

School of Pharmacy and Pharmacology

Head of School

Suleman F, B Pharm.(UDW), M.Pharm.(UDW), Ph.D(USA) MPS (SA)

Secretary to the HOS

Mojapelo Z

Programme Coordinator

Oosthuizen F, BPharm (PU for CHE), MSc (PU for CHE), PhD (PU for CHE)

Secretary to the School

Bagwandeen A

Discipline of Pharmacy

Associate Professors:

Govender T, BSc.Pharm (UND, SA), MPharm (UDW, SA), PhD (Nottingham, UK), MPS (SA)

Senior Lecturers:

du Toit K, B Pharm (PU for CHE), M.Sc (PU for CHE), Ph.D (Applied Chemistry) UKZN), MPS (SA)

Govender T, B.Sc (UDW), B.Sc(Hons)(UND), M.Sc(UND), PhD(Chemistry)(UKZN)

Suleman F, B Pharm.(UDW), M.Pharm.(UDW), Ph.D(USA) MPS (SA)

Lecturers:

Naidoo P, BPharm, MMed Sc (Pharmacology)(UDW), FPS

Ojewole EB, B Pharm (OAU Ife), MSc Clinical Pharmacy (Strathclyde, UK) MPS (SA)

Senior Tutor:

Govinden U, M Tech (Natal), PhD (UKZN)

Principal Technican:

Mocktar C, BSc(Hons, MMedSc(UDW), PhD (UKZN)

Technical Officers:

Chonco S, National Diploma – Analytical Chemistry(Mangosuthu University of Technology)

Govender A, BSc(UDW)

Technical Assistants:

Jugdeow C, Post-basic Pharmacist Assistant

Maphumulo BW

Laboratory Technician:

Murugan L

General Assistant:

Shange NS, BMedSci Anatomy (UKZN)

Discipline of Pharmacology

Senior Professor:

Ojewole JAO, B Pharm (Hons) (Ife) , MSc (Clin Pharm) (London), PhD (Pharmacology) (Strathclyde, UK), MPS (NG)

Lecturers:

Bodenstein J, B Pharm (NWU-Potchefstroom), MSc (NWU-Potchefstroom), PhD(NWU-Potchefstroom), MPS(SA)

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Owira PMO, BSc(Nairobi), BSc(Med Hons) (UCT), MSc (Medicine) (UCT)

Academic Administrative Officer:

Van Maasdyk J, R.N., O.H.N.

Associate Laboratory Technician:

Gobind V, BSc(UDW)

SCHOOL OF PHARMACY AND PHARMACOLOGY

Discipline: Pharmacy & Pharmacology
Westville Campus

Rules for programmes in the School of Pharmacy & Pharmacology

Bachelor of Pharmacy

PHRM1 Curriculum for the Bachelor of Pharmacy

The degree curriculum, which shall be approved by the Board from time to time, shall extend over eight semesters and shall comprise modules with a total credit value of not less than 512 and not more than 576, of which at least 128 shall be at level 4. (See table PHRM-A) The student shall complete these modules with due regard to prerequisite and co-requisite requirements. The student shall also attend tutorials, practicals, wardround visits, wardround presentations, and externships to industry, community pharmacies, hospitals, primary health care clinics, mobile clinics and the health train, and other facilities, as are required by modules in the student's curriculum.

PHRM2 Due performance (to be read with rules GR16, GR17 and FHDL3)

Rules GR16, GR17 and FHDL3 shall apply, save that the attendance requirement for all discipline specific fieldwork, tutorial classes, practical classes, ward round visits, ward round presentations, and externship visits shall be 100%, except where the Head of School has specifically excused the student from a particular session.

PHRM3 Sustained competence

A student who, for two years or more, has undertaken no clinical work in the relevant previous modules in the same subject may be required to pass a test on the work of such previous modules, or otherwise produce evidence of sustained competence in the work of those modules, in order to register for the succeeding module.

PHRM4 Pharmacy Laboratory Safety Regulation

- (a) All students using laboratory facilities in the School are required to comply with the laboratory safety policies and procedures as specified for/in each laboratory at all times.
- (b) Failure to comply with 1 above, shall result in the student being denied access to the laboratory.

PHRM-A Curriculum for Bachelor of Pharmacy –			
Code	Name of Module	Cred	Sem
Level 1			
CHEM110W1	General Principles of Chemistry	16	1
BIOL103W1	Introductory Biology for Health Sciences	16	1
MATH133W1	Mathematics & Statistics for Natural Sciences	16	1
ISTN100W2	End User Computing	8	1
PHYS131W1	Intro Physics for Life Sciences & Agriculture	16	1
CHEM120W2	Chemical Reactivity	16	2
HLSC116W2	Community Studies	16	2
PHRM101WB	An International Model for AIDS Education and Prevention	16	2
PSYC332W2	Managing Health Behaviour	8	2
ZULN101WB	Basic Isizulu Language Studies A	16	2
Total Credits for level 1		144	

¹ Candidates who fail the English Placement Test will register for the English Language Development Module (ELDVI00WB) instead of ZULN101WB. Candidates who pass the English Placement Test can register for ZULN101WB or they can still register for ELDVI00WB or Advanced Zulu (ZULN103WB).

Level 2			
Code	Name of Module	Cred	Sem
HPS221W1	Homeostasis	16	1
ANAT101W1	Introduction to Anatomy and Neuroanatomy	16	1
PHRM211W1	Medicinal Chemistry I	8	1
PHRM241W1	Pharmaceutical Calculations I	8	1

PHRM213W1	Pharmaceutical Chemistry	8	1
PHRM221W1	Physical Pharmacy	8	1
HPHS222W2	Integration & Communication	16	2
PHRM232W2	Introduction to Pathology	8	2
PHRM212W2	Medicinal Chemistry II	8	2
PHRM222W2	Pharmaceutical Technology	16	2
PHRM202W2	Pharmacology I	16	2
PHRM214W2	Pharmaceutical Analysis I	8	2
	Total credits: Level 2	136	
Level 3			
PHRM321W1	Institutional Pharmaceutics	16	1
PHRM311W1	Medicinal Chemistry III	16	1
PHRM313W1	Pharmaceutical Analysis II	8	1
PHRM333W1	Pharmaceutical Care I	8	1
PHRM301W1	Pharmacology II	16	1
PHRM332W2	Health Law and Ethics 1	8	1
PHRM331W1	Pharmacy Logistics, Economics and Management	8	2
PHRM314W2	Applied Clinical Chemistry	8	2
PHRM316W2	Medicinal Chemistry IV	8	2
PHRM334W2	Pharmaceutical Care II	8	2
PHRM302W2	Pharmacology III	16	2
PHRM323W2	Sterile Products	8	2
HLSC300W2	Applied Research Methods for Health Sciences	8	2
	Total credits: Level 3	136	
Level 4			
PHRM421W1	Biopharmaceutics	16	1
PHRM431W1	Health Law and Ethics II	8	1
PHRM433W1	Pharmaceutical Care III	8	1
PHRM401W1	Pharmacology IV	16	1
PHRM422W2	Advanced Drug Delivery	8	2
PHRM442W2	Pharmaceutical Calculations II	8	2
PHRM434W2	Pharmaceutical Care IV	24	2
PHRM402W2	Pharmacology V	16	2
PHRM441WY	Research Project	24	year
	Total credits: Level 4	128	
	Total credits for degree	544	

Curriculum for Master of Pharmacy - Research	
Module Code	Name of Module
PHRM8AY	Research Masters in Pharmaceutics
PHRM8BY	Research Masters in Pharmaceutics subsequent year
PHRM8CY	Research Masters in Pharmacy
PHRM8DY	Research Masters in Pharmacy subsequent year
PHRM8EY	Research Masters in Pharmacology
PHRM8FY	Research Masters in Pharmacology subsequent year

Curriculum for Doctor of Philosophy – Health Sciences	
Code	Name of Module

PHRM9AY	PhD Research in Pharmaceutics
PHRM9BY	PhD Research in Pharmaceutics subsequent year
PHRM9CY	PhD Research in Pharmacy
PHRM9DY	PhD Research in Pharmacy subsequent year
PHRM9EY	PhD Research in Pharmacology
PHRM9FY	PhD Research in Pharmacology subsequent year

Master of Medical Science Programme Description

This is a degree by research dissertation only. It is awarded in the fields of Clinical Pharmacology and Health Systems Pharmacy. The relevant University Rules, General College Rules shall apply. The guided/supervised research process involves the formulation of a research question (related to one of the majors of the Pharmacy programme), literature review, the development of a research proposal, application for ethical clearance, application for funding, the research process using approved methodologies, the analyses of results and the culmination of the process in the form of a dissertation/thesis which includes an appropriate and relevant literature review, description of methodologies employed, analyses and discussion of results, conclusions and recommendations (where applicable).

Curriculum for Master of Medical Science - Pharmacology	
Code	Name of Module
PHRM8EY	Research Masters in Pharmacology
PHRM8FY	Research Masters in Pharmacology subsequent year

Pharmacology

Offered in the School of Pharmacy & Pharmacology

Pharmacology I

PHRM202 W2 (48L-36T-0P-0S-44H-30R-0F-0G-2A-15W-16C)

Prerequisite: BIOL103W1, CHEM110W1, CHEM120W2, MATH133W1, DP in ANAT101W1, DP in HPHS221W1

Corequisite: HPHS222W2.

Aim: To provide learners with an understanding of basic terms and principles of pharmacology with special reference to pharmacodynamics and pharmacokinetics.

Content: Pharmacodynamics: Drug receptors and receptor theories, agonists, antagonists; neurotransmitters and modulators. Autonomic nervous system: Basic concepts of the sympathetic and parasympathetic nervous systems. Introductory Pharmacokinetics: Introduction to drug absorption, distribution, metabolism and elimination; therapeutic index; drug bioavailability, volume of distribution, half-life ($t_{1/2}$); kinetics of drug metabolism, etc.

Tutorials: 10 x 2hr tutorial sessions

Assessment: Formative: 60% of the average of 2 tests + 40% of the tutorial tests and assignments. Summative: 1x 2-hour paper. Final Mark = 60% of Examination Mark + 40% of CAM. A 40% subminimum rule will apply.

DP Requirement: The learner must obtain a CAM of $\geq 40\%$. 100% attendance of all tutorial classes, except where the Head of School has specifically excused a student from a particular session.

A lecture note fee will be charged for this module.

Pharmacology II

PHRM301 W1 (48L-36T-0P-0S-44H-30R-0F-0G-2A-13W-16C)

Prerequisite: PHRM202W2, ANAT101W1, HPHS221W1, HPHS222W2.

Corequisite: None

Aim: To provide learners with a basic understanding on the pharmacology of drugs affecting mediators of inflammation and pain; clinical pharmacological concepts used in the diagnosis, prevention, rational treatment and management of certain Central Nervous System (CNS) disorders

Content: Autocoid pharmacology, with special reference to histamine, serotonin, prostaglandins, leukotrienes, thromboxanes, kinins and vasoactive peptides. Treatment of pain, gout and other inflammatory conditions with specific reference to non-steroidal anti-inflammatory drugs (NSAIDs), opioids, alcohols, general and local anaesthetics. Immunopharmacology. Central Nervous System (CNS) pharmacology with specific reference to neurodegenerative disorders (Parkinson's and Alzheimer's diseases), antipsychotic drug therapy, affective disorders, management of epilepsy, and treatment of headache and migraine.

Tutorials: 10 x 2hr tutorial sessions

Assessment: Formative: 60% of the average of 2 tests + 40% of the tutorial tests and assignments. Summative: 1x 2-

hour paper. Final Mark = 60% of Examination Mark + 40% of CAM. A 40% subminimum rule will apply.
DP Requirement: The learner must obtain a CAM of $\geq 40\%$. 100% attendance of all tutorial classes, except where the Head of School has specifically excused a student from a particular session.
A lecture note fee will be charged for this module.

Pharmacology III

PHRM302 W2 (48L-36T-0P-0S-44H-30R-0F-0G-2A-13W-16C)

Prerequisite: PHRM202W2, ANAT101W1, HPHS221W1, HPHS222W2, DP in PHRM301W1.

Corequisite: None

Aim: To provide learners with an understanding of basic principles of chemotherapy, i.e., the mechanisms by which anti-infective drugs act in the management and treatment of infectious diseases. Therapeutic Drug Monitoring (TDM) will enable learners to understand the concepts of pharmacogenomics and pharmacokinetics of various drug classes, thus enabling them to easily interpret drug-blood levels which are valuable during the implementation of dosage adjustments. Toxicology will enable learners to understand and address toxic chemicals and basic drug overdosage scenarios. Clinical biochemistry will provide learners with a basic background to interpret and understand pathological laboratory results.

Content: The pharmacology of antimicrobial agents, with specific reference to antibacterial, antifungal and antiviral drugs. TDM, toxicology and clinical biochemistry.

Tutorials: 10 x 2hr tutorial sessions

Assessment: Formative: 60% of average of 2 tests + 40% of average of tutorial tests/ assignments. Summative: 1 x 2-hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: The learner must obtain a CAM of $\geq 40\%$. 100% attendance of all tutorial classes, except where the Head of School has specifically excused a student from a particular session.

A lecture note fee will be charged for this module.

General and Ocular Pharmacology

PHRM344 W2 (42L-0T-0P-0S-14H-22R-0F-0G-2A-14W-8C)

Prerequisite: None

Corequisite: None

Aim: To provide learners with the relevant pharmacological knowledge which would aid in the diagnosis and management of ocular conditions

Content: An introduction to pharmacokinetics and pharmacodynamics, autonomic pharmacology and agonists and antagonists of this system. Special topics of interest to optometry such as miotics, mydriatics and cycloplegics, glaucoma, allergy and antihistamines, inflammation and anti-inflammatory agents, chemotherapeutic agents, drug-induced ocular diseases and diagnostic agents. Other topics as they become relevant to the profession.

Practicals: None

Assessment: Formative: Average of 2 tests. Summative: 1 x 2-hour paper. Final mark = 50% of the CAM and 50% of the examination mark. A 40% subminimum rule will apply.

DP Requirement: The learner must obtain a CAM of $\geq 40\%$. 100% attendance of all tutorial classes, except where the Head of School has specifically excused a student from a particular session. Students must also have attended at least 75% of all lectures.

Pharmacology IV

PHRM401 W1 (48L-0T-0P-39S-16H-11R-44F-0G-2A-15W-16C)

Prerequisite: PHRM232W2, PHRM202W2, PHRM301W1, PHRM302W2.

Corequisite: None

Aim: To provide learners with clinical pharmacological concepts used in the diagnosis, prevention, rational treatment and management of certain systemic diseases.

Content: Treatment and/or management of the following pathological disorders: GIT: Peptic ulcer disease, Gastro-Oesophageal Reflux Disease (GORD), Inflammatory Bowel Disease (IBD), Irritable Bowel Syndrome (IBS), diarrhoea, constipation, hepato-biliary diseases, nausea and vomiting. Respiratory System: Bronchial asthma, Chronic Obstructive Pulmonary Disease (COPD) and other respiratory disorders, including cough, pneumonia, congestion, rhinitis. Endocrine System: Growth hormone, anti-diuretic hormone, osteoporosis, infertility (gonadal hormones, contraception, erectile dysfunction, hormone replacement therapy), hormones of the thyroid gland (hypothyroidism and hyperthyroidism), adrenocorticosteroid hormones (glucocorticoids and mineralocorticoids). Anti-Protozoals and Anthelmintics: Anti-infective drugs for malaria, amoebiasis, intestinal helminths, trypanosomiasis, schistosomiasis. Anti-neoplastics: Principles of cancer chemotherapy, cancer cell cycle kinetics, anti-metabolites, alkylating agents, antibiotics, microtubule inhibitors, steroid hormone antagonists, monoclonal antibodies.

Wardrounds: 15 x 3hrs Wardround visits + 15 x 3 hrs wardround presentations

Assessment: Formative: 60% of the average of 2 tests + 40% of ward-round presentation marks. Summative: 1x 2-hour paper. Final Mark = 60% Examination Mark + 40% of CAM. A 40% subminimum rule will apply.

DP Requirement: The learner must obtain a CAM of $\geq 40\%$. 100% attendance of all ward rounds visits and wardround presentations, except where the Head of School has specifically excused a student from a particular session

A lecture note fee and transportation fee will be charged for this module.

Pharmacology V

PHRM402 W2 (48L-0T-0P-39S-16H-11R-44F-0G-2A-15W-16C)

Prerequisite: PHRM232W2, PHRM202W2, PHRM301W1, PHRM302W2, DP in PHRM401W1.

Corequisite: None

Aim: To provide learners with clinical pharmacological concepts used in the diagnosis, prevention, rational treatment and management of certain systemic diseases.

Content: Treatment and/or management of the following pathological disorders: Cardiovascular system: Myocardial infarction (MI), congestive heart failure (CHF), renin-angiotensin system and hypertension, cardiac arrhythmias, angina pectoris, blood disorders (thrombosis, haemophilia and anaemia). Vitamins and vitamin supplements. Diabetes mellitus: Hyperlipidemia, diuresis, insulin and regulation of blood glucose, obesity. Endocrine System: Hormones of the pituitary and thyroid glands (growth hormones, gonadotropins and osteoporosis, hypothyroidism); adrenocorticosteroid hormones (glucocorticoids, mineralocorticoids).

Wardrounds: 15 x 3hrs Wardround visits + 15 x 3 hrs wardround presentations

Assessment: Formative: 60% of the average of 2 tests + 40% of ward-round presentation marks. Summative: 1x 2-hour paper (50%) and oral examination (50%). Final Mark = 60% Examination Mark + 40% of CAM. A 40% subminimum rule will apply.

DP Requirement: The learner must obtain a CAM of $\geq 40\%$. The learner must obtain 100% attendance of all ward round visits and wardround presentations, except where the Head of School has specifically excused a student from a particular session.

A lecture note fee and transportation fee will be charged for this module.

Pharmacy

Offered in the School of Pharmacy & Pharmacology

An Internat Model for AIDS Education & Prevention

PHRM101 WB (0L-0T-20P-0S-20H-20R-0F-0G-20A-0W-8C)

Prerequisite: None

Corequisite: None

Aim: Students will be able to understand the global impact of the disease, social aspects of HIV/AIDS, and the science of the disease.

Content: Objective scientific information about the biology of HIV disease; explore the global impact of HIV/AIDS on public health and social systems; the social aspects of HIV/AIDS; the science of the disease; the basic principles of the chemical and immunological aspects of HIV disease.

Practicals: None

Assessment: 40% Project + 10% Quizzes + 10% class Participation + 40% Exams (all online)

DP Requirement: A student must obtain a CAM of $\geq 40\%$. The student must participate in ALL online activities.

A lecture/workbook note fee will be charged for this module.

Medicinal Chemistry 1

PHRM211 W1 (21L-12T-6P-0S-18H-20R-0F-0G-3A-7W-8C)

Prerequisite: CHEM110W1, CHEM120W2

Corequisite: PHRM213W1

Aim: To introduce students to concepts in drug design, the stereochemistry of drugs and drug targets and the functional classes that are important in medicinal compounds

Content: Review of historical and modern medicinal chemistry, Introduction to drug design, molecular modification, molecular modelling and quantitative structure activity relationships, The three dimensional structure of drugs and drug targets, The physico-chemical properties of the functional classes that are important in medicinal compounds with respect to their biological activities as well as to their in vitro and in vivo stabilities.

Practicals / Tutorials: Practical: 2 (Practical reports form part of the formative assessment) + Tutorials: 4 (The course test is held in one of the tutorial periods)

Assessment: Formative: 70% of the test mark + 30% of the average of the practical marks. Summative: 1 x 2-hour paper. Final mark = 60% of exam mark + 40% of the CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be a 100% attendance for all tutorial classes, and practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused a student from a particular session.

A lecture note fee and a laboratory fee will be charged for this module.

Medicinal Chemistry 2

PHRM212 W2 (21L-0T-18P-0S-18H-20R-0F-0G-3A-7W-8C)

Prerequisite: DP in PHRM213W1, DP in PHRM211W1

Corequisite: None

Aim: To enable the student to understand the chemistry of functional classes and heterocyclic compounds that are important in medicinal compounds and pharmaceutically relevant biomolecules.

Content: The physico-chemical properties of the functional classes and heterocyclic compounds that are important in medicinal compounds with respect to their biological activities as well as to their in vitro and in vivo stabilities and the stability, properties and functions of pharmaceutically relevant biomolecules

Practicals: 6 practicals. The course test is held during one practical session. All students are required to submit individual practical reports even though they may work in pairs/groups in the laboratory.

Assessment: Formative: 70% of the test mark + 30% of the average of the practical marks. Summative: 1 x 2-hour

paper. Final mark = 60% of exam mark + 40% of the CAM. A 40% subminimum rule will apply.
DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be a 100% attendance for practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused a student from a particular session.
A lecture note fee and a laboratory fee will be charged for this module.

Pharmaceutical chemistry

PHRM213 W1 (21L-3T-15P-0S-19H-20R-0F-0G-2A-6.5W-8C)

Prerequisite: CHEM110W1, CHEM120W2, PHYS131W1, MATH133W1

Corequisite: None

Aim: A basic introduction for pharmacy students – covering the principles of pharmaceutical chemistry which underpin the study of pharmacology, drug formulation and drug design.

Content: Acid – base properties of drug substances, ionisation, partition coefficient and biopharmacy, introduction to drug kinetics and stability, drug purity.

Practicals: 5 (Practical reports form part of the formative assessment).

Assessment Formative: 70% of the test mark + 30% of the average of the practical marks. Summative: 1 x 2-hour paper. Final mark = 60% of exam mark + 40% of the CAM.

DP Requirement: A student must obtain a CAM of $\geq 40\%$ and 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Pharmaceutical Analysis 1

PHRM214 W2 (21L-3T-15P-0S-19H-20R-0F-0G-2A-6.5W-8C)

Prerequisite: CHEM110W1, CHEM120W2, PHYS131W1, MATH133W1

Corequisite: None

Aim: Students should be able to demonstrate knowledge and competency in the basic techniques used in pharmaceutical analysis.

Content: Control of the quality of analytical methods. Introduction to drug analysis in accordance with standards and requirements of the official compendia, using prescribed analytical methods: titrimetric and chemical analytical methods, refractometry, polarimetry, introduction to spectroscopic methods.

Practicals: 5 practicals (reports form part of the formative assessment)

Assessment: Formative: 70 % of test + 30 % of practical marks. Summative: 1 x 2-hour paper. Final mark = 60 % of exam mark + 40 % of the CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$ and 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Physical Pharmacy

PHRM221 W1 (17L-3T-15P-0S-22H-21R-0F-0G-2A-6.5W-8C)

Prerequisite: CHEM110W1 CHEM120W2, PHYS131W1, MATH133W1

Corequisite: None

Aim: To provide a physicochemical background (quantitative and theoretical) to the formulation, manufacture and evaluation of pharmaceutical dosage forms.

Content: States of Matter, Diffusion and Dissolution, Disperse Systems, Unit Processes, Interfacial Phenomena, Rheology

Practicals: 5 x 3 Hours Practicals (Practical reports form part of the formative assessment) 1. Determination of the surface tension of a liquid by means of a tensiometer and to determine the critical micelle concentration of a given surfactant 2. Determination of the optimal HLB value for the oil phase of an emulsion 3. Comparison of the in vitro drug release profiles of a controlled release and a conventional release tablet preparation 4. Determination of the viscosity of a viscous liquid using Stokes Method (falling sphere method) 5. Determination of the rate of filtration of a suspension

Assessment: Formative: 70% of 2 tests/assignment +30% of average of Practical Reports. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Pharmaceutical Technology

PHRM222 W2 (35L-5T-30P-0S-58H-30R-0F-0G-2A-13W-16C)

Prerequisite: DP in PHRM221W1

Corequisite: None

Aim: To provide an understanding of principles involved in the design, manufacture and evaluation of pharmaceutical dosage forms.

Content: Dosage form design. Solutions, Suspensions, Emulsions, Powders and Granules, Tablets, Capsules, Aerosols, Topical preparations, Suppositories and Pessaries.

Practicals: 10 x 3 Hours Practicals (Practical reports form part of the formative assessment) 1. Preparation and evaluation of tablets by the direct compression method and by wet granulation. 2. Preparation of the following creams:

aqueous, cold, dimethicone, zinc, borax, coal tar and salicylic acid ointment 3. Preparation of the following emulsions: acacia, white liniment, calamine lotion, benzyl benzoate application 4. Preparation of starch enema 5. Preparation of gelatine supps 6. Preparation of magnesium sulphate paste 7. Preparation of chloroxylenol solution, magnesium hydroxide mixture

Assessment: Formative: 70% of the average of 2 tests/assignment +30% of average of Practical Reports/Products/ Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee and a transportation fee will be charged for this module.

Introduction to Pathology

PHRM232 W2 (21L-15T-0P-0S-17H-20R-4F-0G-3A-7W-8C)

Prerequisite: BIOL103W1, ANAT101, DP in HPHS221W1

Corequisite: HPHS222W2

Aim: Providing the student with a good all round grounding of pathophysiology incorporating microbiology and biochemistry so as to be able to understand diagnoses, laboratory results and other clinical jargon in order to understand pharmacotherapy of the variety of conditions that they may encounter in practice in all fields of pharmacy.

Content: The process of history taking and demonstrate a systematic application of that process; Major pathological processes in man; Inflammation (Infection; Immunological mediated processes; Physical trauma, toxins and radiation) Degeneration (Ischaemia) Neoplasia Inherited pathologies Pathological basis and symptomatology of the listed common conditions in each of the following major systems; Cardiovascular (Hypertension; Cardiac Failure) Renal (Fluid and electrolyte imbalances; Renal failure) Respiratory (Pneumonia; Asthma and chronic obstructive airways disease) Gastro-intestinal and Liver (Hepatitis; Ulcers)

Central Nervous System (Epilepsy; Headache) Musculoskeletal and connective tissue (Arthritis; Pain) Endocrine (Diabetes) Integrate anatomy and physiology principles with pathology; Basic examination skills

Practicals: Clinical skills laboratory sessions (5 x 3 hours)

Assessment: Formative: average of 2 x 40 min tests. Summative: 1 x 2 hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all practicals, except where the Head of School has specifically excused the student from a particular se

A lecture note fee and a transportation fee will be charged for this module.

Pharmaceutical Calculations I

PHRM241 W1 (21L-15T-0P-0S-19H-21R-0F-0G-4A-7W-8C)

Prerequisite: CHEM110W1, CHEM120W2, PHYS131W1, MATH133W1

Corequisite: PHRM213W1

Aim: To train students in calculations based on the fundamental laws of pharmaceutical chemistry

Content: Pharmaceutical calculations based on the fundamental laws of chemistry, Methods of expressing concentration, Calculations involving the mixing of liquids and semi-solids, Dosage calculations and Volume, density, specific gravity and percentage calculations.

Tutorials: 5 x 3hr tutorials

Assessment: Formative: 70% of the test mark + 30% of the average of the tutorial marks. Summative: 1 x 2 hour paper. Final mark = 60% of exam mark + 40% of the CAM. A 40% sub minimum rule shall apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be a 100% attendance for all tutorial classes, practical classes, except where the Head of School has specifically excuse

A lecture note fee will be charged for this module.

Medicinal Chemistry 3

PHRM311 W1 (35L-5T-30P-0S-57H-30R-0F-0G-3A-13W-16C)

Prerequisite: PHRM213W1, PHRM211W1, PHRM212W2

Corequisite: None

Aim: To provide an understanding of the design and development of drugs.

Content: Principles of drug design and discovery, drug development and clinical trials, , development of enzyme inhibitors as drugs, antiviral drugs, anticancer drugs and a few aspects of biotechnology

Practicals: 10x approximately 3hour practicals The practical will take the format of miniprojects entailing literature studies and computational chemistry Technical staff: Ms U Govinden, Mr S Chonco All students are required to submit individual practical reports though they work in groups in the laboratory

Assessment: Formative: 70% of the average of 2 tests + 30% of the practical mark. Summative: 1 x 3-hour paper. Final mark = 60% of exam mark + 40% of CAM. A 40% subminimum rule will apply

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Pharmaceutical Analysis II

PHRM313 W1 (24L-0T-15P-0S-15H-20R-0F-0G-6A-7W-8C)

Prerequisite: PHRM213W1, PHRM214W2, PHRM241W1

Corequisite: None

Aim: To train undergraduate pharmaceutical science students in the techniques used in the analysis of pharmaceuticals, particularly chromatographic techniques.

Content: Drug analysis in accordance with the standards and requirements of the official compendia, using prescribed analytical methods: Chromatography (HPLC, GC, TLC), Infra-red spectroscopy, NMR, Mass spectrometry, Capillary Electrophoresis, Extraction Methods in Pharmaceutical Analysis

Practicals: 5 (Practical reports form part of the formative assessment). Tutorials: 1

Assessment: Formative: 65% of test + 25% of the practical marks + 10% of assignment. 1 assignment included in formative assessment. Summative: 1x 2-hour paper Final mark = 60% of exam mark + 40% CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee and a laboratory fee will be charged for this module.

Applied Clinical Chemistry

PHRM314 W2

(21L-18T-0P-0S-16H-20R-0F-0G-5A-7W-8C)

Prerequisite: PHRM211W1, PHRM212W2, HPHS221W1, HPHS222W2, DP in PHRM311W1

Corequisite: None

Aim: To enable the student to understand the different biochemical processes that occur in the human body and their interrelationships in the normal state and in the disease state and to understand the biochemical changes that occur with the use of selected medicinal compounds.

Content: A review of pharmaceutically pertinent clinical correlations integrating the chemistry of medicinal compounds with abnormal biochemical processes. The module encompasses a review of Chemistry, a review of Bio molecules, Enzymes, Vitamins and Co-enzymes, Carbohydrate, Lipid and Protein Biochemistry, Bioenergetics and Acid-Base Biochemistry

Tutorials: 5 x 2hr tutorials

Assessment: Formative: 70% of the test mark (open book) + 30% of the average of the tutorial marks. Summative: 1 x 3 hour paper (open book). Final mark = 60% of exam mark + 40% of the formative assessment mark. A 40% sub minimum rule will apply

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be a 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Medicinal Chemistry 4

PHRM316 W2

(17L-3T-15P-0S-22H-21R-0F-0G-2A-6.5W-8C)

Prerequisite: PHRM213W1, PHRM211W1, PHRM212W2, DP in PHRM311W1

Corequisite: None

Aim: To provide an understanding of structure-activity relationships and drug design in drugs developed for specific biological targets.

Content: Natural product chemistry and pharmacognosy, Effects of structural modifications on the physicochemical properties of selected drug classes.

Practicals: 6x approximately 3hour practicals. All students are required to submit individual practical reports though they work in groups in the laboratory

Assessment: Formative: 70% of the average of 2 tests + 30% of the practical mark. Summative: 1 x 2hour paper. Final mark = 60% of the exam mark + 40% of formative assessment. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be a 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Institutional Pharmaceuticals

PHRM321 W1

(43L-0T-36P-0S-37H-40R-0F-0G-4A-15W-16C)

Prerequisite: BIOL103W1

Corequisite: None

Aim: To train students in pharmaceutical aspects pertinent to institutional/hospital Pharmacy practice with special emphasis on sterilization, disinfection & infection control.

Content: Microbial structure, nutritional requirements, and, microbial growth, metabolism & death relevant to sterilization (heat, filtration, radiation, gaseous), disinfection & infection control in hospital/institutional pharmacy practice, the preservation of pharmaceutical products, antimicrobial chemotherapy, and, the evolution, genetics & mechanisms of resistance to antimicrobial agents & procedures. Pertinent pathology & immunology are covered as are microorganisms of clinical & pharmaceutical relevance.

Practicals: 12 (Practical reports form part of the formative assessment)

Assessment: Formative: 70% of the average of 2 tests + 30% of the practical marks. Summative: 1x 2-hour paper. Final mark = 60% of the exam mark + 40% of formative assessment. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be a 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee and a laboratory fee will be charged for this module.

Sterile Products

PHRM323 W2

(17L-3T-15P-0S-22H-21R-0F-0G-2A-6.5W-8C)

Prerequisite: DP for PHRM321W1

Corequisite: None

Aim: To train students in the formulation and preparation of sterile pharmaceutical dosage forms and applicable quality assurance measures.

Content: Aseptic technique, sterility testing, intravenous therapy, formulation of injections, ophthalmic products, radiopharmaceuticals, cytotoxics, immunological products and blood products.

Practicals: 7 x 3 Hours Practicals (For 3-7 reports to be handed in) 1. Aseptic Technique: Methods of Reconstitution 2. Cytotoxic Reconstitution 3. Radiopharmaceuticals (Demonstration) and Sterility Test 4. Lecture: Dialysis 5. Lecture: Total Parenteral Nutrition 6. Lecture: Intravenous Therapy 7. Lecture: Blood Products

Assessment: Formative: 70% of the 1 tests +30% of average of Practical Reports. Summative: 1 x 2 –hour paper.

Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all practical classes, and compliance with laboratory safety rules, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee and a laboratory fee will be charged for this module

Pharmacy logistics,Economics & management

PHRM331 W2

(21L-9T-0P-0S-16H-20R-12F-0G-2A-8W-8C)

Prerequisite: HLSC116W2

Corequisite: None

Aim: To give student basic principles of drug supply management, as well as knowledge of financial, operational, human resources and quality management. The student should also at the end of the course be able to apply a knowledge of logistics, including both private and public sector aspects

Content: Health and Health Care; NDL/EDP/Drug Management cycle; Estimating Drug Requirements; Procurement and Storage; Rational Drug Use; Marketing Environment; Demand and Supply; Human Resources; Financial Concepts; Role of Pharmacist

Externship: Fieldtrips: 6 x 5hr externship in retail pharmacies

Assessment: Formative: 2 x 1 hour tests (70%) + Assessment by tutor (30%). Summative: 1 x 2 hour paper. Final mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all fieldtrips, except where the Head of School has specifically excused the student from a particular se

A lecture note fee will be charged for this module.

Health Law & Ethics 1

PHRM332 W1

(21L-3T-0P-0S-31H-20R-3F-0G-2A-8W-8C)

Prerequisite: None

Corequisite: None

Aim: To inform the student about all the relevant legislation as well as professional ethics which should be adhered to

Content: Pharmacy Act. Medicines Act. (PSSA Compendium Vol 1)

Tutorials: 4x2 hour tutorial

Assessment: Formative: 1 x 1 hour test (60%) + 1 x Assignment (20%) + Tutorial evaluation (20%). Summative: 1 x 2-hour paper. Final mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Pharmaceutical Care 1

PHRM333 W1

(21L-0T-0P-0S-13H-20R-24F-0G-2A-8W-8C)

Prerequisite: HPHS221; HPHS221; ANAT101; PHRM232

Corequisite: PHRM301W1

Aim: To equip student to be able to provide responsible drug therapy in order to obtain optimal therapeutic outcomes. This module concentrates on selected body systems for pharmacotherapeutic management (non-drug and drug related).

Content: Pharmaceutical care; CNS; Ophthalmology; ENT; Oral Health; URTI

Practicals: 5 x 2hr counselling sessions

Assessment: Formative: 2 x 1 hour test (70%) + counseling assignment (30%). Summative: 1 x 2-hour paper. . Final mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all counseling sessions, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Pharmaceutical Care 2

PHRM334 W2

(21L-28T-0P-0S-9H-20R-0F-0G-2A-8W-8C)

Prerequisite: HPHS221; HPHS221; ANAT101; PHRM232

Corequisite: None

Aim: To equip student to be able to provide responsible drug therapy in order to obtain optimal therapeutic outcomes. This module concentrates on selected body systems for pharmacotherapeutic management (non-drug and drug related).

Content: Lower respiratory tract infections; Cardiovascular system; Gastrointestinal tract; Organ systems; Blood

Externship: Fieldtrips: 6 x 5hr externship in retail pharmacies

Assessment: Formative: 2 x 1 hour test (70%) + Assessment by tutor (30%). Summative: 1 x 2-hour paper. . Final mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all fieldtrips, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Biopharmaceutics

PHRM421 W1

(35L-30T-0P-0S-58H-35R-0F-0G-2A-13W-16C)

Prerequisite: PHRM221, PHRM222

Corequisite: None

Aim: To provide an understanding of principles involved in drug discovery and drug research and the influence of formulation on the availability of drugs.

Content: Absorption, Disposition, Relevant Pharmacokinetics, Dissolution, Bioavailability, Bioequivalence, Medicines Registration, Pharmaceutical statistics, Factorial Designs, Products of Biotechnology

Tutorials: 10 x 3 Hours tutorial sessions / Assignments: Submission of individual assignment (30% of Formative assessment)

Assessment: Formative: 70% of the average of 2 tests+30% of assignment marks. Summative: 1 x 2-hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Advanced drug delivery

PHRM422 W2

(17L-3T-15P-0S-21H-22R-0F-0G-2A-6.5W-8C)

Prerequisite: PHRM221, PHRM222

Corequisite: None

Aim: To provide a background to the formulation and design of modified release and novel drug delivery systems

Content: Polymer Science, Modified Release drug delivery systems including oral, transdermal, intrauterine, intravaginal, parenteral and ophthalmic

Practicals: 5 x 3 Hours Practical / Seminar sessions (Practical / Seminar reports form part of the formative assessment)

Tutorials: 3 x 1 Hour sessions

Assessment: Formative: 50% of test+ 50% of assignment. Summative: 1 x 2-hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all seminar sessions, practical sessions, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Health Law & Ethics

PHRM431 W1

(21.5L-24T-0P-0S-11.5H-20R-0F-0G-3A-8W-8C)

Prerequisite: PHRM332

Corequisite: None

Aim: To inform student about all the relevant legislation as well as professional ethics which should be adhered to. Also aims to include all aspects of the law and ethics with regards to HIV/AIDS

Content: Medicines and related Substances Act, Application of all relevant Health Law and Ethics, Introduction to GPP. (PSSA Compendium, Vol 1 and 2)

Tutorials: 4 X 2-hour tutorials

Assessment Formative: 1 X 1hour test. Assignment (20%), Tutorials Evaluation (20%). Summative: 1 x 2-hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply

DP Requirement: A student must obtain a CAM of $\geq 40\%$. There must be 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Pharmaceutical Care 3

PHRM433 W1

(21L-24T-0P-0S-10H-20R-3F-0G-2A-7W-8C)

Prerequisite: HPHS221; HPHS222; ANAT101; PHRM232

Corequisite: None

Aim: To equip student to be able to provide responsible drug therapy in order to obtain optimal therapeutic outcomes. This module concentrates on selected body systems for pharmacotherapeutic management (non-drug and drug related).

Content: Dermatology; Wound Care; Bones; Reproductive Health; Child Health

Practicals: 5 x 3hour seminars

Assessment: Formative: 2 x 1 hour test (60%) + Seminar evaluation (First Aid, Family Planning) (40%). Summative 1 x 2-hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session.

A fee for the First Aid training will be payable. A lecture note fee and a transportation fee will be charged for this module.

Pharmaceutical Care 4

PHRM434 W1 (63L-103T-0P-0S-30H-38R-0F-0G-6A-14W-24C)

Prerequisite: PHRM333; PHRM334; PHRM331; PHRM332, DP in PHRM431

Corequisite: PHRM433; PHRM402

Aim: Application of Pharmacotherapeutic Management to real life situations by means of case studies as well as application of evidenced informed decision making and pharmacoeconomic principles

Content: Evidence-Informed Decision Making; HIV/AIDS; Drug-Related Problems; Pharmaceutical Care management, Pharmacoeconomic Principles

Practicals: 10 x 5hour seminar sessions

Assessment: Formative: 2 x 1-hour tests (80%)+ GCP Assignment (20%). Summative: 2 x 2.5 hour paper + 1 hour Observational structured continuous examination. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session.

A lecture note fee will be charged for this module.

Research project

PHRM441 W1 (0L-0T-0P-24S-36H-5R-120F-54G-1A-26W-24C)

Prerequisite: All year 1st, 2nd and 3rd year courses for the programme. Only students who are registered for final-year modules may register for Research Project.

Corequisite: None

Aim: to provide knowledge and skills relevant to conducting research, especially for entry to higher degree courses; to develop an advanced level of knowledge in the area of specialisation; to further develop verbal and written skills relevant to advanced studies.

Content: The guided/supervised research process involves the formulation of a research question (related to one of the majors of the Pharmacy programme), literature review, the development of a research proposal, application for ethical clearance, application for funding, the research process using approved methodologies, the analyses of results and the culmination of the process in the form of a protocol and paper which includes an appropriate and relevant literature review, description of methodologies employed, analyses and discussion of results, conclusions and recommendations (where applicable). Through this, the graduate will have developed analytical techniques and problem-solving skills that can be applied in many types of employment. The graduate will be able to evaluate evidence, arguments and assumptions, to reach sound judgements, and to communicate effectively.

Assessment: Individual contribution and participation in the research process. Standardised assessment criteria are division-specific. Assessment of learners is based on individual contribution and participation in the research process.

Final mark = $(0.1 \times \text{average protocol/proposal mark}) + (0.3 \times \text{average of the internal and external marks on the written scientific paper}) + (0.1 \times \text{average mark obtained for School Research Day presentation}) + (0.25 \times \text{average oral presentation mark}) + (0.25 \times \text{continuous assessment/individual contribution})$.

DP Requirement: N/A

Pharmaceutical Calculations 2

PHRM442 W2 (21L-21T-0P-0S-16H-20R-0F-0G-2A-15W-8C)

Prerequisite: PHRM241, PHRM331

Corequisite: PHM434

Aim: To train students in calculations pertinent to clinical Pharmacy Practice

Content: Reading and interpreting of prescriptions; Reconstitution of drugs; Calculation of doses; Parenteral Nutrition

Practicals: 5 x 2hr tutorials

Assessment: Formative: 70% of the average of 2 tests + 30% of the tutorial marks. Summative: 1x 2-hour paper. Final Mark = 60% Exam Mark + 40%CAM. A 40% subminimum rule will apply.

DP Requirement: A student must obtain a CAM of $\geq 40\%$. A student must obtain 100% attendance for all tutorial classes, except where the Head of School has specifically excused the student from a particular session

A lecture note fee will be charged for this module.