directive shall be regarded as an offence, an act of insubordination and shall cause the Faculty Disciplinary Committee to put you on trial in absentia.

FACULTY STAFF
DEAN'S OFFICE

ACADEMIC STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Azuka C. Oparah	B.Pharm (Nig), MBA, M.Pharm, MPH, PhD, (Benin), FPCPharm, FPSN, FIMC, ENA ^{Pharm}	Professor, Dean	Pharmaceutical care, Public Health, Pharmacotherapeutics
2	Jeffrey S. Soni	B.Pharm, Pharm.D, M.Pharm., Ph.D (Benin), FPCPharm	Senior Lecturer, Assistant Dean	Pharmaceutical Care, Pharmacotherapeutics
3	Vincent O. Imieje	B.Pharm, M.Sc., Ph.D (Benin)	Senior Lecturer, Faculty Examination Officer	Natural Product Chemistry
4	Uyi M. Ogbeide	B.Pharm, Pharm.D, M.Sc., (Benin)	Lecturer I, Faculty Timetable Officer	Pharmaceutical Analysis and Bioinformatics
5	Osamuyi H. Uwumarongie	B.Pharm, M.Sc., Ph.D (Benin), FPCPharm	Senior Lecturer, Faculty Admissions Officer	Standardization of Medicinal Plants/ Products, Ethnobotany, Ethnopharmacology
6	Monday I. Osarenwindu	B.Pharm, Pharm.D, M.Pharm., Ph.D (Benin), FPCPharm	Senior Lecturer, Pharm.D Coordinator	Clinical Pharmacy & Pharmacy Practice, Pharmacoepidemiology

**ACADEMIC STAFF (ASSOCIATE) FROM
SERVICING DEPARTMENT**

S/N	NAME	STATUS	DEPARTMENT
1	Prof (Mrs.) KE Imafidon	Professor	Biochemistry
2	Prof (Mrs.) RI Nimenibo-Uadia	Professor	Biochemistry
3	Dr S.I. Ojeaburu	Senior Lecturer	Biochemistry
4	Dr S.O. Uanseoje	Senior Lecturer	Biochemistry
5	Dr O.C. Ugbeni	Senior Lecturer	Biochemistry
6	Dr K.O. Orumwensodia	Lecturer I	Biochemistry
7	Dr N. Erhunse	Lecturer I	Biochemistry
8	Dr O.D. Abu	Lecturer I	Biochemistry
9	Mrs. E.S. Adeogun	Lecturer I	Biochemistry
10	Dr Osagie-Eweka	Lecturer I	Biochemistry
12	Mrs O.O. Ologie	Lecturer I	Biochemistry
13	Dr Mrs. R Enadeghe	Lecturer II	Biochemistry
14	Prof J. Osemwenkhae	Professor	Mathematics
15	Prof E.O. Oghre	Professor	Mathematics
16	Dr S. Innih	Senior Lecturer	Anatomy
17	Dr E. Obayuwana	Lecturer I	Anatomy
18	Prof E.O. Agoreyo	Professor	Physiology
19	Dr (Mrs) M. I. Omigie	Lecturer II	Physiology
20	Dr E.O. Aihie	Lecturer I	Physiology
21	Dr F. Ebojele	Lecturer I	Physiology

ADMINISTRATIVE STAFF (DEAN'S OFFICE)

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Christopher I. Iyoha	B.Sc (Social Works)	Principal Assistant Registrar, Faculty Officer
2	Osayuki Obaseki Jnr.	M.Sc, FCIPDM, MNIM	Principal Assistant Registrar
3	Joy I. Ataman	B.A. International Studies and Diplomacy	Senior Assistant Registrar
4	Erere M. Saiki	B.Sc Public Admin	Senior Executive Officer
5	Friday Imadiyi	B.Sc Statistics & Computer Science (Benin)	Senior System Analyst I
6	Felica A.N. Okankan	Dip. Public Admin	Principal Executive Officer I
7	Enogie Lucky O.	HND Public Admin, PGD, M.Sc	Principal Executive Officer II
8	Ngozi U. Obumse	HND Computer Science	Principal Executive Officer II
9	Blessing Oghomwen	WAEC	Chief Clerical Officer
10	Blessing Otote	WAEC	Chief Porter
11	Lucky Osayuwala	WAEC	Chief Porter
12	Osayande Edokpayi	S.S.C.E	Chief Driver
13	John Osamor	F.S.L.C	Office Assistant

**DEPARTMENT OF
CLINICAL PHARMACY AND PHARMACY PRACTICE
ACADEMIC STAFF**

S/ N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Stella F. Usifoh	B.Pharm (Ife), MPHM, Pharm.D, MHPM, Ph.D (Benin)	Professor, Head of Department	Pharmacoeconomics and Outcomes Research/Logistics and Supply Chain Management, Public Health
2	Azuka C. Oparah	B.Pharm (Nig), MBA, M.Pharm, MPH, PhD, (Benin), FPCPharm, SN, FIMC. FNAPharm	Professor, Dean	Pharmaceutical care, Public Health, Pharmacotherapeutics
3	Patrick O. Erah	B.Pharm M.Pharm (Benin), Ph.D (Nottingham)	Professor	Clinical Pharmacy and Pharmacy Practice Pharmacotherapeutics, Pharmacokinetics
4	Ehijie F.O. Enato	B.Pharm, M.Pharm, Ph.D (Benin)	Professor Director	Clinical Pharmacy and Pharmacy Practice Global health
5	Anthony W. Udezi	B.Pharm, M.Pharm., Ph.D (Benin)	Professor Director	Pharmacoeconomics and Outcomes Research/Logistics and Supply Chain Management
6	Valentine U. Odili	B.Pharm, M.Pharm., Pharm.D, Ph.D (Benin), FPCPharm.	Professor	Pharmacotherapeutics, Drug Information Services, Pharmacy Practice and Patient Outcomes Research
7	Penaere T. Osahon	B.Pharm, M.Pharm., Pharm.D, Ph.D (Benin), FPCPharm	Associate Professor	Clinical Pharmacy, Pharmacoepidemiology, Pharmacovigilance

8	Monday I. Osarenmwinda	B.Pharm, Pharm.D, M.Pharm., Ph.D (Benin), FPCPharm	Lecturer	Clinical Pharmacy and Pharmacy Practice, Pharmacoepidemiology
9	Jeffrey S. Soni	B.Pharm, Pharm.D, M.Pharm., Ph.D (Benin), FPCPharm	Senior Lecturer	Pharmaceutical Care, Pharmacotherapeutics
10	Isabel N. Aika	B.Pharm, Pharm.D, M.Pharm., Ph.D. (Benin).	Lecturer I	Clinical Pharmacy and Pharmacy Practice, Pharmacoepidemiology, Pharmacotherapeutics, Antimicrobial Stewardship
11	Ogiangbe J. Idiake	B.Pharm, Pharm.D, M.Pharm., (Benin)	Lecturer II	Clinical Pharmacy & Pharmacy Practice, Drug Information Service
12	Maria A. Aghahowa	B.Pharm, Pharm.D, M.Pharm., (Benin). FPCPharm.	Lecturer I	Pharmaceutical Care, Pharmacotherapeutics
13	Ayanbueze E. Egonmwan	B.Pharm, M.Pharm., (Benin).	Assistant Lecturer	Clinical Pharmacy & Pharmacy

ADJUNCT LECTURERS

S/	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Theresa I Pounds	BPharm, PharmD, BCNSP	Associate Professor	Clinical Pharmacy Practice, Opioid & Antibiotic Stewardship, Nutrition/Metabolic Support
2	Nurudeen A.E. Mohammed	Bpharm, MSc, MBA, Ph.D, FPCPharm	Lecturer I	Public Health Policy. Pharmacy Practice & Management

TECHNICAL STAFF

1	Esemuede Ahanor	Dip Applied Microbiology, B.Sc. Microbiology	Senior Laboratory Technologist
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ADMINISTRATIVE STAFF

S/ N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Joy O. Igbineweka	NCE, B.Sc. Pub. Admin.	Senior Executive Officer
2	Samuel A. Igbinosun	B.Sc. Political Science and Public Admin., M.Sc. International Relations	Administrative Officer
3	Aiwerioghene Igiebor	B.Sc Political Science	Senior Executive Officer
4	Veronica O. Uhumwangho- Theophilus	OND. Sec. Studies, B.Sc Accounting. MBA (Benin)	Confidential Secretary
5	Omolola E. Akinmutola	B.Sc. Soc. Work (Benin)	Higher Executive Officer

***DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
ACADEMIC STAFF***

DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

ACADEMIC STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Emmanuel E. Odion	B.Pharm, Pharm.D, M.Sc., Ph.D (Benin)	Senior Lecturer, Ag. Head of Department	Natural Product Chemistry and Pharmaceutical Analysis
2	Cyril O. Usifoh	B.Pharm (Ife), M.Sc (Sussex), Ph.D (Munster), FPSN, EPCPharm. MIPAN	Professor	Medicinal Chemistry
3	Abiodun Falodun	B.Pharm, M.Sc., Ph.D (Benin). MIPAN	Professor	Natural Product Chemistry
4	Henry A. Okeri	B.Pharm, M.Sc., Ph.D (Benin), EPCPharm	Professor	Pharmaceutical Analysis
5	Patrick O.	B.Pharm, M.Sc., Ph.D (Benin)	Professor	Medicinal Chemistry
6	Osayemwenre Erharuyi	B.Pharm, Pharm.D, M.Sc., Ph.D (Benin)	Senior Lecturer	Natural Product Chemistry
7	Vincent O. Imieje	B.Pharm, M.Sc., Ph.D (Benin)	Senior Lecturer	Natural Product Chemistry
8	Godfrey E. Aghayere	B.Pharm, Pharm.D, M.Sc., (Benin)	Lecturer I	Pharmaceutical Analysis
9	Uyi M. Ogbeide	B.Pharm, Pharm.D, M.Sc., (Benin)	Lecturer I	Pharmaceutical Analysis and Bioinformatics
10	Ekene Anakor	B.Pharm, Pharm.D,	Lecturer I	Pharmaceutical Analysis
11	Unuigbo O. Isonah	M.Sc. (UK), (Benin) B.Pharm, Pharm.D, M.Sc., (Benin)	Lecturer II	Medicinal Chemistry
12	Irene O. Oseghale	B.Pharm, Pharm.D, M.Sc., (Benin)	Lecturer II	Natural Product Chemistry, Pharmaceutical Analysis Medicinal Chemistry

TECHNOLOGISTS

1	Augustina Obi	NIST, M.Sc (Benin)	Deputy Chief Laboratory Technologist
2	Thompson O. Oviawe	B.Sc Biochemistry N.D, HND SLT. PGD DNA and Forensic Science	Principal Laboratory Technologis
3	Oghenovo Ukato	B.Sc Biochemistry, M.Sc Biomedical Sciences	Senior Laboratory. Technologis
4	Osagie C. Edionhon	B.Sc SLT	Senior Laboratory. Technologis

ADMINISTRATIVE STAFF

1	Felicia Oriakhi	B.Sc Social Work	Principal Executive Officer
2	Charles E. Ebohon	B.Sc Marketing	Principal Commercial Officer
3	Osazee Ihama	B.Sc Crop Science, M.Sc Public Administration.	Higher Executive Officer.
4	Rosemary O. Oduwale	MSc (Education)	Senior Assistant Registrar

**DEPARTMENT OF PHARMACEUTICS AND
PHARMACEUTICAL TECHNOLOGY**

ACADEMIC STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Florence E. Eichie	B.Pharm, M.Phil, Ph.D (Benin).	Professor, Head of Department	Controlled drug delivery
2	Augustine O. Okhamafe	B.Pharm, (Benin) Ph.D (Bradford), MICTAC, FPSN, FPCPharm	Professor	Coating systems
3	Michael U. Uhumwangho	B.Pharm, M.Phil, Ph.D, MBA (Benin), FIPMD	Professor	Tablet technology and delivery
4	Matthew I. Arhewoh	B.Pharm, M.Phil, Ph.D (Benin), FPCPharm	Professor	Phytomedicines formulation
5	Sylvester O. Eraga	B.Pharm (Benin), M.Sc (Nsukka), Ph.D, Pharm.D (Benin).	Associate Professor	Controlled drug delivery
6	Collins O. Airemwen	B.Pharm, Pharm.D, M.Phil, Ph.D (Benin).	Senior Lecturer	Formulation of Nanopharmaceuticals and Sustained Drug Delivery Systems.
7	Jude E. Isesele	B.Pharm, Pharm.D, M.Phil (Benin).	Lecturer II	Drug Delivery Systems
8	Catherine D. Soni- Osayande	B.Pharm, Pharm.D, (Benin).	Assistant Lecturer	Drug Delivery Systems
9	Vivian N Maduka	BSc, BPharm, PharmD	Adjunct Assistant Lecturer	Drug Delivery Systems

TECHNICAL STAFF

	NAME	QUALIFICATIONS	STATUS
1	Godwin O. Umoru	Final Diploma in Science Laboratory Technology (Chemistry/ Biochemistry), (Benin), NIST, Intermediate Diploma, A.N.I.S.T	Deputy Chief Laboratory Technologist.
2	Emmanuel O. Ovu	Diploma (Benin), HND (NISLT)	Principal Laboratory Technologist
3	Peter O. Edokhumhe	Trade Test Grade III, II, I, Senior School Certificate	Assistant Chief Workshop Supervisor
4	Celestina N. Onwumere	ND, HND, AISLT	Laboratory Supervisor I
5	Abieyuwa Edoro	B. S. Local Government Admin	Senior Laboratory Assistant
6	Gold E. Eboigbodin	OND School of Science and Technology	Principal Pharmacy Technician

ADMINISTRATIVE STAFF

S/N	NAME	QUALIFICATIONS	STATUS
1	Christie O. Achime	B.Sc, MPA	Principal Assistant Registrar
2	Joy A. Ehirim	Master of Public Administration (MPA)	Senior Assistant Registrar
3	Omonbhengbe Daudu	B.A History (Benin)	Assistant Registrar
4	Esohe D. Oduagbon	BA Degree in English and Literature Studies	Principal Executive I
5	Regina O. Okwe	B.Sc Computer Science	Senior Confidential Secretary
6	Magdalene O. Elumeze	NABTEB (Advanced)	Chief Clerical Officer
7	Jolly Igiebor	Diploma in Telecommunications CISCO Certified Networking Administrator	Assistant Technical Officer
8	Joy Enobie	NABTEB 2011	Officer Assistant II

DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY

ACADEMIC STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Enosakhare Oloton	B.Pharm, Pharm.D, M.Sc. (Benin)	Lecturer I, Ag. Head of Department	Industrial/Applied Microbiology
2	John O. Akerele	B.Pharm, M.Sc., Ph.D (Benin)	Professor	Microbial Genetics Chemotherapy, Microbial Resistance to Antimicrobial agents. Mutagenic Studies, Genotoxicology Antimicrobial Screening of Nigerian Medicinal Plants (herbs)
3	Upe F. Babaiwa	B.Sc (Botany), B.Pharm, Pharm.D, M.Sc., Ph.D (Benin)	Senior Lecturer	Chemotherapy and Bacteria Genetics
4	Godfrey E. Umhenin	B.Pharm, Pharm.D, M.Sc (Benin)	Lecturer II	Chemotherapy and Mechanism of Antimicrobial Agents

TECHNICAL STAFF

S/ N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Wilfred O. Aisagbonbuomwan	B.Sc Science Laboratory Technology	Principal Laboratory Technologist
2	Uche J. Uwadia	B.Sc Microbiology	Senior Laboratory Technologist
3	Elizabeth O. Edokpolor	OND, HND	Senior Laboratory Technologist
4	Anthony Egbo	B.Sc (Local Government Administration)	Chief Health Assistant
5	Rose Uwadiae	WASC	Senior Laboratory Supervisor
6	Constance N. Ukwamedua	Diploma, B.SC International Studies and Diplomacy	Senior Laboratory Supervisor
7	Monday Uchejim	WASC	Senior Laboratory Assistant

ADMINISTRATIVE STAFF

S/ N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Roseline O. Ike	OND, HND, PGD, MPA	Assistant Registrar
2	Imuetinyan A. Osatohanmwun	N.C.E, B.Sc Education	Principal Executive Officer
2	Philomina O. Okolo	TC II, WASC	Assistant Chief Clerical Officer

DEPARTMENT OF PHARMACOGNOSY

ACADEMIC STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Josephine O. Ofeimun	B.Pharm, PharmD MHPM, M.Sc., PhD (Benin), FPCPharm, PGCert LTHE (London)	Senior Lecturer, Ag. Head of Department	Natural Product Research and Drug Discovery, Phytochemistry, Ethnopharmacology
2	Buniamin A.Ayinde	B.Sc (Lagos) M.Sc (Ile Ife), Ph.D (Benin)	Professor Deputy VC	Natural Product Research and Drug Discovery, Phytochemistry and Microscopy of Medicinal plant
3	Osamuyi H. Uwumarongie	B.Pharm, M.Sc., Ph.D (Benin), FPCPharm	Senior Lecturer	Standardization of Medicinal Plants/Products, Ethnobotany, Ethnopharmacology
4	Rose O. Imade	Bpharm, PharmD, M.Sc. PhD (Benin)	Senior Lecturer	Natural Product Research and Drug Discovery, Phytochemistry, Ethnopharmacology
5	Clement O. Egharevba	B.Pharm (Benin), M.Sc. (London)	Lecturer I	Ethnobotany, Ethnopharmacology

ADJUNCT LECTURERS

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Dr Shegun Adedokun	B.Sc, M.Sc, PhD (Benin)	Lecturer	Natural Product Research, Phytochemistry
2	Pharm. Faith Aigbangbe	B.Pharm, PharmD	Assistant Lecturer	Phytochemistry
3	Pharm. Faith Aimanoshi	B.Pharm, PharmD	Assistant Lecturer	Phytochemistry
4	Pharm. Ezekiel Efeobokhian	B.Pharm, PharmD (Benin)	Assistant Lecturer	Phytochemistry

TECHNICAL STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Florence I. Adesina	NIST, NISL (Benin)	Deputy Senior Laboratory Technologist
2	Abdul-Hafiz Sanni	HND SLT	Senior Laboratory Technologist
3	Emmanuel V. Alimatarie	NIST, FRIN	Senior Laboratory Technologist
4	Kingsley Ugwu	WASC	Senior Laboratory Supervisor
5	Samuel C. Nwagwu	GCE	Senior Laboratory Assistant
6	Goddy Ehibor	GCE	Workshop Supervisor
7	Osadolodor Uwumarongie	GCE	Foreman

ADMINISTRATIVE STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Folasewa Olaoluwa	L.LB (Ife), BL, LL.M (Ife)	Senior Assistant Registrar
2	Tuoyo E. Agiren	B.Sc, M.Sc (Benin)	Assistant Registrar
3	Okeoghene V. Ottah	B.Sc, MPA	Principal Executive Officer
4	Esther O. Agbontaen	HND	Principal Confidential Secretary

DEPARTMENT OF PHARMACOLOGY & TOXICOLOGY

ACADEMIC STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Fabian C. Amaechina	B.Pharm, M.Sc., Ph.D (Benin)	Senior Lecturer/ Ag H.O.D.	Cardiovascular, Respiratory Pharmacology, CNS, Ethnopharmacology, Toxicology
2	Eric K.I. Omogbai	D.V.M (Ibadan). M.Sc., Ph.D.(Lond). C.Biol., M.I.Biol.(UK) FCVSN	Professor	Cardiovascular and Ethnopharmacology, Endocrine Pharmacology, Toxicology
3	Raymond I. Ozolua	B.Pharm, M.Sc., Ph.D. (Benin), FPSN	Professor Deputy VC	Cardiovascular, and Biochemical Pharmacology, Ethnopharmacology, Toxicology
4	Zuleikha A.M Nworgu	B.Sc (Liverpool), M.Sc (Strathclyde). Ph.D (Benin)	Professor	Reproductive Pharmacology, Ethnopharmacology
5	Stephen O. Okpo	B.Sc, M.Sc., Ph.D (Lagos)	Professor	Autopharmacology, Phytopharmacology, Toxicology
6	Omonkhelin J.Owolabi	B.Pharm, M.Sc., Ph.D (Benin)	Professor	Endocrine and Autacoid Pharmacology Ethnopharmacology
7	Ighodaro Igbe	B.Pharm, M.Sc., Ph.D (Benin)	Professor	Cardiovascular and Endocrine Pharmacology, Ethnopharmacology, Toxicology
8	Loretta O. Iniaghe	B.Pharm (Benin), M.Sc., (Lagos), Ph.D (Benin)	Associate Professor	Neuropharmacology Ethnopharmacology Toxicology
9	Sylvester E. Aghahowa	B.Pharm, M.Sc., M.Phil. Ph.D (Benin)	Associate Professor	Pharmacogenomics and Malaria Research
10	Agbonlahor Okhwarobo	P.Pharm (Benin), M.Sc (London), Ph.D (Benin)	Senior Lecturer	Alcohol Addiction Substance Abuse
11	Osaze O. Edosuyi	B.Pharm, Pharm.D, M.Sc., Ph.D (Benin)	Lecturer I	Cardio-renal Pharmacology, Ethnopharmacology

12	Adaeze P. Uchendu	B.Pharm, M.Sc., Ph.D (Benin)	Lecturer I	Endocrine and Reproductive Pharmacology Ethnopharmacology
13	Abigail M. Akhigbemen	B.Pharm, Pharm.D, M.Sc. (Benin)	Lecturer I	Neuropharmacology, Ethnopharmacology
14	Olapeju I. Bolanle	B.Pharm, Pharm.D, M.Sc (Benin)., Ph.D (Hull)	Lecturer I	Cardiovascular Pharmacology

ADJUNCT LECTURERS

S/ N	NAME	ACADEMIC QUALIFICATIONS	STATUS	AREA OF SPECIALIZATION
1	Edward Salami	B.Pharm, M.Sc (Benin)	Lecturer II	Respiratory Pharmacology
2	Maryam M. Terhemen	B.Pharm, (Zaria)	Assistant Lecturer	Neuropharmacology

TECHNICAL STAFF

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Philip A. Obarisiagbon	B.Sc Science Laboratory Technology Physiology/Pharmacology (Benin). MSc (Awka)	Principal Laboratory Technologist
2	Collins A. Osaigbovo	B.Sc Science Laboratory Technology Physiology/Pharmacology (Abraka)	Senior Laboratory Technologist
3	Joy A. Ogbe	B.Sc Physiology	Senior Laboratory Technologist
4	Josephine Eguaihide	OND, Science Laboratory Technology	Principal Technician
5	Celina Etamesor	NECO	Senior Laboratory Supervisor
6	Okon I. Otobong	SSCE, OND	Senior Laboratory Assistant
7	Roseline Omoregie	FSLC	Livestock Assistant I

ADMINISTRATIVE

S/N	NAME	ACADEMIC QUALIFICATIONS	STATUS
1	Esther Osagie-Idahosa	B.Sc French (Ekpoma)	Assistant Registrar
2	Osarodion A. Ehimare	B.Sc Social Work (Benin)	Senior Executive Officer
3	Omoroghomwan Ebuwa	B.A English and Literature (Benin)	Principal Executive Officer I

SCHEDULE OF COURSES

100 LEVEL COURSES		
Course Code	Course Title	Credit hours
First Semester		
PHY111	Mechanics, Thermal Physics & Properties of Matter	3
PHY113	Vibrations, Waves & Optics	3
CHM111	General Chemistry I	3
CHM113	Organic chemistry	3
PBB111	Introductory Plant Biology	3
AEB111	Introduction to Animal & Environmental Biology	4
GST111	Use of English & Comm. Skills & Library Science	2
GST112	Philosophy and Logic	2
Second Semester		
PHY109	Physics Practical	2
PHY124	Electromagnetism & Modern Physics	4
CHM122	General Chemistry II	3
CHM124	Organic Chemistry II	3
PBB122	Plant Forms & Functions	3
AEB122	Diversity of Animals: History, Physiology and Embryology	4
GST121	Use of English II	2
GST122	Nigeria People and Culture	2
GST123	History and Philosophy of Science	2
Total		48

200 LEVEL COURSES		
Course Code	Course Title	Credit hours
First Semester		
ANT212	Anatomy I (Basic Anatomy)	1
BCH219	Biochemistry 1	4
PHM215	Ancillary Mathematics I	2
PHS212	Introductory and Blood Physiology	2
PHS213	Cardiovascular and Respiratory Physiology	2
PCG212	Introduction to Pharmacognosy	2
PCG211	Pharmacognosy Practical	1
PCT213	Introduction to Pharmacy and Pharmaceutics	2
PCT201	Pharmaceutics Practical (Dispensing)	-
PCH212	Pharmaceutical Chemistry I	2
PCH221	Pharmaceutical Chemistry Practical	-
PMB212	Principles of Pharmaceutical Microbiology	2
Second Semester		
ANT222	Anatomy II (General Embryology, Teratology & Genetic Anatomy)	3
BCH229	Biochemistry II	2
PHM225	Ancillary Mathematics II	2
PHS224	Renal, Gastrointestinal and Endocrine Physiology	2
PHS225	Neurophysiology and Special Senses	2
PCH223	Pharmaceutical Chemistry II	2
PMB221	Pharmaceutical Microbiology I Practical	1
PCT201	Pharmaceutics Practical (Dispensing)	1
PCH221	Pharmaceutical Chemistry Practical	1
PHS202	Physiology Practical	1
Total		37

300 LEVEL COURSES		
Course Code	Course Title	Credit hours
First Semester		
PCO314	General Principles of Pharmacology	3
PCO315	Autonomic/Neuro-pharmacology	3
PCO301	Pharmacology I Practical	-
CPH301	Basic Computing and Information Technology	3
PMB312	Disinfection and Sterilisation	3
PCH311	Pharmaceutical Chemistry Practical II	1
PCH312	Pharmaceutical Organic Chemistry I	3
PCG312	Medicinal Plants and Alternative Medicine I	2
PCT313	Pharmaceutical Technology I	3
PCT301	Pharmaceutics II Practical (Dispensing II)	-
CED300	Entrepreneurship Development	2
Second Semester		
PCO324	Pharmacology	3
PCO301	Pharmacology	3
PMB321	Pharmaceutical Microbiology II Practical	1
PCH322	Pharmaceutical Analysis I	2
PCH323	Pharmaceutical Organic Chemistry II	2
PCG322	Medicinal Plants and Alternative Medicine II	2
PCG321	Pharmacognosy II Practical	1
PCT323	Physical Pharmaceutics	3
PCT301	Pharmaceutics II Practical (Dispensing II)	1
Total		39

400 LEVEL COURSES		
Course Code	Course Title	Credit hours
First Semester		
PPR412	Pharmacy Management	2
PCN412	Clinical Pharmacokinetics	3
PCH412	Medicinal Chemistry I	3
PIT401	Industrial Training (SIWES)	4
PCT413	Pharmaceutical Technology II	3
Second Semester		
PPR422	Pharmacy Entrepreneurship	2
PPR423	Pharmacy Law and Ethics (Jurisprudence)	2
PCN422	Pathophysiology (Incorporating Pathology)	3
PCO421	Pharmacology II Practical	1
PCO422	Central Nervous System Pharmacology	3
PCO423	Chemotherapy	2
PMB421	Pharmaceutical Microbiology III Practical	1
PMB423	Sterile Products Formulation and Immunology	2
PCH421	Pharmaceutical Chemistry Practical III	1
PCG422	Phytochemistry I	3
PCG421	Pharmacognosy III Practical	1
PCT421	Powder and Tablet Technology Practical	1
Total		37

500 LEVEL COURSES		
Course Code	Course Title	Credit hours
First Semester		
PCO512	Endocrine/Autocoid Pharmacology	3
PCN512	Pharmacotherapeutics I	2
PCN513	Patient Assessment and Drug Administration	2
PPR512	Pharmacoeconomics & Pharmacy Practice	2
PMB512	Microbial Chemotherapy & Bacterial Genetics	3
PCH511	Pharmaceutical Analysis Practical	1
PCH512	Medicinal Chemistry II	3
PCG512	Phytochemistry II	2
PCT512	Formulation and Production of Phytomedicines	2
Second Semester		
PCH523	Pharmaceutical Analysis II	2
PTX522	Clinical & Environmental Toxicology	2
PCN521	Clinical Pharmacy Clerkship I	3
PCN522	Pharmacotherapeutics II	2
PCN524	Advanced Communication Skills	2
PPR521	Professional Dispensing	1
PMB522	Infectious Diseases & Pathogenesis	2
PMB523	Preservation and Fermentation Biotechnology	2
PCT522	Biopharmaceutics	2
PCT523	Dosage Form Evaluation and Drug Stability	2
Total		40

600 LEVEL COURSES		
Course Code	Course Title	Credit hours
First Semester		
PCN610	Biostatistics & Research Methodology	2
PCN611	Clinical Pharmacy Clerkship II	7
PCN612	Pharmaceutical Care	2
PPR612	Supply Chain Management	2
PCO612	Health Psychology & Substance Abuse	2
PCO613	Haemopoietic/Biochemical Pharmacology	2
PHV612	Veterinary Pharmacy	2
Second Semester		
PPJ601	Project	4
PCN620	Drug Information Service	2
PCN621	Clinical Pharmacy Clerkship III	7
PCN622	Public Health Pharmacy & Pharmacoepidemiology	2
PCN624	Pharmacotherapeutics III	2
PCN625	Seminar	1
Total		37

COURSE DESCRIPTION

DOCTOR OF PHARMACY, YEAR ONE COURSES

FIRST SEMESTER

PHY111 Mechanics, Thermal Physics & Properties of Matter (3 Credits)

a) Mechanics

Scalars and Vectors: Addition and resolution of vectors, Rectilinear motion and Newton's law of motion, Inertial mass and gravitational mass; free fall; projectile motion; deflecting forces and circular motion, Newton's law of gravitation; satellites, escape velocity. Gravitational potential well, special case of circular motion. Momentum and the conservation of momentum, work, power and energy; units, potential energy for a gravitational field and elastic bodies, kinetic energy, conservation of energy, energy stored in a rotating rigid body, kinetic energy in elastic and inelastic collisions.

b) Thermal Physics and Properties of Matter

Temperature, heat, work, heat capacities; second law, Carnot's cycle, thermodynamic ideal gas temperature scale, Thermal conductivity; radiation, blackbody and energy spectrum, Stefan's law. Kinetic model of a gas; Equation of state, concept of diffusion, mean free path, molecular speeds, Avogadro's number, behaviour of real gases. A model of a solid, inter-particle forces in solids, liquid and gases, physical properties of solids crystalline structure. Close packing orderly arrangement, elastic deformation of an ordered structure, interference patterns and crystals. Model for matter, surface energy and surface tension, plastic deformation; thermal and electrical properties of metals.

PHY113 Vibrations Waves & Optics (3 Credits)

Periodic motion; Periodic motion of an oscillator; Velocity and acceleration of a sinusoidal oscillation, forced oscillations, resonance, propagation of longitudinal and transverse vibrations. Wave behaviour; reflection of waves, stationary waves, propagation of straight and circular pulses; fiber optics. Diffraction, refraction, dispersion, interference, coherence, polarisation. Waves and light; mirrors, lenses, formation of images, lenses in contact microscope, telescope; chromatic and spherical aberrations and their reduction, dispersion by prisms, relation between colour and wavelength; spectra.

CHM111 General Chemistry 1 (3 Credits)

- a) Relationships of Chemistry to other sciences. Atoms, subatomic particles, isotopes, molecules, Avogadro's number. Mole concept. Dalton's theory. Modern concepts of atomic theory. Laws of chemical combination. Relative atomic masses.
- b) Introduction to nuclear reactions. Nuclear binding energy, fission and fusion reactions.
- c) States of matter: Gases, gas laws. General gas equation. Liquids and solids. Introduction to lattice structure. Isomorphism. Giant molecules.
- d) Introduction to the Periodic Table. Hydrogen and hydrides. Chemistry of Groups O, I, II elements. Acid – Base properties of oxides.

CHM113 Organic Chemistry I □ (3 Credits) □

A □ General introduction

- i. Introduction: Definition of Organic Chemistry. Functional groups.
- ii. General procedure for isolation and purification of organic compounds.
- iii. Determination of structure of organic compounds. Elemental analysis percentage composition, empirical and molecular formula, structural formula.
 - iv. Isomerism. Structural isomerism and stereo isomerism (Geometrical and Optical).
 - v. Electronic theory in organic chemistry. Hybridization leading to formation of carbon, carbon single, double and triple bonds. Hydrogen bonding, electronegativity, dipole moment polarization, bond energy. Inductive and resonance effects.

B. □ Non-polar functional Group Chemistry

- i. Alkanes: Structure and physical properties. Nomenclature: Common (trivial) names. IUPAC names of classes of compounds.
- ii. Substitution actions including mechanism.
 - iii. Alkenes: Structure and physical properties. Reaction: addition (of H_2 , X_2 HX , H_2O , O_3 , etc). ; oxidation polymerization.
- iv. Alkynes: Structure. Acidity of acetylenic hydrogen. Reaction; addition of H_2 , X_2 , H_2O , etc. Test of alkynes.
- v. Benzene: Structure and aromaticity of Benzene. Introduction to electrophilic substitution reactions.

PBB111 Introductory Plant Biology I (3 Credits)

Introduction to Botany. Prospects of a Botanist. Diversity of living organisms and habits, life forms, mode of nutrition, size, shape e.g. common features of organisms. Need of arranging them into classifications. Concept of five Kingdom

and their characteristics and possible evolutionary relationship among major groups of organisms. A brief survey of bacteria, viruses, PPLO. Life cycle of algae, bryophytes, pteridophytes, Gymnosperms and Angiosperms (2 lectures, 1 practical/week).

AEB111 Introduction to Animal & Environmental Biology (4 Credits)

Man's population growth, Environmental Pollution and impact on the biosphere; Faunal biodiversity: Invertebrata (Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematoda, Mollusca, Annelida, Arthropoda, Echinodermata.

Vertebrata (Cephalochordata, Pisces, Amphibia, Reptilia, Aves, Mammalia. Mammalian Anatomy: Anatomy of *Rattus rattus*

GST111 Use of English and Communication Skills and Library Science (2 Credits)

Reading: Writing of Essays Ways of looking at sentences:- structurally, semantically and informationally. The structure of expository paragraphs Outline for essay- topic and sentence outlines Rhetoric: Writing description Rhetoric: Writing definitions Rhetoric: Writing systematic analysis and classification Rhetoric: Writing argumentative essay Rhetoric: Writing persuasions Factors in Reading Comprehension Writing continuous summaries Letter writing Report writing Types, Structure & function of a library Parts of a book & referencing styles The natures and structure of the Library – familiarization with the plan of the University of Benin Library. Procedures and processes in conduction a Library research. Choosing and adequately restricting a topic Scouting for materials Use of card and

bibliography card Methods of note taking Preparation of a research paper Matters of formal style books and related matters: forms of documentation. Writing abstract of research paper Carrying out a short library research project.

GST112 Philosophy and Logic (2 Credits)

Introduction to the scope, notions, branches and problem of philosophy. Symbolic logic: Introduction to the special symbols used: conjunction, affirmation, negation, disjunction, equivalence and conditional statements Law of thought: Deductions using rules of inference and conditionals, quantification theory.

SECOND SEMESTER

PHY109 Practical Physics I (2 Credits)

Students are expected to carry out a minimum of 22 major experiments covering the main aspects of the courses taken in the year.

PHY124 Electromagnetism & Modern Physics (4 Credits)

a) Electromagnetism (3 credits)

Electric field; Strength, Flux and the inverse square law, electrostatic force between two charged particles, Flux model for the electric field, energy stored in an electric field, electrical potential due to a dipole.

Steady direct current; simple circuits, potential difference, resistance, power, electromotive force, Kirchhoff's law, potential divider, slide-

wire potentiometer bridge circuits, combine resistances. Capacitors; capacitance, combination of dielectrics, energy stored in charging /discharging.

Electromagnetic effects; electromagnetic forces, electric motors, moving coil galvanometer, ammeter, voltmeter, electromagnetic induction, dynamo, alternating current; Simple A.C circuits, transformers, motors and alternating currents.

Magnetic field; the field at the center of a current carrying solenoid, outside a long solenoid. Flux model and magnetic fields, electromagnetic induction; induction in a magnetic field, magnitude and direction of induced e.m.f. energy stored in a magnetic field, self-inductance, electricity and matter, current flow in an electrolyte, Millikan experiment; conduction of electricity at low pressure, cathode rays, photo electricity.

b) Modern Physics (1 credit)

Structure of the atom; Atomic theory, x-rays, Planck's quantum theory; wave particle duality of matter, scattering experiment of Geiger and Marsden, Rutherford atomic model, Bohr's atomic model, structure of the nucleus; artificial transmutation of an element, natural transmutation of an element, discovery of neutron particle, emission, isotopes and particles emission, gamma radiation.

CHM122 General Chemistry II (3 Credits) □

Acid, Bases and Salts. Quantitative and qualitative analysis. Theory of volumetric analysis – operations and methods. Calculations; Mole, Molarity Molality. Behaviour of electrolytes. Water. Colligative properties. Ostwald's dilution law. Arrhenius, Bronsted – Lowry, Lewis concepts and applications. Buffers. introduction to reaction rates. Equilibria and equilibrium constants. Solubility products. Common effects. Precipitation reactions. Chemistry of Redox reactions

CHM124 Organic Chemistry II □ (3 Credits) □

A Polar functional group chemistry

- i. Hydroxyl group – Alcohols and phenols. Classification Acidity – comparison. Important methods of preparation and reactions. Tests for alcohols and phenols. Importance.
- ii. Carbonyl group – Aldehydes and ketones : Important methods of preparation, physical properties and reactions: Reduction and oxidation (KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$, Tollen's reagent. Fehling's, Benedict), Addition (NaHSO_3 , HCN , Grignard reagent, ammonia derivatives), Aldol formation and Haloform reaction. Tests for aldehydes and ketone.
- iii. Carboxylic group: Monocarboxylic acids. Structure, physical properties, acidity and resonance. Important methods of preparation – (from alcohols, aromatic hydrocarbons, Grignard reagent). Reactions with bases. Conversion to esters, amides, halides and anhydrides. Test for carboxylic acids and importance.
- iv. Carboxylic acid derivatives: Anhydrides, acid halides, esters and amides. Change in reactivity when $-\text{OH}$ is replaced by OCOR , $-\text{X}$, $-\text{OR}$. $-\text{NR}_2$, reactions with water, alcohols, ammonia, amines, LiAlH_4 ,

NaBH₄. Test for esters.

v. Amino group - Amines. Structure. Physical properties. Important methods of preparation. Basicity and salt formation. Reaction with acids, alkylation, acylation, with nitrous acids. Heinsberg method of separation. Test for amines. Importance.

B□ Miscellaneous

i)□ Fats and oils:□ d e f i n i t i o n , i m p o r t a n c e , saponification. Soaps and detergents. Mode of cleaning action. Use in paints and vanishes.

ii)□ Amino acids and proteins: Definition, classification, essential amino acids, special properties and reactions, isoelectric point. Tests and importance.

iii)□ Carbohydrates: Definition, classification, Importance, nomenclature. Structure and reactions of glucose. Mutarotation. Tests.

iv)□ Natural Products: Main classes (other than lipids, carbohydrates and proteins): Steroids, terpenoids, alkaloids and prostaglandins: Definition, importance and examples.

PBB 122 Introductory Plant Biology II (3 Credits)

The general morphology, anatomy. Histology and physiology of flowering plants. Seed structure, dispersal and germination. Development of primary and secondary plant body. Water relations. Photosynthesis, translocation and storage organs. Respiration (2 lectures, 1 practical/week).

AEB122 Functional Zoology (4 Credits)

Embryology: Gametogenesis, fertilization and cleavage as demonstrated by Amphioxus, Genetics: the cell and distribution of genetic material mitosis, meiosis, inheritance, sex determination and sex-linked inheritance, Histology:

Cells, tissues, organ formation and main features.

Physiology: Functioning of mammalian skin, muscles/skeleton, alimentary system/nutritional requirements and deficiencies.

GST121 Peace Studies & Conflict Resolution (2 Credits)

Basic concept in peace studies and conflict resolution The place of peace in national unity and development Types and causes of conflict Conflict management and peace building Developing a culture of peace The role of citizenship development in National unity and development. Peace mediation and peace-keeping Alternative dispute resolution Dialogue/ arbitration in conflict resolution Role of International organization in conflict resolution. Role of gender in peace keeping and building.

GST122 Nigerian Peoples and Culture (2 Credits)

Nigerian in pre-colonial times: general survey of indigenous culture areas and their characteristics. Evolution of Nigeria as a political Unit: Salient points in the history of Nigeria under colonial rule and thereafter. Contemporary issues in Nigeria education economy and social justice. Norm, values and moral obligations of Nigerian Citizens. Environmental sanitation Cultism and Gangsterism.

GST123 The History & Philosophy of Science (2 Credits)

Theories about the origin of man. Man's cosmic environment – theories about the universe. Scientific methodology (empiricism) Technology is society (definition and history) Renewable and non-renewable resources. Energy resources Environmental effects of chemical, plastics, wastes etc. Chemical and radio-chemical hazards. Various areas of science and technology.

YEAR TWO COURSES FROM SERVICING DEPARTMENTS

DEPARTMENT OF PHYSIOLOGY

PHS 212 Introductory & Blood Physiology (2 credits, 30 hr)

Body fluids, Cell Physiology, Transport System, Excitable cells, contractile tissues. Homoestasis, Control Systems; Blood; Introductory Autonomic Nervous system. □ □ □ □

PHS 213 Cardiovascular & Respiratory Physiology (2 credits, 30 hr)

Cardiovascular physiology: Cardiac muscle, E.C.G., Hemodynamics, Systemic Circulation, Events in Cardiac cycle, Heart rate and its control, Blood Pressure, Cardiac output.

Respiratory Physiology: Introduction to Mechanics of respiration, Lung volumes, Gas tensions, Oxygen Transport, Oxygen dissociation curve, Carbon dioxide transport, Carbon dioxide dissociation curve, Nervous regulation of respiration, Chemoreceptors, Hypoxia, hyperpnoea, Apnoea, Periodic respiration, Dyspnea, Cyanosis.

PHS 224 Renal, Gastrointestinal & Endocrine Physiology (2 credits, 30 hr)

Renal Physiology: Introductory Renal anatomy, Glomerular Filtration and clearance, Tubular reabsorption, T_m , Countercurrent Mechanism, E.C.F. Regulation; Dilute and concentrated urine output, Micturition, Renal hormones, Renin-Angiotensin system.

Gastrointestinal Physiology: Introduction: Mastication, deglutition; Salivation, Stomach and its emptying, Small intestine, Large intestine, Salivary, Gastric and Pancreatic

juices, Reflexes, Digestion, Absorption and Assimilation, Bile.

Endocrinology & Reproduction: Introduction and general features, Thyroid; Parathyroid and calcium Metabolism, Pituitary gland, Adenohypophysis, Neurohypophysis, Adrenal Cortex and Medulla. Pancreas, Thymus, Pineal Gland, Male and Female Reproductive systems.

PHS 225 Neurophysiology & Special Senses (2 credits, 30 hr)

Neurophysiology: Organization of the CNS and CNS control systems, Spinal reflexes, Excitation, Inhibition. Localization of functions in the cortex, Motor system, Pyramidal and Extrapyramidal Sensory systems, Reticular formation, Cerebellum, Control of posture, Neurobiology rhythms, Sleep and unconscious states, Memory, Learning. Autonomic Nervous System: Para-sympathetic and sympathetic neuro-effectors, Cholinergic mechanisms, Adrenergic mechanisms, Autonomic reflexes, Adrenal medulla, autonomic drugs.

Special Senses: Eyeball, retina, sight, accommodation, photochemical mechanism, receptor potential, light reflexes, adaptation, Ear, Sound waves, Hearing, Taste, Smell.

PHS 202 Physiology Practical (1 credit, 45 hr)

This course is designed to augment and enhance understanding of the topics covered in physiology.

DEPARTMENT OF ANATOMY

ANT 212 Anatomy I (1 credit, 60hr)

Basic Anatomy: Basic organization of the human body: A study of human biological structure at various levels of complexity: from subcellular to gross and microscopic structure of individual organ systems. Structure - function correlations are emphasized: Integumentary system, Circulatory system, lymphoid system, Alimentary system, musculoskeletal system, Respiratory system, Urinary system, Genital system, Endocrine system, Organs of special sense.

Histology: Tissues; lymphatic system; alimentary system; exocrine glands; urinary glands; reproductive system; and organs of special senses

Classes: Lectures and practicals

ANT 220 Anatomy II (3 credits, 70 hr)

Neuroanatomy: Basic structural organization of the nervous system: The neuron (Soma and neurites); Centralization and Telencephalization; Neural Circuitry (Receptors, Effectors and the synapse); Spinal cord and brain vesicles; Fate of the Neural Crest. Spinal Cord: General Topography; Grey matter; Ascending and Descending pathways. Brain: □ General Topography; Brainstem; Cerebellum; Diencephalon; Cerebrum. Meninges and Ventricular system: Pia, Arachnoid & Dura Matera; Secretion and Circulation of Cerebrospinal fluid; Blood-Brain Barrier. Peripheral Nervous System: Basic plan; Afferent and Efferent cerebrospinal peripheral nerve endings; Ganglia. Autonomic Nervous system: Basic plan; Sympathetic system; Parasympathetic system; Autonomic effector endings.

General embryology - Male gamete, female gamete, fertilization (gametogenesis), development of early embryo

and developmental malformations

Systemic embryology - musculoskeletal system, respiratory system, cardiovascular system, nervous system, urogenital system, and developmental malformations

Genetic anatomy - genetic apparatus, and genetically related malformations. Influence of drugs on development.

Classes: Lectures and tutorials (2 credits) and practicals (1 credit)

DEPARTMENT OF BIOCHEMISTRY

BCH 219 Biochemistry 1 (4 credits, 60 hr)

This course covers both the theoretical and practical aspects of the following areas:

Importance of biochemistry to the health Sciences - levels of medical care and biochemistry. Membranes and cell structure techniques used in biochemistry and medicine. Protein structure and function-primary, secondary and tertiary structure of proteins in blood, digestion, absorption and transport across membranes; Protein calorie malnutrition.

Metabolism - introduction of the study of intermediary metabolism. Carbohydrate chemistry, digestion, absorption and metabolism. Lipid chemistry, digestion, and metabolism including phospholipids and prostaglandins; lipidoses.

Metabolism of amino acids; amino acid degradation and biosynthesis. Essential and non-essential amino acids. Ketogenic and glucogenic amino acids.

BCH 229 Biochemistry II (2 credits, 30 hr)

Introductory Molecular Biology - Nucleic acids - DNA, RNA and elementary treatment of their structure. Biochemistry of heredity. Discovery and properties of the genetic materials, DNA replication and cell division. Cloning and recombinant DNA Technology, Mutagens and mutation. Mechanism of protein synthesis. Biochemistry of hormones and hormonal action to include actions of cyclic-AMP, cyclic-GMP, adrenaline, glucagon and insulin. Detoxification mechanisms including cytochrome P₄₅₀ and other isoforms. Haem degradation and other important biochemical transformation of medical importance.

DEPARTMENT OF MATHEMATICS

PHM 215 Ancillary Mathematics I (2 credits, 30 hr)

Quadratic equations. Graph of simple functions: polynomials, logarithmic and trigonometric. Matrices: addition, multiplication and inverses. Solution of linear equations in three unknowns. Trigonometrical ratios. Sums of angles. Small angles. Solution of triangles. Differentiation and integration. Area and volume of revolution of solids. Descriptive statistics: mean median mode and standard deviation; frequency distribution and related graphs.

PHM 225 Ancillary Mathematics II (2 credits, 30 hr)

Simple 1st and 2nd order differential equations with constant coefficients. Complex numbers. Algebra of complex numbers, the Argand diagram. Introduction to probability Binomial, Poisson and normal distributions. Introduction to large sample estimates and tests using normal distribution. Linear regression and correlation.

CENTRE FOR ENTREPRENEURSHIP DEVELOPMENT

CED 300 Entrepreneurship Development (2 credits, 30 hr)

Entrepreneurship and Management In Nigeria: The Concept, Philosophy and Practices, Site Selection Options and some techniques for the new Entrepreneur in Nigeria, Sources of funds and Miscellaneous assistance for new Entrepreneurs, Causes of small and Medium Enterprise failure in Nigeria. The Arts and the Development and utilization of technology: The Nigerian Experience, Planning and decision-Making in small and medium Business Enterprises, Human Resources Needs of small and medium business enterprises (Smes) In Nigeria, Business Policy and Entrepreneurship: The

Interface, Marketing Skills for the New Business Enterprises, The Art of Writing Feasibility Studies for New Business Enterprises, Business Enterprises: The Uniben Table Water Factory Experience, The Nigerian Entrepreneur and The Law, The Nigerian Entrepreneur and The Environment of Business, Small and Medium Scale Business Enterprises and Social Responsibility (Accounting) in Nigeria, Starting Your own Public Relations and Advertising Outfit: Preparation and Opportunity, Real Estate Development and Housing Starts in Nigeria: Opportunities for Young Entrepreneurs, Setting Up Educational Institutions in the Nigerian Environment: The Theory, The practice, Women Entrepreneurs: Opportunities and Challenges in Nigeria, Technical Reports on The Establishment of Selected Profit – Yielding Businesses in Nigeria, Challenges in Setting Up Health Related Facilities in The Nigeria Environment, Translating Technical Innovation into Entrepreneurship in Nigeria: Social and Policy Implications. Contributors, index.

Profiles of business ventures in the various business sectors such as Soap/Detergent, Tooth brush and Tooth paste making; Photography; Brick making; Rope making; Brewing; Glassware production/ Ceramic production, Paper production; Water treatment/conditioning/packaging; Food processing/preservation/packaging; Metal fabrication; Tanning industry; Vegetable oil extraction; Farming; Fisheries/aquaculture; Plastic making; Refrigeration/Air-conditioning; Carving, Weaving; Bakery; Tailoring; Printing; Carpentry; Interior Decoration; Animal husbandry etc. Case Study Methodology applied to the development and administration of Cases that bring out key issues of business environment, start-up, pains and gains of growth of businesses, etc. with particular reference to Nigerian businesses. Experience sharing by business actors in the economy with students during Case presentations.

Classes: Lectures and tutorial

***DEPARTMENT OF CLINICAL PHARMACY &
PHARMACY PRACTICE***

**CPH 301 Basic Computing & Information Technology (2
credits, 45 hr)**

Objectives

To provide the basic working knowledge of the computer, and the application of information technology in pharmacy practice.

Course Outline

Introduction to computer; Definition of terms e.g. types of computer, packages, operating systems, software, hardware etc. Different components of computer e.g. CPU, input and output devices, storage devices etc. Programme Languages WINDOWS: Starting a PC, The Windows OS (Run programme from the start menu, work with files and folders, Customize the desktop and taskbar. Manipulating Windows etc. Word Processing, Introduction, Formatting documents, Word Processing features, Printing; Spread sheets: uses, entering and deleting data, sorting, total single and multiple columns, filtering data, creating and using formula; Charts: Statistics analysis using a spread sheet; Graphs, pictures and icons. Retouching and changing dimensions, Painting filling with colours, working with texts; Adding special effects. Multimedia Networking and communications, Robotics, Internet

Telephone satellites etc. HANDS-ON. Problem solving computerization to include needs analysis design, Flowchart etc. Social and ethical implications of computing. AL. speech recognition; Presentation, Uses, creating a presentation, Viewing and formatting a presentation, inserting clip art and pictures. Charts, Animation, Using transition time setting; Database: Uses. Creating database/

Rational database, Queries, Forms Reports; The Internet and its origin. Internet explorers. Electronic Mails, Search engines, Web pages. HTML, Applets E. commerce etc. Introduction to computer modelling in healthcare. HANDS-ON.

Classes: Lectures (1 credit) and practicals (1 credit)

PPR 412 Pharmacy Management (2 credits, 30hr)

Objectives

Discuss the functions of management in an organization; highlight managerial skills involved in different practice areas of Pharmacy

Course Outline

Concept of management and tools of management (men, money, materials and machines); Time Management; Effectiveness and Efficiency in management; Business Goals; Relevance of Management; Internal and External Environment of Management; Management Theories – Scientific Management; Administrative School; and Behavioral School; Roles & Skills of Managers – Interpersonal, Informational, and Decisional Roles; Technical, Human, and Conceptual Skills; Functions of Managers – Planning, Organizing, Controlling, Leading, Staffing, Motivation, Communication; Planning – Meaning & Importance of Planning; Planning Hierarchy & Time Horizons; Organizing – Meaning of Organizing, Organizational Structures & Functions; Chain of Command & Span of Control; Power & Authority in an Organization; Types of Authority; Advantages & Disadvantages of Delegated Authority; Pharmacy Control Systems- Administrative, Financial, Inventory Control; Leadership – Meaning, Role of Leadership; Leadership Characteristics; Synergy between leadership & High performance; High Performance Pharmacy Leadership; Motivation – Maslow's

Theory; Theory X and Y; Herzberg's Two-factor Theory; Organizational Communication Channels & Barriers to Effective Communication; Functions of Human Resource Management; Marketing Management – Marketing Mix (Product, Price, Place, Promotion) & Marketing Communication Mix; Salesmanship; Drug Distribution and problems in Nigeria.

Classes: Lectures and tutorials

PCN 412 Clinical Pharmacokinetics (3 credits, 45 hr)

Objectives

Explain pharmacokinetic (PK) parameters and discuss the role of pharmacokinetics in pharmacotherapy.

Course Outline

Review of Pharmacokinetic parameters:

Review of parameters of absorption, biotransformation, distribution and elimination of drugs; single and multiple dosing regimen kinetics; intravenous bolus kinetics

Pharmacokinetic analysis I: To including compartment and non-compartment methods, and determination of pharmacokinetic parameters (half-life, AUC, volume of distribution, clearance, rate of elimination, etc).

Bioavailability and Bioequivalence of Drugs: Definitions: bioavailability, absolute and relative bioavailability, chemical equivalence, pharmaceutical equivalence, bioequivalence, etc; reasons for determination of bioequivalence/bioavailability; problems in determination.

Biological and Physicochemical factors affecting bioavailability of drugs. Pharmacokinetic analysis II: Determination of bioavailability and bioequivalence; bioanalytical methods including biosafety, sample collection, preparation and instrumental analysis. Clinical Application of Pharmacokinetics: Dosing in chronic illnesses

such as cardiac, renal and hepatic failures, and in hemodialysis; Monitoring of drugs in plasma; Clinical significance of pharmacokinetic parameters in drug therapy. Drug –drug and drug- food interactions, drug-disease interaction.

Therapeutic Drug Monitoring: Definition, Importance, and Commonly Monitored Drugs and Ranges.

Classes: Lectures and tutorials

PPR 422 Pharmacy Entrepreneurship (2 credits, 30 hr)

Objectives

Acquire knowledge and skills required to set up and run a successful pharmacy business

Course Contents

Definition of pharmacy entrepreneurship; Entrepreneurial Development & Objectives of Entrepreneurial Development; Characteristics of successful entrepreneurs; Requirements for starting one's own pharmacy; Acquiring an existing pharmacy business; Business forms – Sole proprietorship, Partnership, Private Limited Liability Companies; Public Limited Liability Companies; Cooperatives; Sources of Funds to Business; Business Registration & Registration of Pharmaceutical Enterprise in Nigeria; Business Plan and Case Illustration of Feasibility Study for a Pharmaceutical Enterprise.

Concepts in Accounting & Financial Management; Accounting Records (Purchases Book, Sales Book, Returns Book, Cash Book, Ledgers); Accounting Equation; Financial Statements – Profit & Loss Accounts; Balance Sheet, Cash Flow Statements; Financial Ratios – Liquidity or Solvency Ratios (Current Ratio, Quick Ratio, Working Capital; Cash Flow); Profitability Ratios – Gross Profit Margin, Net Profit Margin, Return on Investment; Inventory Management

(Physical Stock Taking & Perpetual Inventory Control).
Research & Development: Consultancy and research services; information and communication technologies; product design, development and presentation; launching new products/services

Classes: Lectures and tutorials

PPR 423 Pharmacy Law & Ethics (Jurisprudence) (2 credits, 30 hr)

Objectives: To equip students with pharmacy laws, drug laws, regulations and ethics guiding pharmacy practice and use of medicines.

Course Outline

Aspects of laws relating to Pharmacy Practice in the following agencies/bodies; National Agency for Food and Drug Administration and Control (NAFDAC), National Drug Law Enforcement Agency (NDLEA), Standard Organization of Nigeria (SON), Pharmacists Council of Nigeria (PCN), WHO/FAO Codex Alimentarium Commission, United Nations Narcotic Commission, Federal Environmental Protection Agency (FEPA), etc.; Food, Drug and Cosmetics laws including regulation, inspection, registration, advertising, manufacture, sale/distribution; Poison, Dangerous Drugs and Pharmacy Acts; Essential Drugs List (EDL), Fake and Counterfeit Drug laws; Consumer Protection Council law; All other relevant laws related to the practice of pharmacy including those of the Pharmacists Disciplinary Committee and Assessors rules, Pharmacists registration rule, Dispensing of Drugs, Patent and Proprietary Medicines, etc. Legislation on animal health products; National Health; Insurance Scheme (NHIS) and other health policies, and National Drug Policy; Ethics of pharmacy profession in Nigeria.

Classes: Lectures and tutorials

PCN 422 Pathophysiology (Incorporating Pathology)
(3 credits, 45 hr)

Objectives

Introduce pathology of diseases; Discuss pathophysiological basis of diseases; Appreciate the role of pathophysiology in pharmacotherapy.

Course Outline

Pathology

Cell Pathology & Cell Injury;; Cell Injury- Homeostasis; Causes of cell injury; Mechanisms of cell injury; Outcomes of cell injury; Morphological changes in cell injury; Reversible & Irreversible cell injury; Calcification; Amyloidosis; Cell death & Necrosis; Apoptosis; Cellular Aging; Atrophy; Hypertrophy & hyperplasia; Metaplasia . Inflammation, Healing & Repair: Cellular signs of inflammation; Effects of inflammation; Acute inflammation; Chronic inflammation; Healing & Repair: Regeneration & Fibrosis; Mechanisms of Repair; Skin & Wound Healing;

Pathophysiology

Topics include definition, etiology, epidemiology; pathogenesis, clinical manifestations/complications, and diagnosis of disorders of the: Cardiovascular system: Hypertension, CHF, Angina, MI, Hyperlipedemia, Stroke; Respiratory system: Asthma, COPD; Gastrointestinal system: Endocrine system: Diabetes, thyroidism; Peptic ulcer and Liver cirrhosis; Renal system: Renal failures, Fluid & electrolyte disorders; Musculoskeletal system: Rheumatoid arthritis, osteo arthritis, gout; Haemopoietic system: Anemias (sickle cell, iron deficiency, vitamin deficiency;

Central nervous system: Schizophrenia, unipolar and bipolar disorders;

Classes: Lectures and tutorials

PCN 512 Pharmacotherapeutics I (2 Credits, 30 hr)

Objectives: To emphasize the application of the knowledge of the pathophysiology, clinical manifestations, epidemiology, diagnosis, biopharmaceutics and pharmaceutical care to develop skills in planning the rational therapeutic and non-drug therapy of selected diseases.

Course Outline

Areas to be covered will be pharmacotherapeutics of the following:

Cardiovascular Disorders – Hypertension, Cardiac Failure, Dyslipidemia, Ischemic Heart; Disease, Acute Coronary Syndromes, Arrhythmias, Venous Thromboembolism, Stroke; Case Reviews of Cardiovascular Disorders.

Respiratory Disorders – Bronchial Asthma, Chronic Obstructive Pulmonary Disease

Gastrointestinal Disorders - Gastroesophageal Reflux Disease, Peptic Ulcer Disease, Drug-Induced Liver Disease; Case Reviews of Respiratory Disorders.

Endocrine Disorders - Diabetes Mellitus, Thyroid Disorders; Case Reviews of Endocrine Disorders.

Renal Disorders - Acute Renal Failure, Chronic Kidney Disease, Glomerulonephritis, Nephrotic Syndrome; Case Reviews of Renal Disorders.

Psychiatric Disorders - Schizophrenia, Mania and Depression; Case Reviews of Psychiatric Disorders.

Classes: Lectures and tutorials

PCN513 Patient Assessment and Drug Administration (2 credits, 30 hr)

Objectives

To introduce students to the principles of clinical pharmacy; Obtain medical histories, screen patients for common medical problems, measure and evaluate vital signs, detect adverse drug reactions, monitor patients' therapies. Students will also be able to administer drugs effectively as appropriate.

Course Outline

Principles of patient assessment; Medical Abbreviations & Terminologies; Patient Interview; Physical Assessment techniques and the role in identifying drug therapy problems; Physical Assessment of the cardiovascular system; respiratory system, gastrointestinal system, genitor-urinary system, skin etc. Biological & Pathological Test Methods & Interpretation with relevance to pharmacotherapeutics; Administration of Eye, Ear, Vaginal, Anal, Topical and other preparations

Classes: Lectures and tutorials

PCN 521 Clinical Pharmacy Clerkship I (3 Credits, 135 hr)

This course is designed to expose students to experience direct patient care in clinical settings; identify and resolve drug therapy problems under supervision. Clinical rotations are conducted in outpatient and inpatient departments which should include internal medicine and psychiatric units; community pharmacy. Students should refer to the Clerkship Manual for details.

PCN 522 Pharmacotherapeutics II (2 credits, 30 hr)

Objectives

Emphasise the application of the knowledge of the pathophysiology, clinical manifestations, epidemiology, diagnosis, biopharmaceutics and pharmaceutical care to develop skills in planning the rational therapeutic and non-drug therapy of selected diseases; Develop students' awareness and knowledge of nutrition in pharmacy practice

Course Outline

Infections – Malaria, Tuberculosis, HIV/AIDS, Sexually Transmitted Infections and Syndromic Management

Nutritional Disorders – Enteral Nutrition, Parenteral Nutrition, Total Parenteral Nutrition; Fluid & Electrolyte, Acid-Base Balance

Rheumatologic Disorders – Osteoporosis, Rheumatoid Arthritis, Osteoarthritis

Hematologic Disorder – Anemias

Oncologic Disorders – Breast cancer, Prostate cancer, Leukemias

Neurologic Disorders - Parkinson's disease, Epilepsy & Pain Management

Urologic Disorders- Erectile Dysfunction, Benign Prostatic Hyperplasia

Ophthalmic Disorder – Glaucoma

Critical care therapeutics

Case studies and WHO/other standard indicators/prescribing guidelines are employed as approaches to developing the ideas of rational drug therapy, monitoring drug therapy and interactions.

Classes: Lectures and tutorials

PCN 524 Advanced Communication Skills (2 credits, 30 hr) □

Objectives

This course is designed to enable students to be proficient in scientific and technical writing, presentation, interpersonal communication with patients and collaboration with other health professionals,

Course Outline

This will include the principles of communication, interpersonal communication, emphatic listening, conflict management, assertiveness, patient education and counseling, patient interview, medication history taking, etc.

Classes: 1 hour of lectures and 1 hour of recitation (consisting of presentation and writing exercises) per week.

PPR 521 Professional Dispensing (1 credit, 45 hr)

Objectives

Enable the student with an understanding of prescription and non-prescription drug dispensing and prosthetics and their place in self-medication; Able to critically evaluate and identify drug products, make sound judgments concerning the benefit to the patient and be able to make prudent recommendations.

Course Outline

Areas to be covered include prescription drugs, non-prescription drugs, intravenous fluids and injections, ophthalmic and nasal preparations, extemporaneous preparations, vaccines, etc.

Classes: Practicals

PPR 512 Pharmacoeconomics & Practice of Pharmacy (2 credits, 30 hr)

Objectives

Provide students with the understanding of the concept of pharmacoeconomics, drug distribution systems in the hospital and ways to promote rational medicine use.

Course Outline

Definitions, overview of basic economics. Structure and politics of Nigerian health system; healthcare costs.

Pharmacoeconomic techniques i.e. cost minimization, cost effectiveness, cost utility, cost benefits; pharmacoeconomic methods i.e. objectives, study design, comparison of alternatives and cost assessment.

Unit Dose Dispensing & Floor Stock; Telepharmacy & Robotic Dispensing.

Rational Medicine Use; Factors for Irrational Use & Strategies to Promote Rational Use of Medicines; Essential Medicines List, Standard Treatment Guidelines; Pharmacy and therapeutic committee, drug utilization review/evaluation; Drug Revolving Fund; National Health Insurance Scheme.

Classes: Lectures and tutorials

PCN 612 Pharmaceutical Care (2 credits, 30 hr)

Objectives

Explain the philosophy of pharmaceutical care as the mission of pharmacy; Acquire knowledge and skills to deliver pharmaceutical care; Identify and resolve drug therapy problems; Apply pharmaceutical care in disease state management

Course Outline

Transitions in Pharmacy Practice – Apothecary, Compounding, Distribution, Clinical Pharmacy, Pharmaceutical care & Total Pharmacy Care Models; Comparison between traditional pharmacy practice and pharmaceutical care, Clinical pharmacy & pharmaceutical care; Concept and Origin of Pharmaceutical Care; Pharmaceutical Care Outcomes (Clinical, Humanistic & Economic) & Quality Assessment; Philosophy of Pharmaceutical Care- Social Need, Patient Centered Care, Caring, & Pharmacist's Responsibility; Steps in Delivering Pharmaceutical Care to Patients – Establishing Professional Relationship, Subjective and Objective Patient Data, Data Evaluation, Identification of Drug Therapy Problems, Development & Implementation of Care Plans, Pharmaceutical Care Documentation; Scope of Drug Therapy Problems; Barriers to Pharmaceutical Care; Marketing Pharmaceutical Care; Pharmaceutical Care in Special Populations- Pediatrics & Elderly; Pharmaceutical Care in Selected Disease States- Hypertension; Diabetes, Malaria; HIV/AIDS; Medication Therapy Management

PCN 610 Biostatistics and Research Methodology (2 credits, 30 hr)□

Objectives

Use and evaluate biostatistical and research methodologies in the practice of pharmacy; Evaluate the appropriateness of the research methodology designed to answer a research question or to test a hypothesis, select an appropriate statistical test, analyzing data using a statistical computer package, explain and evaluate the results, and apply the results to decisions about research and practice.

Course Outline

Introduction to research: concept & types of research, scientific process, Research design; Data collection: sampling techniques, questionnaire design/administration; Literature search & evaluation, Data analysis & presentation of results, Systematic Review, meta-analysis, scientific writing/ referencing, seminar presentation.

Basic statistics including definition of biostatistics, data in biology (definition, presentation, population and sample, etc), measures of central tendency/dispersion, hypotheses testing, confidence interval, parametric and non-parametric analysis; and multiple comparisons; two factor analysis of variance; chi-square test and other measures of association including linear regression, multiple regression, logistic regression, correlation, and relative risk, data transformations, survival analysis, multi-way factorial analysis of variance, binomial distribution, testing for randomness; data transformation, and analysing data using statistical computer packages.

Classes: Lectures and tutorials

PCN 611 Clinical Pharmacy Clerkship II (7 credits, 315 hr)

The course is designed to build on Clerkship I and provide advanced experiential learning in community pharmacy and hospital departments. Students should refer to the Clerkship Manual for details.

PPR 612 Supply Chain Management (2 credits, 30 hr)

Objectives: To discuss standard guidelines for proper storage of health commodities, monitoring and evaluation of logistics activities and logistics assessment systems

Course Outline

Storage of Health Commodities; Assessing Health Logistics System; Product Selection and Quantification for Health Commodities; Supply Planning and Shipment Scheduling; Monitoring and Supervision of Logistics System; Setting the context of the Course and Introduction to Supply Chain Management; Introduction to the Standard Operating Procedure (SOP) Manuals for the SCM Facilities and Staff in the SCM of Health Commodities; Logistics Management Information System (LMIS); Introduction to Maximum-Minimum Inventory Control System (ICS); Adjusting Pipeline in the Max-Min Inventory Control System and Assessing stock status

Classes: Lectures and tutorials

PCN 620 Drug Information Services (2 credits, 30hr) □

Objectives

Apply systematic approach to answering drug information requests; Use various types of reference sources; Evaluate literature, review monographs, write abstracts and a drug monograph for formulary review, and/or write a paper for publication.

Course Outline

Information sources and services, their methods of use and the nature and status of information available such as books, journals, the pharmaceutical associations, drug information centres, poison centres, self-help societies, industries and the Internet-based information; skills required in disseminating information; limitations on the use of drug leaflets; legal status of advice from local drug information centres and its relationship to professional responsibility and negligence; principles of information evaluation; drug information

service and monitoring/evaluation of adverse drug events;
Journal Clubs

Classes: Lecturers (1 credit) and clerkship (1 credit)

PCN 621 Clinical Pharmacy Clerkship III (7 credits, 315 hr)

The course is designed to build on Clerkship I & II and provide advanced experiential learning in community pharmacy and hospital departments. Students should refer to the Clerkship Manual for details.

PCN 622 Public Health Pharmacy & Pharmacoepidemiology (2 credits, 30 hr)

Objectives

Appreciate expanding frontiers of pharmacy practice; Discuss the role of the pharmacist in public health; Design, implement & evaluate community-based public health interventions; Describe key concepts and applications of pharmacoepidemiology; Explain the role of pharmacovigilance in medication safety

Course Outline

Concept of Health; Models of Health – Biomedical, Socio-environmental, Behavioral; Triangular Model of Health (Health, Habits, & Habitat); Scope and Role of Public health; Determinants of Health; Culture & Health, Water & Health, Housing & Health should be specifically discussed; Population Health Indicators (Life expectancy, Infant mortality, Morbidity, Median age); Public Health Pharmacy, Meaning, Challenges & Role of Pharmacists in Public health; Stratification of Public Health Pharmacy (Micro and Macro levels); Health Promotion Model comprising health protection, disease prevention (primordial, primary, secondary, tertiary), and health education; Specific Health

Education Themes: Exercise & Fitness including types of physical exercise (aerobics, strength, balance, & flexibility); Smoking Cessation; Substance Abuse; Alcohol Moderation & Management of Alcoholics; Drugs in Sports & List of Prohibited Agents; Mental Public Health; Oral Health; Obesity & Weight Management; Food Security; Primary Health Care – origin, components, principles, and WHO/UNICEF primary health care measures for children; Drug use in infertility and family planning management

Overview of Epidemiology & Epidemiological Designs; Epidemiology & Control of Infectious Diseases such as malaria, hemorrhagic fever (Ebola & Lassa), HIV/AIDS; Overview of Pharmacoepidemiology & Pharmacovigilance Programs

PCN625 Seminar (1 credit, 15 hr)

Each student is expected to present a seminar based on his/her project. The seminar shall be presented prior to presentation of the project for final assessment.

PPJ601 Project (4 credits, 180 hr)

This course is a project assigned to the student under the supervision of one or more academic staff.

DEPARTMENT OF PHARMACOLOGY & TOXICOLOGY

PCO 314 General Principles of Pharmacology (3 credits, 45hr)

Objectives: To expose the students to the basic principles and concept in pharmacology

Course Outline

Definition of pharmacology, scope and sub-divisions of pharmacology, methods and measurements in pharmacology: drugs development and evaluation; biological assays; clinical trials; measurement and evaluation of toxicity, Pharmacokinetics: routes of drug administration, kinetics of drug absorption, distribution, blood-brain-barrier, placental barrier, biotransformation and elimination, Pharmacodynamics: mechanisms of drug action, drug receptors, signal transduction and second messengers, selectivity of drug action, factors affecting drug action in man, dose-response relationships, agonists, antagonists and their interactions with receptors. Drug toxicity and adverse drug reactions.

Classes: Lectures & tutorials

PCO 315 Autonomic and Neuropharmacology (3 credits, 45 hr)

Objectives: To enable the students understand neurophysiological mechanisms in drug action

Course Outline

Review of the anatomy and physiology of the autonomic and somatic nervous systems; General principles of neurohumoral transmission; Cholinergic transmission; synthesis, storage and release of ACh; Muscarinic and nicotinic actions of ACh; Muscarinic receptor agonists and

antagonists; Cholinesterases and anticholinesterases; Drugs used in myasthenia gravis; Drugs affecting autonomic ganglia; Neuromuscular blocking agents; Adrenergic Transmission; Synthesis, storage and release and inactivation of noradrenaline; Neuronal and extraneuronal uptake mechanisms; Sympathomimetic amines, adrenergic neuron blocking drugs, drugs affecting the storage, release and disposition of neurotransmitters; Adrenoceptor blocking agents (alpha and beta blockers); Methods of studying neurotransmitters; Nitric oxide (NO) and Non-Adrenergic Non-Cholinergic (NANC) transmission.

PCO 324 Systemic Pharmacology (3 credits, 45 hr)

Objectives: To highlight drug actions in some systems of the body.

Course Outline

Ocular Pharmacology: Miotics and mydriatics, drugs used in glaucoma, ophthalmological diagnostic agents; Respiratory Pharmacology: Asthma and antiasthmatic drugs, expectorants, mucolytics and antitussives; Cardiovascular pharmacology: Hypertension and antihypertensive drugs, K^+ channel modulators, anti-anginal drugs, cardiac glycosides and other inotropic agents, antiarrhythmic agents; Gastrointestinal pharmacology: Laxatives and purgatives, antidiarrhoeal drugs, oral rehydration therapy, antipeptic ulcer drugs, spasmolytics, emetics and anti-emetics; Renal Pharmacology: Diuretics – osmotic diuretics, carbonic, anhydrase inhibitors, thiazides, loop diuretics, K^+ sparing, diuretics. Urine pH-altering agents.

Classes: Lectures and tutorials

PCO 301 Pharmacology I Practical (1 credit, 45hr)

Experiment I: The Influence of the route of drug administration on pharmacological response.

Experiment II: The relationship between agonist concentration and magnitude of drug response.
Experiment III: Introduction to bioassay methods.
Experiment IV: Experiment on rabbit jejunum
Experiment V: The Guinea pig ileum preparation
Experiment VI: The rat uterus preparation
Experiment VII: Cholinesterases and anticholinesterases
Experiment VIII: The effect of neuromuscular blocking drug on the rat phrenic-nerve diaphragm preparation
Experiment IX: Assay of antagonists
Experiment X: Specificity of antagonists
Demonstration I: Finkleman Preparation
Demonstration II: The isolated perfused heart (Langendorff) preparation
Demonstration III: □ The study of the effect of parasympathomimetic drugs on cardiovascular system (in vivo).
Demonstration IV: □ To demonstrate adrenergic mechanisms using cat blood pressure.

PCO 422 Central Nervous System Pharmacology (3 credits, 45 hr)

Review of the functional organization of the CNS; Local anesthetics, theories of general anaesthesia, general anaesthetic agents, preanaesthetic medication; Hypnotics and sedatives; Centrally acting muscle relaxants; Alcohol; CNS stimulants; Drugs used in Parkinson's disease; Drugs used in other neurodegenerative diseases; Antipsychotics; Antidepressants and mood stabilizing drugs; Opioid analgesics, and antagonists; Non-steroidal anti-inflammatory analgesics; Antiepileptic drugs.

PCO 423 Chemotherapy (2 credits, 30hr)

The pharmacology of the following drugs: Sulphonamides, beta-lactam antibiotics (penicillins, cephalosporins,

carbapenems, and monobactams), tetracyclines, chloramphenicol, aminoglycosides. Miscellaneous antibiotics - macrolides, polymyxins, lincosamides, flouroquinolones, metronidazole, bacitracin.

Chemotherapy of tuberculosis and leprosy; Antifungal agents; Chemotherapy of protozoan parasitic infections: antimalarials, antiamoebics, drugs used in trichomoniasis, gardiasis, trypanosomiasis, leishmaniasis; Antihelmintics; Antiviral agents; HIV/AIDS treatment; Antineoplastic agents.

PCO 421 Pharmacology II Practical (1 credit, 45hr)

Experiment I: Determination of action of drug on sympathetic nerve function

Experiment II: Screening test for local anaesthetics.

Experiment III: Analgesic testing

Experiment IV: Evaluation of substances that modify the action of the central nervous system

Experiment V: Action of drugs on the eye

Experiment VI: Analysis of unknown drugs:diverse techniques.

PCO 512 Endocrine & Autocoid Pharmacology (3 credits, 45hr)

Thyroid and antithyroid drugs; Drugs used in diabetes – insulin, oral hypoglycaemic agents, and glucagon; Corticosteroids; Pituitary hormones; Sex hormones; Anabolic steroids; contraceptives; Ergot alkaloids; Uterine relaxants; Histamine, Histamine receptor antagonists; 5-hydroxytryptamine and 5-HT antagonists; The kinins; Prostaglandins and leukotrienes (SRSA); Renin-angiotensin system; Substance P.

PTX 522 Clinical and Environmental Toxicology (2 credits, 30 hr)

Objectives: To discuss the problems of posing and drug-drug and drug-food interactions and be able to address them clinically

Course Outline

Definition of toxicology and toxicant; Management of acute drugs poisoning; Plant, bacterial and animal poisoning; Solvent poisoning; Pesticides, herbicides; Radiation toxicology; Air-borne poisoning; Poisoning caused by animal bites; Heavy metals and chelating agents; Toxicity of drug-drug interactions, Management of poisoning

Classes: Lectures and tutorials

PCO 613 Haemopoietic & Biochemical Pharmacology (2 credits, 30hr)

Objectives

Explain role of iron and vitamins in good health; Discuss the role of pharmacogenetics and pharmacogenomics technologies in drug discovery, development, and post-marketing surveillance

Haemopoietic: Drugs in iron deficiency anaemia; Vitamins and other therapeutic nutritional supplements;

Biochemical: Principles of biochemical pharmacology. Pharmacological methods of screening various drugs e.g., analgesics. Screening of sedatives, hypnotics, neuroleptics, diuretics, muscle relaxants, local and general anaesthetics. General principles of drug evaluation – clinical trials, potency and toxicity. Statistical calculations of LD50, ED50, and data comparison (Student t-test). Drug antagonism and determination of pA values – Schild plot. Transport of drugs across biological membranes. Function of sub-cellular structures. Neurohumoral transmission. Drug-receptor interactions and theories of drug action. Mechanisms of drug action. Biochemical mechanisms of drug resistance.

Cholesterol metabolism and hypolipidemic drugs; Anticoagulant; Fibrinolytics; Antifibrinolytics and antithrombotics. Structure-activity-relationships (sympathomimetics, cholinomimetics, narcotic analgesics, barbiturates, etc).

Pharmacogenetics and genomics:

Pharmacogenetics: Definition; Genes and their organization and regulation; alleles and phenotype; polymorphisms in human populations; Pharmacogenetics and idiosyncratic reactions; Drug metabolism and disposition: Phase I and Phase II reactions; Hepatic and extra-hepatic metabolism, Induction and inhibition of drug metabolism; human genetic variation and drug metabolism, activation, and disposition; Pharmacogenomics: Definition; genomic databases and resources on the Internet; genomic technologies and drug discovery and development; Implication and application in drug delivery systems; pharmacogenomics *and* postmarketing surveillance; legal and ethical issues in genetic testing and patient stratification in clinical trials

Classes: Lectures and tutorials

PHV 612 Veterinary Pharmacy (2 credits, 30 hr)

Objectives: This course will afford the student knowledge of the common diseases of animals and their therapies.

Course Outline

Common Animal Diseases: Diseases to be covered include those of ruminants (sheep, goats and cattle), horses, pigs, fish, small animals (cats and dogs) and poultry; contagious bovine pleuropneumonia, foot and mouth disease, sleeping sickness, African swine fever, rhinderpest, rabies, fowl cholera, Salmonellosis and coccidiosis.

Therapeutics: Veterinary dosage forms and routes of drug administration in veterinary practice; common veterinary drugs – antibacterial, antiviral, antifungal, antiprotozoan and

anthelmintics;; vaccines and other biologicals; anti-inflammatory agents and corticosteroids; vitamins; haematinics; dietary supplements; digestants and other feed additives; insecticides and ascaricides and rodenticides; disinfectants (antiseptics topical and urinary).

Classes: Lectures and tutorials

PCO 622 Health Psychology and Substance Abuse (2 credits, 30 hr)

Objectives

Give an overview of health psychology; Expose the students to the problems of substance abuse and dependence; Illustrate strategies for prevention, rehabilitation and management

Course Outline

Health Psychology: General principles of psychology, medical sociology, role of psychology in healthcare delivery, management of aggression and stress, psychological factors in anxiety, depression and psychosomatic illness, etc.

Substance Abuse: Drug abuse and their effects - social, economic, health, legal and psychological; nature of substance abuse – strategies for treatment, rehabilitation and prevention

Classes: Lectures and tutorials

PPJ601 Project (4 credits, 180 hr)

This course is a project assigned to the student under the supervision of one or more academic staff.

***DEPARTMENT OF PHARMACEUTICAL
MICROBIOLOGY & BIOTECHNOLOGY***

**PMB 212 Principles of Pharmaceutical Microbiology
(2 credits, 30hr)**

General structure of the bacterial cell; the bacterial spore, its structure and resistance to inactivating agents. Systematic classification of bacteria and characteristics of major groups – Taxonomy. Protoplasts, spheroplasts and L-Forms. Nutritional requirements and growth of bacteria. Bacterial culture media and evolution of pure culture technique. Enumeration of microorganisms. Fungi and moulds; their importance in pharmacy, and medicine. The Rickettsia, Chlamydia, Viruses (including HIV/AIDS) and viral replication. Introductory parasitology; Protozoal parasites of Public Health importance

**PMB 221 Pharmaceutical Microbiology I Practical
(1 credit, 45 hr)**

The practical exercises in this course are designed to make the students appreciate some of the principles and techniques which are unique to the field of microbiology. They include exercises on ubiquity of microorganisms; effect of environmental factors on growth and survival, Nutritional requirements and microscopic examinations of bacteria.

PMB 312 Disinfection & Sterilization (3 credits, 45 hr)

The preparation and handling of sterile pharmaceutical products requires the adoption of techniques aimed at minimizing or completely eliminating the possibility of contamination by microorganisms, whether pathogenic or not. This is a theoretical and practical course on disinfection and sterilization designed to ensure basic knowledge acquired for performance of these skills. They include;

General principles of physical and chemical sterilization. Chemical disinfection and microbiology of air; properties of ideal chemical disinfectant, and factors affecting the activity of chemical disinfectants and disinfection. The major groups of chemical disinfectants. Their properties, storage and uses. Method of Evaluation of potency of disinfectants and antiseptics; Extinction Time and Phenol Coefficient Methods. Bacteriostatic and Fungistatic activity determinations. Modes of action of chemical antibacterial agents used as disinfectant and antiseptics. The design of aseptic room and the provision of clean air.

Official Methods of sterilization by heat; other methods of sterilization. e.g. Use, of gases, radiation and filtration. Sterility Testing of Filtration-sterilized products and of bacteria proof filters.

Classes: Lectures and tutorials

PMB 321 Pharmaceutical Microbiology II Practical (1 credit, 45 hr)

This course is designed to augment and enhance understanding of the principles studied in PMB312, for example exercises are carried out on factors affecting bactericidal activity, determination of phenol coefficient values etc.

PMB 421 Pharmaceutical Microbiology III Practical (1 credit, 45 hr)

The focus of this course is aseptic techniques and preparation of some sterile products such as eye drops and single-use parenteral large volume solutions.

PMB 423 Sterile Products Formulation & Immunology (2 credits, 30 hr)

Objectives: Discuss aseptic techniques and preparation of

sterile products; basic principles & applications of immunology

Course Outline

The focus of this course is aseptic techniques and preparation of some sterile products such as eye drops and single-use parenteral large volume solutions. Areas to be covered will include: Parenteral products, injections (single and multi-dose), eye preparations, and contact lens solutions – their formulation, preparation and use; solvents for parenteral preparations; pyrogens and apyrogenic water; effects of routes of administration on parenteral products Principles of immunology, immunity, antigens, antibodies – their reactions and applications; antibody production; hypersensitivity, allergy, atopy and other outcome of antigen-antibody reactions; Immunization procedures; immunological products – production and quality control; types of bacterial and viral vaccines; toxoids; immunosera; diagnostic reagents e.g. Schick, Dick and Tubercullin Testing reagents.

Classes: Tutorials and practicals

PMB 512 Microbial Chemotherapy and Bacterial Genetics (2 credits, 30 hr)

Brief historical perspective of chemotherapy. Fundamental principles of rational chemotherapy – selective toxicity principle. Classification of antimicrobial agents with special reference to mechanism of action and chemical structures. Drugs inhibiting cell-wall synthesis - beta-lactam antibiotics. Inhibitors of protein synthesis - aminoglycosides, macrolides, tetracyclines. Drugs which interfere with cell membrane integrity. Inhibitors of RNA and DNA Synthesis – refamyans and quinolones. Miscellaneous antimicrobials e.g., sulphonamides,

trimethoprin, fusidic acid, clindamycin, lincomycin, chloramphenicol. Antifungal Agents. Antiviral Agents. Interferon and Interferon Inducers. Chemotherapy of some parasitic infections. Development of resistance to antibiotic by microorganisms: plasmid mediated and biochemical basis. Control of emergence of resistance. Introduction to Bacterial Genetics and Genetic engineering.

Classes: Lectures and tutorials

PMB 522 Infectious Diseases and Pathogenesis (2 credits, 30 hr)

Current drug therapies for AIDS and its associated opportunistic infections; the psychological aspects of HIV pharmaceutical services will be discussed with emphasis on the role of the pharmacist as HIV/AIDS counselor/educator; Infections, mechanisms of infections, host-parasite relationship, transmission of infections. Pathogenesis, human pathogenic bacteria, identification and infection patterns of Gram negative and Gram positive organisms, urinary tract, GIT and respiratory tract infections.

PMB 523 Preservation and Fermentation Biotechnology (4 credits, 60 hr)

Objectives:

- To have adequate knowledge of preservation and industrial fermentation
- To understand the molecular biology and technology associated with genetic engineering

Course Outline

Preservation and Fermentation (2 credits): General principles of spoilage and preservation against biodegradation. Raw Materials quality. Water and its purity. In-process Microbiological Controls; Quality Assurance of

finished products; limiting number of viable organisms. Principles of preservation of multiphase systems, Factory and Hospital hygiene. Code of Good Pharmaceutical Manufacturing Practical (GPMP). Fundamentals of Industrial Fermentation. Use of Micro Organisms in Biotechnology. Search for Cultures. Approaches in Strain Development Genetic/Enzymatic engineering techniques. Selective isolation of Mutants. Maintenance and preservation. Media development and processing. Fermentation and product recovery. Primary and Secondary Metabolites

Pharmaceutical Biotechnology (2 credits)

Introduction to Bacterial Genetics and Genetic engineering

Basic techniques in biotechnology – cutting and joining of DNA molecules, cloning techniques, construction of DNA structure, screening methods, DNA analysis, mutagenesis, PCR

Medical importance of recombinant proteins e.g., insulins, growth hormones, interferon.

Engineering antibodies for therapy – production of monoclonal antibodies, recombinant antibodies and antibody fragment.

Biotechnology in vaccines development – DNA vaccines, vaccine production by recombinant DNA for prevention of viral and bacterial infections

Classes: Lectures and tutorials

***DEPARTMENT OF PHARMACEUTICAL
CHEMISTRY***

PCH 212 Pharmaceutical Chemistry I (2 credits, 30 hr)

(i) Atomic and Molecular Structure: In this course, a short review of electronic structure of atoms and molecules including introduction of quantum theory, application of Shrodinger equations to simple systems (e.g. the Hydrogen atom) to show the origin of the: n, l, m, s. nomenclature will be carried out. The relationship between the electronic structure of elements and the formation of covalent, ionic and coordinative (dative) bonds leading to complexation and chelation and the nature and pharmaceutical important application of co-ordination compounds, metal complexes and chelating agents will be discussed.

(ii) Pharmaceutical Inorganic Chemistry: This course will involve a comparative study of the physico-chemical properties, preparation and uses of the elements of the periodic table and their compounds of pharmaceutical importance. The chemical basis for the pharmaceutical uses will also be emphasized.

PCH 221 Pharmaceutical Chemistry Practical I (1 credit, 45 hr)

Practical exercises in quantitative analysis of compounds of Pharmaceutical important.

- Standardization of NaOH (use of primary standard).
- Standardization of HCl (Use of secondary standard).
- Determination of the percentage of acetyl salicylic acid in Aspirin.
- Determination of the percentage of sodium salicylate in a given sample.



- Determination of sodium potassium lactate, Rochelle salt $\text{NaKC}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$.
- Standardization of 0.1N KMnO_4 solution, determination of FeSO_4 in a given sample.
- Determination of percentage of calcium lactate in the given sample.
- Standardization of 0.1N sodium thiosulphate solution of Iodine, B.P. determination of strong iodine solution. Determination of percentage of w/v $\text{C}_6\text{H}_5\text{OH}$ (Phenol).
- Determination of percentage of NH_4Cl (Ammonium Chloride) in the given sample.

Gravimetric determination of sulphur

PCH 223 Pharmaceutical Chemistry II (2 credits, 30 hr) (i)

Physical Chemistry: Review of principles of thermodynamics, chemical and ionic equilibria, and chemical kinetics relevant to pharmacy, effect of these on the feasibility, of drug synthesis, mixing, solubility, and biological redox systems.

(ii) □ Radiochemistry/Radiopharmacy: Introduction to Radiochemistry: Types of radioactivity and radio-active decay particles and their measurements. Pharmaceutical application of radio isotopes.

(iii) A brief review of fundamental concepts in organic chemistry such as bonding and reactivity of organic compounds, hybridisation, resonance theory, □ inductive, mesomerichyperconjugative and electrometric effects.

PCH 311 Pharmaceutical Chemistry Practical II (1 credit, 45 hr)

The practical exercises will incorporate the following techniques in organic chemistry:



Purification: Separation techniques (neutral, Neutral and acidic, neutral and basic, acidic and basic; Recrystallisations; Distillations; Chromatography.

Criteria of purity (Tests for Purity): Melting point; Boiling point; Chromatography

Qualitative Organic Analysis: Different types of organic compounds possessing various functional grouping will be used for the exercise.

PCH 312 Pharmaceutical Organic Chemistry I (3 credits, 45 hr)

(i) Types of organic reaction mechanisms taken in relation to types of organic functional groups, effects on their stability, use in pharmacy, other physicochemical properties, solubility, absorption, distribution and excretion when found in drug molecules. Functional groups to be treated include Aldehydes and ketones, alcohols and phenols, carboxylic acids and their derivatives (amides, Esters, acid anhydrides, Acyl halides) and sulphonic acid, also to be treated are amines and imines, also to be treated are amines and imines, nitriles, nitro and nitroso groups and azo-compounds.

(ii) General review of the concept of aromaticity in benzene and how this affects substitution in such structures.

(iii) General review of organic reactions leading to interconversion and modification of functional groups through nucleophilic and electrophilic substitution, elimination addition and rearrangement reactions. Utility of these reactions for isolation, characterisation, elucidation of structure and synthesis of medicinal products.

(iv) Stereochemistry: Review of total concept of stereoisomerism as distinct from isomerisms of other types optical and geometrical isomerism chiral and achiral

molecules, stereoisomerism and molecular conformation in relation of drug action through drug-receptor interaction. Biological examples, Determination of configuration-spectroscopic methods, Resolution of racemic mixtures and importance in Pharmacy using named medicinal examples. Optical rotatory dispersion and its uses. Importance of stereochemistry in terpenes.

PCH 322 Pharmaceutical Analysis I (2 credits, 30 hr)

Objective: To enable students understand the basic tests involved in identification and quantification of medicines

Course Outline

(i) Instrumental Methods of Analysis of pharmaceuticals: Absorption spectrophotometry; Infra-red spectroscopy; Fluorimetry; Atomic Absorption spectroscopy; N.M.R. Spectrometry; Gas-liquid chromatography; HPLC; Other methods; e.g. Polarography, Potentiometry; and Polarimetry; Mass Spectrometry.

(ii) Official standards for pharmaceutical chemicals and formulated products which are designed primarily to set limit of tolerance for the product at the time it reaches the patient. Such quality criteria which are specified in official monographs for pharmaceutical chemicals include: A description of the drug or product, Solubility, Test for identity, Physical constants, Quantitative assay of pure chemical entity in the case of pharmaceutical chemicals, or of the principal active constituents in the case of formulated product, Limit tests to exclude excessive contamination, and Storage conditions. In addition to the above, the students should be aware of the source of impurities in pharmaceutical. The methods mentioned above should include: Acid-base titrations, non-aqueous acid base titrations, oxidation-reduction titrations, complexometric titrations, gravimetry and limit tests.

PCH 323 Pharmaceutical Organic Chemistry II (2 credits, 30 hr)

(i) Synthetic Methods in Medicinal Chemistry: Carbon-carbon, carbon-nitrogen, carbon-oxygen, carbon sulphur etc. bond forming reactions as well as other functional group reactions and their applications to synthesis of organic compounds with examples from biological active compounds. Reactions leading to modification of functional groups such as oxidation and reduction reactions. A brief review of organo-metallic chemistry and its pharmaceutical compounds.

(ii) Chemistry of Heterocyclic Compounds: Nomenclature, properties, preparation, reactions and general chemistry of the following hetero, - aromatics - furan, thiophen, pyrrole, pyridine, isoquinoline, quinoline, and important pharmaceutical compound derived from them.

PCH 412 Medicinal Chemistry I (3 credits, 45 hr)

(i) Drug design: Principles and theories of drug design, Qualitative and Quantitative approaches to drug design. Biological and chemical databases. Computer aided drug design, molecular modeling, Lipinski rule and other rules, drug repurposing. The concept of isosterism. Bioisosterism as a tool in drug design. SAR in drug design. Anti-metabolite and pro-drug approach to design of new drugs.

(ii) Medicinal chemistry of some selected compounds: A study of the following classes of drugs in respect of their nomenclature, physical and chemical properties, structure-activity, relationship, synthesis (where necessary), assay, metabolism, where applicable and uses. General and Local anaesthetics; Sedative-hypnotics – benzodiazepines;

Antipsychotics-phenothiazines; Anticonvulsants-phenytoin, carbamazines; Analgesics; Antidepressants-mepramine.

(iii) Chemistry of drug metabolism

PCH 421 Pharmaceutical Chemistry Practical III (1 credit, 45 hr)

Organic Synthesis on medicinal compounds involving several stages, e.g preparation of benzocaine (Ethyl-p-aminobenzoate); Preparation of Aspirin; Preparation of sulphanilamide; Instrumental Methods of Analysis involving Refractometry, Colorimetry and colorimetric methods; Potentiometric methods (use of pH and pH determination hydrolysis); Demonstration of IR, UV/Visible spectrophotometry for the analysis of drugs or organic compounds.

PCH 512 Medicinal Chemistry II (2 credits, 30 hr)

Study of the chemistry of medicinal compounds: The chemistry, nomenclature, physico-chemical properties, stereo-chemistry synthesis (where necessary), structure-activity relationship, metabolism and uses of the following groups of drugs:

(i) Antihypertensives, diuretics, steroids including steroidal hormones, chemotherapeutic agents such as sulphonamides, anti-malarials, antibiotics, anthelmintics, trypanocides, schistosomicides, amoebicides, anticancer and antiviral agents.

(ii) Photochemistry: general principles, characteristics of photochemical reactions and applications both in the synthesis and spoilage of drugs.

PCH 511 Pharmaceutical Analysis Practical (1 credit, 45 hr)

To illustrate the subject matter of the theoretical aspects of PCH 512

PCH 523 Pharmaceutical Analysis II (2 credits, 30 hr)

Drug quality assurance system; Monographs and specifications for drugs and drug products. Applications of chemical and physicochemical analytical methods in purity determinations identification of pharmaceuticals, radio-pharmaceuticals and medicinal products; Basic tests methodology for essential drugs. Equivalence and bioequivalence of drug products, biopharmaceutical methods in purity determination. Analysis of drugs in biological samples.

PPJ 601 Project (4 credits, 180 hr)

This course is a project assigned to the student under the supervision of one or more academic staff.

DEPARTMENT OF PHARMACOGNOSY

PCG 212 Introduction to Pharmacognosy (2 credits, 30 hr)

Classification of Vegetable Drugs: Alphabetical, Morphological, Pharmaco-logical, Chemical, Pharmacological, Plant description – morphology and anatomy. The cell differentiation and organic cell contents – carbohydrates, proteins, fixed oils, gums and mucilages with emphasis on those used in pharmacy and pharmaceuticals. Biological and geographical sources and uses of plant drugs – crude drugs with particular reference to Nigerian sources. Factors involved in production of plant drugs: Climate, cultivated and wild, collection; Adulteration; Plant pests

PCG 211 Pharmacognosy Practical (1 credit, 45 hr)

This is designed to expose the students to laboratory work on the introduction to pharmacognosy in order to enhance their knowledge and belief in the science of the course. Areas to be covered include the identification tests for genuine carbohydrates, fats oils, waxes, gums, surgical dressings and the use the use of microscopes in plant identification.

PCG 312 Medicinal Plants & Alternative Medicine I (2 credits, 30 hr)

This course will introduce various categories of alternative/complimentary medical practices and explores the reasons for the rising trend towards alternative medicine including cultural, socioeconomic, immigration, and perceptions of conventional medicine. Mind-body interventions, Manual manipulations, Asian and Chinese healing methods, Aromatherapy, Hypnosis, Acupuncture, Diet, Homoeopathy, Traditional birth attendance, Nutrition and lifestyles, Psychiatry, Bone setting, Hydrotherapy, will be discussed. Global situation in the use of traditional medicine will also be discussed.

The regulatory aspects of alternative medicines will be discussed. The course will use case studies to enhance understanding of the relationship between the various alternative medical practices and orthodox medicine.

PCG 321 Pharmacognosy II Practical (1 credit, 45 hr)

Plant collection, preparation and storage of herbarium specimens. Standardization/

evaluation of crude drugs with particular emphasis on chemical constituents, adulteration and substitution, microbial contamination, toxic residues, moisture content, ash values, extractive values, crude fibre, and other numerical values of crude drugs.

Formulation and production of phytomedicines of some Nigerian medicinal plants. Physio-chemical characteristics and assessment of quality of the phytomedicines.

PCG 322 Medicinal Plants & Alternative Medicine II (2 credits, 30hr)

This will include discussion on the following topics: History and present state of herbal medicines. The practitioner, the plant – collection, drying and storage, pests and pesticides. Herbarium, herbarium specimen and voucher numbers. Research findings and documentation of medicinal plants. Selected examples of Nigerian medicinal plants will be discussed under the following headings: local names, geographical sources, microscopy, medicinal uses, chemical constituents and toxicity profile. Examples will be taken from the following areas: antimalarials, antisicklings, antihypertensives, antidiabetics, antimicrobials. Also to be discussed are toxic special plants – hallucinogens, allergens and molluscicides. Phytochemical principles involved in formulation of phytomedicines will be discussed. Substantial emphasis will be laid on physiochemical and pharmacological assessment of quality, efficacy and safety.

Regulatory aspects of herbal medicines will be discussed. In addition, integration – prospects and problems as well as future perspectives will be discussed. Emphasis will be laid on the responsibilities of the pharmacist in product selection, preservation, use and counseling.

Students will undertake field trips to herbal homes, and fields/forests for plant collection and herbalist information.

PCG 422 Phytochemistry I (2 credits, 30 hr)

- a) General Phytochemical Methods in drug Analysis:
 - i. Plant collection, drying and processing. Extraction methods including maceration, percolation, Soxhlet and count-current methods and others.
 - ii. Separation and Isolation of constituents.- Chromatographic techniques (Analytical and preparative, paper, conventional column, HPLC. DCCC, G.C., gel filtration, electrochromatography, flash column, modern pressure liquid chromatography, and affinity chromatography. Adsorbents in chromatography, Applications.
- b) Secondary Plant Metabolites: The under-mentioned will be discussed under the following headings: sources, chemical constituents, Identification tests, medicinal uses and toxicities:

Glycosides:

- (i) Saponins – at least, sources to be discussed are one for the Steroidal and one for the Triterpenoidal type. Natural steroids for the production of pharmaceuticals.
 - (ii) Tannins and Galls.
 - (iii) Anthraquinones – The purgative drugs – local and foreign sources.
 - (iv) Cardiac glycosides. Foreign and local sources. (1)
- Alkaloids - Tropane alkaloids (including cocaine), quinoline,

Isoquinoline, indole, Steroidal alkaloidal glycosides. The Indian hemp an anticancer agents from plants and semi-synthetic products. (2) Others – Coumarins and flavonoids.

PCG 421 Pharmacognosy Practical (1 credit, 45 hr)

- a) Extraction methods: Maceration processes, percolation and demonstration of Soxhlet extraction. Chemical tests for glycosides, alkaloids, tannins, general and specific tests for identification.
- b) Chromatography methods in plant material analysis – Thin layer and paper analytical and preparative, Column, GC, PTLC (Demonstration only) to be applied for analysis of glycosides phenolics alkaloids.

PCG 512 Phytochemistry II (2 credits, 30hr)

- a) Biogenetic studies: Glycolysis and enzymes (i) Alkaloids - Shikimides and shikimic acid pathway for the amino acids - tryptophan, tyrosine, lysine, ornithine, and phenylalanine (basic nuclei for alkaloid biosynthesis). Biosynthesis of ornithine, lysine, tyrosine, phenylalanine and tryptophan-derived alkaloids. At least one special example of the drugs will be discussed for each type. (ii) Glycosides–Biosynthesis of cardiac glycosides – bufadienolides and other steroidal compounds.
- b) Radioactive tracer techniques – detection and assay of radioactivity-labelled compounds, out-radiography, produce-product sequence, competitive feeding and administration of precursors and their applications in pharmacognosy.
- c) Artificial propagation – Cell, tissue and organ cultures in the production of plant constituents of medicinal interest, mutation and mutual strains, hybridization and grafts, and effects on production of medicinal constituents.



PPJ 601 Project (4 credits, 180 hr)

This course is a project assigned to the student under the supervision of one or more academic staff.



DEPARTMENT OF PHARMACEUTICS & PHARMACEUTICAL TECHNOLOGY

PCT 213 Introduction to Pharmacy and Pharmaceutics (2 credits, 45hr)

Objectives: To enable the students to appreciate the foundation of pharmacy.

Course Outline

History of Pharmacy, First Aid and hygiene, Orientation to the Pharmacy Profession, The role of a Pharmacist in the health services, Opportunities in pharmacy, history of pharmacy, evolution of profession of pharmacy, various disciplines of pharmacy, Stages in the development of a new drug. Concept of dosage forms and the prescription.

Fundamental Operations in weighing: Errors in using dispensing balances; minimum weighable amounts and weighing techniques; conical and beaker shaped measures for dispensing liquids; errors in measurements and measuring technique. Household measures and weighing of small amounts of materials.

Ethics of Dispensing and Presentation of Products: General dispensing procedure; the prescription; Information given on the labels of dispensed medicines. Presentation of information on labels; Additional labels. Pharmaceutical Calculations: Percentage, proportional calculations and alligation; Calculations involving very small quantities.

Types of Pharmaceutical Preparations: Solutions, mixtures, linctuses, syrups, elixirs, oral liquids, emulsions, applications, lotions, gargles, mouth washes, nasal and ear drops. Divided and bulk powders, granules, cachets, capsules and tablets, etc.

Pharmaceutical solutions and Solubility: factors affecting solubility and rate of solution; Solutions of liquids in liquids; the distribution of solutes between immiscible liquids and applications of the distribution law in pharmacy; Colligative properties of solutions.

Phase equilibria: The phase rule; Systems of one and two components and applications in pharmacy, e.g., eutectic mixture and sublimation (freeze) drying. □

PCT 201 Pharmaceutics I Practical (Dispensing) (1 credit, 45hr)

Schedule 1: Preparation of mixtures.

Schedule 2: Preparation of syrups, elixirs and linctuses.

Schedule 3: Preparation of lotions and liniments.

Schedule 4: Preparation of collodions and paints.

Schedule 5: Preparation of gargles, inhalations and nasal drops.

Schedule 6: Preparation of enemas and irrigations.

Schedule 7: Preparation of powders.

PCT 313 Pharmaceutical Technology I (3 credits, 45hr)

Filtration: factors affecting filtration; mechanism of filtration; filter media and aids; filtration equipment (continuous rotary vacuum filter, the filter press and the edge filters).

Centrifugation: principles of centrifugation; laboratory and large scale centrifuges.

Dispersed systems: Suspensions: factors affecting the preparation of a physically stable suspension; flocculated and deflocculated systems; caking and resuspension; sedimentation behaviour of flocculated and deflocculated suspensions; pharmaceutical applications of suspensions; colouring agents used in the formulation of suspensions.

Emulsions and emulsification: types of emulsion and

testing of emulsion types; theories of emulsions (Bancroft's Harbans oriented wedge and the complex film theories); emulsifying agents and their classification; methods available for the preparation of emulsions; preservation and stability of emulsions; concept of hydrophile-lipophile - balance (HLB); formation of emulsions by HLB methods; methods for determining HLB numbers; semi-solid emulsions

Creams - types and preparations.

Ointments - types of ointment bases and methods of preparation.

Pastes - their bases and method of preparation.

Jellies and Poultices - Kaolin Poultice B.P.C.

Gels: The structure and properties of gels; application of gels in pharmacy.

Suppositories and Pessaries: methods of their preparation, shapes and sizes properties of an ideal suppository base; types of suppository bases; general methods of preparation of suppositories and their packaging.

PCT 323 Physical Pharmaceutics (3 credits, 45hr)

Adsorption: The mechanism of adsorption: The Langmuir and B.E.T. isotherms, chemisorption; and factors affecting the amount absorbed; application of adsorption in pharmacy.

Surface and Interfacial Phenomena: Surface tension: contact angle and the wetting of solids, spreading of one liquid over another, mechanism of capillary rise and effect of temperature, method of determining surface tension. Surface active agents and their classification: pharmaceutical applications and medicinal importance of surface active agents.

Bulk Properties of Surfactant Solutions: micelle formation and methods for the determination of the critical micelle concentration (C.M.C.); factors affecting micelles;

stability of micelles. Solubilization: factors affecting solubilization, and pharmaceutical applications of solubilization.

Colloidal systems: classification of colloids; properties of colloidal solutions; preparation of lyophobic solutions; stability of lyophobic colloids.

Rheology: Newtonian fluids; flow characteristics of Newtonian fluids and effect of temperature; determination of viscosity - principles of capillary tube; Redwood and falling sphere viscometers; rotational viscometers; the flow properties of disperse systems and viscosity coefficients of colloidal dispersions; viscosity imparting agents in pharmacy; non-Newtonian fluids; plastic, pseudoplastic and dilatant flows; thixotropic systems; rheological properties of suspensions; emulsions, ointments and creams. Mechanism of fluid flow; significance of Reynolds number; distribution of velocities across a tube and boundary layers.

PCT301 Pharmaceutics II Practical (Dispensing) (1 credit, 45 hr) □□

Schedule 1: □ Preparation of emulsions

Schedule 2: □ Preparation of ointments

Schedule 3: □ Preparation of creams

PIT 401 Industrial Training (SIWES) (4 credits, 640hr)

This is a supervised work-experience progress of approximately three months' duration, commencing with the long vacation (following the end of the 300 level second semester examinations) and ending on November 30, or an appropriate date stipulated by the Industrial Training Coordinator. During the programme, students are attached to pharmaceutical establishments including drug manufacturing concerns, hospital pharmacies and community pharmacies. The objective is to expose students to pharmacy practice in an actual work - related

environment. Each student keeps a record of his/her training and experience during the programme in a log book and is visited for supervisory purposes by an academic staff member from the Faculty. In addition, an experienced pharmacist located in the pharmaceutical establishment to which the student is attached provides day-to-day supervision.

PCT 413 Pharmaceutical Technology II (3 credits, 45 hr)

Size Classification: Particle shape and size; sieving and sifting; determination of particle size.

Comminution: General principles. Size distribution during comminution and importance of fine particles in pharmacy. Comminuting machines.

Mixing: Definition and objective of the mixing process, mixing process and types of mixtures. The scale of scrutiny. The mixing of solids; some properties of random mixture. The degree of mixing and de-mixing of powders. Assessment of degree of mixing.

Drying of Solids: The rate of drying and the distribution of moisture in solids. The three stages of moisture distribution in a drying particulate bed. Factors involved in the selection of drying methods and choice of drying equipment; freeze drying.

Flow properties of Powders: Methods for the determination of angle of repose; factors affecting the angle of repose; flow of powders through tubes and holes; cohesive pharmaceutical powders; experimental methods used for measuring the "cohesiveness" of powder beds; factors affecting the tensile strength of powders, factors affecting the flow properties of powders e.g., effect of particle shape and size; moisture; glidants and temperature.

Granulation and Tablet Technology: Reasons for and methods of granulation; essential granule properties. Tablet manufacture; types of compressed tablets; formulation of tablets; excipients; the compression of granules, compression

weight and pressure; principles of the operation of single punch and multiple (rotary) punch tablet machines; problems encountered during tablet manufacture and ways to remedy them.

Solid dosage coating: Types of coating materials and methods - pan, sugar, film and enteric coatings; requirements for core tablets and coating of granules; fluidized - bed and compression coating.

Capsules: Hard gelatin capsules materials for capsules; method of capsule production; capsule filling; equipment and operations; formulation and finishing of capsules; soft gelatin capsules; nature of the soft gelatin shells and of the capsule content.

PCT 421 Powder and Tablet Technology Practical (1 credit, 45 hr)

Measurement of flow properties of powders. Assessment of degree of mixing in powders

Introduction to tablet machines and their maintenance. Granulation techniques and drying processes. Compression of tablets. In-process controls in tableting.

PCT 512 Formulation & Production of Phytomedicines (2 credits, 30 hr)

This course will cover the formulation and production of herbal medicines into dosage forms. Assessment of the dosage forms including the pharmacognostic standardization (chemical analysis of the active ingredients), stability studies, micro-biological evaluation, pharmacological evaluation and standardization of doses will be discussed.

PCT 522 Biopharmaceutics (2 credits, 30 hr)

Objectives

Define the basic concepts of pharmacokinetics; Use raw data and derive the pharmacokinetic models and parameters that best describe the process of drug absorption, distribution and elimination; Critically evaluate biopharmaceutic studies involving drug product bioequivalency and bioinequivalency; Design and evaluate dosage regimens of drug using pharmacokinetic and biopharmaceutic parameters.

Course Outline

Review of pharmacokinetic parameters of absorption, biotransformation, distribution and elimination of drugs; Definition of terminology and symbols used in pharmacokinetics; Fate of a drug after administration; Physical significance of drug concentration in the blood; Biological and physicochemical factors in drug absorption; Dosage form consideration in gastrointestinal absorption; Drug-drug and drug-food interactions, bioavailability and bioequivalence with emphasis on product registration with regulatory bodies.; Problems associated with pre-formulation of drugs and the design of dosage forms from an industrial perspective; Relationship between pharmacokinetic parameters and pharmacologic response.

PCT 523 Dosage Form Evaluation and Drug Stability (2 credits, 30 hr)

Pharmaceutical Evaluation of Dosage Forms. Standard for tablets and capsules: Shape, weight, content of medicaments, diameter, crushing strength (hardness) and friability of tablets and capsules. Formulation factors affecting the dissolution rates of solid dosage form.

Liquids: Labelling and packaging, description, content,

appearance (colour, clarity, etc), pH, weight per ml, refractive index, etc.

Semi-solids: Labelling and packaging, description, content, appearance, weight per ml.

Tablets and Capsules: Labelling and packaging, description, content, appearance, disintegration and dissolution tests. In-vitro dissolution tests for solid dosage forms: Natural convention - Non-sink methods such as solvometer, hanging pellet, and static disc methods, forced convention - non-sink methods such as wruble, beaker, oscillating tube rotating disc, sounder & ellenbogen methods, and forced convention - sink methods (adsorption, partition, dialysis and column methods, continuous flow through system, computerized automated systems.

Drug Stability: Incompatibilities in liquid dosage forms; chemical degradation of pharmaceutical products (hydrolysis, oxidation, isomerization, polymerization, decarboxylation and adsorption of carbon dioxide); physical factors influencing chemical degradation (temperature, moisture, light and radiation): factors influencing and methods of reducing chemical degradation; physical degradation of pharmaceutical products e.g. loss of volatile constituents, loss of water, absorption of water, crystal growth, polymorphic changes and colour changes. Microbiological degradations.

Accelerated stability testing.

Packaging Materials - general principles

Metals (e.g. tin, iron and aluminium) and plastics - solvent properties, toxicity, permeability and light transmission characteristics

Glass - mechanical strength and resistance to thermal shock.

Flake and spicule formation; Paper and board; Closure testing: - folded, bung and push-on seals, reasons for test failures; Package-testing.

PPJ601 Project (4 credits, 180 hr)

This course is a project assigned to the student under the supervision of one or more academic staff.

Endocrinology & Reproduction: Introduction and general features, Thyroid; Parathyroid and calcium Metabolism, Pituitary gland, Adenohypophysis, Neurohypophysis, Adrenal Cortex and Medulla. Pancreas, Thymus, Pineal Gland, Male and Female Reproductive systems.

PHS 225 Neurophysiology & Special Senses (2 credits, 30 hr)

Neurophysiology: Organization of the CNS and CNS control systems, Spinal reflexes, Excitation, Inhibition. Localization of functions in the cortex, Motor system, Pyramidal and Extrapyramidal Sensory systems, Reticular formation, Cerebellum, Control of posture, Neurobiology rhythms, Sleep and unconscious states, Memory, Learning. Autonomic Nervous System: Para-sympathetic and sympathetic neuro-effectors, Cholinergic mechanisms, Adrenergic mechanisms, Autonomic reflexes, Adrenal medulla, autonomic drugs.

Special Senses: Eyeball, retina, sight, accommodation, photochemical mechanism, receptor potential, light reflexes, adaptation, Ear, Sound waves, Hearing, Taste, Smell.

PHS 202 Physiology Practical (1 credit, 45 hr)

This course is designed to augment and enhance understanding of the topics covered in physiology.

QUALITY ASSURANCE

**UNIVERSITY OF BENIN
BENIN CITY, NIGERIA**

COURSE EVALUATION FORM

Course Title: _____

Year/Semester: _____

Course Code: _____

Lecturer's Name: _____

Each item below represents a characteristic of the Lecturer and his teaching. Please indicate, as frankly as possible, your rating of the Lecturer by ticking the appropriate box on the scale. **DO NOT WRITE YOUR NAME OR MATRICULATION NUMBER.**

The Lecturer: _____
Name



S/N	ITEM	Never	Sometimes	Always
1	Comes to class regularly			
2	Comes to class punctually			
3	Is helpful when students have difficulty with the course			
4	Is responsive to students' feelings & problems			
5	Encourages students to ask questions & express their opinions			
6	Is fair & impartial in dealing with students			
7	Motivates students			
8	Shows interest in the subject			
9	Comes to class well prepared to teach			
10	Appears to have adequate knowledge of the subject			
11	Reads directly from notes or books			
12	Uses multimedia to teach			
13	Presents materials in a well organized manner			
14	Follows course outline as earlier distributed in class			
15	Returns marked quizzes, tests, projects promptly to students			
16	Transparent in awarding marks & grades			
17	Is available outside of class for consultation			
18	Effectively controls the classroom			
19	Gives appropriate projects/assignments			
20	If given the choice, would you want this lecturer in another course?			
<p>21. Everything considered, how would you rate this lecturer? Poor Fair Good Very Good Excellent</p>				
<p>22. Please comment on how this lecturer can improve this course:</p>				



**FACULTY OF PHARMACY, UNIVERSITY OF BENIN,
BENIN CITY, NIGERIA**

DRESS CODE FOR PHARMACY STUDENTS

DAY	ACTIVITY	DRESSING	MALES	FEMALES
Monday - Wednesday	Lectures	Formal Dressing	Corporate Shirt (Long or Short Sleeves) Tie Trousers Native Attire with Cap Cover Shoes Not Allowed: Jeans trousers, Short pants; body hogging & sagging dresses etc. Grooming: Low cut kempt hair & beards or clean shaving. Dreadlocks are not allowed	Corporate Shirt (Long or Short Sleeves)/ Tops with Knee-length skirt or Corporate trousers Corporate Gown Native attire Cover Shoes Not Allowed: Jeans trousers, miniskirts, short gowns, Sleeveless tops. leggings etc Grooming: Moderate make up, jewelry & hairdo

Thursday	Lectures	Business Casual Dressing	Trousers & Shirt (Tucked in); Native attire with or without cap Cover Shoes or Sandals	Trousers or skirt with sleeved shirt/top; Native attire Cover Shoes or Sandals
Friday	Lectures	Dress Down	Native or Business Casual, Jean & T-shirt Snickers or Sports Shoes, Sandals or Palms Not Allowed: Torn Jeans, Short pants Allowed: Torn Jeans, Short pants etc	Native or Business Casual, Jean & T-shirt Snickers or Sports Shoes, Sandals or Palms Not Allowed: Torn Jeans, Short pants etc
Monday - Friday	Practicals	Formal Plus	Formal Dressing with Neat White Laboratory Coat Cover Shoes Name Tags	Formal Dressing with Neat White Laboratory Coat Cover Shoes Name Tags
Monday – Friday	Clinical Clerkship	Formal Plus	Formal Dressing with Neat White Ward Coat Cover Shoes Name Tags	Formal Dressing with Neat White Ward Coat Cover Shoes Name Tags

Monday - Saturday	Examinations	Business Casual Dressing	Trousers & Shirt (Tucked in); Native attire with or without cap Cover Shoes or Sandals	Trousers or skirt with sleeved shirt/top; Native attire Cover Shoes or Sandals
Monday - Saturday	Other Functions	Flexible	Formal Dressing Business Casual Native Wears	Formal Dressing Business Casual Native Wears

IMPLEMENTATION

Entry into force: This dress code shall take effect from Monday, January 20, 2020 in the 2019/2020 Academic Year

Enforcement: All academic staff shall take responsibility. A student who is not appropriately dressed shall not be allowed into the class. Such a student shall miss attendance for the day which may have implications in their participation in examinations.

The Faculty's Dress Code Monitoring Committee shall ensure compliance. Defaulting students may face a Disciplinary Committee of the Faculty

Approved by Faculty of Pharmacy Board of Studies & Examiners Meeting held on the 16 Day of January 2020