

M.S./M.Phil.in Pharmaceutics (Course Base)

Courses in 1st semester (Credit Hours-12)

Course No	Title of Course	Credit Hours
PHP-611	Advance Pharmaceutical Technology	3
PHP-612	Advance Clinical Pharmacy and Therapeutics	3
PHP-613	Biopharmaceutics and Pharmaceutical Biotechnology	3
PHP-614	Neutraceuticals and cosmetology	3

Courses in 2nd semester (Credit Hours-12)

Course No	Title of Course	Credit Hours
PHP-621	Advance Pharmaceutical Quality assurance	3
PHC-622	Rheology of Pharmaceuticals	3
PHP-623	Pharmacy Practices	3
PHP-624	Pharmaceutical Calculations	3

Courses in 3rd semester (Credit Hours-12)

Course No	Title of Course	Credit Hours
PHC-631	Bioequivalence	3
PHC-632	Hospital & Community Pharmacy	3
PHC-633	Dosage Form Design	3
PHC-634	Derma cosmetology	3

Courses in 4th semester (Credit Hours-14)

Course No	Title of Course	Credit Hours
PHC-641	Pre-formulation and Product Development	3
PHC-642	Radiopharmaceuticals	3
PHC-643	Drug Regulatory GMP	3
PHP-644	Research Methodology	3
PHP-645	Short Project Report	2

Total Credit Hours= 50

PHP-611 Advanced Pharmaceutical Technology (Credit Hours 3)

1. Product Development
 - a. Fundamental of Product development
 - b. Materials and devices
 - c. Preformulation techniques and evaluations
2. Advanced Formulations Techniques
 - a. Development of formulation methodology and flow plan for the new product
 - b. New Technologies in Drug Delivery systems
3. Novel Drug Delivery systems
 - a. Diffusion controlled systems
 - b. Biodegradable polymers
 - c. Osmotic systems
 - d. Mechanical systems
 - e. Micro sponge Drug Delivery system
 - f. Transdermal drug Delivery systems
 - g. Site specific drug delivery (Targeting) systems
4. Microencapsulation and coating techniques
 - a. Introduction and Techniques of microcapsules
 - b. Microspheres and Beads technology
 - c. Different coating techniques
5. Recent Developments in Nanoparticulate Drug Delivery Systems
 - a. Polymeric Nanoparticles for Small-Molecule Drugs
 - b. Gold Nanoparticles and Surfaces
 - c. NPDDS for the Treatment of Diabetes
 - d. Nanosystems for Dermal and Transdermal Drug Delivery
6. Enabling Excipients: Cyclodextrins
 - a. Development of a New Excipient-Sulfobutylether β -Cyclodextrin (CAPTISO)
 - i. Parent CDs
 - ii. Modified CDs
 - iii. cGMP Manufacturing Analysis, Stability and Quality
 - b. The Cost to Develop a New Excipients

Recommended Books

1. Remington's Pharmaceutical sciences
2. Theory and Practice of Industrial Pharmacy by Leckman
3. Drug Delivery and Targeting by Anya M. Hellery
4. Controlled and Novel Drug Delivery by N.K Jains
5. Pharmaceutical Dosage form in drug delivery system by Ansel
6. Drug Delivery and Nano Particles by Yeshwant Pathak
7. Excipient development for Pharmaceutical Biotechnology and Drug Delivery systems by Ashok Katdare

PHP-612 Clinical Pharmacy and Therapeutics (Credit Hours 3)

1. Clinical Pharmaceutics and its Introduction
 - a. Drug interactions and ADR
 - b. Pharmacokinetics and variability
 - c. Posology and Drug Dosing Regimens
 - d. Therapeutics and monitoring of different disorders (Hepatic, Renal, Respiratory, Thoracic, Skin, Hormonal, AIDS, CNS, ANS and Blood. etc)
 - e. Clinical Documentations and Case studies
2. Clinical Trials of Drug Substances
 - a. Designing of clinical trials
 - b. Types of Clinical trials
 - c. Choice of Patients
 - d. Total Quality Management of Clinical Trial
 - e. Application of Computers in the Production and Control of Clinical Trial
3. Pharmaceutical care
 - a. Patient care (In-patients, Ambulatory, Neonatal, Pediatric and Geriatric patients)
 - b. Drug Procurement and Utilizations (Sterile, Cytotoxic products and TPNs)
 - c. Patient Rehabilitations
4. Specialty areas for Patients cares
 - a. Pediatric conditions
 - b. Environmental Conditions
 - c. Toxicological Conditions
 - d. Wounds and soft Tissue injures
 - e. HIV Conditions
 - f. ECG Abnormalities
 - g. Emergency Patient care and Ultrasound
5. Self Medication and Drug Abuse
 - a. Personalized medicines
 - b. Child Abuse
 - c. Alcoholism
 - d. The elderly and Their Medications
6. Case Studies

Recommended Books

1. Pharmacy Case Studies by Soraya Dhillon and Rebekah Raymond
2. Drug Interactions and Infectious Diseases by Stephen C. Piscitelli
3. Clinical Pharmacy and Therapeutics by Roger Walker
4. Clinical Pharmacy and Therapeutics by Herfindal Gourley
5. Clinical Pharmacy and Therapeutics by William and Wilkins

PHP-613: Biopharmaceutics and Pharmaceutical Biotechnology (Credit Hours 3)

1. Pharmaceutical Biotechnology and its Introduction
 - a. Molecular Biotechnology (Gene expression, Recombinant and Specific DNA technology, Cell cultures etc)
2. Pharmaceuticals, biologics and biopharmaceuticals
 - a. Introduction to pharmaceutical products
 - b. Biopharmaceuticals and pharmaceutical biotechnology
 - c. History of the pharmaceutical industry
 - d. Biopharmaceuticals: current status and future prospects
3. Protein structure
 - a. Introduction
 - b. Overview of protein structure
 - i. Primary structure
 - ii. The peptide bond
 - iii. Amino acid sequence determination
 - iv. Polypeptide synthesis
 - c. Higher level structure
 - i. Secondary structure
 - ii. Tertiary structure
 - iii. Higher structure determination
 - d. Protein stability and folding
 - i. Structural prediction
 - e. Protein post-translational modification
 - i. Glycosylation
 - ii. Carboxylation and hydroxylation
 - iii. Sulfation
4. The drug development process
 - a. Introduction
 - b. Discovery of biopharmaceuticals
 - c. The impact of genomics and related technologies upon drug discovery
 - d. Gene chips
 - e. Proteomics
 - f. Structural genomics
 - g. Pharmacogenetics
 - h. Initial product characterization
 - i. Patenting
 - i. What is a patent and what is patentable?
 - ii. Patenting in biotechnology
 - j. Delivery of biopharmaceuticals
 - i. Oral delivery systems

- ii. Pulmonary delivery
 - iii. Nasal, transmucosal and transdermal delivery systems
 - k. Preclinical studies
 - l. Pharmacokinetics and pharmacodynamics
 - i. Protein pharmacokinetics
 - ii. Tailoring of pharmacokinetic profile
 - iii. Protein mode of action and pharmacodynamics
 - m. Toxicity studies
 - i. Reproductive toxicity and teratogenicity
 - ii. Mutagenicity, carcinogenicity and other tests
 - iii. Clinical trials
 - iv. Clinical trial design
 - v. Trial size design and study population
 - n. The role and remit of regulatory authorities
 - i. The Food and Drug Administration
 - ii. The investigational new drug application
 - iii. The new drug application
 - iv. European regulations
 - v. National regulatory authorities
 - vi. The European Medicines Agency and the new EU drug approval systems
 - vii. approval systems
 - viii. The centralized procedure
 - ix. Mutual recognition
 - x. Drug registration in Japan
 - xi. World harmonization of drug approvals
- 5. Cytokine and Gene therapy
 - a. Cytokines as biopharmaceuticals
 - b. The interferons
 - i. The biochemistry of (interferon- α , Interferon- β , Interferon- γ)
 - ii. Interferon signal transduction and receptors
 - iii. The interferon JAK-STAT pathway
 - iv. The biological effects of interferons
 - v. The eIF-2 α protein kinase system
 - vi. Interferon biotechnology
 - vii. Production and medical uses of interferon- α , interferon- β and interferon- γ
 - viii. Interferon toxicity
- 6. Pharmacokinetic and bioavailability variations in disease state
- 7. Co-relation between in-vitro and in vivo studies of different parameters of dosage forms

Recommended Books

1. Pharmaceutical Biotechnology concepts and Application by Gary Walsh
2. Pharmaceutical Biotechnology and introduction for Pharmacists and Pharmaceutical Scientists by Daan, J.A. Crommelin and Robert
3. Remington Pharmaceuticals Sciences
4. Pharmaceutical Biotechnology by Michael J. Groves

PHP-614 Nutraceuticals and Cosmetology (Credit Hours 3)

1. Introduction

- Food and vegetables with health promoting properties and Need for dietary supplements.
- Alternative medical systems,
- Nutraceuticals and Functional foods,
- The need for digestion, absorption and utilization of Nutraceuticals,

2. Major Nutraceuticals and their applications

- Source, manufactures and analysis of Nutraceuticals,
- Dietary fibers,
- Fish oil and lipoprotein metabolism,
- Antioxidant vitamins and phyto chemical contents of fresh and processed Pepper fruit.
- Lipoic acid a multifunctional Nutraceuticals.
- Coffee as a functional beverage.

3. Clinical Nutraceuticals

- Nutritional assessment,
- Obesity and Eating disorders,
- Cholesterol and Hyperlipidemia,
- Nutritional aspects of Diabetes,
- Nutritional aspects of genetic disease,
- Nutritional and metabolic effect of alcohol,
- Nutritional epidemiology,
- Nutraceuticals and athletes related health.

4. Cosmetic and Nutraceuticals

- Role of Vitamin E in Nutraceuticals,
- Olive fruit extracts for skin health,
- Amino acids and peptides as building blocks for skin.
- Skin care

5. Future trends of Nutraceuticals

- Nutraceuticals and biotechnology,
- Nutraceuticals stability concerns and shelf life testing,
- Bioavailability and skin efficiency of Vitamin C and E,
- Gene nutrition interaction.

Recommended Books

1. Brian Lockwood, Brian Lockwood, **Nutraceuticals: a guide for healthcare professionals**, Royle Pharmaceutical Press, USA, 2nd Ed, 2007.
2. Robert A, Roch, **Complementary and Alternative medicine clinic design**, The Haworth Integrative Healing Press, Newyork. 2003.
3. Benjamin Caballero, **Guide To Nutritional Supplements**, Elsevier LTd., The Boulevard, Kidlington, Oxford, 1GB,UK,2005.
4. Aaron Tabor and Robert Blair, **Nutritional Cosmetics Beauty from Within**, Presedent, interative Consulting, Inc NY, USA,2005.
5. Vishwanth M. Sardesai, **Introduction to Clinical Neutrition**, Marcel Dekker, Inc, USA. 2003.

PHP-621: Advanced Pharmaceutical Quality assurance (Credit Hours 3)

1. Introduction
 - a. Quality control and statistics
 - b. Development of SOPs for dosage forms
 - c. Process validations
 - d. Stability studies and shelf life
2. **Instrumental Techniques**
 - a. HPLC
 - b. DSC
 - c. Viscometry
 - d. FTIR
 - e. Coulter Counter and Zeta Potential
 - f. UV spectrophotometry
 - g. XRD
 - h. Scanned Electron Microscopy
3. Computer added Quality Control and Quality Assurance of Various Drug Delivery systems
4. Safety measures in Pharmaceutical Industries
5. Preservation of Quality Through Packaging
 - a. Quality and Shelf-Life
 - b. Physical and Chemical Interactions Between Packaging (Plastics, Food and Pharmaceuticals)

Recommended Books

1. Plastic Packaging by Otto G, Piringer
2. Chromatography and Separation Sciences by S Ahuja
3. Drug Delivery and Nano Particles by Yeshwant Pathak
4. Excipient development for Pharmaceutical Biotechnology and Drug Delivery systems by Ashok Katdare
5. Remington Pharmaceutical Sciences

PHC-622: Rheology of Pharmaceuticals

1. Defining and understanding the concepts of different types of solution dosage forms.
2. Understanding the concepts of pharmaceutical suspensions and emulsions, factors that affect their stability and describing approaches used in preparing physically stable formulations
3. Familiarizing students with Reformulation studies and their application.
4. Discuss types of dosage forms and administration routes in relation with therapeutic outcomes.
5. Understanding the concepts of Rheology and its application in pharmaceutical preparations

PHP- 623: Pharmacy Practices (Credit Hours 3)

1. Introduction to Pharmacy Practice
 - a. Various aspects of Pharmaceutical Practices (Clinical, Industrial, Marketing and Management etc)
 - b. Hazards Control Practices (ADR, Drug interaction, Poisons, Narcotics, Pesticides, Chemicals and Industrial Pollutions)
 - c. Family Planning and welfare (birth control, Child protection, Sexually transmitted Diseases etc)
2. Pharmacy practice and the healthcare system
 - a. Medicine presentation and administration
 - b. Medicine safety
 - c. Community pharmacy practice
 - d. Dispensing prescriptions
 - e. Health promotion
 - f. Communication skills and patient counselling
 - g. Compliance, adherence and concordance
 - h. Mathematical principles of drug therapy
 - i. Point-of-care testing
3. Pharmacotherapeutics
 - a. Pharmaceutical care plans and Medicine action
 - i. Constipation and diarrhoea
 - ii. Gastro-oesophageal reflux disease and peptic ulcer disease
 - iii. Inflammatory bowel disease and other chronic bowel disorders
 - iv. Emesis
 - v. Cardiovascular disorders and Hypertension
 - vi. Hyperlipidaemia
 - vii. Allergic rhinitis, asthma and chronic obstructive pulmonary disease
 - viii. Mood, Anxiety and Sleep disorders
 - ix. Eating disorders

- x. Pain management and fever
 - xi. Dementia and Alzheimer's and Parkinson's disease
 - xii. Anti-infective agents
 - xiii. Thyroid disorders
 - xiv. Diabetes mellitus
 - xv. The menopause, hormone replacement therapy and Menstrual cycle disorders and contraception
 - xvi. Genito-urinary disorders
 - xvii. Cancer chemotherapy and palliative care

 - xviii. Rheumatoid, Osteoarthritis and Bone disorder
 - xix. Drugs used in pregnancy and during lactation
4. Critical care therapeutics
 - a. Recent advances in pharmacotherapy
 5. Responding to Symptoms in Community Pharmacy
 - a. Colds and influenza, eyes, ear, oral and dental Problems
 - b. The feet
 - c. Abdominal pain, and perianal and perivulval pruritus
 - d. Travel medicine
 - e. Community pharmacy management
 6. Pharmacy Information and Research
 - a. Pharmacy literature and medical information
 - b. Medical writing
 - c. Research methodology
 - d. Pharmacy Systems
 - e. Primary care health services
 7. Hospital pharmacy services
 - a. Formulary systems
 - b. Medicines regulatory affairs
 - c. Quality standards in community pharmacy practice

Recommended Books

1. Lecture Notes in Pharmacy Practices by Lilian M Azzopardi
2. Comprehensive Pharmacy Review by Alan H Mutnick
3. Remington Pharmaceutical sciences
4. Hospital Pharmacy by Willaim Hasan

PHP-624 Pharmaceutical Calculations (Credit Hours 3)

1. The discipline of Statistics: Introduction and terminology

1. Descriptive and inferential statistics
2. The discipline of Statistics
3. The term “statistic” and the plural form “statistics”
4. The term “statistical analysis”
5. Association versus causation
6. Variation and systematic variation
7. Compelling evidence
8. The terms “datum” and “data”
9. Results from statistical analyses as the basis for decision-making
10. Application of Bio statistics in the field of Biological and Pharmaceutical Sciences.

2. Data Graphics

1. Introduction
2. Construction and Labeling of Graph
3. Scatter Plot (Correlation Diagrams)
4. Semi logarithmic Graphs

3. Probability

1. Introduction
2. Binomial and Normal Distribution
3. Continuous Data Distribution
4. The Log Normal Distribution

4. Sample Size and Power

1. Introduction
2. Determination of Sample size by simple Comparative experiments
3. Determination of Sample Size by Simple Binomial Tests
4. Sample Size and Power for more than two treatments
5. Sample size for Bioequivalence studies
6. Probability and Non Probability Methods

5. Linear Regression and Correlation

1. Introduction
2. Analysis of standard Curve in Drug Analysis
3. Assumptions in Test of Hypothesis in linear Regression
4. Estimate of the variance

5. The Drug stability studies
6. Confidence intervals in Regression analysis
7. Weighted Regression
8. Analysis of Residuals
9. Nonlinear Regression
10. Rank Correlation
11. Multiple Regression

6. Analysis of Variances (ANOVA)

1. T-test, Chi-Square test, the student T-test
2. One way Anova
3. Planned Verses Un planned Comparison in ANOVA
4. Two way ANOVA
5. Statistical Models
6. Collection of p values
7. Analysis of Covariance
8. Use of SPSS for ANOVA Calculation
9. Use of MINITABE for ANOVA Calculations

7. Experimental Design

1. Definitions and Basic Principles
2. Experimental Design in Clinical Trials
3. Some Principals in Experimental Design and analysis
4. Cross over Design and Bioavailability/ bioequivalence Studies
5. Optimization Techniques and screening Designs
6. Split Plot Design
7. Application of these designs in Biological and Pharmaceutical data.

Recommended Books

- 1. Pharmaceutical Statistics** by Sanford Bolton
- 2. Statistics In Drug Research** by Shein-Chung Chow
- 3. Statistical Design and Analysis of Stability Studies** by Shein- Chung Chow
- 4. Introduction to statistical in Clinical Trials** by Todd A Durham and J Rick Turner
- 5. Applied Mixed Models in Medicines** by Helen Brown and Roben Prescott
- 6. Bio-Statistics Foundation for analysis in Health Sciences** by Daniel W.W
- 7. Statistical Methods in Biological and Health Sciences** by Niltea J.S

PHC-631: BIOEQUILANCE

1. Bioavailability and bioequivalence:
 - a. Definitions, federal requirements, methods of determination of bioavailability using blood and urinary excretion data.
 - b. Protocol design for bioavailability assessment.
2. Methods for bioequivalence determination.
3. Pharmacokinetic characterization of drugs:
 - a. Pharmacokinetics of drugs following one/ two compartment open models.
 - b. First order elimination kinetics as applied to rapid intravenous injection.
 - c. Intra venous transfusion and oral administration.
4. Determination of absorption rate constant using
 - a. Wagner-Nelson,
 - b. Loo Riegelman methods.
 - c. Flip-flop models,
 - d. Method of residual.
5. Urinary excretion data and its application in pharmacokinetic characterization of drugs.
Pharmacokinetics of multiple dosing

PHC-632: Hospital & Community Pharmacy

1. Learner Develop,
 - a. Integrate, and apply knowledge from the foundational sciences to evaluate the scientific literature, explain drug action,
 - b. Solve therapeutic problems, and advance population and patient-centered care.
2. Patient-centered care
 - a. Provide patient-centered care as the medication expert
3. Medication use systems management—
 - a. Manage patient healthcare needs using human, financial, technological, and physical resources to optimize the safety and efficacy of medication use
4. Health and wellnes
 - a. Design prevention, intervention, and educational strategies for individuals.
 - b. Communities to manage chronic disease and improve health and wellness
5. Problem solving
 - a. Identify problems, explore and prioritize potential strategies,
 - b. Design, implement, and evaluate viable solutions
6. Educatio
 - a. Educate respective audiences by determining the most effective and enduring ways to impart information and assess understanding
7. Patient advocacy
 - a. Assure that patients' best interests are represented
8. Interprofessional collaboration
 - a. Actively participate and engage as a health care team member by demonstrating mutual respect,
 - b. Understanding, and values to meet patient care needs
9. Cultural sensitivity

- a. Recognize social determinants of health to diminish disparities and inequities in access to quality care
- 10. Communication
 - a. Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization
- 11. Self-awareness
 - a. Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth
- 12. Leadership
 - a. Demonstrate responsibility for creating and achieving shared goals, regardless of position
- 13. Innovation and entrepreneurship
 - a. Engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals
- 14. Professionalism
 - a. Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other health care providers, and society

PHC-633: Dosage Form Design

1. Biotechnological aspects of product development. Concepts and Techniques
2. Radiopharmaceutical formulation techniques, Q.C. instrumentation and application in health care system.
3. Granulation Technology.
4. Quality Control and GMP Compliance in Pharmaceutical Industry. Importance of design/layout of pharmaceutical industry.
5. Precaution in handling/storage and manufacturing of pharmaceutical products containing antibiotics.
6. Stability testing.
7. Formulation and development of Controlled Release dosage Forms.
8. Packaging Techniques for Pharmaceuticals
9. Advances in Film Coating Techniques
10. Tablet Tooling
11. Calibration and Validation of instruments/equipments used in testing and manufacturing of drugs.

PHC-634: Dermacosmetology

1. Lab experience in infection control
2. Safety procedures and practice
3. Basic roller and wet styling techniques
4. Blow dry/ curling iron styling
5. Various haircuts/ cutting techniques
6. Chemical relaxer application and maintenance
7. Permanent waving
8. Hair color applications, including special –effect hair color
9. Facials

10. Manicuring

Pedicuring

PHC-641: Pre-formulation and Product Development

1. Concept of pre-formulation
2. Aspects of bulk drug characterization, solubility and stability studies.
3. Importance of each aspect in formulation development.
4. Definition of drug and new drug as per regulatory aspects, sources of drugs.
5. Concept of dosage form, rationale for development of dosage form, classification of the basis of nature, routes of administration.
6. Concept of pack, primary and secondary pack.
7. Types of packaging materials. Unit dose packaging.
8. Packaging of liquid, powders, tablets and semisolid dosage forms.
9. Evaluation of containers and closures of non sterile formulations as per pharmacopoeia

PHC-642: Radiopharmaceuticals

1. Nuclear Medicine Imaging (NMI or NM)
 - a. Gamma Camera (Planner NM Imaging).
 - b. Single Photon Emission Computerized Tomography SPECT.
 - c. Positron Emission Tomography PET.
2. Radiopharmaceutical within human.
3. NM images for clinical information about certain functions of human organs.
4. Other medical imaging modalities such as CT and MRI.
5. These advanced NM imaging that give valuable diagnostic information.
6. Radio- pharmaceuticals including the process of production, localization, uptake, clearance, and other associated aspects.

PHC-643: Drug Regulatory GMP

1. Drug Regulatory Affairs-I
2. Drug Regulatory Affairs-II
3. Pharmaceutical Jurisprudence (Forensic Pharmacy)
4. Laws related to Drug Product Design,
5. Safety & Environment
6. Good Manufacturing Practices
7. Regulation of Clinical and Preclinical Studies

PHP- 644 Research Methodology (Credit Hours 3)

1. Questionnaires, Surveys and Sampling

- 1.1. Questionnaires design
- 1.2. Asking the question

- 1.2.1. Wording the question
- 1.2.2. Response form of closed ended question
- 1.3. Advantages and disadvantages of questionnaires
- 1.4. Surveys
 - 1.4.1. General Principles of surveys
 - 1.4.2. The design of surveys
 - 1.4.3. Selecting the People to take part by Sampling, incidental Sampling, Random sampling methods, Sample size
- 2. Searching of Drug Literature**
 - 2.1. Importance of Drug Literature
 - 2.2. Sources of Drug Literature
 - 2.2.1. Tertiary drug literature
 - 2.2.2. Secondary Drug Literature
 - 2.2.3. Primary Drug Literature
 - 2.2.4. Online Drug Literature
 - 2.3. Searchable Online data base
 - 2.3.1. National Library of Medicine Data base
 - 2.3.2. Higher Education Commission Library (HEC) Search
 - 2.3.3. Search Strategies of Science Direct, Pubmed, Scopus, Springerlink and Google Scholar etc
- 3. Classifications of Study Designs**
 - 3.1. Observational Research
 - 3.1.1. Nature of Research
 - 3.1.2. Time Orientation of Research
 - 3.1.3. Investigator action
 - 3.1.4. Observational Research Design in Drug Literature
 - 3.2. Experimental Research
 - 3.2.1. Validity of Clinical Trials
 - 3.2.2. Enhancing Validity
 - 3.2.3. Selecting an appropriate Sample
 - 3.2.4. Subject Attrition and Intention to Treat Analysis
- 4. The Publication Process**
 - 4.1. Starting of Aims and Objective
 - 4.2. Reviewing the background research
 - 4.3. Reference information
 - 4.4. Writing the Research Proposal
 - 4.5. Obtaining the financial support
 - 4.6. Planning the detail of the study
 - 4.7. Interpreting and disseminating results
 - 4.8. Submitting the research paper

Recommended Books

1. **Evaluating drug Literature** by Richard L, Slaughter, and David J. Edward
2. **Research Methods for Clinical Therapeutics** by Carolyn M Hicks

PHP- 645 Short Project Writing (Credit Hours 2)

