

Ph.D Courses in Pharmacology

COURSE NO	TITLE	CR.Hrs
PHL 901	Advanced Research Methodology	3
PHL 902	Computer Applications in Pharmaceutical Research	3
PHL 903	Development in contemporary treatment of different neoplasms	3
PHL 904	Clinical pharmacology	3
PHL 905	Cellular signaling cascades and their role in drug development	3
PHL 906	Nutrition, drug and disease	3
PHL 907	Era of chemotherapeutic agents: Past, Present and Future	3
PHL 908	Current and Future impact of enzymes in disease outcome	3
PHL 909	Recent advances in the treatment of neurological disorders	3

Note:

- Out of 9 courses students have to opt 6 courses in two semester.
- Each course is of 3 Credit hours

PHL 901 ADVANCED RESEARCH METHODOLOGY Cr. Hr .03

1. Initiation of Research, Nature and Significance of Research, Concepts and Objectives of Research, Phases of Research, Classification of Research, Design of Research (Research problem/Proposal, Steps in preparing a research design, Background, Conditions etc) Ethics of Research, Literature search, Data Collection, Data Interpretation and Analysis, Research report.
2. Development of scientific thought and innovative approaches, Information sources in Pharmaceutical sciences, Fields of study in Pharmaceutical sciences, Pharmaceutical research as a basis for the development of new therapeutic agents, scientific presentations, research paper writing, treatment of scientific data.
3. Writing of synopsis for National / International Conferences/Symposia.
4. Report on related topics covered in Conferences/Symposia.
5. Seminars on latest development in concerned field of Research.
6. Writing projects to National / International funding agencies.

PHL 902 COMPUTER APPLICATIONS IN PHARMACEUTICAL RESEARCH

Cr .Hr. 03

Computer application specific to Pharmaceutical Analysis and Research with emphasis on computer-assisted programs. Application of statistical software SPSS in different data and analysis of data through statistical packages. Advance software awareness regarding computer aided drug designing.

PHL 903 DEVELOPMENT IN CONTEMPORARY TREATMENT OF DIFFERENT NEOPLASMS

Cr. Hr. 03

Staging and complications of malignancy. Cytotoxic chemotherapeutic agents with MOA. Protocol and regimens with different areas of cancers. Factors influencing response. Schedule/ drug resistance Combinations/choice of agents. Adjuvant chemotherapy, Endocrine therapy, Biologic response modifiers, Gene therapy, Interferons/interleukins, Signal transduction pathway inhibitors. Medication errors. Comparison of advancements in treatment options of different neoplasms with classic cancer therapies.

PHL -904 CLINICAL PHARMACOLOGY

Cr.Hr. 03

Clinical Pharmacokinetics; evaluation of factors affecting frequency and dose of a drug. Therapeutics of chronic pathological conditions. Clinical scenarios in different conditions and complications. Diagnostic tools with special reference to laboratory data. Case studies and evaluations with significance of lab tests involving hepatic, cardiac, renal and hematological disorders and other conditions. *Pharmacogenetics*; Implementation for altered or unusual drug handling.

PHL -905 CELLULAR SIGNALLING CASCADDES AND THEIR ROLE IN DRUG DEVELOPMENT

Cr. Hr. 03

1. Types of signaling cascades. 2. Molecular mechanisms utilized by intracellular mediators of signal transduction including cell surface receptors, nuclear receptors, protein kinases, protein phosphatases and lipid kinases. 3. Basic mechanisms of signaling by oxidizing and free radical inflammatory mediators, nitric oxide, steroids, parathyroid hormone, neurotransmitters, hypothalamic hormones, and rhodopsin. 4. Diseases associated with defects in signaling pathway. 5. Role of signaling cascades in drug development. e.g. Interleukin therapy, free radical generation, molecular mechanisms of antioxidant regulation and detoxification, aberrations in the mechanisms of programmed cell death (apoptosis) associated with tumor growth and alterations in DNA repair and DNA damage response genes associated with tumor growth and chemotherapeutic resistance.

PHL-906 NUTRITION, DRUG AND DISEASE**Cr.Hr. 03**

Commonly utilized nutrients, effect of different daily nutrients on progression or treatment of disease, Effect of different nutrients on specific drugs and combination of drugs. Food-disease interaction, Food-drug interaction case scenarios.

PHL-907 THE ERA OF CHEMOTHERAPEUTIC AGENTS: PAST, PRESENT & FUTURE**Cr. Hr. 03**

Basic principles of host defense system. Basic principles of bacterial virulence. General principles of antimicrobial therapy, Principles of laboratory diagnosis, Therapeutics of bacterial, protozoal and viral infections with examples, Current therapeutic practices in the management of common nosocomial infections and other infections caused by resistant microorganism, e.g pneumonia, tuberculosis, diarrhea, AIDS, conjunctivitis etc.

PHL-908 CURRENT AND FUTURE IMPACT OF ENZYMES IN DISEASE OUTCOME**Cr. Hr. 03**

Enzyme classification, mechanism of controlling enzyme activity. *Use of enzymes as therapeutic agents*; collagenase, lipases, streptokinase, serratiopeptidase, hyaluronidases, Lysosomal hydrolases, asparaginase. *Antioxidant enzymes*; superoxide dismutase, catalase, heme oxygenase, glutathione. Peroxidase. Chondroitinase. *Enzyme in future*; Use of enzymes as therapeutic agents in cancer, pancreatic disorders, heart diseases, kidney diseases, respiratory disorders etc.

PHL-909 RECENT ADVANCES IN THE TREATMENT OF NEUROLOGICAL DISORDERS**Cr.Hr. 03**

Basic functions of the brain, spinal cord, sensory systems and peripheral nerves with the aim to reveal mechanisms of neurological disorders and new approaches for their treatment. Basic mechanisms of neuronal function, how these mechanisms are changed in disease, and how pharmacological agents interfere with these changes. Mechanisms of nerve injury, protection and repair in neurological disorders such as depression, schizophrenia, neurodegenerative diseases (Alzheimer's, epilepsy or Parkinson's), anxiety disorders, insomnia and chronic pain. Introduction of cell- and gene-based medicines in development to treat neurologic disorders. Application of nanotechnology for the treatment of neurodegenerative disorders.

PhD Courses in Pharmaceutical Chemistry

	TITLE	CR.Hr
PHC 901	Seminars and project proposals	3
PHC 902	Computer Applications in Pharmacy	3
PHC 903	Advances in Medicinal Chemistry	3
PHC 904	Advances in Determining Structure of Molecules	3
PHC 905	Current approaches in Drug Designing	3
PHC 906	Drug development	3
PHC 907	Research Methodology	3
PHC 908	Kinetic methods of analysis	3

Out of 8 courses students have to opt 6 courses (each course is of 3 Cr.Hrs) in two semester

PHC 901 Seminars and project proposals

1. Participation in National / International Conferences/Symposia.
2. Report on related topics covered in Conferences/Symposia.
3. Seminars on latest development in concerned field of Research.
4. Writing projects to National / International funding agencies.

PHC 902 Computer Applications in Clinical Pharmacy

Computer application specific to health education, with emphasis on computer-assisted instruction development and evaluation, instructional and office management, and health education research applications for statistics packages. Students select projects based on degree concentration and /or area of interest.

PHC -903 ADVANCES IN MEDICINAL CHEMISTRY

Recent advances; current trends in drug design, Neurotransmitters and their receptors
Cholinergic, Adrenergic, G.A.B.A, Dopamine, Serotonin, Histamine, Peptidergic receptors
Opioids, Insulin, Glucagon, Angiotensin.

PHC -904 Advances in Determining Structure of Molecules

1. Basic Principal of 1D and 2D NMR spectroscopy.
2. Two dimensional NMR spectroscopy: COSY, HSQC, HMBC, NOESY, ROESY, TCOSY.
3. Factors effecting chemical shift and coupling constants.
4. Recent advances in ^1H NMR and ^{13}C NMR Spectoscopy.
5. Mass spectroscopy: LCMS, HRMS, EIMS, ESI.
Interpretation of spectra.

PHC -905 Current approaches in Drug Designing

Computing system in drug discovery.
Peptidometrics.
Role of chirality is designing of drug.
Virtual Screening.
Molecular Modelling.

PHC -906 Drug development

Purpose of drug development.
Cost, Time factor and different phases.
Significance of plants as potential source of drug development
Screening methods
Formulation and stability study
Establishment of drug standards
Toxicology and safety evaluation

PHC -907 Research Methodology

1. Laboratory Safety and disaster management.
2. Literature search and sources
3. Types of research and preparation of research proposals
4. Scientific research presentations, Analysis of data and manuscript preparation for international publication
5. Development of scientific thoughts and innovative approaches

PHC -908 KINETIC METHODS OF ANALYSIS

Chemical Kinetics ,Molecularity of reaction, Kinetics of complex reaction, Theories of chemical reactions,Factors affecting chemical reactions,Isotope effect in chemical reaction,Reactions in solution Enzyme Kinetics,General principles of catalysis,Process and equations of kinetics,Multisubstrate system,Enzyme inhibition,Allosteric interactions P H effect on enzyme kinetics

PhD Courses in Pharmacognosy

PHG 901	Seminars and project proposals	3
PHG 902	Computer Applications in Pharmacy	3
PHG 903	Research methodology	3
PHG 904	Herbal Bioequivalence	3
PHG 905	Structure elucidation of natural product	3
PHG 906	Biosynthesis of natural products	3
PHG 907	Phytomedicine	3
PHG 908	Standardization of phytomedicine	3

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PHG 901 Seminars and project proposals

1. Participation in National / International Conferences/Symposia.
2. Report on related topics covered in Conferences/Symposia.
3. Seminars on latest development in concerned field of Research.
4. Writing projects to National / International funding agencies.

PHG 902 Computer Applications in Clinical Pharmacy

Computer application specific to health education, with emphasis on computer-assisted instruction development and evaluation, instructional and office management, and health education research applications for statistics packages. Students select projects based on degree concentration and /or area of interest.

PHT -903 RESEARCH METHODOLOGY

Initiation of Research, nature and significance of research, Concepts and Objective of research. Phases of Research Classification , Clasification of Research, Design of Research(R esearch problem proposal.Steps in preparing a research design, Background, Conditions etc) Ethics of research. Literature search, Data collection, Data Interpretation and Analysis Research report Development of scientific thought and innovative approaches, Information sources in Pharmaceutical Sciences , Fields of study in pharmaceutical sciences, pharmaceutical research as a basis for the development of new therapeutic agents, Scientific presentations research paper writing, treatment of scientific data.

PHG -904 HERBAL BIOEQUIVALENCE

Herbal Pharmacokinetic Definition, importance and ethical standards of bioequivalence. assay methods of drugs in biological fluids, validation of assay methods, clinical statistical evaluation (AUC, AUMC, C_{max}), biological half life, dissolution volume.

Herbal pharmacodynamics

Clinical responses to a drug on different physiological systems (ENT, CVS, CNS, UGS, RS And RTS)

Guide lines for bioequivalence

- a) WHO guide lines for bioequivalence
- b) Waiver or bioequivalence

Bioequivalence studies on natural sources

Literature survey and clinical data on: *Silybum marianum*, *Glycyrrhiza glabra*, *Centella asiatica*, *Hypericum perforatum*, *Allium sativum*, *Zingiber officinale*, *Allium cepa*, *Trigonella foenum – graecum*, *Digitalis purpurea*, *Ginkgo biloba*, *Cinnamomum zeylanicum*, *Ginseng cinerariifolium*, *Ginseng quinquefolium*

PHG -905 STRUCTURE ELUCIDATION OF NATURAL PRODUCTS

Application of spectroscopic and chemical techniques to elucidate the structure of natural products with particular reference to alkaloids, steroids, saponins, flavonoids and terpenes

PHG -906 BIOSYNTHESIS OF NATURAL PRODUCTS

Introduction, mechanism and biosynthetic pathways of amino acids, vitamins, phenolic compounds, terpenes, steroids, alkaloids

PHG -907 PHYTOMEDICINE

1 Cultivation and post harvest technology, Cultivation and post harvest technology of *Papaver somniferum*, *Solanum nigrum*, *Withania somniferum*, *Cassia angustifolia*. Isolation and estimation

Isolation and estimation of clove oil, atropine, curcumin, vinca alkaloids, quinine, taxol, emetine, sennoside, glycyrrhizin, starch, microcrystalline cellulose. Structural Elucidation Structural elucidation of citral, nicotine, atropine, amygdaline, caffeine, morphine.

Chemotherapy Flavonoids and terpenoids. Marine natural products. Effects of pests on Phytomedicine

PHG -908 STANDARIZATION OF PHYTOMEDICINE

Plant Extracts Preparation and standardization of the extracts of *Tinospora cordifolia*, *Curcuma longa*, *Solanum xanthocarpum*, *Ocimum sanctum*, *Adhoda vasica*, *Emblica officinalis*, *Centella asiatica*, *Melia azadirachta*, *Withania somnifera*. Traditional drugs formulations Ayurveda, Homeopathy, Unani and Aromatherapy 3 Herbal drug formulations Cosmoceuticals: skin and their care products, 4 Agroproducts of economic importance, Corn oil, soyabean, spirulina, papain, Standarization of Phytopharmaceuticals by HPTLC Technique. Bacoside, andrographolide, solasodine, glycyrrhetinic acid, vasicine, sennosides Standarization of Phytopharmaceutical by HPLC technique Amarogentin, asiaticoside, cordifolioside, lupeol, solasodine, vasicine.

PhD Courses in Pharmaceutics

PHT 901	Research methodology	3
PHT 902	Seminars and project proposals	3
PHT 903	drug delivery (formulation, development, principles and applications)	3
PHT 904	Computer Applications in Pharmacy	3
PHT 905	Production and Application of pharmaceutical biotechnology	3
PHT 906	pharmaceutical microbiology	3
PHT 907	Advanced physical pharmacy	3
PHT 908	pharmacovigilance	3

PHT 901	Seminars and project proposals	3
PHT 902	Computer Applications in Pharmacy	3
PHT 903	Research methodology in pharmaceutical sciences	3
PHT 904	pharmacovigilance	3
PHT 905	pharmaceutical microbiology	3
PHT 906	drug delivery (formulation, development, principles and applications)	3
PHT 907	Production and Application of pharmaceutical biotechnology	3
PHT 908	Advanced physical pharmacy	3

PHT -901 RESEARCH METHODOLOGY IN PHARMACEUTICAL SCIENCES

Basic principle of research Introduction, basic concept of research design and statistics, questionnaire, surveys and sampling, technique of some descriptive statistics, testing hypothesis, designing the study sources of errors in research, matching the research design to the statistical test, putting the theory into practice, writing up the research for publication, reading research publication critically. Nonparametric Methods and parametric methods, Factorial design of experiments, Regression and correlation, Model-Dependent and independent Optimization. Design of studies (Case reports and Cohort studies etc. Research application Library techniques for effective literature search. Research proposal guidelines, Mentor selection, Literature search deadlines, Human subjects rights- The evolution of the current status of human research. Research type developing a hypothesis: construction of a clinical study, validation of data Responsible Scientific Conduct – Examples of Irresponsible Science, Ethical issues in clinical testing activities in Third World Countries.

Out of 8 courses students have to opt 6 courses (each course is of 3 Cr.Hrs) in two semester

PHT 902 Seminars and project proposals

1. Participation in National / International Conferences/Symposia.
2. Report on related topics covered in Conferences/Symposia.
3. Seminars on latest development in concerned field of Research.
4. Writing projects to National / International funding agencies.

PHT -903 DRUG DELIVERY (FORMULATION,DEVELOPMENT,PRINCIPLES AND APPLICATIONS)

An advanced level study of the physical and biological principles which apply to the design development and evaluation of drug delivery systems. Specific examples of modern systems such as Transdermal preparations, Liposomes, Implants Monoclonal Antibodies, and those involving site –targeting will be discussed. Targeted GI Delivery ,Enhanced Gastrointestinal Absorption of Lipophilic drugs, Promoted Rectal Absorption ,Cyclodextrins and other enhancers in Rectal delivery. Development of generic drug formulation, Experimental Formulation Development, Optimization of formulation, Scale up and Post Approval Changes ,Legal issues in drug product development.

PHT 904 Computer Applications in Clinical Pharmacy

Computer application specific to health education, with emphasis on computer-assisted instruction development and evaluation, instructional and office management, and health education research applications for statistics packages. Students select projects based on degree concentration and /or area of interest.

PHT- 905 PRODUCTION AND APPLICATION OF PHARMACEUTICAL BIOTECHNOLOGY

Introduction: Importance and application of pharmaceutical biotechnology, Definition and application fields of biotechnology and pharmaceutical biotechnology, Structure and function of genetic materials and DNA. Recombinant DNA Technology; Gene Cloning; Cell Fusion Techniques, Pharmaceutical biotechnological products of ,Hormones, Enzymes, Monoclonal Antibodies, Biotechnological Drug Products, Peptide-Protein structured drugs; Oligosaccharides vaccines; Recombinant Vaccines; Tuberculosis , Hepatitis B ; Adjuvants, Industrial Biotechnology applications. Formulation design for biotechnological drugs (Formulation

parameters ; protein ;Solubility; Sterility ;Stability ; Packaging ; Lyophilization0 ; Dosage forms of biotechnological drugs(Classical ;Modern) ; GMP Rules for Biotechnological place; Equipments; Control of finished product ; Sampling/ analysis) Licensing of biotechnological products ; role of hospital and Pharmacy Pharmacist in biotechnology ; information.

PHT -906 PHARMACEUTICAL MICROBIOLOGY III

Manufacture of pharmaceutical products using microbes Use of microbes and their products in biological assays.Manufacture and quality control of immunological products Non-antibiotic anti microbial agents: chemical disinfectants ,antiseptics and preservatives,Ecology of microorganisms as it affects the pharmaceutical industryMicrobial spoilage and preservation of pharmaceutical products: Principles and practice of sterilization; Hospital and industry hygiene and GMP.Serum Bactericidal assays,Agar dilution and disk susceptibility methods.Antibiotics, newer antibiotics and other antimicrobial agents. Risk of contamination and their control.

PHT -907 ADVANCE PHYSICAL PHARMACY

Application of physiochemical principles in the evaluation of pharmaceutical systems preformulation, and drug transport,In depth analysis of the physical principles that underlie the formulation of drugs.the presentation of this course is grounded in theoretical and physical cincepts.These concepts are further developed for relevant pharmaceutical systems. Topics covered dealing with basic principles includes thermodynamics, free energy and spectroscopy Equilibrium phenomena will be dealt with at an advanced level including strong and weak acids / bases,buffers distribution, complexation and protein binding; drug release, dissolution, absorption and stability.Surface chemistry, colloids and emulsions are presented.Kinetic phenomena including pathways of drugs metabolism and degradation, reteaction order and reversible reactions will be discussed.Diffusion, transport processes and membrane diffusion will be covered.Polymer science will also be discussed in terms of characterization and modification for formulation use. Understand saturable kinetics and apply the model to enzyme kinetics protein binding etc

Calculate steady state diffusion profiles and interpret experimental data to determine diffusion and permeability coefficients. Design diffusion experiments .Understand and apply the Noyes-Whitney and Hixson –Crowell dissolution models.Understand properties of interfaces and adsorption process.Colloids and coarse dispersions and their preparation Monitoring and maintenance of pharmaceutical water systems.

PHT -908 PHARMACOVIGILANCE

Pharmacoepidemiology is to employ epidemiologic methods to the content area of clinical pharmacy. Also, it is to study of utilization and effects of drugs in large numbers of people. This course is designed as overview of pharmacoepidemiology including: Drug development, Approval and clinical trials Introduction to epidemiologic research design and post marketing studies Application of epidemiologic methods to study drug safety and effectiveness. Sample calculation in pharmacoepidemiology studies, Hospital based cohort studies, case controlled studies, prescription event monitoring, Bioethical issues in pharmacoepidemiology studies, drug utilization review, meta analysis and statistical analysis. Pharmacovigilance issues such as preclinical safety evaluation, drugs in elderly, spontaneous reporting, spontaneous signaling, statistical methods of analyzing pharmacovigilance data drug safety in pregnancy, Adverse Drug Reactions (ADR's), pharmacogenetics and the generic basis of ADR's medical errors and regulatory issues.

PhD Courses in Pharmacy Practice

PHP 901	Advances in Rational Phytotherapy	3
PHP 902	Fundamentals of Clinical Investigation	3
PHP 903	Clinical Gastroenterology	3
PHP 904	Clinical Immunology	3
PHP 905	Clinical Neurology	3
PHP 906	Designing Clinical Research	3
PHP 907	Biostatistics in Clinical Pharmacy	3
PHP 908	Computer Applications in Clinical Pharmacy	3

Out of 8 courses students have to opt 6 courses (each course is of 3 Cr.Hrs) in

Advances in Rational Phytotherapy

PHP 901

Cr.Hrs.3

The detailed determination of clinical approaches and its application and implications to cure and prevent the diseases and promote health care. Medicinal plants, phytomedicine and phytotherapy central nervous system (CNS), Cardia vascular system (CVS), Respiratory system (RS), Digestive

System (GIT), Urinary tract, Skin , Trauma, Rheumatism and pain, Age and resistance to diseases.

Fundamentals of Clinical Investigation

PHP 902

Cr.Hrs.3

This course provides an introduction to clinical research for physicians and other health-care workers. Lectures focus on how to critically interpret the clinical experimental literature, how to identify the various clinical research designs, Students may enhance their medical training through a variety of activities that offer students an opportunity to explore areas of special interest, such as working in rural or urban clinics that serve medically underserved communities, undertaking medical research projects. Assess the scientific evidences on the effects of selected medicine remedies.

Clinical Gastroenterology

PHP 903

Cr.Hrs.3

The most recent knowledge of the anatomy, physiology, biochemistry, biophysics, and bioengineering of the gastrointestinal tract and the associated pancreatic, liver and biliary tract systems is presented and discussed. Gross and microscopic pathology and the clinical aspects of important gastrointestinal diseases are then presented, with emphasis on integrating the molecular, cellular and pathophysiological aspects of the disease process to their related symptoms and signs. Support patients who seek information and guidance on health and medical sciences

Clinical Immunology

PHP 904

Cr.Hrs.3

The course will comprise of the topics as follows: Basic Components of the Immune System, Immunological Techniques, Immune Regulation, Immunological Aspects of Infection, Immunological Aspects of Immunodeficiency Diseases, Autoimmunity, Chronic Lymphocytic Leukemia, Immunology of HIV Infections, Immunological Aspects of Allergy and Anaphylaxis, Immunological Aspects of Skin Diseases, Experimental Approaches to the study of autoimmune Rheumatic Diseases, Immunological Aspects of Cardiac Disease, Immunological Aspects of Chest Diseases: The Case of Tuberculosis, Immunological Aspects of Gastrointestinal and Liver Disease, Immunological Aspects of Endocrine Disease, Immune-Mediated Neurological Syndromes, Immunological Aspects of Renal Disease.

Clinical Neurology

PHP 905

Cr.Hrs.3

The program emphasizes various disciplines of neurosciences, including structural , cellular, systems, and molecular, developmental , cognitive and behavioral biology .Understanding the brain function and brain diseases are major intellectual and practical changes facing mankind. Neuroscience in Eastern medicine will cover source neurodegenerative diseases, Zeurodegeneration and repair, neuronal function and dysfunction.It will include neuro-anatomy, brain structure-function relationship as well as discussion on diseases of the nervous system: epilepsy, pain , tumors, and movement disorders and Parkinson's disease, dementia and cognition, and multiple sclerosis.

Designing Clinical Research

PHP 906

Cr.Hrs.3

The subjects describes the principles of clinical research in Medicine, the significance of ethical aspects and good clinical practice. Student will be guided to develop clinical trail performa and format of research design.The subject will include the types of clinical research, clinical research administration, toe-way communication on current knowledge about diseases and related research methodologies . In-depth concepts of clinical trials and ethics are provided.Each student is required to present a clinical research plan on the disease.

Biostatistics in Clinical Pharmacy

PHP 907

Cr.Hrs.3

Workshop and discussion on statistical methods and software in clinical, laboratory and population medicine.Graphical and tabular presentation of data, probability, bionomial ,Poisson , normal,t- F- , and Chisquare distributions ,elimentary nonparametric methods, simple linear regression and correlation , life tables. The analysis of data and design of experiments for laboratory data with an emphasis on health science advance statistics. Students will develop understanding for basic planning and targets biomedical audience. Students will develop understanding for basic planning and analysis of clinical studies and learn to develop collaborations with biostatisticians.Biostatistics: The completely randomizes designs(CR-designs) Randomized complete block designs (RCB-designs) ,Latin square designs (LS-designs), Factorial experimental designs, Computer method of statistical evaluation , Co-relation/regression analysis.

Computer Applications in Clinical Pharmacy

PHP 908

Cr.Hrs.3

Computer application specific to health education, with emphasis on computer-assisted instruction development and evaluation, instructional and office management, and health education research applications for statistics packages. Students select projects based on degree concentration and /or area of interest.

Thesis:

The research work will be carried out in any branch of clinical pharmacy. The thesis shall embody the results of research, which may either be continuation to the existing knowledge of the subject, or application of known methods of research to some technical problems. This will also include seminar and viva-voce examination concerning research topics. Six copies of research thesis printed or type written shall be submitted for the examination at the end the academic year.