

**UNIVERSITY OF NIGERIA, NSUKKA  
FACULTY OF PHARMACEUTICAL SCIENCES**

**DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY**

**REVISED M.PHARM/M.SC. AND PH.D DEGREE  
PROGRAMMES**

## **POSTGRADUATE PROGRAMMES**

The Department of Pharmacology and Toxicology offers Postgraduate courses leading to the award of Master of Pharmacy (M.Pharm), Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D) degrees.

### **PHILOSOPHY**

Lack of experts in Pharmacology and Toxicology has been a serious problem in the country. The postgraduate programmes in Pharmacology and Toxicology are designed to meet the needs of government and private organizations in specialized and advanced areas within the Pharmacology discipline.

### **OBJECTIVES**

The objectives are to help graduates deepen their knowledge and understanding of specific areas within the discipline, and also acquire skills needed to conduct specialized research without losing contact with other areas. The courses are designed to increase the candidate's knowledge and thus develop intellectual and professional competencies required for career in teaching, research and industry.

### **SCOPE**

The programmes, which are based on theoretical and practical training, are designed to produce professionally competent personnel. The programmes thus cover the following areas of specialization; autonomic physiology & pharmacology, neuropharmacology, biochemical pharmacology and drug metabolism, cardiovascular pharmacology, chemotherapy, toxicology and natural product pharmacology, and other pertinent and topical areas in general pharmacology.

### **ENTRY REQUIREMENTS**

The following categories of students may be admitted on application.

**i. Master of Pharmacy (M.Pharm.)**

Graduates of the University of Nigeria or other recognized Universities who have obtained an approved Bachelor's Degree in Pharmacy with at least second class honours or its equivalent.

**ii. Master of Science (M.Sc.)**

Graduates of University of Nigeria or other recognized universities who have obtained an approved Bachelors Degree in related discipline such as Pharmacology, Medicine, Veterinary Medicine, Biochemistry and Physiology with at least a second class honours or its equivalent.

## **Doctor of Philosophy (Ph.D.)**

- (a) Graduates of the University of Nigeria or other recognized universities who have obtained the degree of Masters appropriate for proposed areas of study with a minimum of 4.0 G.P.A. on a 5 point scale, provided that satisfactory research work formed part of the Master's degree.
- (b) Candidates who hold qualifications other than the above acceptable to the Senate of the University.

## **MODE OF STUDY**

### **1. Master's Degree Programme:**

The degree of Masters will be prosecuted through course work and project. The course work is to be examined in written papers together with research work to be presented in a project, where course work predominates over research and constitutes not less than 2/3 of the total unit load.

### **2. Ph. D Programme**

Award of the Ph.D will be based on comprehensive research to be embodied in a thesis. The Ph. D degree will be awarded to a candidate only after a successful oral defense of his/her thesis before a panel of examiners. Course work/ taught courses in Pharmacology are not involved.

## **DURATION OF THE PROGRAMMES**

The minimum and maximum duration of the Masters and Ph.D programmes shall be:

### **(a) Masters Programme**

Full-time	-	18 Calendar months minimum 3 semesters
		36 Calendar months maximum 6 semesters
Part-time	-	24 Calendar months minimum 4 semesters
		48 Calendar months maximum 8 semesters

### **(b) Masters/Doctoral (M. Sc./Ph.D)**

Full-time	-	48 Calendar months minimum 8 semesters
		72 Calendar months maximum 12 semesters
Part-time	-	60 Calendar months minimum 10 semesters
		84 Calendar months maximum 14 semesters

### **(c) Ph.D. Programme**

Full-time	-	6 semesters minimum
		10 semesters maximum
Part-time	-	8 semesters minimum
		14 semesters maximum

## EMPLOYMENT OPPORTUNITIES

The successful graduates in Pharmacology and Toxicology are well equipped for careers in pharmaceutical industry, petrochemical industries, hospitals, tertiary and research institutions.

## AREAS OF SPECIALIZATION

Available staff and laboratory facilities permit for specialization in the following areas.

1. Autonomic Pharmacology
2. Neuropharmacology
3. Biochemical Pharmacology
4. Chemotherapy
5. Clinical Pharmacology
6. Toxicology
7. Cardiovascular Pharmacology
8. Natural product Pharmacology
9. General Pharmacology

## STRESS AREAS:

Area		Code
Research Technique	-	0
Advanced General Pharmacology	-	1
Neuropharmacology	-	2
Chemical Pharmacology	-	3
Advanced Autonomic Pharmacology	-	4
Biochemical Pharmacology	-	5
Chemotherapy	-	6
Toxicology	-	7
Project	-	9

## DEPARTMENTAL COURSES

### M.Pharm and M.Sc.

#### First Semester

Course No.	Course Title	Units
PCL 601	Research Techniques	4
PCL 611	Advanced General Pharmacology	2
PCL 631	Chemical Pharmacology	2
PCL 641	Advanced Autonomic Pharmacology	2
PCL 661	Advanced Chemotherapy	<u>2</u>



Mechanisms and sites of action of CNS drugs, neurotransmitters, receptors in the CNS, biochemical theories of disorders of central origin, major CNS disorders, e.g. Parkinson disease, Alzheimer disease, depression, etc.

**PCL 631 Chemical Pharmacology 2 Units**

Mechanisms of drug action, drug receptor kinetics, receptor isolation, drug antagonism, synthesis and isolation of drugs. Structure activity relationships. Chelating agents.

**PCL 632 Drug Metabolism and Drug Interaction 2 Units**

Drug absorption, distribution, bioavailability, biotransformation and elimination. Influences of formulation, genetic or species, and other factors on pharmacokinetic parameters. Reactive metabolites. Drug interactions at cellular and sub-cellular levels and factors affecting them. Pharmacogenetics.

**PCL 641 Advanced Autonomic Pharmacology 2 Units**

Physiology and pharmacology of the autonomic nervous system. Structure-activity relationships. Autonomic receptor subtypes and drug development. Presynaptic and post-synaptic receptors.

**PCL 651 Biochemical Pharmacology 2 Units**

Molecular basis for drug action. Molecular biology of receptors, Enzyme activation and inhibition, Drug action at sub-cellular level. Cyclic nucleotides. Immunopharmacology.

**PCL 661 Chemotherapy 2 Units**

Drug treatment of infectious diseases especially tropical infections. New developments in the treatment of malaria, tuberculosis, autoimmune deficiency syndrome (AIDS), bacterial and fungal infections etc. Drug resistance-mechanisms and implications for therapy.

**PCL 671 Toxicology 3 Units**

Drug toxicities, environmental pollutants and poisonings, oil spillage and toxicity. Environmental impact assessment. Heavy metal poisoning and antagonists. Specific organ and developmental toxicity.

**PCL 690 Research Project 6 Units**

The candidate is expected to carry out a research project in the field of Pharmacology and/or Toxicology. This project will be presented in a report and subsequently examined by an external examiner.

### **PGC 601 Research Methodology and Application of ICT in Research 3 Units**

In depth research work aimed at acquiring full knowledge and presentations in scholarly writing of the concepts, issues, trends in the definition and development of the study area from African and Western perspectives. Major steps in research: Selection of problem, Literature review, Design, Data collection, analysis and interpretation, Conclusions, Study of various research designs, Historical, Case studies, Surveys, Descriptive, Cross sectional, Experimental, etc. Analysis, surveys and synthesis of conceptual and philosophical foundations of different disciplines. Identification of research problems and development of research questions and or hypotheses. Detailed treatment of methods of collecting relevant research data and the format for presenting research results (from designing the table of contents to referencing, bibliography and appendix). Data analysis and result presentation in different disciplines using appropriate analytical tools. Methods of project/dissertation writing. Application of appropriate advanced ICT tools relevant in every discipline for data gathering, analysis and result presentation. Essentials of Spreadsheets, Internet technology and Internet search engines.

All registered Masters Degree students must attend a solution-based interactive workshop to be organised by the School of Postgraduate Studies for a practical demonstration and application of the knowledge acquired from the course, conducted by selected experts.

### **PCL 790 Doctoral Thesis**

**12 Units**

The candidate is expected to carry out a comprehensive research in specific area(s) of Pharmacology, and/or Toxicology to be embodied in a thesis. The research should present novel outcomes and contribute significantly to the field of Pharmacology and/or Toxicology.

### **PGC 701 Synopsis and Grant Writing**

**3 Units**

Identification of types and nature of grant and grant writing, mining of grants application calls on the internet. Determining appropriate strategy for each grant application, Study of various grant application structures, and contents and writing of concept notes, detailed project description, budgeting and budget defense. Study of sample grant writings in various forms and writing of mock research and other grants. Identification of University of Nigeria synopsis structure and requirements (Introduction, Methodology and Results). Determining the content of each sub-unit of the synopsis. Steps in writing of synopsis from the Dissertation/Thesis document. Structural and language issues, Common errors in synopsis writing and strategies for avoiding them. The roles of the student and the supervisor in the production of a synopsis. Writing of mock synopsis.

All registered Ph.D. students must attend a solution-based interactive workshop to be organised by the School of Postgraduate Studies for a practical demonstration and application of the knowledge acquired from the course, conducted by selected experts.

## **PGD COURSES**

The Department does not offer any PGD course.

## **LIST OF APPROVED POSTGRADUATE SUPERVISORS**

<b>S/No</b>	<b>Staff</b>	<b>Qualifications</b>	<b>Rank</b>
1.	Prof. Peter A. Akah	PhD; M. Sc; B. Sc	Professor
2.	Prof. Charles O. Okoli	PhD; M. Pharm; B. Pharm	Professor
3.	Dr. Okechukwu O. Ndu	PhD; M. Pharm; B. Pharm	Senior Lecturer
4.	Dr. Adaobi C. Ezike	PhD; M. Pharm; B. Pharm	Senior Lecturer
5.	Dr. Theophine C. Akunne	PhD; M. Pharm; B. Pharm	Senior Lecturer
6.	Dr. Sylvester C. Nworu	PhD; M. Pharm; B. Pharm	Senior Lecturer