

# FACULTY OF PHARMACY

## Acting Dean of the Faculty and Head of Pharmacy

GC Wells, MSc(Rhodes), PhD(Bristol), MICS, MACM

## Deputy Dean

To be appointed

## PHARMACEUTICS

### Professor of Pharmaceutics

RB Walker, BPharm, PhD(Rhodes), MPS(SA)

### Associate Professor

R Dowse, BPharm, PhD(Rhodes), MPS(SA)

### Senior Lecturer and Head of Division

SMM Khamanga, BSc(Swaziland), BPharm, MSc(Pharm), PhD(Rhodes)

### Lecturer

C Rambanapasi

## PHARMACEUTICAL CHEMISTRY

### Professor of Pharmaceutical Chemistry

To be appointed

### Senior Lecturer and Head of Division

R Tandlich MS (SUT), PhD (NDSU)

### Lecturers

ED Goosen, BSc (Hons)(UOFS), MSc (Weizmann Institute), PhD(UFS), HDE(UPE)

CGL Veale, BPharm (Rhodes) MSc (Edin) PhD (Rhodes)

NP Ngqwala, BSc (Hons)(UFH), MSc, PhD (Rhodes)

## PHARMACY PRACTICE

### Associate Professor and Head of Division

SC Srinivas, BPharm, MPharm(Bangalore), PGDHE(Rhodes), PhD(RGUHS)

### Senior Lecturer

C Oltmann, BSc (Med)(Hons)(Witwatersrand), MSc, BPharm(Rhodes), PGDHET, PhD(Rhodes), MPS(SA)

### Lecturers

YL Irwin, BPharm, MSc (Rhodes), MPS(SA)

L Allan, BPharm, MPharm, PGDHET (Rhodes), MPS(SA)

## PHARMACOLOGY

### Associate Professor and Head of Division

To be appointed

### Associate Professor of Clinical Pharmacy

To be appointed

## Senior Lecturer

MJ Naidoo, BSc(Hons)(UDW), MSc, BPharm(Rhodes)

## Lecturer

H Walsh

## Lecturer, Anatomy & Physiology

M Marais, BJourn (Technikon PTA), BSc (UJ), BSc(Hons), PhD (Witwatersrand)

## Honorary Appointments

### Visiting Professors

MP Ducharme, BA, BPharm, RPEBC, DPH(Montreal), PharmD(Wayne State), FCCP, FCP  
RK Verbeeck, BSc(Pharmacy), PhD(KULeuven)  
BD Glass, BPharm, PhD(Rhodes), BSc(Chem) (Hons), BTech(Hons)(UPE), MPS(Aus)

### Visiting Fellow

PW Hill, DipPharm(Wits), PhD(Rhodes), CMW  
P Smith, BSc(Pharm)(Rhodes), MBL(UNISA), MPS(SA), MRPharmS(GRTBRIT)  
A Gray, BPharm, MSc(Pharm) (Rhodes), FPS, FFIP

### Research Associates

BD Patterson, BS(Pharmacy)(NDSU), MS(Hospital Pharmacy), PhD(Iowa)  
V Sewram, BSc(Hons), MSc, PhD(Natal), MPH(Epidemiology)(UCT)

### Emeritus Professors

I Kanfer, BSc(Pharm), BSc(Hons), PhD(Rhodes), MRPharmS, FPS(SA)  
JM Haigh, BSc(Pharm), BSc(Hons)(Rhodes), PhD(UCT), MRPharmS, MPS(SA)  
S Daya, BSc(UDW), MSc(Rhodes), PhD(MEDUNSA)

### Emeritus Associate Professors

BJ Wilson, MSc(Sask), PhD(Purdue)  
WT Futter, BCom, MCom(Rhodes), ACIS

### Clinical Associates

GPG Boon, MBChB(UCT), FCP(SA)(Paed)  
S Meintjes, BPharm(UWC), BTech, MBA(PE Tech)  
AG Parrish, MBChB, MMed (UCT), MMedSc (Newcastle), FCP (SA)  
EMR Race, BS, BA (Stan), MD (Texas), MPH, MS (Harvard)

JCO Sablón, MBChB(Santiago, CUBA)  
G Serrano Ocana, MBChB(Holguin, CUBA)

The Faculty of Pharmacy aims to accomplish its specific objectives as outlined in its Mission and Vision of the Faculty (see Faculty of Pharmacy entry section of this calendar) in the following manner:

- Provision of formal training in both undergraduate and postgraduate programmes
- Undertaking research and Community and Professional service

The BPharm degree has been registered as an NQF Level 8 qualification. The following information is a summary of the documentation submitted to the NQF to register the qualification and includes information pertaining to the revised BPharm curriculum. The BPharm curriculum is accredited by the South African Pharmacy Council.

#### **Purpose of the BPharm degree (Competence)**

Learners who have completed this programme have the education and training to enter the pharmacy profession as interns and gain the experience and confidence needed to render a professional service as pharmacists to the community. As a pharmacist registered with the South African Pharmacy Council, the learner will be able to practise the profession of Pharmacy and serve as a:

- Custodian of medicines;
- Formulator, manufacturer, distributor and controller of safe, effective and quality medicine;
- Advisor on the safe, rational and appropriate use of medicine;
- Provider of essential clinical services including screening and referral services;
- Provider of health care education and information;

#### **Exit Level Outcomes (Capabilities)**

The exit level outcomes for the BPharm curriculum indicate that on completion of the degree, the candidate will be able to:

1. Integrate and apply foundational scientific principles and knowledge to pharmaceutical sciences. Range of scientific principles and knowledge includes, but is not limited to: Chemistry, microbiology, biochemistry, mathematics, physics, physiology, pathophysiology, anatomy, social and behavioural sciences, including biomedical ethics.

2. Apply integrated knowledge of product development and formulation in the compounding, manufacturing, distribution and dispensing of pharmaceutical products
3. Compound, manipulate and prepare medication in compliance with Good Pharmacy Practice (GPP) rules, Good Manufacturing Practice (GMP) and/or Good Clinical Practice (GCP) guidelines.
4. Manage the manufacture, packaging and registration of pharmaceutical products in compliance with GMP and GCP. The range of pharmaceutical products includes, but is not limited to: medicines, veterinary products, biological products.)
5. Manage the logistics of the selection, procurement, storage, distribution and disposal of pharmaceutical products.
6. Dispense medication and ensure optimal pharmaceutical care for the patient in compliance with GPP and, where applicable, GCP. The range of dispensing process includes, but not limited to: interpretation and evaluation, preparation and labelling, provision of information and instructions, therapeutic intervention and supply of medicines to the patient and monitoring of compliance.
7. Apply a pharmaceutical care management approach to ensure rational medicine use.
8. Initiate and/or modify therapy, where appropriate, within the scope of practice of a pharmacist and in accordance with GPP and GCP, where applicable
9. Promote public health.
10. Integrate and apply management principles in the practice of pharmacy.
11. Participate in research

#### **Critical cross-field outcomes of the BPharm curriculum indicate that on completion of the degree, the candidate will be able to:**

1. Identify, analyse and solve problems related to the provision of pharmaceutical care using creative approaches
2. Work effectively with others as a member of a team of health care professionals in applying pharmaceutical care management principles.
3. Organise and manage activities responsibly and effectively in contributing to the institution and broader community

4. Collect, analyse, organise and critically evaluate information in using evidence-based approaches in provision of services and information to develop a pharmaceutical product or enhance pharmaceutical care programmes and services
5. Communicate effectively using visual, mathematical and/or language skills in the modes of oral, written and/or practical presentation in a sustained discourse.
6. Use science and technology, including informatics, in pharmacy effectively and critically, showing responsibility towards the environmental and health of others by promoting ethical conduct in all contexts
7. Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation

#### Specific exit level outcomes (Abilities)

The primary aim of pharmacy education is to develop life-long learners who can provide a professional service to the community using their knowledge, skills, professional thinking, behaviour and attitudes in all avenues of pharmacy practice, as caring health care providers and managers of health care resources. On completion of the undergraduate programme, the learner must demonstrate the following knowledge, skills, professional thinking, behaviour and attitudes.

#### Knowledge outcomes

- The use of science and technology to formulate, manufacture, distribute and use drugs and medicines
- Identification and management of diseases, their processes, environmental and social determinants
- The principles of disease prevention and health promotion, with emphasis on primary health care as an integral part of the health care team
- The principles of pharmacotherapy, the effect of drugs and medicines in the body, the appropriateness of different drug delivery systems and the ability to assess the effect of the drug in the body
- Appropriate and cost-effective use of screening and monitoring procedures
- How to solve problems that arise with the use of medicines and how to predict, identify, prevent and/or treat such problems
- Human behaviour, relationships and

communication, individually and in the context of the community

- Ethical and legal issues relevant to the practice of pharmacy
- Managerial aspects of the provision of health care at national, community and individual practice level
- The promotion and delivery of cost effective health care
- Principles and procedures governing research, with particular emphasis on evidence-based medicine.

#### Skills

- Laboratory skills
- Clinical skills and procedures, including patient history taking, assessing patient data, formulating a treatment plan and a follow-up plan
- Practice management skills
- Computer skills
- Communication skills and language proficiency
- The ability to work in a multi-disciplinary team

#### Attitudinal and behavioural outcomes

- Respect for patients and colleagues, without judgement or prejudice with regard to race, culture, or gender amongst others
- Recognition of human and patients' rights
- A positive approach to self-directed life-long learning
- A positive approach towards primary health care
- An awareness of moral and ethical responsibilities
- A desire to practice legally
- A desire to ensure patient care of the highest possible quality
- An awareness of personal limitations and a willingness to seek help when necessary
- A positive attitude towards change and functioning within the uncertainties of our times
- A positive attitude towards the advancement of medical and health related knowledge

#### Assessment

Assessment will take place using tests, assignments, practicals, presentations, written and/or oral examinations. Continuous assessment is emphasized, especially during the first two years of study.

#### Quality Assurance

- The Quality Assurance system for this

qualification relies on:

- External examiners
- Internal moderation
- Inspection and accreditation by the South African Pharmacy Council
- South African Qualifications Authority
- Internal reviews by the University in terms of its quality assurance criteria
- Higher Education Quality Committee

### Articulation

The possession of a BPharm degree permits both vertical and horizontal articulation. Graduates may gain access to postgraduate studies at the Master, PhD and/or PharmD levels. The degree is a fundamental requirement to gain entry into a PharmD programme.

Candidates may receive exemption for some first year credits obtained at other tertiary level learning institutions.

### COURSES FOR THE BACHELOR OF PHARMACY DEGREE

**Chemistry 1:** Chemistry 101 (CHE 101) is offered in the first semester and Chemistry 102 (CHE 102) in the second semester. CHE 101 includes learning about chemical symbols and numeracy, nuclear chemistry, atomic structure and bonding, chemical and physical equilibrium, introduction to organic chemistry. CHE 102 includes learning about properties of inorganic systems, chemistry and the environment, organic functional group chemistry, biological building blocks, reaction rates, chemical thermodynamics and electrochemistry.

**Cell Biology (CEL101):** is offered in the first semester. This course compares cell structure in prokaryotic and eukaryotic cells and examines cellular processes including cell to cell communication, photosynthesis and cell respiration. Cell division and fundamental genetics, including the structure of genetic material and how it controls cellular processes are also included.

**Mathematics for Life Sciences (MAT 1S):** A study of mathematical concepts and applications relevant for the study and practice of Pharmacy.

**Introduction to ICT (Information and Communication Technology) (CSC 1L):** Fundamental concepts and applications of hardware,

computing environments, editing and word processing, spreadsheets, databases, other software packages, networks, the Internet, social issues, and the logic of problem solving.

**Anatomy and Physiology 1:** A study of the functional anatomy and physiology of humans.

**Pharmaceutical Biochemistry 1:** A study of the important molecules found in living organisms.

**Foundations of Pharmacy:** An introductory course in Pharmacy, where learners will be introduced to the fundamentals of Pharmacy Practice, Pharmaceutics, Law and Ethics.

**Anatomy, Physiology, Pathophysiology and Pathology:** A study of the functional anatomy and physiology of humans and of diseases and pathological conditions in different body systems, how diseases develop, their characteristics, features of common diseases and conditions as they occur in humans and the effects of diseases on human functioning.

**Biochemistry, Microbiology and Immunology:** A study of the important molecules found in living organisms and of the role of Pharmaceutical Microbiologists and the application of microbiology in the practice of pharmacy, the health and economic implications of microbial contamination of pharmaceutical and hospital environments, the basic characteristics, pathogenesis, diagnosis, disease, epidemiology, prevention and treatment of microorganisms found in pharmaceutical and hospital environments, water and sewage systems.

**Pharmaceutics:** A 2½-year course covering basic pharmaceutical principles and their application to the formulation, production and assessment of medicinal products, microbiology and sterility.

**Pharmaceutical Chemistry:** A two-year course covering the study of the purity and chemical properties of various materials and formulations used in the practice of pharmacy.

**Pharmacy Practice:** A 2½-year course, which examines Pharmaceutical Care and the role of the pharmacist; various aspects of management including performance management, organizational management, managing pharmaceutical supply;

understanding and influencing behaviour; Primary Health Care; Ethics; legal and psychosocial principles and their application in providing safe and effective medicine use by pharmacists and patients.

**Pharmacology:** A 1½-year study of the interaction between medicaments and the human body, disease states and medicinal therapy used to relieve these conditions, the toxic effects of household agents, medicines and street drugs.

**Biostatistics:** A one semester course offered in the third year. A study of statistics that is used in pharmaceutical and biomedical research, so as to use and understand different statistical methods used in research.

**Pharmacotherapy:** A study of the relevant pathophysiology of diseases and conditions, how mechanisms of action of medicines are used to treat these diseases and/or disorders to counteract their pathophysiological origins, synthesizing and integrating information to make an informed and rational pharmacotherapeutic decisions justifying the selection of appropriate dosage forms.

**Research Project:** An individual project on an approved topic in any pharmaceutical field.

**Electives:** These may include the topics listed below, or candidates may select elective courses offered in other Faculties provided they are relevant to Pharmacy and can be accommodated in the timetable for that academic year.

#### ELECTIVES AND RESEARCH PROJECT

All candidates must take either two elective courses offered within the Faculty of Pharmacy or a full year course offered by any department in another Faculty that are relevant to Pharmacy and can be accommodated in the BPharm 4 timetable.

The elective courses entail study at an advanced level of aspects of the BPharm curriculum and will depend on staff availability and interest.

#### Research Project

An individual report on an approved topic in any pharmaceutical field, based on a literature survey, or a practical project.

#### SAPC REGISTRATION

**Pharmacy students will be required to register with**

**the SAPC in their first year of study. Registration requires the payment of a registration fee and annual fees in order to remain registered whilst completing the BPharm degree.**

#### MASTER'S DEGREES

Students who have completed the BPharm degree at a sufficiently high academic standard or students who have completed a bachelor's degree in another Faculty and have attained in their degree a standard suitable for continuation to a Master's degree in that Faculty, and who have an interest in the application of elements of other subjects to pharmaceutical disciplines, may be admitted as candidates for the degree of Master of Science or Master of Pharmacy. The Master of Science degree is taken by thesis. The Master of Pharmacy degree is taken either by examination, or by thesis, or a combination of the two. Registration for the Master of Science or Master of Pharmacy degree will depend upon the field of study of the candidate.

Registration with the South African Pharmacy Council may be a pre-requisite for registration for the Master of Pharmacy programme.

#### DOCTOR OF PHARMACY (PharmD)

Suitably qualified Pharmacy professionals who wish to specialise in research in clinical services, the design and implementation of professional and clinical health-related systems may be considered for registration for study toward this degree. The programme focuses on applied, operational and fundamental research which is supported by supplemental course work. It provides research based practical experience and is designed to prepare candidates to:

- develop, evaluate and improve pharmaceutical systems which ensure that the appropriate drugs are available and that they are used rationally in such a way as to improve the quality of life
- develop, evaluate and improve systems to provide clinical services which include the design, delivery, monitoring and evaluation of pharmaco-therapeutic guidelines and patient-specific pharmaco-therapy
- provide specialised, advanced, drug information and pharmaco- therapeutic education to other health professionals
- develop, evaluate and improve drug use policies, formularies and rational treatment protocols, to rationalise and control drug use.

Programme participants are required to perform applied, operational and fundamental research in a number of areas. Each area of research is supported by distance learning modules and takes place in an on-site experiential programme at an approved clinical site. Each rotation is evaluated independently in partial fulfilment of the requirements for the degree of Doctor of Pharmacy and together they constitute a thesis for this degree. The minimum duration of the course is three years.

**DOCTOR OF PHILOSOPHY AND  
DOCTOR OF SCIENCE**

*See General Regulations.*