DEPARTMENT OF PHARMACEUTICS & INDUSTRIAL PHARMACY
FACULTY OF PHARMACY
UNIVERSITY OF IBADAN

COURSE CONTENTS AND LEARNING OUTCOMES FOR POSTGRADUATE COURSES

Degrees Available

The postgraduate programmes available in the Department are as follows:

(a) M.Sc. Pharmaceutics
(b) M.Phil.
(c) Ph.D.

Areas of Research

i) Tableting Technology
ii) Dispersed Systems
iii) Stability Studies
iv) Drug release/ Controlled release studies
v) Drug carrier systems

Admission to the M.Sc. degree programme in Pharmaceutics is open to holders of a good first degree in Pharmacy. Admission to the M.Phil. degree programme shall be open to:

a) Candidate who have attained an overall average of 50% or above in the relevant course work and project for the M.Sc. degree of the University of Ibadan.

b) M.Sc graduates in Pharmaceutics or Pharmaceutical Technology of other Universities recognized by the Senate of the University of Ibadan, provided the course contents do not indicate substantial deficiencies in the area of Pharmaceutics.

Part-time registration will normally be considered. The degree of M.Phil. in Pharmaceutics shall be awarded on the basis of a dissertation resulting from an original and independent research, and satisfactory performance in any recommended course work.

Admission to the Ph.D. degree shall be open to :

(a) Candidates who have attained an average of 60% and above in the course examination for the M.Sc. degree programme in Pharmaceutics of the University of Ibadan and who have made satisfactory progress in their research work. Candidates who score 55 - 59% weighted average at the one calendar year M.Sc. degree programme of the University of Ibadan may be provisionally admitted to the M.Phil / Ph.D. programme. Such candidate shall be assessed by a written examination and the pass mark in this case shall be 60% to proceed with the Ph. D. programme.

(b) Candidate with M.Sc degree in Pharmaceutics or Pharmaceutical Technology from other Universities awarding degrees recognized by the Senate of the University of Ibadan who have satisfied all course requirements for the

M.Phil. degree and have been permitted by Senate of the University of Ibadan to up-grade their registration on the basis of satisfactory progress in research.

(c) Candidate with M.Sc. degree in Pharmaceutics or Pharmaceutical Technology from other Universities awarding degree recognized by the Senate of the University of Ibadan with at least 60 % average course work score. The performance of such candidates must be adjudged adequate for the Ph.D. programme and such candidates may be given provisional admission to the Ph.D degree programme pending assessment report. Confirmation of admission being subject to satisfactory assessment report.

Part-time candidates will normally be considered.

Summary of Courses

Course No	Course Title and Description	No of Units	Remarks
PCT 701	Drug Stability Studies	3	C
PCT 702	Biopharmaceutics	3	C
PCT 703	Trends in Dosage form Development	3	E
PCT 704	Project	6	C
PCT 705	Drug Formulation studies	3	C
PCT 706	Advanced Tableting Technology	3	C
PCT 708	Advanced Micromeritics	3	E
PCT 709	Advanced Laboratory Course	2	C
PCT 710	Seminar and Directed Reading	2	C
PCT 712	Advanced Unit Operations	2	E

C:*Compulsory Courses* E : *Elective Courses* R: *Required Courses*

Course content and Learning outcomes

PCT 701 Drug Stability Studies

Kinetics of Degradation; Stability of pure compounds; Stability of Dosage Forms; shelf-life, Accelerated Stability Testing; Storage.

Learning outcomes

At the end of the course students would be able to:

Understand the various types of physical and chemical degradations that can occur in various dosage forms

Understand the various factors affecting drug stability

Know the kinetic pathways of degradation

Know how to determine shelf-life of dosage forms using accelerated stability studies

PCT 702 Biopharmaceutics
Fundamental principle; Concepts; Ranking of Drugs: Relationship between Dosage Regimen and Pharmacokinetics; Dosage of Drugs in infants, Children and Adults; Measurement and Interpretation of rates of dissolution; In-vitro and In-vivo correlations. Methods of estimating Bioavailability.

Learning outcomes
At the end of the course students would be able to:
Understand fundamental principles of Biopharmaceutics.
Know the various dosage of drugs for infants, children and adults
Know how to determine the rates of dissolution and bioavailability

PCT 703 Trends in Dosage form Development
Reason for dosage form development. Brief review of conventional dosage forms, their methods of administration and drawbacks; various technologies
For prodrug. sustained release, repeat action, and prolonged release drug dosage formulations. Philosophy behind the design, classification of controlled release drug delivery systems. Multiple and micro emulsions, slow release drug delivery systems. Targetable and Novel drug delivery systems.

Learning outcomes
At the end of the course students would be able to:
Understand the drawbacks of conventional dosage forms and the design of novel formulations to overcome their limitations
Know the philosophy behind the design of controlled release drug delivery
Know the various classifications of slow released, targeted and other novel drug delivery systems

PCT 704 Project
A supervised project in the areas of research of Tabletting Technology, Dispersed Systems, Stability Studies, Drug release/ Controlled release studies and Drug carrier systems.

PCT 705 Drug Formulation Studies
Dosage form design and evaluation: Preformulation studies. Factors in dosage-form design; effect of formulation variables; specialized formulation problems related to tropical conditions.
Learning outcomes
At the end of the course students would be able to:
Understand the factors to be considered in the design of dosage forms
Know important considerations in carrying out preformulation studies
Know the use of factorial design in determining the effects of individual and interactive variables on the required quality attributes of a formulation.
Understand the formulation problems that are related to tropical conditions.

PCT 706 Advanced Tableting Technology
Advanced studies in selection and control of raw materials for tableting; flow and packaging properties of powders, selected unit operations, size reduction, mixing, drying; granulation, theories and mechanisms, compression and compaction, forces of compression;

instrumentation of tablet machine. Processing problems, tablet properties including in-vivo, in vitro dissolution testing, coating, sustained release tablets.

Learning outcomes

At the end of the course students would be able to:
Select appropriate excipients for tableting
Understand the flow and packing properties of powders
Know the unit operations, compression and compaction processes involved in tableting.
Understand tablet processing problems and how to evaluate tablet properties.
Know the types of coatings required for conventional and sustained release tablets and their methods of preparation.

PCT 708 Advanced Micromeritics

Particle size measurements; dynamics of small particles, shape and size distribution: methods of size measurements – detailed limit and advantages: indirect measurements Theory of sieving, grading of material: packing.

Learning outcomes

At the end of the course students would be able to:
Know the direct and indirect methods of measuring particles size and size distributions
Understand the theory of sieving and grading of materials

PCT 709 Advanced Laboratory Studies

Selected practical on methods of determining particle size, powder flow properties, formulation of suspensions, tablets and some novel dosage forms such as microspheres using local excipients**.**

Learning outcomes

At the end of the course students would be able to:
Prepare some selected dosage forms
Evaluate the properties and quality of selected dosage forms using pharmacopoeia standards.

PCT 710 Seminar and Directed Reading

Development of specific topics of interest and presentation of up-to-date report on topic highlighting recent advances in chosen subjects.

PCT 712 Advanced Unit Operations

Review of Heat and Mass transfer. Size reduction and size grading, mechanisms and methods. Mixing-solids and liquids, detailed mechanisms and selected methods machinery design. Drying theory and mechanism detailed heat transfer process, moisture content and moisture loss. Factors affecting rate of drying; drying rate curves. Falling rate periods. Separation of solids from liquids.

Learning outcomes

At the end of the course students would be able to:
Understand the mechanisms and methods of unit operations
Know detailed mechanisms of the design of appropriate machinery
Know the various methods of separation of solids from liquids .