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# FACULTY PROSPECTUS 2013

## UNIVERSITY OF NAMIBIA

### SCHOOL OF PHARMACY



◀ Inspiring minds & shaping the future ▶

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## NOTE

This Prospectus is only valid for 2012 as regulations and syllabi may be amended for 2013. The general regulations and further information appear in the General Information and Regulation Prospectus.

Although the information contained in this Prospectus has been compiled as accurately as possible, it is possible that errors and omissions have inadvertently occurred, for which we apologise in advance. The University reserves the right to amend any regulation or stipulation without notice. The information is correct up to 30 October 2012.

The fact that particulars of a specific module or programme have been included in this Prospectus does not necessarily mean that the module or programme will be offered in 2013.

This Prospectus must be read in conjunction with the *General Information and Regulations Prospectus 2013*.

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## SCHOOL OF PHARMACY PREAMBLE

The mission of the School of Pharmacy is to be a Regional centre of excellence in preparing graduates for a life-long professional career in the provision of pharmaceutical care that is in tune with the needs of society. The School shall provide a quality learning environment conducive to the pursuit of professional competence, while providing services to the community and undertaking relevant translational research for the enhancement of health. The School will continually strive for the establishment of training programs in the field of pharmacy, lending support to the human resource development initiatives of the country; this will include the provision of Continuing Professional Development and postgraduate education of pharmacists, and the training and education of technical cadres and scientists. Finally, the School will seek pharmaceutical solutions in medicines access and supply through pharmaceutical production with research and development of existing medicines and novel agents particularly those derived from the rich natural resources of Namibia.

The key objectives of the School of Pharmacy are:

- To promote equity of access to health care services for all;
- To promote affordable health care service delivery by strengthening health care systems that are sustainable, cost-effective, efficient, culturally relevant and acceptable;
- To institute pharmaceutical care measures to counter major health risks including the prevailing communicable diseases;
- To develop academically and professionally qualified pharmacists in sufficient numbers to support the health care infrastructure of Namibia;
- To conduct research directed to the health care needs of the Namibian society at large, and which is instrumental in ensuring quality health care service delivery;
- To utilise the natural resources available and the skills and research generated in producing commercially viable quality pharmaceutical products.

## SCHOOL OF PHARMACY OATH

### **All (Students and Faculty):**

We pledge to serve our patients, their families, our community and each other with respect, competence, compassion, and humility. We hold as our ideal to care and treat all of our patients. From them we will learn. We hold as our ideal the advancement of knowledge. Through it disease will be understood, prevented and cured. We hold as our ideal open-minded collaboration. To this we are collectively committed.

We hold as our ideal critical self-evaluation. Through this we will grow.

### **Faculty:**

We, your faculty, promise to serve as worthy role models, as our own teachers have before us.

### **Students:**

We, your students, recognize the excellence and commitment of those from whom we learn.

### **Faculty:**

We promise to support your personal and professional growth, in health care settings, in the laboratory, in the community, and through your own teaching.

### **Students:**

We promise to pursue responsibly our calling to patient care, to service, and to research.

**Faculty:**

We promise to maintain an environment where scientific integrity and ethical standards sustain your trust in us.

**Students:**

We commit ourselves to the highest standards of academic honesty, scientific integrity and ethical practice as students and in our professional lives.

**All (students and faculty members):**

We honor The University of Namibia, the Medical Board and our Government's history of service to the people of this nation. We accept the challenges and opportunities of those alumni whom we follow. We vow to be professional, punctual and courteous. We vow to honor and respect life on earth, in all forms, crawling and reasoning, with intellect or with handicap, to be ambassadors of healthy living and a prosperous future. We vow to take to heart and mind that all men are created equal. We vow to uphold this pledge and our assistance to others who do the same.

## ACADEMIC CALENDER

### FIRST SEMESTER

30 January	-	Academic orientation (1 <sup>st</sup> Year Students)
01 February	-	Registration: (1 <sup>st</sup> year students)
05- 06 February	-	General Orientation: School of Pharmacy (1 <sup>st</sup> Year Students)
08 February	-	White Coat Ceremony (1 <sup>st</sup> year students)
<b>12 February</b>	-	<b>Lectures commence for 1<sup>st</sup> semester</b> (1 <sup>st</sup> year students)
29 March	-	<i>Easter Break Starts</i>
08 April	-	<b>Lectures resume after Easter Break</b>
24 May	-	Lectures End for First Semester (1 <sup>st</sup> Year Students)
28 May	-	Regular Examination Commence (1 <sup>st</sup> Year Students)
07 June	-	Regular Examinations end (1 <sup>st</sup> Year Students)
11 June	-	Special /Supplementary examinations commence (1 <sup>st</sup> Years)
14 June	-	Special/Supplementary Examinations end (All students)
<b>17 June</b>	-	<b>Pharmacy Attachment Starts (2<sup>nd</sup> &amp; 3<sup>rd</sup> year students)</b>
17 – 19 June	-	External Moderation Period
25 June	-	Announcement of examination results

### SECOND SEMESTER

15 July	-	Lectures commence for Second Semester
09 September	-	Spring Break Starts
16 September	-	Lectures resume after Spring Break
08 November	-	Lectures end for 2 <sup>nd</sup> semester ( <b>16 weeks</b> )
12 November	-	Regular examinations for 2 <sup>nd</sup> semester commence
27 November	-	Regular examinations for 2 <sup>nd</sup> semester end
11 - 13 December	-	Special/Supplementary Examinations
16 December	-	Pharmacy Attachment commence (3 <sup>rd</sup> & 4 <sup>th</sup> year students)

### January 2014

09 January	-	Pharmacy Attachment end (2 <sup>nd</sup> & 3 <sup>rd</sup> year students)
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## DUE DATES FOR THE 2012 ACADEMIC YEAR

(i) **GENERAL**

Last day for appeals (Semester 1 modules – Regular & Supplementary/Special Examinations) (Nov 2012).....	25 Jan
Last day for application of retention of continuous assessment mark .....	08 Feb
Last day for application for exemption(s).....	08 Feb
Last day for Late Registration ( <i>Late fee payable</i> ) .....	13 Feb
Last day for approval of exemption(s).....	13 Feb
Last day for approval of retention of continuous assessment mark .....	13 Feb
Last day for approval of module(s) & qualification changes .....	13 Feb
Last day to change Examination Centres at Regional Centres (Semester 1 modules – Regular & Supplementary/ Examinations).....	12 April
Last day for appeals (Semester 1 modules – Regular & Supplementary/Special Examinations) .....	02 Aug
Last day to submit outstanding documentation.....	23 Aug
Last day to change Examination Centres at Regional Centres (Semester 2 & Double modules – Regular & Supplementary/ Examinations) .....	27 Sept
Last day to cancel enrolment .....	27 Sept
Last day for submission of Theses and Dissertations for examination .....	15 Nov
Last day for appeals (Sem 2 & Double modules – Regular & Suppl/Special Examinations) (Nov 2013) .....	30 Jan 2014

(ii) **CANCELLATIONS**

**Semester 1 modules**

Last day to cancel Semester 1 modules .....

**Semester 2 modules**

Last day to cancel Semester 2 modules .....

**Double modules** (A double module normally extends over one academic year)

Last day to cancel Double modules .....

(iii) **FINANCE**

**Semester 1 modules**

Last day to cancel with 100 % credit.....

Last day to cancel with 50 % credit.....

**Semester 2 modules**

Last day to cancel with 100 % credit.....

Last day to cancel with 50 % credit.....

**Double modules** (a double module normally extends over one academic year)

Last day to cancel with 100 % credit.....

Last day to cancel with 50 % credit.....

## STRUCTURE AND PERSONNEL

### OFFICE OF THE DEAN

Associate Dean	Dr T Rennie
Deputy Associate Dean	Dr V Haakuria
Faculty Officer	Mrs S Marthinussen
Faculty Secretary	Vacant

General enquiries regarding the school of Medicine and the qualifications offered by the School should be directed to:

Mrs Sanet Marthinussen  
The Faculty Officer  
School of Medicine  
University of Namibia  
Private Bag 13301  
WINDHOEK

Telephone: +264-61-2065015  
Fax: +264 61- 2065093  
E-mail: [smarthinussen@unam.na](mailto:smarthinussen@unam.na)

Matters regarding specific subjects and departments should be addressed to the relevant Head of Department.

### ACADEMIC DEPARTMENTS

#### DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS

☎ (+264 61) 2065020      ☎ (+264 61) 20645090      ✉ Private bag 13301, Windhoek, Namibia

Head of Department: Dr. M Adorka  
Professor : Vacant  
Associate Professor: Vacant  
Senior Lecturer: Dr. M Adorka, BPharm (Pharmacology), University of Science & Tech, Ghana; MPharm (Clinical), University of Bradford, England; PhD (Pharmacy Practice), Northwest University, South Africa  
Lecturer: Mr. D Kibuule, BPharm (Hons), Makerere University; MSc (Clinical Pharmacology), Makerere University, Registered with the Pharmacy Council of Namibia

#### DEPARTMENT OF PHARMACY PRACTICE AND POLICY

☎ (+264 61) 2065001      ☎ (+264 61) 2065090      ✉ Private bag 13301, Windhoek, Namibia

Head of Department: Mr. D Kibuule  
Professor: Vacant  
Associate Professor: Vacant



Lecturer: Dr. L Prins, BPharm, North-West University; MSc (Pharmaceutical Chemistry), North-West University; PhD (Pharmaceutical Chemistry), North-West University, Registered with the Pharmacy Council of Namibia

Lecturer: Dr. T Rennie MPharm (Hons), University of London; PhD, University of London; Member of the Royal Pharmaceutical Society; Member of the Pharmaceutical Society of Namibia

Technologist: Ms. S Ilonga, BSc, University of Namibia

#### DEPARTMENT OF PHARMACEUTICS

☎ (+264 61) 2065003

📠 (+264 61) 2065090

✉ Private bag 13301, Windhoek, Namibia

Head of Department: Vacant

Professor: Vacant

Associate Professor: Vacant

Senior Lecturer: Vacant

Lecturer: Dr. V Haakuria, BSc (Chemistry/Molecular Microbiology) University of Namibia, BSc Honours (Biotechnology) Rhodes University, MSc (Biotechnology) University of the Witwatersrand, PhD (Biochemical Engineering) University College London

Lecturer: Mr. S !Nowaseb, BSc (Pharmacology) University College London, MSc (Pharmaceutical Technology), Kings College London

#### DEPARTMENT OF PHYTOCHEMISTRY AND PHARMACEUTICAL CHEMISTRY

☎ (+264 61) 2065003

📠 (+264 61) 2065090

✉ Private bag 13301, Windhoek, Namibia

Head of Department: Vacant

Professor: Vacant

Associate Professor: Vacant

Senior Lecturer: Vacant

Lecturer: Vacant

## REGULATIONS

The regulations should be read in conjunction with the General Information and Regulations prospectus

### PROGRAMMES

Bachelor of Pharmacy (Honours)

**18BPHA**

#### THE 7 STAR PHARMACIST

The School of Pharmacy aspires to produce a pharmacy graduate with the following qualities and characteristics herein referred to as the 7 Star Pharmacist.

- Care Provider
- Decision-maker
- Communicator
- Community Leader
- Manager
- Researcher
- Life-long Learner

# CURRICULUM FOR THE BACHELOR OF PHARMACY DEGREE

## BPHARM (HONOURS)

**COURSE CODE: 18BPHA**

### **INTRODUCTION**

The education and training of pharmacists for award of the Bachelor of Pharmacy of the University of Namibia is conducted over a 4-year period. During the course a variety of instructional methodologies are used. Instructional strategies at the School combine didactic methods (lectures and seminars), practical work (laboratory, pre-clinical practice, and fieldwork), clinical apprentice, independent study and student scientific work. The overall goal of the degree program is to produce a graduate who has sound understanding of the scientific foundations for the practice of pharmacy, possesses a high standard of pharmacy practice and is able to provide leadership in the community. The graduates are also adequately prepared for future specialization in own area of interest and have the desire for lifelong learning

### **MAJOR LEARNING OUTCOMES AND CONTENT OF THE COURSE**

At the end of the BPharm degree programme, the graduates will be able to demonstrate the following major learning outcomes:

1. Practise pharmacy within legal requirements in a professional and ethical manner
2. Provide high quality patient-centred pharmaceutical care
3. Interpret and dispense prescriptions and medication orders
4. Provide information on medicines
5. Promote and support Primary Health care
6. Manage the manufacture of pharmaceuticals and related substances
7. Manage the pharmaceutical supply chain system
8. Manage pharmaceutical human resources
9. Manage pharmacy budget and financial operations
10. Manage physical facilities for pharmaceutical operations
11. Manage pharmaceutical information systems
12. Conduct pharmaceutical and related research
13. Optimize patient care and inter-professional relationships
14. Apply information and communication technology

The content of the curriculum comprises but is not limited to the following:

- *Biomedical sciences:* anatomy, physiology, pathophysiology, microbiology, immunology, biochemistry, molecular biology, and biostatistics.
- *Pharmaceutical sciences:* medicinal and pharmaceutical chemistry, pharmacognosy and phytochemistry, pharmacology, toxicology, and pharmaceutics which encompasses physical and chemical characteristics of drugs and excipients, principles of dosage forms and drug delivery systems, biopharmaceutics, and pharmacokinetics.
- *Behavioral, social, and administrative pharmacy sciences:* pharmacoeconomics, communications applicable to pharmacy, the history of pharmacy, legal and ethical foundations to practice, management of pharmaceutical systems.
- *Pharmacy practice:* prescription processing, compounding and preparation of dosage forms, including parenteral products, drug distribution and drug administration, epidemiology, health

promotion and disease prevention, clinical laboratory medicine, clinical pharmacokinetics, patient evaluation and ordering medications, pharmacotherapeutics, and drug information and literature evaluation.

- *Professional experience*: field attachments including rural, community, hospital and industrial practice attachments.

## **INTERNSHIP AND REGISTRATION**

After graduating, candidates will have to complete a one year internship programme under the supervision of the Pharmacy Council of Namibia, the statutory body responsible for the registration of pharmacists. The internship is supervised by mentors registered with the Pharmacy Council of Namibia. Successful completion of the internship is a condition for registration to practise as a pharmacist in Namibia.

## **STUDENT ADMISSION**

### **Committee on Admissions**

Admission to the pharmacy degree course shall be administered by a Committee on Admissions, which shall be composed of members of the School and the Administrative Officer in charge of admissions to the School. All committee members shall be appointed by the Dean for a term of three years and may be reappointed for additional terms. The Committee shall have the authority to select students entering the School on condition that they fulfil the minimum admission requirements as set out below. The School shall exercise the responsibility of reviewing the requirements for admissions and recommending any revisions to Senate for approval.

### **Admission criteria**

In order to be admitted to the programme, candidates must satisfy at least one of the following requirements:

1. To apply for the B.Pharm degree, a candidate must be enrolled in Grade 12 studying towards a NSSC certificate or in possession of a NSSC certificate or any other equivalent qualification with at least:
  - a) 30 points on the UNAM scale with a grade B or better in ordinary level English OR 32 points on the UNAM scale with a grade C or better in ordinary level English
  - b) A Score of "2" or better on higher level in Mathematics and Physical Sciences (or a 2 in Mathematics and a 3 in Physical Science) (or a 2 in Physical Science and a 3 in Mathematics) or a grade B or better in ordinary level Mathematics and Physical Sciences
  - c) Grade B or better in ordinary level Biology/Life Science

*(Please refer to the scale used by the University to calculate the UNAM score);*

**OR**

2. To apply for the BPharm degree, a candidate must have successfully completed the entire first year Science curriculum and must have passed chemistry, Biology and Mathematics/Physics modules with an aggregate of at least 55%.

**OR**

3. To apply for the BPharm degree, a candidate must have successfully completed a Science degree from a recognised University with passes in Sciences including Chemistry and Biology

**OR**

4. Mature Entry: Candidates aspiring for admission to UNAM's Bachelor of Pharmacy degree through the Mature Age Entry Scheme must satisfy the following conditions:
  - a. They should be at least 25 years old on the first day of the academic year in which admission is sought
  - b. They should have successfully completed senior secondary education

- c. They should have proof of at least five years pharmacy relevant work experience (as determined by the School).
- d. They should pass all papers of the prescribed Mature Age Entry Tests with an overall average of 55%.
- e. Candidates who, in the opinion of the Faculty, merit further consideration, may be called for an oral interview before the final selection is made

Meeting the above student admission criteria DOES NOT necessarily ensure admission. Admission is awarded on merit based on places available on the programme and any other conditions that may be determined from time to time.

The Faculty reserves the right to administer special written entry tests and interviews before admission.

The admissions process **will not be re-opened** and a waiting list will be kept to choose from in the case of admitted student not turning up for registrations the following year.

### **DURATION OF STUDY**

Each academic year shall comprise of two semesters each of 16 weeks of lectures and 2 weeks of examinations. The programme shall be completed in not less than four (4) years of full time academic study. The BPharm degree MUST be completed within six (6) years of full time study, unless special permission is granted for this period to be extended.

### **EXEMPTIONS**

UNAM may give exemptions for equivalent modules taken at other recognized tertiary institutions but the exemptions shall not exceed 50% of the modules in the UNAM BPharm degree programme and shall be limited to the first two academic years only. An application for exemption from (a) module(s) must be accompanied by documentary proof issued by the examining body concerned that the student has passed the relevant module (not older than 5 years). For detailed rules on exemption, see the General University Information and Regulations.

### **EXAMINATION REGULATIONS**

For detailed examination and promotion rules, see the General University Information and Regulations.

#### **Eligibility for Examinations**

1. A candidate shall present himself/herself for the University examinations at such a time as indicated by the School Calendar of Examinations approved by the Senate.
2. A candidate will be eligible to write the examinations if he/she has attained the required minimum continuous assessment mark of 50% in each module. In addition, the candidate should have regularly and satisfactorily participated in the course of study, by attending not less than 80% of theory. Attendance of all practical classes is **COMPULSORY**.

#### **Mode of Examinations**

1. Theory examinations shall be of three hours duration, unless specified otherwise.
2. Practical examinations shall not exceed three and a half hours duration.
3. A viva-voce (oral) examination shall be of not more than half hour duration for all modules, except the Project and the Field Attachment assessment.
4. The Project shall be examined by :
  - a. Assessment of the dissertation by the Supervisor, and this shall constitute 50% of the mark
  - b. Assessment of an oral defence by a panel, and this shall constitute 50% of the mark
5. Field Attachment assessment: The student shall be evaluated by lecturer(s) and preceptor(s) using student evaluation forms for each rotation upon completion of the attachment.
6. For each module, an external examiner shall moderate the examinations

## Criteria for passing examinations

1. The examination in each module for any academic year shall constitute of:
  - a. 60% Continuous assessment ( CA, practicals, term papers)
  - b. 40% Semester examination (Written theory papers, Practical and oral examinations where applicable)
2. A student shall be declared to have passed examination if he / she attain at least 50% mark in each of the modules. Where a module has a theory, practical and oral examination, the student must pass each examination with a minimum mark of 50%

## ACADEMIC ADVANCEMENT RULES

### FIRST YEAR TO SECOND YEAR OF PHARMACY

A student must have passed at least 12 of the prescribed First Year modules (192 credits) to register for Second Year modules. If any of the failed modules is a pre-requisite for a Second Year module, the student cannot register for the affected Second Year module until the pre-requisite is passed.

### SECOND YEAR TO THIRD YEAR OF PHARMACY

A student must have passed **ALL** the prescribed First Year modules. In addition, the student must have passed at least 11 of the prescribed Second Year modules (408 credits). If any of the failed modules is a pre-requisite for a Third Year module, the student cannot register for the affected Third Year module until the pre-requisite is passed.

### THIRD YEAR TO FOURTH YEAR OF PHARMACY

A student must have passed **ALL** the prescribed First Year and Second Year modules. In addition, the student must have passed at least 13 of the prescribed Third Year modules (656 credits). If any of the failed modules is a pre-requisite for a Fourth Year module, the student cannot register for the affected Fourth Year module until the pre-requisite is passed.

### MINIMUM REQUIREMENTS FOR RE-ADMISSION

A student will not be re-admitted into the Bachelor Pharmacy (Honours) Degree if she/he has not earned:

- At least 96 credits by the end of the first year (at least 6 modules of Year 1)
- At least 272 credits by the end of the Second year (12 modules of year 1 plus 5 modules of Year 2)
- At least 488 credits by the end of the Third Year (All modules of Year 1, plus 11 modules of Year 2 and 5 modules of Year 3)
- At least 608 credits by the end of the Fourth Year (All modules of Year 1 and 2, plus 10 modules of Year 3)
- At least 680 credits by the end of the Fifth Year (All modules of Year 1,2,3, plus 2 modules of Year 4)

### GRADUATION

A student can ONLY graduate with a Bachelor Pharmacy (Honours) Degree if she/he has passed the entire prescribed modules (1104 credits) of the program.

### GRADING OF EXAMINATIONS

The UNAM grading system shall apply to all modules in the course including the Project.

### AWARD OF THE DEGREE OF BACHELOR OF PHARMACY

A student must meet all requirements of this programme and the General University Information and Regulations in order to be awarded the Bachelor of Pharmacy Degree (BPharm).

### DELIVERY MODE OF COURSES

Learning outcomes relate to the three domains: cognitive (knowledge), affective (attitudes), and psychomotor (skills). All modules include practical components. The delivery modes and techniques include, but are not limited to, case studies that will require students to use higher cognitive skills, role plays and real life experiences.

## CURRICULUM STRUCTURE

The curriculum for the degree of Bachelor of Pharmacy (BPharm) consists of four years of learning spread over 8 semesters each of 16 weeks of lectures and 2 weeks of examinations, resulting in an 18 week semester. A full module carries 16 credits and is offered at three (3) contact hours plus two (2) hours of tutorial (or 3 hours of practical) per week for 16 weeks while a half-module carries 8 credits and is offered at two (2) contact hours plus one (1) hour of tutorial (or 2 hours of practical) per week for 16 weeks unless specified otherwise in the module. In addition, the curriculum includes 8 weeks of experiential learning in the form of field attachment at the end of years 2 and 3. The total number of credits for the degree is 792.

YEAR 1 SEMESTER 1 (16 WEEKS)					
Module Title	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Organic Chemistry	PCMO3511	5	16	3+3P	
Mathematics	PCTM3511	5	16	3+1P	
Anatomy I	PPHA3511	5	16	3+2P	
Physiology I	PPHP3511	5	16	3+2P	
Sociology of Health & Disease	PCSS3511	5	16	3	
English for Academic Purposes	ULEA3519	5	16	4	
Computer Literacy	UCLC3509	5	16	2+1P	

YEAR 1 SEMESTER 2 (16 WEEKS)					
Module Title	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Physical Chemistry	PCMO3512	5	16	3+3P	PCTM3511
Anatomy II	PPHA3512	5	16	3	PPHA3511
Physiology II	PPHP3512	5	16	3+2P	PPHP3511
Biochemistry I	PPHB3512	5	16	3+2P	PCMO3511
Biostatistics	PCSB3512	5	16	3+1P	
Introduction to Pharmacology	PPHH3632	6	16	3+3P	PPHP3512
Primary Health Care: Health Promotion	PCSP3512	5	16	3+2P	
Contemporary Social Issues	UCSI3529	5	8	2	
<b>TOTAL CREDITS</b>			<b>232</b>		

YEAR 2 SEMESTER 1 (16 WEEKS)					
Module Title	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Introduction to Pharmacy & Dispensing	PCTI3631	6	16	3+3P	
Physiology III	PPHP3631	6	16	3+2P	PPHP3512
Biochemistry II	PPHB3631	6	16	3+2P	PPHB3512
Inorganic Chemistry	PCMI3611	6	16	3+3P	
General Pharmaceutics	PCTG3631	6	16	3+3P	PCMP3512
Systems Pharmacology I	PPHS3731	7	16	3+3P	PPHI3631

YEAR 2 SEMESTER 2 (16 WEEKS)					
Module	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Introduction to Clinical and Nursing Skills	PCSN3632	6	16	3+4P	PPHA3512 PPHP3631
Pharmaceutical Analysis	PCTA3632	6	16	3+3P	PCMO3511 PCMI3512
Pharmaceutical Organic Chemistry	PCMO3632	6	16	3+3P	PCMO3511
Pharmacy Practice I	PCSP3622	6	8	2+2P	PCTI3631
Physical Pharmacy	PCTP3632	6	16	3+3P	PCMP3512 PCTG3631
Research Methods	PCSR3632	6	16	3+1P	PCSB3512

FIELD ATTACHMENT -YEAR 2 (2 X 4 WEEKS)					
Module	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Community Pharmacy	PCSC3739	7	16	35P	PCSP3622
Rural Attachment	PCSU3739	7	16	35P	PCSP3622
<b>TOTAL CREDITS</b>			<b>216</b>		

YEAR 3 SEMESTER 1 (16 WEEKS)					
Module Title	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Pharmacognosy and Phytochemistry	PCMH3751	7	16	3+3P	PCMO3511
Pharmaceutical Microbiology	PCTM3751	7	16	3+3P	
Systems Pharmacology II	PPHS3751	7	16	3+3P	PPHS3632
Biopharmaceutics & Pharmacokinetics	PCTK3721	7	8	2+1P	PCTM3511 PCTG3631
Pharmacy Law & Ethics	PCSL3721	7	8	2	
Veterinary Pharmacy & Agrochemicals	PPHV3721	7	8	2+1P	PPHI3631
Chemotherapy	PPHC3751	7	16	3	PCTM3751

YEAR 3 SEMESTER 2 (16 WEEKS)					
Module	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Medicinal Chemistry I	PCMM3752	7	16	3+3P	PCMO3511
Applied Pharmaceutical Microbiology	PCTA3752	7	16	3+3P	PCTM3751
Environmental & Occupational Health	PCSO3722	7	8	2+2P	
Pathophysiology & Pharmacotherapeutics I	PCST3752	7	16	3+4P	PPHS3751
Pharmaceutical Technology I	PCTT3752	7	16	3+3P	PCTP3632
Pharmacy Practice II	PCSP3742	7	8	2+2P	PCSP3622

FIELD ATTACHMENT -YEAR 3 (2 X 4 WEEKS)					
Module	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Hospital Pharmacy	PCSY3859	8	16	35P	PCSP3742
Industrial/Manufacturing Facility	PCSF3859	8	16	35P	PCTT3751
<b>TOTAL CREDITS</b>			<b>200</b>		

YEAR 4 SEMESTER 1 (16 WEEKS)					
Module Title	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Medicinal Chemistry II	PCMM3871	8	16	3+3P	PCMM3752
Pathophysiology & Pharmacotherapeutics II	PCST3871	8	16	3+4P	PCST3752
Pharmaceutical Technology II	PCTT3871	8	16	3+3P	PCTT3752
Complementary and Alternative Medicine	PCSA3861	8	8	2	PCMH3751
Research Project	PCSR3870	8	16	6P	PCSR3632

YEAR 4 SEMESTER 2 (16 WEEKS)					
Module	Code	NQF Level	Credits	Hrs	Pre /Co-requisites
Pharmacy Management	PCSM3872	8	16	3	
Clinical Pharmacokinetics and Therapeutic Drug Monitoring	PCSD3872	8	16	3+2P	PCTK3721
Pharmacoepidemiology & Pharmacoeconomics	PCSE3872	8	16	3+1P	PCSB3512
Clinical Toxicology	PPHT3862	8	8	2+1P	PPHS3632 PPHS3751
Research Project	PCSR3870	8	16	6P	PCSR3632
<b>TOTAL CREDITS</b>			<b>144</b>		

### COURSE EQUIVALENTS

BACHELOR OF PHARMACY (BPharm)		BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBChB)	
Module Title	Code	Module Title	Code
Organic Chemistry	PCMO3511	Biochemistry I	MBSB3511
Anatomy I	PPHA3511	Anatomy I	MBSA3511
Physiology I	PPHP3511	Physiology I	MBSP3511
Sociology of Health & Disease	PCSS3511	Behavioral Sciences I	MBSC3511
Primary Health Care –Health Promotion	PCSP3511	Family Medicine I	MBSF3514
Anatomy II	PPHA3512	Anatomy II	MBSA3512
Physiology II	PPHP3512	Physiology II	MBSP3512
Biochemistry I	PPHB3512	Biochemistry II	MBSB3512
Biostatistics	PCSB3512	Community Medicine I	MCMC3612
Physiology III	PPHP3631	Physiology III	MBSP3631
Biochemistry II	PPHB3631	Biochemistry III	MBSB3531
Introduction to Clinical and Nursing Skills	PCSN3632	Internal Medicine I	MBCC3732
Research Methods	PCSR3632	Community Medicine III	MCMC3632
Environmental & Occupational Health	PCSO3721	Family Medicine II	MBSF3551



## THE SYLLABI

### UNAM CORE MODULES

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#### COMPUTER LITERACY

UCLC3509

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<b>NQF level:</b>	5
<b>Contact hours:</b>	4 Lectures, 1 Theory+6 Computer Practice/Week for 16 weeks;
<b>Credits:</b>	16
<b>Module Assessment:</b>	Continuous Assessment 2 Practical tests 50% + 2 Theory tests 50%
<b>Pre/Co-requisite:</b>	None

**Module description:** This module is aimed at assisting students to develop basic information technology skills that are necessary for studying at tertiary level. The module will impart skills necessary to communicate process documents, analyse and present data. The student will be better equipped to conduct literature searches. The module is necessary for future delivery of services by the pharmacy professional.

#### **Learning Outcomes**

At the end of this module, a student is expected to be able to:

- Distinguish between the functions of various computer components and peripherals
- Use a computer under the Windows operating system
- Differentiate between word processors, spreadsheets, presentations and databases
- Perform practical exercises using MS Word, Excel and PowerPoint.
- Be able to create own email address, communicate with email and use the Internet.

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#### CONTEMPORARY SOCIAL ISSUES

UCSI3580

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<b>NQF</b>	5
<b>Contact Hours</b>	2 Contact hours per week for 14 weeks
<b>Credits</b>	8
<b>Assessment</b>	Continuous 100%
<b>Prerequisite</b>	None

#### **Module Description:**

The module raises awareness on the need for a personal, national and global ethics. The main objective of the course is to help students reflect on the social moral issues; to discover themselves in a learner-centered, contextual, and religious and life related setting. It also stimulates students' critical thinking and helps them to appreciate their values, standards and attitudes. Furthermore it orientates students with regards to the epidemiology of HIV/AIDS; the prevalence of the disease in Namibia, Africa and Internationally. It also informs students on the psycho social and environmental factors that contribute to the spread of the disease, the impact of HIV/AIDS on their individual lives, family and communities at large. The unit further seeks to enhance HIV/AIDS preventive skills among students by means of paradigm shift and behaviour change and also to impart general introductory knowledge on gender, to make students aware, as well as sensitize them towards gender issues and how they affect our society, Sub-Region and continent at large.

#### **Learning Outcomes:**

Upon completion of this module the students should be able to:

- Identify social issues affecting the Namibian Society
- Describe the characteristics of these issues and to design a plan of action

- Assess the challenges facing the society in a multi-cultural, multi-faith and secular setting
- Develop respect for humanity, nature and cosmos
- Describe the physical-medical aspects of HIV/AIDS
- Demonstrate knowledge of the following social factors that can contribute towards the spread of HIV/AIDS; Relationships; Social conditions; Attitudes; Cultural influences; Myths about HIV/AIDS
- Explain behaviour change towards HIV/AIDS
- Construct HIV/AIDS prevention strategies, continuum of care and support among students
- Identify with, and use gender concepts with ease
- Utilize gender-sensitive language and live a life that reflects gender exposure
- Reflect on gender relations between women and men in society, and the impact on society
- Reduce gender stereotypes in their home and community at large
- Examine the impact of gender unequal relations on the spread of HIV/AIDS, gender based violence, myths, stereotypes and beliefs about males and females, resource distribution, the education system and many other issues that affect society and community at large

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## ENGLISH FOR ACADEMIC PURPOSES

ULEA3519

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<b>NQF level:</b>	5
<b>Contact hours:</b>	4 Lectures/Week
<b>Credits:</b>	16
<b>Module Assessment:</b>	Continuous Assessment (40%) and Examination (60%) (1 X 3 hours written paper)
<b>Pre/Co-requisite:</b>	None

### Module Description:

This module develops a student's understanding and competencies regarding academic conventions such as academic reading, writing, listening and oral presentation skills for academic purposes. Students are required to produce a referenced and researched essay written in formal academic style within the context of their university studies. Students are also required to do oral presentations based on their essays. The reading component of the course deals with academic level texts. This involves students in a detailed critical analysis of such texts. The main aim is therefore, to develop academic literacy in English.

### Learning Outcomes:

At the end of this module, a student is expected to be able to:

- Apply academic and formal writing conventions within the context of their studies
- Integrate advanced reading strategies in reading an academic context
- Employ oral and presentation skills in an academic context
- Employ academic listening techniques in an academic context

<b>NQF level:</b>	5
<b>Contact Hours</b>	3 Lecture hours per week + 2 hours of tutorial (or 3 hours of practice)
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 × 3 hours written paper)
<b>Pre-requisites</b>	None

**Module description**

**Basic Human Histology:** This course aims to provide a general introduction to cells, the structure of the developing human, as well as the histology of the resulting main tissue types. An overview will be provided to levels of organization of the human body which ranged from cells to organ systems. The primary focus will be structural embryology with emphasis on human reproduction, gametogenesis, fertilization, gastrulation and the derivatives of the three germ layers. Furthermore, the development of the placenta will also be studied and a general introduction to congenital defects and embryopathies will be provided. In addition, this course will also provide an introduction to the four basic tissue types namely, epithelium, connective tissue, muscle and nervous tissue. Histological slides will be used to examine tissues in context.

**Learning Outcomes:**

At the end of the module, a student is expected to be able to:

- Discuss structure and function of the cells and tissues of the human body
- Demonstrate the approaches to naming anatomical structures
- Demonstrate skills in the different methods and histological techniques frequently used in the study of cells and tissues
- Discuss normal development with emphasis on the reproductive cycle, gametogenesis, fertilization, gastrulation and the derivatives of the three germ layers.
- Interpret developmental defects of the embryo, foetus, placenta, and the amniotic fluid
- Identify preventive actions that contribute to decreasing the rate of birth of premature, retarded, or genetically defective children
- Explain the potential causes of infertility and the value of technological choices as solutions to the problem
- Explain the signs of normal and risky pregnancies from the standpoint of the embryo, foetus, amniotic fluid, and the mother
- Explain the concepts of cell potentiation, differentiation, proliferation, and death, and characterize the structure of the different types of cells and tissues according to function
- Discuss the transformations that take place during the development of different systems, Analyze the actions taken in preventing and detecting defects in a foetus
- Explain how modern techniques are used in the diagnosis of malformations
- Evaluate the normal foetal development and the effects of foetal, maternal, and placental factors on the growth and development of the foetus

<b>NQF level:</b>	5
<b>Contact Hours</b>	3 Lecture hours per week
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PPHA3511

**Module description**

**Systemic Anatomy:** This second module in anatomy will expose students to morphological and functional characteristics of the various organs and organ-systems of the human body. This module builds on the basic concepts that were acquired during the study of human development and the four basic tissue types. Both the macro and micro-anatomy of the human body systems will be scrutinized. Emphasis will be placed on the histology of the eye, ear, skin, circulatory system, nervous system, lymphoid system, gastrointestinal tract, gastrointestinal tract glands, respiratory system, urinary system, andrological and female reproductive systems and endocrine system. Relevant clinical anatomy will be studied. This will be achieved through the evaluation of case studies related to each system and use of relevant medical technology. Students will be exposed the morphological alterations and their manifestations in the normal variant and pathological states. Histological slides will be used to examine the various organ systems as well as their tissue constituents.

### Learning Outcomes

At the end of the modules, a student is expected to be able to:

- Discuss the morphological and functional characteristics of the main structures of the nervous, circulatory system, lymphoid system, gastrointestinal tract, the glands of the gastrointestinal tract, respiratory system, urinary system, andrological and female reproductive systems, endocrine system, as well as the organs of vision and hearing
- Interpret the symptoms of frequent diseases
- Compare the morphological characteristics of the structures of components of circulatory, urinary, respiratory, and digestive systems
- Interpret the symptoms of frequent diseases produced by alterations of the components of these systems under the microscope
- Explain their functions
- Distinguish pathological specimens from normal ones
- Compare and contrast the morphological and functional characteristics of the main structures of the cell
- Relate the principal histological characteristics of different organs and systems of the human body in relation with their functions and identify these structures in both health and disease

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## APPLIED PHARMACEUTICAL MICROBIOLOGY

PCTA3752

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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PCTM3751
<b>Assessment Methods:</b>	Assignment, tests, practicals, class presentation, student form evaluation

### Module Description:

The module involves the application of basic microbiological principles in the production of clean and sterile pharmaceutical products in community and hospital pharmacies, and in industrial manufacture. This includes the principles and methods of sterilisation, aspects of disinfection and preservation; concepts of good manufacturing practice, aseptic techniques and infection control in health care settings.

### Learning Outcomes:

At the end of the module, a student is expected to be able to:

- Describe the principles and applications of sterilisation and disinfection
- Apply knowledge of the process, methods and techniques of sterilization and disinfection
- Describe and apply the basic principles of preservation used in pharmaceuticals, foods and cosmetics
- Demonstrate knowledge and skills of fermentation
- Demonstrate knowledge of the kinetics of microbial growth

- Apply the principles of vaccine production, classification and DNA recombinant technology
- Demonstrate knowledge of infection control

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**BIOCHEMISTRY I**
**PPHB3512**


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<b>NQF:</b>	5
<b>Contact Hours:</b>	3 lecture hours + 2 hours of laboratory practical
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PCMO3511

**Module Description**

**Molecular Biology and Genetics:** This module is the first of two, describing the biomolecules and biochemical processes that are required in all functioning cells. Building upon what they have learnt in organic chemistry, students will be acquainted with the chemistry of essential biomolecules and will also be able to explain the molecular basis underlying enzymatic reactions. The course gives an overview of cell structure and function and focuses on the metabolism and storage of macromolecules, energy transduction and the flow of information within cells and between individual cells. In this course, students will become acquainted with the central dogma of molecular biology and the interrelated roles that DNA, RNA and protein play. Students will study gene structure and expression, biochemistry of DNA and RNA, protein biosynthesis, genetic defects and inheritance and genetic recombination. Multifactorial genetic diseases will also be covered. Finally, genetic diseases will figure prominently in discussions of DNA testing, cloning, ethics and genetic counseling. At the end of this course, students will be able to describe the structural and functional relationships of the various components of a cell.

**Learning Outcomes**

At the end of this module, a student is expected to be able to:

- Relate the structural and functional organization of the eukaryotic cell
- Explain the properties and functions of the components of macromolecules that contribute to the structural and functional characteristics of substances crucial in life processes
- Discuss the biological functions of the different types of macromolecules
- Explain the molecular basis of the main mechanisms at play in regulating enzyme activities and various metabolic processes
- Describe the molecular mechanisms that allow the exchange of substances, energy, and signaling across the cell membrane
- Discuss the molecular events that occur during the conservation, transmission, and expression processes of the genetic information and the consequences of their variations due to the action of internal and external agents
- Explain the molecular basis of genetics
- Interpret the inheritance of genetic diseases
- Discuss the abnormalities of human chromosomes and phenotypic characteristics of genetic diseases
- Explain the importance of the interaction of the genome with the environment

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**BIOCHEMISTRY II**
**PPHB3631**


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<b>NQF</b>	6
<b>Contact Hours:</b>	3 lecture hours + 2 hours of practical per week
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% Examination (1 x 3 hours written paper + 1½ practical examination)
<b>Pre-requisite:</b>	None

**Module Description:**

**Metabolism and nutrition:** The course gives an overview of cell structure and function and focuses on the metabolism and storage of macromolecules, energy transduction and the flow of information within cells and between individual cells. The course will give an integrated overview of the functions of protein, carbohydrate and major vitamins and minerals as determinants of health and disease in human populations. The structure and function of vitamins and chemical carcinogenesis will be studied in this course. Students will be acquainted with the structure and role of the various immunoglobulins in the body's response to foreign materials. Students will be able to explain laboratory findings and disorders of metabolism and provide an overview of the major macro and micronutrients relevant to human health, the role of key nutrients in the prevention of disease and major nutrition related diseases.

**Learning Outcomes**

At the end of this module, a student is expected to be able to:

- Describe the molecular mechanisms that allow the exchange of substances
- Explain energy exchange, and signaling across the cell membrane
- Explain the events of cellular respiration, their basic molecular mechanisms
- Describe the cell metabolism regulation and how the cell synthesizes, catabolizes, and stores macromolecules
- Demonstrate a dynamic understanding of the interrelations between the main metabolic pathways and their regulations
- Explain the quantitative and qualitative nutritional necessities of carbohydrates, lipids, proteins and vitamins
- Relate some metabolic dysfunctions of carbohydrates, lipids, vitamins and nitrogenous compounds with the molecular origin of such defects
- Explain laboratory findings of disorders of metabolism
- Describe the metabolic and nutritional determinants of health and disease in individuals, families and human populations

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**BIOPHARMACEUTICS AND PHARMACOKINETICS****PCTK3721**

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<b>NQF level:</b>	7
<b>Contact hours:</b>	2 lecture hours/week 1 hour practicals/week
<b>Credits:</b>	8
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisites:</b>	PCTM3511, PCTG3631
<b>Assessment Methods:</b>	Assignments, tests, student evaluation form

**Module Description:**

**Biopharmaceutics:** This module provides students with knowledge of drug dosage forms and drug delivery systems. The module develops the students understanding of the role of biopharmaceutics in the design of safe and effective medicines. It provides an understanding of the influence of formulation on the bioavailability of drugs. It covers routes of administration, biopharmaceutics, bioavailability, bioequivalence, rate and extent of availability, onset and duration of effect, getting to the site of absorption, dissolution, disintegration, first-pass effect, passive diffusion and active transport.

**Pharmacokinetics:** This module provides the students with an understanding of the process and kinetics of absorption, distribution and elimination of drugs and the application of such knowledge to the rational design of dosage regimens and to the *in vivo* evaluation of dosage forms. The module covers the quantitation of factors affecting absorption, distribution, and metabolism, and excretion of drugs; derivation of mathematical models to calculate the time course of drug concentrations following drug administration; analysis of drug concentration data sets graphically and using non-linear regression.

**Learning Outcomes:**

At the end of this module, a student will be able to:

- Describe mechanisms of pharmacokinetics

- Describe drug distribution in one- and multi-compartment models
- Appreciate the relevance of bioequivalence in therapeutics
- Demonstrate an understanding of the differential and integrated equations associated with pharmacokinetic models
- Demonstrate an understanding of factors which affect the absorption, distribution, metabolism and excretion of drugs
- Predict the changes in relevant pharmacokinetic parameters in presence of factors which affect the absorption, distribution, metabolism and excretion of drugs
- Calculate pharmacokinetic parameter values from appropriate data (e.g. patient data) using graphical techniques
- Calculate appropriate dosing regimens using appropriate criteria
- Analyze drug information literature including reference books, package inserts and research publications with regard to pharmacokinetics and pharmacodynamics of drugs

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## BIOSTATISTICS

PCSB3512

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<b>NQF:</b>	5
<b>Contact Hours:</b>	3 lecture hours + 1 hour of practice
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)

**Pre/Co-requisite:** None

### Module description

**Biostatistics** - Biostatistics is a core science for all medical staff. Skills in statistical analysis are critical for research, evaluation and audit, as well as critical appraisal of the medical literature. The Biostatistics module presents a broad approach to evidence based decision making, statistical analysis, and concentrates particularly on areas which are likely to impact on Medical care or research.

### Learning Outcomes

At the end of this module, a student is expected to be able to:

- Distinguish between categorical and quantitative variables or data and, within each type, respectively, to distinguish between ordinal and non-ordinal categorical variables and between discrete and continuous quantitative variables
- Define distributions and frequency tables
- Distinguish between bimodal, unimodal, normal, leptokurtic, platykurtic, skewed, and symmetric distributions
- Construct histograms from raw data, including setting category boundaries for continuous data (or discrete data with low frequencies within data classes)
- Calculate the value of a summation notation expression
- Calculate summary statistics (mean, mode, median, range, interquartile range, standard deviation, and variance) from raw data
- Distinguish between a parameter and a statistic
- Define sampling error and be able to identify both bias and homogeneity in samples
- Explain the difference between a symmetric and a skewed distribution and apply these concepts to the normal curve
- Describe the relationship between probability and the area under the normal curve
- Calculate z-scores

- Calculate the appropriate probabilities and z-scores from actual data as an answer to a question about the data, assuming the data is normally distributed
- Define and calculate the expected mean and standard deviation of sample means drawn from a quantitative variable
- Calculate the standard deviation of sample means
- Reject or accept the null and alternative hypotheses from a comparison of the p value with a given critical (alpha) value (both one- and two-way)
- Give the conditions of validity for the use of the t-test for testing the significance of a difference between two sample means
- Determine if it is appropriate to use the t-test for testing the significance of a difference between two sample means for a given scenario
- Describe both type I and II errors for a given scenario
- Define significant effect size and calculate it for a given scenario
- Define the power of a statistical test and determine, using the tables in the textbook, the minimum sample size that will provide for a specified level of power given an expected standard deviation and an alpha level.

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## CHEMOTHERAPY

PPHC3751

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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours per week
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 × 3 hours written paper)
<b>Co-requisite:</b>	PCTM3751

### Module Description:

This module is designed to provide students a basic understanding of the principles of chemotherapy including treatment of infections, infestations and cancer. It includes the rational use of specific drugs, problems of drug resistance, current anti-cancer and anti-infective drugs.

### Learning Outcomes:

At the end of this module a student is expected to be able to:

- Explain the rational use of drugs in the therapy of infections, infestations and cancers
- Demonstrate knowledge of drug resistance and its modulation
- Explain the classification, side-effects and complications of antimicrobials and chemotherapeutic agents
- Demonstrate an understanding of the development of cancer in man
- Describe the principles of chemotherapy used in various situations - cancer, infection and infestations

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## CLINICAL PHARMACOKINETICS AND THERAPEUTIC DRUG MONITORING

PCSD3872

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<b>NQF level:</b>	8
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 2 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 × 3 hours written paper)
<b>Pre-requisite:</b>	PCTK3721
<b>Assessment Methods:</b>	assignments, tests, practicals and student assessment forms



**Module description:**

This module develops the students' theoretical concepts acquired in the biopharmaceutics and Pharmacokinetics module. Emphasis is on practical and clinical applications.

**Learning Outcomes:**

At the end of the module, a student is expected to be able to:

- Initiate drug dosing regimens individualized to specific patient needs and organ function
- Interpret drug serum concentration data
- Calculate individual pharmacokinetic parameters
- Calculate appropriate dosing regimens utilizing derived pharmacokinetic parameters
- Demonstrate an understanding of the appropriate application and limitations of selected pharmacokinetic models
- Recognize sources of individual pharmacokinetic variability due to physiological and disease factors
- Demonstrate understanding of the application and role of pharmacokinetic information generated for selected drugs and drug classes.
- Apply pharmacokinetic data generated from individual patients to develop appropriate therapeutic dosing regimens

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**CLINICAL TOXICOLOGY**
**PPHT3862**


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<b>NQF level:</b>	8
<b>Contact hours:</b>	2 lecture hours/week for 16 weeks + 1 practical hour
<b>Credits:</b>	8
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PPHS3632, PPHS3751
<b>Assessment Methods:</b>	assignments, tests, student evaluation

**Module Description:**

The module covers general toxicology and provides students with knowledge and understanding of basic toxicology relevant for drugs. The module covers the most common acute-toxic drugs and chemicals, poisoning symptoms, treatments and antidotes.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Demonstrate knowledge of the types, mechanisms of action, clinical features, diagnosis, detection and management of poisons
- Integrate the results of laboratory tests for the diagnosis of types of poisons
- Demonstrate knowledge and skills required to determine the features, diagnosis and general management of drugs of abuse

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**COMMUNITY PHARMACY**
**PCSC3732**


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<b>NQF level:</b>	7
<b>Contact hours:</b>	35 attachment hours/week for 3 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	100 % Continuous Assessment (Student evaluation form, problem based learning)
<b>Pre-requisite::</b>	PCSP3622

This module provides students with knowledge and hands-on skills in the main sectors of pharmacy – hospital, community and pharmaceutical industry. The module provides students with the opportunity to develop professional skills through interaction with role model professionals and to develop interpersonal communication skills in practice.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Manage medicines and pharmacy personnel in a community pharmacy.
- Provide pharmaceutical care services to the public
- Manage a community pharmacy
- Dispense various pharmaceutical dosage forms.

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**COMPLEMENTARY AND ALTERNATIVE MEDICINE**

**PCSA3861**

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<b>NQF level:</b>	8
<b>Contact hours:</b>	2 lecture hours/week for 16 weeks;
<b>Credits:</b>	8
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCMH5715
<b>Assessment Methods:</b>	assignments, tests, class presentation, student evaluation form

**Module Description:**

This module equips students with knowledge, skills and attitudes to provide unbiased information and advice to patients on complementary and alternative therapies including African traditional medicine the medicinal uses of various naturally occurring drugs and their history, sources, distribution, methods of cultivation, active constituents, medicinal uses, identification tests, preservation methods, substitutes and adulterants.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Demonstrate understanding and respect for cultural and ethnic influences on patients' health beliefs and health care choices
- Discuss patient's use of complementary therapies as a necessary part of finding a common ground when providing patient-centered care
- Collaborate with practitioners of complementary therapies to ensure patients' access to quality CAM
- Demonstrate understanding of the prevalence and patterns of CAM use within Namibia and the region.
- Demonstrate understanding of the conditions for which patients most commonly seek out complementary approaches
- Interpret information regarding safety, efficacy and cost of complementary therapy interventions and communicate this information clearly to the patient
- Describe the potential for adverse effects and herb-drug interactions and when using complementary therapies
- Demonstrate awareness of methodological issues and difficulties raised in studying efficacy of complementary therapies

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**ENVIRONMENTAL AND OCCUPATIONAL HEALTH**

**PCSO3722**

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<b>NQF:</b>	7
<b>Contact Hours:</b>	2 lecture hours + 2 hour of practice
<b>Credits:</b>	16

**Assessment:** 60% Continuous assessment 40% final examination (1 X 3 hours written paper)  
**Pre/Co-requisite:** None

### Module description

**Environmental and Occupational Health:** This course, gives medical students the attitudes, skills and knowledge necessary to provide preventive health services to reduce the health impact of disease and injury resulting from workplace and community factors. The course caters for the special needs of medical practitioners, pharmacists, nurses, allied health personnel, scientists and occupational health and safety managers.

### Learning Outcomes

At the end of this module a student is expected to be able to:

- Demonstrate an understanding of the legal and ethical framework which governs occupational health and safety practice and the obligations of industry in regard to the environment
- Appraise and integrate hazard information from published studies and other relevant sources in the occupational and environmental health literature
- Recognise and evaluate the level of exposure and assess the degree of risk to health from workplace and environmental hazards and provide advice on appropriate control measures in the workplace and the community
- Demonstrate an understanding of the factors underlying risk perception and be able to effectively and sensitively communicate ( in both written reports and oral presentations) these risks to exposed people in the workplace and the community
- Provide occupational health services, including preventative programs and environmental advice to industry

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## GENERAL PHARMACEUTICS

PCTG3631

**NQF level:** 6  
**Contact hours:** 3 lecture hours/Week for 16 weeks;  
3 practical hours / week for 16 weeks  
**Credits:** 16  
**Module Assessment:** 60% Continuous assessment 40% final examination (1x 3 Hours written paper)  
**Pre-requisite:** PCMP3512  
**Assessment Methods:** assignments, tests, practicals, class presentations, student evaluation forms

### Module Description:

This module builds on the foundation knowledge acquired from the module on the introduction to pharmacy and dispensing in the previous semester. It emphasises on properties of powders and other dosage forms and to do basic calculations related to the physical and chemical properties of drugs and common dosage forms

### Learning Outcomes:

At the end of this module, a student is expected to be able to:

- Perform complex pharmaceutical calculations;
- Formulate different types of dosage forms in relation to semi-solids and solids
- Describe the major physical and chemical properties of drugs and excipients which influence the performance of drugs and dosage forms

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## HOSPITAL PHARMACY

PCSY3852

**NQF level:** 8  
**Contact hours:** 35 attachment hours/week for 3 weeks for each rotation

<b>Credits:</b>	16 for each rotation
<b>Module Assessment:</b>	Student evaluation form
<b>Co-requisite:</b>	PCSP3742

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**INDUSTRIAL/MANUFACTURING FACILITY**
**PCSF3852**


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<b>NQF level:</b>	8
<b>Contact hours:</b>	35 attachment hours/week for 3 weeks for each rotation
<b>Credits:</b>	16 for each rotation
<b>Module Assessment:</b>	Student evaluation form
<b>Co-requisite:</b>	PCTT3751

**Module Description:**

This module provides students with knowledge and hands-on skills in the main sectors of pharmacy – hospital, community and pharmaceutical industry. The module provides students with the opportunity to develop professional skills through interaction with role model professionals and to develop interpersonal communication skills in practice.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Manage medicines and pharmacy personnel in a hospital pharmacy.
- Provide pharmaceutical care services to the public
- Formulation and manufacture of various pharmaceutical dosage forms.

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**INORGANIC CHEMISTRY**
**PCM13611**


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<b>NQF</b>	6
<b>Contact Hours:</b>	3 lecture hours + 2 hours of practical per week
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% Examination (1 x 3 hours written paper + 1½ practical examination)
<b>Pre-requisite:</b>	None

**Module Description:**

**GENERAL CHEMISTRY:** This is an introductory course to inorganic chemistry. It builds upon what is covered in the First Year chemistry courses. Students are expected to review the structure of the atom on their own, then the course progresses into its reactivity to form simple and complex molecule. The following topics are covered: In-depth studies of chemical bonding; (valence bond theory (VBT), shapes of molecules and hybridization; molecular orbital theory (MOT) in diatomic and polyatomic molecules); Delocalized multiple bonding. S-block elements: The chemistry of alkali and alkaline earth elements (groups 1 and 2); reactivity with hydrogen, oxygen, halogens, water, and liquid ammonia; Classification of oxides, and their reaction with water; P-block elements (groups 13 to 18): Reactivity with oxygen and halogens; The hydrides of P block elements; Hydrolysis and ammonolysis of P-block halides

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Explain the basic chemistry of the main group elements.
- Distinguish the difference between a main group element and a transition metal.
- Apply valence bond theory and molecular bond theory to predict the shapes of inorganic molecules.
- Demonstrate and understanding of delocalized multiple bonding.
- Discuss the chemistry of s, p and d block elements.

<b>NQF:</b>	6
<b>Contact Hours:</b>	3 lecture hours + 3 hours of practice per week
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PPHP3631
<b>Pre-requisite:</b>	PPHA3512,

**Module description**

**Introduction to Clinical Methods and Nursing Skills:** This module which is the mainstay and foundation of clinical medical practice is designed to introduce the students early on to the professional and technical skills, scientific knowledge, and human understanding necessary in the care of the sick, their families, and the community and build up on the art of medical practice to near perfection. The module also introduces students to basic nursing procedure through didactic teaching and hands-on practice. A student is also equipped with knowledge and skills for providing emergency First Aid resuscitation and support before arranging for secure and safe transfer to health facility. It emphasizes on the establishment of direct, one-to-one physician-patient relationships, the process of social communication, and the performance of physical examination based on competent use of professional skills. Topics covered include communication skills, medical ethics, general, regional, and systemic physical examination of patients; basic nursing skills; First Aid.

**Learning Outcomes**

At the end of the modules, a student is expected is to be able to:

- Carry out a medical interview
- Methodically perform a physical examination with full consideration of a patient's comfort, confidentiality, and privacy results
- Record and present to clinical faculty
- Perform basic nursing procedures with full consideration of a patient's comfort, confidentiality, and privacy in a methodical manner
- Administer First Aid during a medical emergency, make effective referral and follow-up of a patient who requires life-saving care

<b>NQF:</b>	6
<b>Contact hours:</b>	3 lecture hours + 2 hours of practice
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% Examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	MBSP3631; MBSB3531
<b>Co-requisite:</b>	MPCP3732; MPCM3631; MCMM3732

**Module Description**

**INTRODUCTION TO PHARMACOLOGY:** This module highlights the fundamental principles of action of all medicinal drugs and is semi-integrated with the module on Internal Medicine. The module focuses on pharmacodynamics, pharmacokinetics, and toxicity of drugs used in diagnosis, treatment, and prevention of disease, with emphasis on drugs frequently encountered in clinical practice. Special focus will be given to medicines influencing the autonomic nervous system (ANS) as knowledge gained is generalizable to pharmacology of other systems. Students will also develop a further understanding of experimental pharmacology and how it can be used as a tool in the development and/or reformulation of new drugs. Upon completing this unit students will be able to correlate drug effects with physiological function and explain a given drugs mode of action as well as side effects and the mechanisms by which these drugs modify the

physiological system. Topics: compliance, rational drug use; risk benefit ratio in prescribing; prescribing; use of generics or trade (brand); selection of drugs; route of administration; formulation and dosage; classification of drugs; metabolism and elimination of drugs; side effects;

### Learning Outcomes:

At the end of the module, a student is expected to be able to:

- Classify medicinal drugs;
- Differentiate the choice, and routes of drug administration including dynamics of absorption and bioavailability;
- Explain how pharmacokinetic processes of absorption, distribution, metabolism and excretion influence plasma drug concentration and response;
- Explain the mode of absorption, distribution, metabolism and excretion of different medicinal drugs at molecular and biochemical level;
- Recognize and evaluate the various therapeutic and adverse effects of drugs;
- Explain the mode and mechanisms of action of various drugs from the basis of cellular receptor, biochemical, molecular and physiological level;
- Explain resistance to medicinal drugs;
- Discuss the logistics management of pharmaceuticals (the drug supply chain);
- Explain the mechanisms of toxicity and therapeutic reversal of toxic effects;
- Develop and initiate emergency remedial measures;
- Discuss the process of drug development (product research, scientific testing and inclusion in national formulary);
- Demonstrate knowledge of drug interactions including antagonism, synergism and potentiation and its clinical applications
- Describe the Pharmacology of the drugs influencing the Autonomic nervous system including major classes of drugs, prototypes, their pharmacokinetics and pharmacodynamics, indications and contraindications.

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## INTRODUCTION TO PHARMACY AND DISPENSING

PCTI3631

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<b>NQF level:</b>	6
<b>Contact hours:</b>	3 lecture hours / week for 16 weeks 3 practical hours / week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	None
<b>Assessment Methods:</b>	assignments, tests, practicals, class presentations and student assessment forms.

**Module description:** The module is intended to introduce students to the history and practice of Pharmacy in general and in Namibia. The module covers basic skills and knowledge for dispensing medicinal products including the assessment of the validity of a prescription, the use of appropriate reference sources for the interpretation and dispensing of prescriptions.

Students are provided with basic skills and knowledge on the application of information and communication technology in pharmacy and dispensing.

### Learning Outcomes:

At the end of the module a student is expected to be able to:

- Outline the scope and history of pharmacy
- Apply information in standard reference books and materials
- Perform basic pharmaceutical calculations
- Formulate different types of dosage forms in relation to liquids and simple solutions
- Describe the major physical and chemical properties of drugs and excipients which influence the performance of drugs and dosage forms

- Describe the major properties and uses of solutions, dispersions, semi-solids, and solids in common dosage forms

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**MATHEMATICS**
**PCTM3511**


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<b>NQF level:</b>	5
<b>Contact hours:</b>	3 lectures per week for 16 weeks 1 tutorial per week for 16 weeks
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (at least 2 tests), (3 hours examination paper).
<b>Pre/Co-requisite:</b>	None

**Module description:**

Functions: one-to-one and onto functions, horizontal line test, composition of functions, inverse of a function. Introduction to exponential and logarithmic functions. Limit of a function: definition, left and right limits, infinite limits, limits at infinity, continuity in terms of limits. Differentiation: rate of change, derivative of a function, rules of differentiation, increasing and decreasing functions and graph sketching. Integration: antiderivatives, the definite integral, area under a graph. Trigonometry: further trigonometric identities, area of a sector and segment of a circle, derivatives and integrals of trigonometric functions.

**Learning Outcomes**

At the end of this module, a student is expected to be able to:

- Demonstrate understanding of basic mathematics and differential calculus
- Demonstrate understanding of the application of differentiation, integral calculus to life sciences.
- Recognise the importance of statistics in both private and public sectors
- Summarise the data using a few summary measures (e.g. mean and standard deviation)
- Do simple statistical analysis
- Use a computer to analyse the data.

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**MEDICINAL CHEMISTRY I**
**PCMM3752**


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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 03 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCMO3511
<b>Assessment Methods:</b>	assignments, tests, practicals, class presentation, student evaluation form

**Module Description:**

This module covers modern concepts of rational drug design. This includes introduction to Quantitative Structure Activity Relationship (QSAR), combinatorial chemistry, computer aided drug design (CADD), drug metabolism and prodrugs.

**Learning outcomes:**

At the end of this module, a student is expected to be able to:

- Describe the intermolecular energies (forces) that allow drug molecules to bind to proteins and how these interactions dictate binding specificity
- Demonstrate understanding of structure-activity relationships defining the interaction of a drug with its receptor

- Describe the pharmacophoric functional groups that are important for receptor binding and biological activity
- Apply receptor binding models to predict the ability of a structural analogue of a characterized drug to bind to the target receptor
- Describe prodrugs and the design thereof, applying chemical techniques and drug metabolism aspects.

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**MEDICINAL CHEMISTRY II**
**PCMM3871**


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<b>NQF level:</b>	8
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCMM3752
<b>Assessment Methods:</b>	assignments, tests, practicals, class presentation, student evaluation form

**Module Description:**

This module covers concepts of biotechnology and the medicinal chemistry of classes of drug molecules. Classes of drugs will be covered in detail with respect to their physico-chemical properties, mode of action, structure-activity relationship, synthesis, chemical, nomenclature, and their side effects.

**Learning Outcomes**

At the end of this module, a student is expected to be able to:

- Discuss biotechnological drugs and drug applications and give examples
- Relate the physicochemical properties, formulation aspects, action and side effects of a class of drugs to their chemical structure and properties

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**ORGANIC CHEMISTRY**
**PCMO3511**


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<b>NQF Level:</b>	5
<b>Contact Hours:</b>	3 lecture hours + 3 hours of laboratory practical per week
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination
<b>Pre/Co-requisites:</b>	None

**Module Description:**

**Organic Chemistry:** This module administered over one semester is designed to acquaint students with the basic knowledge in the classification of organic compounds. This includes the analysis of the chemical and physical properties and the use of organic compounds in medicine. Topics covered include the chemistry of alkyl halides, alcohols, ethers, carbonyl compounds and amines; aromatic and aliphatic chemistry, heterocyclic compounds; isomerism, stereoisomerism and reaction mechanisms. Upon completion of this course students will be acquainted with the molecular interactions that drive biosynthesis and bioenergetics within cells.

**Learning Outcomes**

At the end of this module, a student is expected to be able to:

- Classify organic compounds into chemical groups;
- Identify the chemical and physical properties of organic compounds;
- Discuss the use of organic compounds in medicine;
- Apply concepts and basic techniques of simple synthesis and re-crystallization;
- Perform solvent extraction, identification and characterization of compounds;



<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours / week for 16 weeks; 4 practical hours / week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PPHS3751
<b>Assessment Methods:</b>	assignments, tests, class presentation, student evaluation form, problem based learning

**Module description:**

This module introduces students to the structural changes of tissues and organs of the human body, which result in or from pathological changes, or are caused by excessive functional adaptation or accumulation of the same. The module also introduces students to clinical pharmacy, an increasingly important aspect of modern pharmacy practice. Emphasis will be placed on the integration of knowledge and skills gained from previous courses with pathophysiology and therapeutics to devise appropriate pharmaceutical care plans.

**Learning outcomes:**

At the end of this module a student is expected to be able to:

- Demonstrate an understanding of basic mechanisms of cellular pathology, including inflammation, injury, and wound healing.
- Describe features of immunological and haematological disorders
- Evaluate prescriptions for authenticity, completeness and appropriateness
- Review patient profile in relation to pharmacotherapy
- Communicate effectively with and counsel patients appropriately
- Interpret laboratory results of specific disease states.

<b>NQF level:</b>	8
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks 4 practical hours / week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCST3752
<b>Assessment Methods:</b>	Assignments, tests, class presentation, student evaluation form, problem based learning

**Module Description:**

This module enables students to integrate knowledge and skills in pathophysiology and therapeutics to devise appropriate pharmaceutical care plans. It focuses on major body systems including: gastrointestinal, respiratory and cardiovascular; central nervous system; musculoskeletal system; endocrine system and infectious diseases. Students also develop skills in selecting drugs rationally.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Demonstrate understanding of the pathophysiology and therapeutics of the different body systems

- Demonstrate understanding of the pathophysiology and therapeutics of HIV/AIDS and other common infections
- Compare and contrast different types of cancers, their epidemiology, routes of metastasis, treatment options and prognosis
- Set therapeutic objectives and justify drug selection
- Apply knowledge of pathophysiological mechanisms in devising appropriate pharmaceutical care plans
- Demonstrate problem solving skills in drug therapy of diseases

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## PHARMACEUTICAL ANALYSIS

PCMA3632

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<b>NQF level:</b>	6
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCMO3511, PCMI3512
<b>Assessment Methods:</b>	assignment, tests, practicals, class presentation, student form evaluation

### Module Description:

This module provides students with the theoretical and practical foundation to assure the quality and efficacy of drugs. The module incorporates requirements for drug quality in connection with Good Laboratory Practices and Good Manufacturing Practices. It includes the use of official reference books for drug analysis.

### Learning outcomes:

At the end of this course a student is expected to be able to:

- Describe key concepts related to quality assurance of pharmaceuticals
- Apply the principles of spectroscopy and chromatography to the structural elucidation of drugs and other pharmaceuticals
- Apply spectroscopic and chromatographic techniques of analysis for structural determination and quantification of drugs

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## PHARMACEUTICAL MICROBIOLOGY

PCTM3751

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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre/Co-requisite:</b>	None
<b>Assessment methods:</b>	assignments, tests, practicals, class presentations, student evaluation forms

### Module description:

This module covers the various aspects of microorganisms, their classification, morphology, laboratory cultivation identification and maintenance. It includes sterilization of pharmaceutical products, equipment and media.

### Learning Outcomes:

At the end of this module a student is expected to be able to:

- Analyse the anatomy, identification, growth factors and sterilization of microorganisms

- Describe the mode of transmission of disease causing microorganism, symptoms of disease and treatment
- Estimate of RNA and DNA and identify their source
- Cultivate microorganisms in the laboratory
- Perform diagnostic tests to identify diseases

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**PHARMACEUTICAL ORGANIC CHEMISTRY**
**PCMO3632**


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<b>NQF level:</b>	6
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks 3 practical hours / week for 16 weeks
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 × 3 hours written paper)
<b>Credits:</b>	16
<b>Pre-requisite:</b>	PCMO3511
<b>Assessment Methods:</b>	assignments, tests, practical, class presentation and student assessment.

**Module Description:**

This module covers the classification of organic compounds. It includes the analysis of the chemical and physical properties and the use of organic compounds in pharmacy and medicines.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Classify organic compounds into the different functional groups
- Analyse the chemical and physical properties of organic compounds
- Describe the use of organic compounds in pharmacy and medicine
- Apply basic techniques of simple synthesis, re- crystallisation, solvent extraction, identification and characterisation of compounds

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**PHARMACEUTICAL TECHNOLOGY I**
**PCTT3752**


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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCTP3632
<b>Assessment Methods:</b>	assignments, tests, practical, class presentations, student evaluation form

**Module Description:**

This module introduces students to the basics of industrial and small-scale manufacturing. This includes the application of the principles involved in the formulation and evaluation of various pharmaceutical dosage forms, the packaging, labelling and storage of pharmaceuticals and the safe use of tools, equipment and materials during manufacturing.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Apply the principles involved in the formulation of various pharmaceutical dosage forms
- Monitor and apply procedures for the packaging, labelling and storage of pharmaceuticals
- Apply knowledge of equipment used in pharmaceutical operations
- Compile and maintain documentation
- Prepare various pharmaceutical formulations
- Evaluate pharmaceutical dosage forms
- Observe safety during manufacturing

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## PHARMACEUTICAL TECHNOLOGY II

PCTT3871

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<b>NQF level:</b>	8
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks;
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCTT3752
<b>Assessment Methods:</b>	assignments, tests, practical, class presentations, student evaluation form, problem based learning.

### Module Description:

This module introduces students to the basics of industrial and small-scale manufacturing. This includes the application of the principles involved in analysis and quality assurance as applied to the development, manufacture, assembly and distribution of medicinal products. The module exposes the student to all stages of drug development from discovery of an active agent to launch. The varied components of the undergraduate core course in the context of Industrial Pharmacy and drug development will be consolidated.

### Learning Outcomes:

At the end of the module, a student is expected to be able to:

- Obtain and interpret data in relation to standard pharmacopoeial monographs and Namibian Regulatory Authority regulations
- Design a drug formulation
- Test it in relation to pharmacopoeial monographs and pass it through the various regulatory bodies to the market
- Explain, the design of pharmaceutical production facilities

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## PHARMACOGNOSY AND PHYTOCHEMISTRY

PCMH3751

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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCMO3511
<b>Assessment Methods:</b>	assignments, tests, practicals, class presentation, student evaluation form

### Module Description:

This module provides students with knowledge of the medicinal uses of various naturally occurring drugs and their history, sources, distribution, methods of cultivation, active constituents, identification tests, preservation methods, substitutes and adulterants.

#### **Learning Outcomes:**

At the end of this module a student is expected to be able to:

- Demonstrate understanding of the basic principles of cultivation, collection and storage of crude drugs
- Explain the source, active constituents and uses of crude drugs
- Describe the applications of primary and secondary metabolites of the plant in pharmacy.
- Evaluate herbal drugs in accordance with World Health Organization (WHO) guidelines for quality control of medicinal plants

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### **PHARMACOEPIDEMOLOGY AND PHARMACOECONOMICS**

**PCSE3872**

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<b>NQF level:</b>	8
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks + 1 practical hour/week
<b>Credits:</b>	16
<b>Module Assessment:</b>	Continuous 60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCSB3512
<b>Assessment Methods:</b>	assignments, tests, class presentations, student evaluation form

#### **Module Description:**

This module introduces students to various aspects of pharmacoepidemiology that play important roles in therapeutics, medicine and public health. The module will also introduce students to basic principles of pharmacoeconomics and how they are used in the economic evaluation of health care policies and programmes.

#### **Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Explain the definition of pharmacoepidemiology, its contribution, reasons for performing, the drug approval process and the risk tolerance
- Describe the perspectives on pharmacoepidemiology from the view of the pharmaceutical industry and the regulatory authorities
- Explain the statistical methods used in pharmacoepidemiologic study including the basic measurements used, causality assessment as well as the sensitivity and specificity tests in pharmacy practice
- Explain and apply the principles of clinical trials and post-marketing surveillance
- Investigate a clinically significant therapeutic problem using appropriate tools and recommend a solution to the problem
- Describe some special applications of pharmacoepidemiology such as pharmacoeconomics, Drug Use Evaluation (DUE) and study of therapeutic effects of drugs.
- Explain the basic theory, concepts and principles of economics and its applications in pharmacoeconomics
- Explain the definition and purposes of pharmacoeconomics
- Describe the applications of pharmacoeconomics in various aspects of pharmacy practice
- Demonstrate understanding of the importance and future role of pharmacoeconomics in health care

<b>NQF level:</b>	7
<b>Contact hours:</b>	2 lecture hours/week for 16 weeks
<b>Credits:</b>	8
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre/Co-requisite:</b>	None
<b>Assessment Methods:</b>	assignments, tests, student evaluation form

**Module Description:**

This module exposes students to several important legislations related to the profession of pharmacy in Namibia. These includes the following: Pharmacy Act, No. 9, 2004, Medicine and Related Substances Control Act, No 13, 2003 and Amendment Act, No. 8, 2007; Medical Aid Funds Act, No. 23, 1995; Hospital and Health Facilities Act, No. 36, 1994; Hospital and Health Facilities Amendment Act, No. 1, 1998; Council for Health and Social Services Professional Repeal Act, No. 3, 2004; and Allied Health Professions Act, No. 7, 2004, Dangerous Drugs. The new Drug Policy, Professional Ethics, Patent and Design Act.

**Learning Outcomes:**

At the end of this module, a student is expected to be able:

- Evaluating the requirements and implications of the different legislation impacting on pharmacy in Namibia
- Complying with legal requirements and code of ethics in pharmacy practice
- Participate in life-long learning activities
- Demonstrate an understanding of the Namibian healthcare system and the role of pharmacists and other professionals
- Practice as a pharmacist in the Namibian cultural framework
- Demonstrate understanding of labelling requirements and practising guidelines for drugs and cosmetics

<b>NQF level:</b>	8
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre/Co-requisite:</b>	None
<b>Assessment Methods:</b>	assignments, tests, student evaluation form

**Module Description:**

The aim of this module is to develop the foundation for the management of activities in all pharmacy practice settings. These activities include financial management, supervision and marketing. While some challenges will be related to the clinical aspects of patient care and the management of patients with complex and intractable medical conditions, other significant challenges include managing other health professionals, pharmacy staff and resources

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Demonstrate understanding of the principles of management
- Apply the principles of managerial problem solving to pharmacy practice problems

- Adapt and respond to changes in the practice setting
- Recruit and train staff
- Apply basic supervision principles including managing professional relationships, managerial decision making, motivation, leadership, conflict management, and negotiation
- Manage budget and financial operations
- Manage physical facilities for pharmaceutical operations
- Apply entrepreneurship and marketing principles

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## PHARMACY PRACTICE I

PCSP3622

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<b>NQF level:</b>	6
<b>Contact hours:</b>	2 lecture hours/week for 12 weeks; 2 practical hours / week for 16 weeks
<b>Credits:</b>	8
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 × 3 hours written paper)
<b>Co-requisite:</b>	PCTI3631
<b>Assessment Methods:</b>	Assignments, tests, practicals, class presentations, student evaluation forms

### Module Description:

This module provides students with the skills and knowledge to provide various pharmaceutical care services to the public in a community pharmacy setting. This includes the provision of pharmacist-initiated therapy, monitoring of patients, responding to minor ailments, counselling, provision of information to patients and the maintenance of all records. The students are introduced to the basics of pharmaceutical business management.

### Learning Outcomes:

At the end of this module a student is expected to be able to:

- Demonstrate understanding of the operation and management of a community pharmacy
- Take patient history
- Identify and recommend treatment options including non-drug treatment measures
- Counsel patients
- Provide enhanced community pharmacy services to the public such as disease screening, immunization and reproductive health services
- Conduct point-of-care tests
- Monitor outcomes
- Maintain patient records
- Monitor self-medication
- Respond to minor ailments and provide appropriate advise and/or medication
- Apply business and professional practice management skills
- Show empathy and sympathy to patients

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## PHARMACY PRACTICE II

PCSP3742

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<b>NQF level:</b>	7
<b>Contact hours:</b>	2 lecture hours/week for 16 weeks; 2 practical hours / week for 16 weeks
<b>Credits:</b>	8

**Module Assessment:** 60% Continuous assessment 40% final examination (1 X 3 hours written paper)  
**Pre-requisite:** PCSP3622  
**Assessment Methods:** Assignments, tests, practicals, class presentation, student evaluation form

**Module Description:**

This module focuses on equipping students with the knowledge and skills for managing health commodities and pharmacy personnel within the hospital environment and working in a multi-disciplinary health care team.

**Learning Outcomes:**

At the end of the module, a student is expected to be able to:

- Select medicines and related supplies according to patients needs using evidence-based and pharmaco-economic principles
- Quantify medicines and related supplies
- Conduct inventory management using various inventory control systems
- Procure, store and distribute medicines and related supplies
- Promote rational use of medicines in hospitals
- Manage unwanted, damaged and expired stock
- Handle spillages safe
- Dispose of medicines according to legal requirements and environmental guidelines
- Manage pharmaceutical information
- Provide medicine information services

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**PHYSICAL CHEMISTRY**

**PCMP3512**

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**NQF level:** 5  
**Contact hours:** 3 lecture hours +3 practical hours  
**Credits:** 16  
**Module Assessment:** 60% Continuous assessment 40% final examination (1 X 3 hours written paper)  
**Co-requisite:** PCTM3511  
**Assessment Methods:** Assignments, tests, practicals, class presentations, student evaluation forms

**Module Description:**

This module enables students to analyse the physicochemical properties of drugs from the perspective of pharmacy. The behavior of ions in solution and electrode potential and spectroscopy are discussed.

**Learning Outcomes:**

At the end of this course, a student is expected to be able to

- Analyse the behaviour of ions in solution and their application in the measurement of electrode potentials and potentiometric titration
- Distinguish between different compounds and solutions
- Determine the order of reactions and reaction rates and their applications to drug stability in various formulations
- Apply the concept of thermodynamics in the explanation and deduction of spontaneity of reaction, maximum yields and general energetics of reactions
- Demonstrate an understanding of the basic concepts of spectroscopy



<b>NQF level:</b>	6
<b>Contact hours:</b>	4 lecture hours/week for 16 weeks; 3 practical hours / week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PCTG3631
<b>Pre-requisite:</b>	PCMP3512
<b>Assessment Methods:</b>	Assignments, tests, practicals, class presentations, student evaluation forms

**Module Description:**

This module provides students with an understanding of the physical and physicochemical principles, design, formulation, manufacture and evaluation of pharmaceutical dosage forms. It introduces students to concepts such as diffusion and dissolution of drugs, drug solubilisation, surface and interfacial tension, surface active materials, micelle formation and pharmaceutical complexes.

**Learning Outcomes**

At the end of the module, a student is expected to be able to:

- Analyse the physical and physicochemical properties of drugs and drug solutions in order to predict the solubility, ionisation and stability of a given drug under specified conditions
- Explain the principles underlying the formulation and properties of emulsions and suspensions and the role of surfactants in the stabilisation of these systems
- Demonstrate knowledge of the pharmaceutical properties of systems in solid and semi-solid state and their relevance to the design of efficient drug dosage forms

<b>NQF:</b>	5
<b>Contact Hours:</b>	3 lecture hours + 4 hours of tutorial (or 3 hours of practice)
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre/Co-requisite:</b>	None

**Module description**

**Embryology and Developmental Biology:** This course in physiology introduces students to the fundamental processes and concepts of embryonic development. These include the acquisition of multicellularity, organization of the early embryo, morphogenesis of tissues, major organ systems, foetal membranes, growth, differentiation and analysis of common developmental defects. Upon completion of this course students should be versed in the genetic aspects of early development as well as the interactions that occur in development leading to the formation of the ectoderm, mesoderm and endoderm and the further differentiation of these layers into tissues, organs and systems. Particular attention will be placed on cell-cell communication and the pivotal role signaling plays in development.

**Learning Outcomes:**

At the end of the module, a student is expected to be able to:

- Demonstrate understanding of gene transcription and translation and how the regulation of these two processes results in differential gene expression and the differentiation of cell;
- Explain cellular movement, organization and the role of cells and tissues;
- Demonstrate understanding of the establishment of the three layer body plan and the role cell-cell signaling plays in the establishment of the body plan and tissues;

- Describe the origins of the 10 organ systems and how signaling between these effects development;
- Relate the role of the environment to development;

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## PHYSIOLOGY II

PPHP3512

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<b>NQF</b>	5
<b>Contact Hours:</b>	3 lecture hours + 2hours of tutorial (or 3 hours of practice)
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PPHP3511

### Module description

**Basic Cell Process and Homeostasis, and Control:** The study of physiology encompasses a number of fields of study; from molecules to ecosystems. The module begins with an investigation of basic cell processes. The students will be expected to understand how molecular interactions are integral to the generation, storage and utilization of energy, signalling and cellular dynamics. Building upon this importance of cellular and tissue compartmentation will be stressed including how information flows within a cellular and mass context. The integration of these systems and how they may impact homeostasis is of critical importance. By the end of the course students will also be familiar with the components and mechanics of the Endocrine system, the cellular and network properties of neurons and how they function within the context of the central and peripheral nervous systems. The module covers autonomic and somatic motor control. Finally, the module covers muscles and the integration of all of the aforementioned systems.

### Learning Outcomes

At the end of the module, a student is expected to be able to:

- Describe the structure and function of the various aspects of a cell
- Explain the fundamental mechanisms underlying cell function
- Explain how homeostasis is established and maintained in the face of disease and infection
- Demonstrate understanding of the structures and functions of the endocrine system
- Demonstrate understanding of the structure-function relationship inherent in the central and peripheral nervous systems
- Describe how the organ systems covered interact throughout the body to maintain homeostasis

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## PHYSIOLOGY III

PPHP3631

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<b>NQF:</b>	6
<b>Contact Hours:</b>	3 lecture hours + 2hours of tutorial (or 3 hours of practice)
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PPHP3512

### Module description

**Integration of Function and Metabolism, Growth and Aging:** This third course in physiology will expose students to the fundamental processes and mechanisms occurring in the remaining organ systems. They will leave the course with an in-depth understanding of cardiovascular physiology, blood flow and how it is regulated and blood. Students will understand fluid and electrolyte balance as well as gas exchange and transport. These processes integrate numerous organ systems. The students will investigate the integration of the respiratory, circulatory and urinary systems and their respective organ components. The remaining organ systems, the digestive, endocrine, immune and reproductive will also be covered and the interconnectivity of all the organ systems considered.

## Learning Outcomes

At the end of this module, a student is expected to be able to:

- Explain the functional organization of the human body as well as the biophysical base of the all ten organ systems
- Explain the major mechanisms by which hormones bring about the effects on their target tissues
- Discuss the mechanisms of deviation from normal physiological functions and development of diseases
- Discuss control and regulatory mechanisms of body function.

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## PRIMARY HEALTH CARE: HEALTH PROMOTION

PCSP3511

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<b>NQF:</b>	5
<b>Contact Hours:</b>	3 lecture hours + 2 hour of practice
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% Examination (1 × 3 hours written paper)
<b>Pre/Co-requisite</b>	None

### Module Description

Health Promotion is the provision of information and education to individuals, families, and communities that encourage family unity, community commitment, and traditional spirituality that make positive contributions to their health status. Health Promotion is the promotion of healthy ideas and concepts to motivate individuals to adopt healthy behaviours.

According to the World Health Organization, health promotion is the process of enabling people to increase control over, and to improve, their health.

Health promotion represents a comprehensive social and political process, it not only embraces actions directed at strengthening the skills and capabilities of individuals, but also action directed towards changing social, environmental and economic conditions so as to alleviate their impact on public and individual health. Health promotion is the process of enabling people to increase control over the determinants of health and thereby improve their health. Participation is essential to sustain health promotion action.

The Ottawa Charter identifies three basic strategies for health promotion. These are advocacy for health to create the essential conditions for health indicated above; enabling all people to achieve their full health potential; and mediating between the different interests in society in the pursuit of health. Every contact between a doctor and a patient can be seen as an opportunity for health promotion and disease prevention. It is therefore essential that the new graduate knows how to make the most of these opportunities through demonstrable knowledge of the principles involved both for individual patients and populations.

### Learning Outcomes:

At the end of this module a student is expected to be able to:

- Recognize the causes of disease and the threats to the health of individuals and populations at risk
- Define of health, disease and disability
- Assess the distribution of risk factors in the population
- Evaluate risk identification and reduction policies for populations taking into account diversity, ethnicity and social inequality
- Implement where appropriate, risk reduction strategies for individual patients;
- Demonstrate an understanding of the changing of risk factors
- Demonstrate the use of evidence-based medicine and effective interventions

- Assist patients to modify behavior whilst respecting their autonomy
- Manage and implement change
- Demonstrate understanding that health promotion and disease prevention depend on collaboration with many other professionals and agencies

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## RESEARCH METHODS

PCSR3632

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<b>NQF:</b>	6
<b>Contact Hours:</b>	3 lecture hours + 1 hour of practice
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite:</b>	PCSB3512

### Module description

**Research Methods** - The student is expected to be able to challenge the prevailing notion of a hierarchy of research methods from stronger experimental designs to weaker qualitative techniques and crude dichotomous thinking (hard versus soft, quantitative versus qualitative; understand that there is no right or wrong methodological approach - rather the central concern should be the appropriateness of the method to the problem being investigated, the knowledge base, the resources available (including both financial and person power), the socio-cultural context, and the level of analysis; recognize that most medical care and public health interventions still occur "downstream" and are unable to significantly affect the course of mortality, morbidity and disability in modern society and that "upstream" primary and secondary prevention is required, especially policy-level interventions designed to affect whole populations; understand that behavioural and social science research methods are particularly well suited to measuring, explaining and evaluating "upstream" public health activities; view quantitative and qualitative research methods as complementary partners in the public health research enterprise, rather than competing with each other.

### Learning outcomes

At the end of this module a student is expected to be able to:

- Explain the purpose of clinical research
- Differentiate types of research (clinical, basic science, health services) and their applications
- Distinguish the different types of research designs
- Design research instruments
- Apply research methods in designing a research proposal
- Demonstrate an understanding of research methodology
- Critically review literature
- Identify the research question
- Formulate hypotheses, problem statement and justification of the study
- Formulate objectives
- Select study design and strategy
- Define the study population, sampling and sample size determination
- Specify variables, data collecting tools and data collection methods
- Develop data management and analysis plan
- Determine the budget and research project administration
- Interpret results and write report
- Apply principles of medical ethics in research

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**RESEARCH PROJECT****PCSR3880**

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<b>NQF level:</b>	8
<b>Contact hours:</b>	6 practical hours/week for 32 weeks
<b>Credits:</b>	32
<b>Module Assessment:</b>	50% assessment of dissertation by supervisor and 50% oral examination/defence of dissertation by a panel
<b>Pre-requisite:</b>	PCSR3632
<b>Assessment Methods:</b>	Assessment of written project and oral examination/defence of dissertation

**Module Description:**

Projects are intended to develop students' ability to evaluate scientific literature and engage in independent research. Projects will normally be of potential high impact value on health resource utilization and management of diseases relevant to Namibia. In this semester, students will focus more on literature search and research tool development. Data collection, analysis and write-up will be covered in the second semester.

**Learning Outcomes:**

At the end of this module, a student is expected to be able to:

- Demonstrate ability to evaluate scientific literature
- Demonstrate problem identification and formulation of a solution or intervention.
- Demonstrate knowledge and skills in the chosen field of research
- Apply and interpret biostatistics in research
- Demonstrate a sound knowledge of statistics and its application in data analysis
- Demonstrate the critical appraisal of experimental design
- Communicate research findings
- Write a scientific report
- Present of a scientific report

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**RURAL ATTACHEMENT****PCSU3739**

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<b>NQF level:</b>	7
<b>Contact hours:</b>	35 attachment hours/week for 3 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	100 % Continuous Assessment (Student evaluation form, problem based learning)
<b>Pre-requisite::</b>	PCSP3622

**Module Description:**

This module provides students exposure to health care systems in rural areas based on the government's health policies. It gives the students an opportunity to explore the role of the pharmacist in the rural setting and to appreciate the potential problems encountered by the health care personnel in the rural areas. The module will involve students in projects and activities aimed at promoting primary health care and to identify possible interventions and solutions to problems in the rural health care service.

**Learning Outcomes:**

Upon completion of the rural attachment a student is expected to be able:

- Equipped with knowledge of the health service in Namibia
- Able to explain problems faced by health personnel in medicine supply, communication, morbidity and mortality

- Equipped with knowledge, skills and attitudes necessary for working in a multi-disciplinary environment in delivering health care in rural areas.

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## SOCIOLOGY OF HEALTH & DISEASES

PCSS3511

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<b>NQF Level:</b>	5
<b>Contact Hours:</b>	3 lecture hours + 2 hours of practice
<b>Credits:</b>	16
<b>Assessment:</b>	60% Continuous assessment 40% final examination (1 × 3 hours written paper)
<b>Pre/Co-requisite:</b>	None

### Module Description

This module is offered in the first semester of the first academic year. It focuses on the indirect pathway between sociology and health/disease, and emphasizes the role that *beliefs* and *behaviours* play in health and illness. The introductory lectures in this module reflect this emphasis and illustrate how different sets of beliefs relate to behaviours and how both these factors are associated with illness. Students will learn about changes in the causes of death over the twentieth century and why this shift suggests an increasing role for beliefs and behaviours. Students will also master theories of health beliefs and the models that have been developed to describe beliefs and predict health behaviour. Beliefs that individuals have about illness will be examined, followed by health beliefs in the context of health professionals–patient communication, as well as health care worker counselling. Students will then examine health-related behaviours and apply many of the theories and constructs to specific behaviours, e.g., addictive behaviours and the factors that predict smoking and alcohol consumption; eating behaviour drawing upon developmental models, cognitive theories and the role of weight concern; exercise behaviour both in terms of its initiation and methods to encourage individuals to continue exercising; screening of health behaviours and assessment of the factors that relate to whether or not someone attends for a health check, as well as the psychological consequences of screening programs. Since this module also focuses on the direct pathway between sociology and health/disease, this will be the focus of the second half of the module. Students will master the following topics: stress (definition and measurement); the links between stress and illness via changes in both physiology and behaviour and the role of moderating variables; pain and the factors in exacerbating pain perception; how psychological interventions can be used to reduce pain and encourage pain acceptance; the interrelationships between beliefs, behaviour and health using the example of placebo effects; illustration of this interrelationship in the context of illness, focusing on HIV, cancer, obesity and coronary heart disease; aspects of women's health; the problems with measuring health status and the issues surrounding the measurement of quality of life; ethics involved in physician/patient interaction and counselling.

### Learning Outcomes

At the end of this module a student is expected to be able to:

- Conceptualize the Sociology of Health and Disease
- Conceptualize “health beliefs”
- Discuss illness cognitions
- Discuss health care worker-patient communication and counseling, the role of health beliefs in communication and counseling, as well as the ethics involved in communication and counseling
- Discuss health-defying behaviors: smoking and alcohol
- Conceptualize eating behavior
- Discuss the role of exercise in promoting health
- Discuss screening in health and disease: primary, secondary and tertiary prevention
- Conceptualize stress and discuss stress and illness
- Explain early models of pain and their description of pain as a sensation
- Discuss placebos and the interrelationship among beliefs, behavior and health
- Examine the role that sociology plays at each stage of an illness: HIV and Cancer

- Examine the role that sociology plays at each stage of an illness: Obesity and Coronary Heart Disease
- Discuss the sociology of Women's Health Issues
- Discuss measurement of Health Status and Quality of Life
- Identify other professionals and agencies and their roles
- Plan health promotion interventions, taking into account barriers to preventing disease and promoting health both in the individual and the population
- Describe political, economic, behavioral and organizational barriers to disease prevention and health promotion
- Explain the importance of the auditing of health promotion and disease prevention activities
- Implement screening programmes based on appropriate criteria

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## SYSTEMS PHARMACOLOGY I

PPHS3731

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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours / week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Co-requisite:</b>	PPHI3631
<b>Assessment Methods:</b>	Assignment, tests, practicals, class presentation, student form evaluation

### Module Description:

This module provides students with knowledge on the pharmacology of drugs used in disorders of body systems such as cardiovascular, renal, respiratory, and digestive and peripheral nervous systems. The module develops students' understanding of and skills in experimental pharmacology as a tool in the development of drugs. It develops their ability to conduct experimental investigations in accordance with established standards of scientific procedures and critical thinking.

### Learning Outcomes:

At the end of the course, a student is expected to be able to:

- Identify typical examples of drugs which are used to restore physiological functions in the cardiovascular, renal, respiratory, digestive and peripheral nervous systems
- Explain the mechanisms of drug action
- Describe the side effects and potential for interaction with other drugs and foods

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## SYSTEMS PHARMACOLOGY II

PPHS3751

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<b>NQF level:</b>	7
<b>Contact hours:</b>	3 lecture hours/week for 16 weeks; 3 practical hours / week for 16 weeks
<b>Credits:</b>	16
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Pre-requisite::</b>	PPHS3632
<b>Assessment Methods:</b>	Assignments, tests, practicals, class presentation, student evaluation form

### Module Description:

This module provides students with knowledge on the pharmacology of drugs used in the treatment of conditions of the CNS and in chemotherapy of infections and cancers. It includes and actions for the

restoration of physiological functions in the endocrine systems and control of inflammation and immune responses.

**Learning Outcomes:**

At the end of the module, a student is expected to be able to:

- Demonstrate understanding of the pharmacology of the drugs acting on the central nervous system and their use in the treatment of disorders of this system
- Analyse the biological and sociological issues of dependence
- Describe the principles underlying the actions drugs which are used to restore physiological functions in the endocrine systems and
- Demonstrate an understanding of the use of drugs to control inflammation and immune responses

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**VETERINARY PHARMACY AND AGROCHEMICALS**

**PPHV3721**

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<b>NQF level:</b>	7
<b>Contact hours:</b>	2 lecture hours / week for 16 weeks + 1 practical work
<b>Credits:</b>	8
<b>Module Assessment:</b>	60% Continuous assessment 40% final examination (1 X 3 hours written paper)
<b>Prerequisite:</b>	PPHI3631
<b>Assessment Methods:</b>	Assignments, tests, class presentation, student evaluation form

**Module Description:**

This module will provide students with the basic knowledge of common animal diseases and their drug treatment. The manufacture and storage of common veterinary drugs will be covered.

**Learning outcomes:**

At the end of this module a student is expected to be able to:

- Describe the principles underlying the formulation and storage of veterinary drugs.
- Recognize signs and symptoms of common animal diseases.
- Recommend appropriate drugs for treatment