University of Pretoria Yearbook 2023

Bachelor of Radiography in Diagnostics [BRad in Diagnostics] (10137100)

Department	Radiography
Minimum duration of study	4 years
Total credits	500
NQF level	08

Programme information

The programme extends over four years' full-time study.

The programme has both an academic and compulsory clinical (work integrated learning) component, with students having to complete specified clinical outcomes for the course in an HPCSA accredited facility. Students must comply with the stipulations of the Health Professions Council of South Africa concerning the required clinical outcomes and as determined by the Department of Radiography.

All students are required to complete specified clinical outcomes in HPCSA accredited training facilities for each year of study. Students are subject to the rules and regulations of the selected facility in which they are placed for the clinical component of the course, whether in public and/or private health sectors.

Admission requirements

Important information for all prospective students for 2023

The admission requirements apply to students who apply for admission to the University of Pretoria with a **National Senior Certificate (NSC) and Independent Examination Board (IEB) qualifications.**

University of Pretoria website click here

Minimum requirements Achievement level English Home Language or English First Additional Language	**Mathematics**	**Physical Sciences**	**APS**
NSC/IEB	NSC/IEB	NSC/IEB	
4	4	4	**30**

For advice on a second-choice programme, please consult a Student Advisor. To make an appointment, send an email to carol.bosch@up.ac.za.

Applicants with qualifications other than the abovementioned should refer to the Brochure**:** Undergraduate Programme Information 2023: Qualifications other than the NSC and IEB, available at click here.

International Students: Click here

Important faculty-specific information on undergraduate programmes for 2023

The closing date for all **selection programmes** is **30 June 2022**. Applicants are strongly advised and encouraged to submit their applications as soon as possible after **1 April 2022** and to check the application site (UP Student Portal) regularly.

- The following persons will be considered for admission: a candidate who is in possession of a certificate that is deemed by the University to be equivalent to the required National Senior Certificate (NSC) with university endorsement; a candidate who is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution; a candidate who is a graduate of another Faculty at the University of Pretoria; and a candidate who is currently studying at a university.
- Admission to Health Sciences programmes is subject to a selection process.
- Grade 11 final examination results will be used for the conditional selection of prospective students.
- For selection purposes, the sum of the results in six subjects, including English, Mathematics and Physical Sciences, is calculated.
- Life Orientation is excluded in the calculation of the Admission Point Score (APS).
- All modules will be presented in English, as English is the language of tuition, communication and correspondence.
- Places are reserved in specific categories to ensure an equitable representation of demographically defined designated groups. Selection thus takes place in different categories.
- For purposes of selection in the Faculty of Health Sciences, the “Designated Group” category includes South African Black African or South African Coloured African candidates. The “Open” category refers to all applicants including applicants from the Designated Group who compete first in the Open category and then in the Designated Group category if unsuccessful in the Open category.
- Target numbers are specified for all categories as applicable to each programme. Where insufficient applications are received from qualifying applicants in a certain category, the selection committee may decide not to fill all places or to fill the places from qualifying applicants in another category.
- A limited number of places are made available to citizens from countries other than South Africa (applicants who are not South African citizens), with those from SADC countries being given preference. Permanent residents of RSA are not categorised as foreign students. Applications from citizens from countries other than South Africa (applicants who are not South African citizens) may also be considered if they are
  - citizens or permanent residents of countries which have relevant government to government agreements with South Africa
  - asylum seekers or refugees
- Citizens from countries other than South Africa (applicants who are not South African citizens) who do not comply with the conditions above may be considered if space is available.
- If an applicant has multiple citizenships, which includes South African citizenship, he/she will be considered as a South African applicant.
- The final number of places allocated to new applicants will be determined on an annual basis taking into account the teaching facilities and resources available and, where necessary, the number of places allocated to students repeating modules in the first year of study of each degree programme.
- Only applicants who comply with the requirements set out in this document will be considered for selection.

However, the achievement of the minimum requirements does not guarantee admission as only a limited number of students can be accommodated.

- Selection is based on merit. The faculty does not determine specific selection cut-off values for the different categories. Such values are generated by the competing students within a particular category in relation to the number of places available.
- A Merit Point Score (MPS) is used for ranking applicants for selection purposes in all programmes. In certain programmes other criteria such as rural residence may be used as part of the selection process.
- Only first-choice applicants will be considered, except where otherwise specified, in which case second-choice candidates may be considered if there are places available.
- The top candidates will be selected provisionally up to or surpassing the allocated number, based on experience of the expected number of acceptances. A waiting list is created from the group of candidates with the next highest scores. The length of the waiting list is determined by experience of the number of places likely to become available and to prevent creating unrealistic expectations.
- All offers are provisional until the final exam results have been received. For applicants in the School leaver categories a provisional place will be confirmed as long as the NSC or equivalent scores do not fall by more than two points from the Grade 11 APS score.
- After the final NSC or equivalent qualification results are received, provisional offers will be confirmed if the applicant still meets the required criteria. The MPS of those on the waiting list will be recalculated using the NSC or equivalent qualification results and if places become available they will be made offers.
- Places becoming available in any category after selection due to cancellation or forfeiture will be filled from the waiting list for the specific category.
- This waiting list will remain active until the end of the second week after the start of lectures.
- All successful candidates are admitted to the first year of study only. Registered students in the University Experienced categories may apply for credit for equivalent modules which they have completed.
- Incomplete applications will not be considered and any false information provided by an applicant in his/her application may result in immediate cancellation of the application, admission or registration.
- **Candidates should note that their conditional admission will be revoked if their APS drops by more than two points in their final school examination results.**
- PLEASE NOTE that compliance with the minimum admission requirements does not guarantee admission to any programme in this Faculty.
- Selection queries may be directed to click here.
- A student who is made an offer but does not accept it cannot defer the offer and must reapply to be considered in the following year.

Transferring students

A transferring student is a student who, at the time of applying at the University of Pretoria (UP) is/was a registered student at another tertiary institution. A transferring student will be considered for admission based on NSC or equivalent qualification and previous academic performance. Students who have been dismissed from other institutions due to poor academic performance will not be considered for admission to UP.

Closing dates: Same as above

Returning students

A returning student is a student who, at the time of application for a degree programme is/was a registered student at UP, and wants to transfer to another degree at UP. A returning student will be considered for admission based on NSC or equivalent qualification and previous academic performance.

- Students who have been excluded/dismissed from a faculty due to poor academic performance may be considered for admission to another programme at UP, as per faculty-specific requirements.
- Only ONE transfer between UP faculties and TWO transfers within a faculty will be allowed.
- Admission of returning students will always depend on the faculty concerned and the availability of space in the programmes for which they apply.

Closing date for applications from returning students is the same as the above

Additional requirements

Please note:
Each student in BRad in Diagnostics must apply to the Registrar of the Health Professions Council of South Africa for registration as a student in BRad in Diagnostics immediately after admission to the first year of study.

Examinations and pass requirements

Consult the general pass requirements of the School of Healthcare Sciences, for the calculation of the final mark in a module, the continuous assessment mark, obtaining a pass mark in modules with practical and/or clinical components, etc.

Subminimum
A subminimum of 50% is required in the written, as well as the practical/clinical components sections of the examinations in all modules in Radiographic Sciences at 100, 200, and 300 level.

Examinations

- There are two main examination periods per annum. In respect of first-semester modules, the standard examination is in May/June and the supplementary examination is in October/ November and the supplementary examination in November/December of the same year. Where students need to work additional clinical hours to be allowed to do a supplementary examination, the relevant head of department will determine the date of the supplementary examination.
- Only two examination opportunities per module are allowed. If a student fails the supplementary examination, the module must be repeated.
- A supplementary examination in a module is granted to students in the following cases:
  - If a student obtains a final mark of between 40%-49% in the relevant module at the standard examination and thus fails.
  - If a student obtains a final mark of at least 50% but the required subminimum in the examination, as required for a specific module, has not been obtained.
- Students intending to sit the supplementary examination due to the reasons mentioned above, must register for the supplementary examination opportunity 24 hours after the results have been made public.
- If a student fails a module at the standard examination opportunity, the examination mark obtained in the relevant module at the supplementary examination will be calculated as the final mark. The marks obtained with continuous evaluation during the course of the quarter/semester/year will not be taken into calculation. If the student passes the module at the supplementary examination a maximum of 50% is awarded as a pass mark to the module in question.
- A student who is prevented from writing the standard examination due to illness or other qualifying circumstances, may be granted permission by the dean to write a special examination in the particular module(s). If a student is granted permission by the dean to write a special examination, the continuous

evaluation mark, together with the examination mark obtained in the module in question at the special examination, will be calculated as the final mark obtained in the module.
- In instances where students are unable to write the examination and supplementary examination as a consequence of a serious medical condition or an accident, such a student must apply for a special dispensation, with the support of the dean, to the Registrar, who will make a final decision.

Admission to fourth year of study
A student must pass all the modules of the first, second and third year of study in order to be admitted to the fourth year of study

Chancellor's examination: Fourth year of study
A Chancellor's examination for a student who failed the module; Clinical Practice in Diagnostic Radiography IV. He or she must undergo further clinical instruction in specified clinical training areas and obtain at least 50% in the examination.

A student who has not obtained a pass mark in the module Research for healthcare sciences 400 must submit an amended essay at a date determined by the head of department.

Promotion to next study year

Consult the general requirements for promotion to a subsequent year of study under the School of Healthcare Sciences, in this publication. Consult also the general pass requirements of the School of Healthcare Sciences for the calculation of the final marking and module, the continuous assessment mark, etc in the learner guides. All modules with practical and clinical training credits cannot be passed, unless all prescribed clinical hours and practical skills have been completed as per module requirement.

Exemption from the examination in (ANP) Anatomical Pathology 210
Exemption from the examination may be granted if a student who obtained a module mark of at least 65%, exercises the option to accept it as the final mark.

Passing modules in Anatomy and Physiology

i. A **module mark** is calculated from the continuous evaluation opportunities during the course of the presentation of the relevant module. These evaluations will include one or more of the following:

a. Evaluations in connection with theoretical knowledge.
b. Evaluations in connection with practical knowledge and skills.
c. Compulsory attendance at and active participation in prescribed activities.
d. A final comprehensive module test.

ii. Students may exercise the option that the module mark at the end of the semester be ratified as the final module mark for the relevant module (i.e. they are exempted from the module examination for this module), if they comply with the following requirements:

a. The abovementioned module mark is more than 65%.
b. Proven attendance of all applicable module-specific activities, namely:

- All tests/continuous evaluations.
- All practical work and skills development sessions.

c. Attendance of the relevant module from Day 1.
d. No convictions by the School’s Preliminary Disciplinary Committee (Student Transgressions) of any form of transgression.

iii. A **module examination** is granted to all registered students (even if the module mark is more than 65%).
iv. The **final module mark** is calculated from the examination mark and the module mark (continuous evaluation) in the ratio 50:50.
v. A **second module examination** is granted to all students who have obtained a final module mark of 40% to 49%. Students who have obtained a module mark of less than 40%, fail the module and will have to repeat the year of study.
vi. The relevant **second examination** will take place in November/December of the current year or in January of the subsequent year. A minimum of 50% is required to pass in the second examination.
vii. **Aegrotats or extraordinary examinations**, for students who could not sit the module examination due to health or other acceptable reasons, will take place during the second examination period. Students must apply formally for these examinations, and will be admitted by the Chairperson of the School or his/her authorised person. Where applicable, the Chairperson of the School may first require the recommendation of the Faculty Health Committee before admission to an aegrotat.

All modalities of a final examination must be written jointly as a special examination, even if part of the relevant examination had already been written during the previous examination period.

The **final module mark** is calculated from the marks of all the sections/ modalities of the special examination and the continuous evaluation mark. The same criteria as set for a pass mark in a module are applicable here. Students who could not sit the module examination in the examination period due to acceptable reasons, and who are consequently writing the module examination in the supplementary examination period, forfeit the opportunity to be admitted to a further examination.

Pass with distinction

The degree is conferred with distinction on a student who has obtained an average of at least 75% (not rounded) in the final-year modules.

General information

University of Pretoria Programme Qualification Mix (PQM) verification project

The higher education sector has undergone an extensive alignment to the Higher Education Qualification Sub-Framework (HEQF) across all institutions in South Africa. In order to comply with the HEQSF, all institutions are legally required to participate in a national initiative led by regulatory bodies such as the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and the South African Qualifications Authority (SAQA). The University of Pretoria is presently engaged in an ongoing effort to align its qualifications and programmes with the HEQSF criteria. Current and prospective students should take note that changes to UP qualification and programme names, may occur as a result of the HEQSF initiative. Students are advised to contact their faculties if they have any questions.

Curriculum: Year 1

Minimum credits: 130

Choose SEP 119 or ZUL 119.

Fundamental modules

Academic information management 111 (AIM 111)

Module credits	4.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Economic and Management Sciences Faculty of Humanities Faculty of Law Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Theology and Religion
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 1

Module content

Find, evaluate, process, manage and present information resources for academic purposes using appropriate technology.

Academic information management 121 (AIM 121)

Module credits	4.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Economic and Management Sciences Faculty of Humanities Faculty of Law Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Theology and Religion Faculty of Veterinary Science
Prerequisites	No prerequisites.
Contact time	2 lectures per week

Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 2

Module content

Apply effective search strategies in different technological environments. Demonstrate the ethical and fair use of information resources. Integrate 21st-century communications into the management of academic information.

Academic English for Health Sciences (BNurs, BDietetics, BOH, BOT, BRad and BPhysio) 121 (ELH 121)

Module credits	6.00
NQF Level	05
Service modules	Faculty of Health Sciences
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Unit for Academic Literacy
Period of presentation	Semester 1

Module content

Academic reading as well as academic writing and presentation skills, based on the approach followed in the healthcare sciences. **Presented to students in Health Sciences only.*

Academic English for Health Sciences122 (ELH 122)

Module credits	6.00
NQF Level	05
Service modules	Faculty of Health Sciences
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Unit for Academic Literacy
Period of presentation	Semester 2

Module content

Study of specific language skills required in the Health Care Sciences, including interviewing and report-writing skills. *Presented to students in Health Sciences only. (BCur, BDietetics, BOH, BOT, Brad, BPhysT)*

Physiology 161 (FSG 161)

Module credits	6.00

NQF Level	05
Prerequisites	No prerequisites.
Contact time	1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Physiology
Period of presentation	Quarter 3

Module content

Introduction to physiological principles; neurophysiology, and muscle physiology.

Physiology 162 (FSG 162)

Module credits	6.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Physiology
Period of presentation	Quarter 4

Module content

Body fluids; haematology; cardiovascular physiology, lymphatic system, and body defence mechanisms.

Medical terminology 180 (MTL 180)

Module credits	8.00
NQF Level	05
Service modules	Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Ancient and Modern Languages and Cultures
Period of presentation	Semester 1

Module content

The acquisition of a basic medical orientated vocabulary compiled from Latin and Greek stem forms combined with prefixes and suffixes derived from those languages. The manner in which the meanings of medical terms can be determined by analysing the terms into their recognisable meaningful constituent parts, is taught and exercised. The functional use of medical terms in context as practical outcome of terminological application is continually attended to.

Radiographic anatomy 100 (RAN 100)

Module credits	20.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Anatomy
Period of presentation	Year

Module content

General introduction to anatomy: Anatomical terminology, surface and regional anatomy, histology of basic tissues; ossification, healing and repair.
Introduction to osteology.
Regional anatomy I: Thoracic skeleton and thoracic soft tissues; osteology; joints and soft tissues of the extremities; osteology and joints of the vertebral column; abdominal surface anatomy; osteology and soft tissue of the pelvis. Skull I: Cranium and facial bones.
Radiographic anatomy I: Regional radiographic anatomy, with emphasis on the skeletal components.

Radiation physics 100 (RPH 100)

Module credits	10.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	1 tutorial per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Year

Module content

Units: standards, conversion, dimensional analysis.
Mechanics: simple harmonic motion, rotation, sound wave propagation.
Electricity: electrostatics, electrodynamics.
Electromagnetism: induction, alternating currents, safety.
Atomic physics: atomic models and quantum phenomena, X-rays, particle-wave duality.

Sepedi for beginners 119 (SEP 119)

Module credits	12.00
NQF Level	06
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	African Languages
Period of presentation	Semester 2

Module content

*For absolute beginners only.

* Students from the School of Healthcare Sciences, who already possess the language skills taught in this module, may write an exemption examination.

The acquisition of basic Sepedi communicative skills with emphasis on everyday expressions and suitable high frequency vocabulary, within specific social situations.

Academic orientation 110 (UPO 110)

Module credits	0.00
NQF Level	00
Language of tuition	Module is presented in English
Department	Health Sciences Deans Office
Period of presentation	Year

isiZulu for beginners 119 (ZUL 119)

Module credits	12.00
NQF Level	06
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	African Languages
Period of presentation	Semester 2

Module content

*For absolute beginners only

* Students from the School of Healthcare Sciences, who already possess the language skills taught in this module, may write an exemption examination.

The acquisition of basic isiZulu communicative skills with emphasis on everyday expressions and suitable high frequency vocabulary, within specific situations.

Core modules

Clinical practice in diagnostic radiography 100 (CDR 100)

Module credits	10.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	3 discussion classes per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Clinical practice to operationalise and integrate the fundamental theoretical components of the first year of studies. Students will be involved in patient care and communication in diagnostic radiography, undertake operating of diagnostic radiography equipment, whilst practicing health and safety principles in the moving and handling of patients. Students will be allocated to clinical training platforms where patient/public interactions, and interprofessional skills and behaviours are developed.

This module has 10% of the specified clinical training hours necessary to complete specified clinical competencies for the course in an HPCSA accredited facility.

Diagnostic radiography 100 (DIR 100)

Module credits	15.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	2 discussion classes per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Introduction to radiography.
Fundamental ethical principles; consent and history taking in radiography. Professional roles, responsibilities and codes of conduct. Introduction to communication: interpersonal and scientific. Team work. Reflective processes. Introduction to legislation and the professional bodies related to Radiography practice (national and international).
Care of the patient. Principles of infection control. Pathological conditions. Overview of imaging modalities and procedures. Radiation personnel monitoring – requirements, methods of monitoring, record keeping, responsibility of radiation protection officers. Practical radiation protection- facility design; safety accessory equipment; safety devices.

a. Respecting the human rights of vulnerable patient groups.
b. Basic patient positioning and immobilisation for radiographic examinations. Radiographic examinations: thorax, abdomen, extremities, hip, pelvis, spine and skull. Theoretical and practical instruction is used to integrate basic Science and clinical radiography. Procedural considerations and positioning techniques. Selection of technique factors. Radiation protection. Pathological conditions and image evaluation. Problem-solving. Execution of radiographic examinations and procedures. Trauma.

Introduction to research in health care science – research process.

Integrated healthcare leadership 120 (IHL 120)

Module credits	8.00
NQF Level	05
Service modules	Faculty of Humanities
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Nursing Science
Period of presentation	Semester 2

Module content

Leadership and multidisciplinary team work. Healthcare systems and legislation. Determinants of health. Introduction to healthcare models (e.g. community-based care, family-centred care, etc.). Professionalism, Ethical principles. Management of diversity. NB: Only for School of Healthcare Sciences and Department of Speech-Language Pathology and Audiology students.

Diagnostic radiographic science 100 (RSC 100)

Module credits	15.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 1 tutorial per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiography

Period of presentation Year

Module content

Introduction: Discovery of x-rays, processing principles, handling of x-ray equipment. x-ray beam: production of x-rays, attenuation.
Properties of X Rays: importance and influence of Bremsstrahlung and Characteristic radiation on Imaging and Dose, Electron Energy, Target Material, Influence of Filtration. X-Ray Projection Imaging Concepts: Geometry, Radiographic Contrast, Scatter and Scatter Reduction (Control of scatter radiation: production of scatter, effect of scattered radiation on the image, beam restriction devices, grids and grid efficiency), Artefacts and Image Degradation.
Radiographic Detectors: Intensifying Screen and Film (, cassettes, intensifying screens, efficiency of rare earth intensifying screens and x-ray film construction), Computed Radiography (CR), Direct Digital Radiography (DDR), Indirect Digital Radiography (IDR).

Principles of conventional and digital radiography image optimisation – Primary exposure factors: mAs, kVp and SID. AEC.(factor which influence the production and recording of images); Principles of technique charts Conventional Image processing: darkrooms Image Representations: Contrast, Spatial Resolution, Noise, Temporal Resolution, Sampling and Quantization
Introduction to quality assurance in radiographic imaging. Introduction to radiation protection for patient, personnel and public- radiation units, detection and measurement, radiation dose equipment and area survey. Regulations and operation of radiation equipment. Introduction to digital imaging system.

Curriculum: Year 2

Minimum credits: 127

Fundamental modules

Anatomical pathology 210 (ANP 210)

Module credits	10.00
NQF Level	06
Prerequisites	[PHY 131, CMY 151, FSG 161, FSG 162, FTP 100, ANA 152, ANA 162] or [AKU 200, ART 282, ART 284, RPD 200, ART 281, ART 283] or [RAN 100]
Contact time	1 seminar per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Anatomical Pathology
Period of presentation	Semester 1

Module content

General principles of pathology, including necroses, reversible cell damage, reparation and abnormalities of growth, circulation disturbances, acute and chronic infections, classification of the spreading of tumours and carcinogenesis. Directed course in systematic pathology, with specific reference to cardiovascular system, respiratory system, locomotor system and neurophathology.

Physiology 251 (FSG 251)

Module credits	6.00
NQF Level	06
Prerequisites	RAN 100, FSG 161, FSG 162, MTL 180
Contact time	1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Physiology
Period of presentation	Quarter 1

Module content

Structure, gas exchange and secretory functions of the lungs; structure, excretory and non-urinary functions of the kidneys, acid-base balance, and skin and body temperature control. Practical work to complement the theory.

Physiology 252 (FSG 252)

Module credits	6.00
NQF Level	06
Prerequisites	RAN 100, FSG 161, FSG 162, MTL 180
Contact time	1 practical per week, 4 lectures per week

Language of tuition	Module is presented in English
Department	Physiology
Period of presentation	Quarter 2

Module content

Nutrition, digestion and metabolism, hormonal control of body functions, and the reproductive systems. Practical work to complement the theory.

Physiology 262 (FSG 262)

Module credits	6.00
NQF Level	06
Prerequisites	RAN 100, FSG 161, FSG 162, MTL 180
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Physiology
Period of presentation	Quarter 4

Module content

Applied pathophysiology.

Basic emergency care 286 (GNK 286)

Module credits	5.00
NQF Level	06
Prerequisites	(does not apply to the BOH programme) CMY 151,FIL 155,MGW 112,MLB 111,PHY 131,MTL 180,GNK 120,BOK 121,GNK 127,GNK 128,CIL 111 and 121 or AIM 101 or AIM 111 and 121 EOT 110 and 120 or ELH 111 and 112
Contact time	2 other contact sessions per week, 4 practicals per week
Language of tuition	Module is presented in English
Department	Health Sciences Deans Office
Period of presentation	Semester 1 and/or 2

Module content

This practical-orientated module will provide students with training in basic life support, automated external defibrillation, and first aid treatment to the suddenly ill or injured patient. The theoretical content will be offered in an interactive format where students are expected to master the content as self-directed learning. Practical skills will be demonstrated in the skills laboratory and students will get the opportunity to practice the skills under guidance and supervision.

Radiographic anatomy 280 (RAN 280)

Module credits	10.00

NQF Level	06
Prerequisites	MTL 180, RAN 100, FSG 161, FSG 162, CDR 100, DIR 100 and RSC 100
Contact time	1 discussion class per week, 1 other contact session per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Anatomy
Period of presentation	Semester 1

Module content

Systemic anatomy I: Digestive and urogenital systems.
Sensory organs: Skin; eye; ear; nose; tongue.
Skull II: Advanced osteology; base of cranium; openings and sinuses.
Radiographic anatomy II: Systemic anatomy with emphasis on soft tissue components.

Radiation physics 200 (RPH 200)

Module credits	20.00
NQF Level	06
Prerequisites	RPH 100, DIR 100, RSC 100, CDR 100
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Year

Module content

X-ray generation: atomic physics, thermodynamics, X-ray tubes, linear accelerators.

Image formation and recording: optics, image intensifiers, solid state physics, digital imaging display and storage systems, image quality and patient dose.

Radioactivity: nuclear nomenclature, half-life, activity, decay modes and nuclear processes, nuclide chart and decay.

Production of radioisotopes: Nuclear reactions, production facilities (cyclotrons, reactors, and accelerators).

Interactions of ionising radiation with matter: charged particles, neutrons, photons, attenuation coefficients, photo-electric Compton contribution.

Radiation Detection: detectors (Geiger, scintillation, TLD, semiconductor, ionisation chamber), counting (spectroscopy, efficiency, statistics), protection.

Dosimetry: units, exposure, dose, absorbed dose, equivalent dose, effective dose, dose limits.

Core modules

Clinical practice in diagnostic radiography 200 (CDR 200)

Module credits	10.00

NQF Level	06
Prerequisites	CDR 100, RSC 100, DIR 100, RAN 100, RPH 100
Contact time	3 discussion classes per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Clinical practice to operationalise and integrate the fundamental theoretical components of the second year of studies and to build on the competencies developed in the first year of study. Aspects covered within this module include the use of fluoroscopy, conventional tomography, emergency trolley setting, pharmacology, contrast media, paediatric radiography, mobile/bedside and trauma radiography. Radiation protection of patients, public and personnel.

Note:
This module comprises 25% of the specified clinical training hours necessary to complete specified clinical competencies for the course in an HPCSA accredited facility.

Diagnostic radiography 200 (DIR 200)

Module credits	22.00
NQF Level	06
Prerequisites	DIR 100, CDR 100, RSC 100, RAN 100, RPH 100
Contact time	1 discussion class per week, 1 seminar per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Skeletal system: Procedures and techniques for: positioning, patient care, selection of Technique factors, radiation protection, pathological conditions and image evaluation. Problem-solving. execution of radiographic examinations and procedures. Trauma radiography. Paediatric and mobile radiography, bone age radiography and dental radiography. Alternative imaging principles and procedures. Apparatus. Radiation protection. Procedures and techniques for fluoroscopy.
Radiographic procedures: Execution of radiographic examinations and procedures, selection of technique factors, radiation protection, problem-solving, pathological conditions and image evaluation for neonatal and mobile unit procedures. Orthopaedic theatre procedures. Soft tissue examinations using contrast media in demonstration of Genito-urinary, gastro-intestinal, biliary tract, arthrography , dacrosystography, sialography procedures. Introduction to pharmacology and contrast media. Introduction to developing research idea and literature review.
Patient assessment, education and care by the diagnostic radiographer. Developing professional attitudes as a diagnostic radiographer practitioner. Patient communication-establishing professional relationship. Patient family interactions. Inter-professional management between divisions in radiography discipline. Inter-professional management within trauma, surgical theatre and hospital wards. Psycho-social management of patient.

Integrated healthcare leadership 210 (IHL 210)

Module credits	8.00
NQF Level	06
Service modules	Faculty of Humanities
Prerequisites	IHL 112/2/3, IHL 120 (For Audiology and Speech-Language Pathology and Dietetics students only IHL 120 is applicable).
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Nursing Science
Period of presentation	Semester 1

Module content

Principles of project management. Communication principles. Leadership. Health promotion and education, advocacy and literacy. Counselling for health behaviour change. NB: Only for School of Healthcare Sciences and Speech- Language Pathology and Audiology students.

Introduction to radiation therapy, nuclear medicine and radiobiology 200 (RNR 200)

Module credits	9.00
NQF Level	06
Prerequisites	No prerequisites.
Contact time	1 lecture per week
Language of tuition	Module is presented in English
Department	Radiography

Period of presentation Year

Module content

a. Introduction to radiation therapy: Radiation therapy services organisation. The radiation therapist – Scope of practice; Practice Standards. Cancer management – Cancer incidence; epidemiology and etiological studies; Detection and diagnosis; Prevention. Treatment – Radiation oncology; Surgical oncology; Medical oncology; Immunotherapy; Complementary and alternative medicine. Radiation treatment modalities; Identification and application of radiation therapy equipment and accessories. Key terms related to external beam radiation equipment. Key terms related to radiation dose to be delivered. Radiation beam positioning terms; Patient positioning. Common radiation effects on normal tissue.
b. Introduction to nuclear medicine: Role of Nuclear Medicine in medical diagnosis and treatment. Principles of nuclear physics and nuclear medicine, nuclear instrumentation, radio chemical pharmacology. Basic approach to clinical nuclear medicine and relevant techniques.
c. Introduction to radiobiology: • basic background to the field of radiobiology the interaction of different radiation types with the molecules and organelles of the mammalian cell; biological interaction of different radiation types with the cellular dynamics; biological effect of radiation on organs of the body and the whole body; clinical radiobiology in diagnostic radiography.

Diagnostic radiographic science 200 (RSC 200)

Module credits	15.00
NQF Level	06
Prerequisites	RPH 100, RSC 100, DIR 100, CDR 100
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Film evaluation. Application of technique factors, compiling of technique charts. Films, film technology, image formation and sensitometric properties. Processing, monitoring the processor and processing area. Mechanical and chemical processing. Digital image manipulation: Pre-Processing, Segmentation, Grayscale Processing, Frequency Processing, Reconstruction,
Display technologies: Hard-Copy Printers, Film, Cathode Ray Tube (CRT), Liquid Crystal Display (LCD), Other Displays (e.g., Plasma, Projection)
Viewing Conditions: Viewing Distance, Image and Pixel Size, Workstation Ergonomics, Adaptation and Masking, Ambient Lighting and Illumination. Quality assurance of conventional, computed and digital radiography systems. Hospital integrated computer patient and imaging system and principles of system management in terms of information capture, display, storage and distribution.

Curriculum: Year 3

Minimum credits: 123

Fundamental modules

Anatomical pathology 300 (ANP 300)

Module credits	15.00
NQF Level	07
Prerequisites	ANP 210, RAN 280, DIR 200, CDR 200, RSC 200
Contact time	1 seminar per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Anatomical Pathology
Period of presentation	Semester 1

Module content

Systematic pathology – Capita Selecta:
Respiratory and Circulatory system ; Digestive system; Genito-urinary system; Locomotor system; Nervous system; Female reproductive system; Lymphatic and Haematological systems; Intergumentary system; Endocrine system.
Neoplasia associated with viruses.
Tumour markers.
Developmental tumours and tumour like conditions.
Cysts developing on basis of pre-existing malformations.
Tumours developing in pre-existing malformations.
Definition, Incidence, Epidemiology, Aetiology and Pathogenesis of Male & Female Reproductive system, Breast, Endocrine, Skin, Bones/Joints and Soft tissue, Peripheral nerve, Skeletal muscles, Central Nervous system, Eye, Lung, Head and Neck, Gastro-intestinal tract, Urinary system, Liver and Biliary tract, Pancreas.

Radiographic anatomy 380 (RAN 380)

Module credits	10.00
NQF Level	07
Prerequisites	RAN 280, FSG 251, FSG 252, FSG 262, DIR 200, CDR 200 and RSC 200
Contact time	1 discussion class per week, 1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Anatomy
Period of presentation	Year

Module content

Systemic anatomy II: Female reproductive system and breast; Cardiovascular system; Cerebrospinal fluid system. Introduction to neuroanatomy.
Regional cross-sectional anatomy: Cranium, brain; thorax; abdomen; pelvis and limbs.
Radiographic anatomy III: Systemic and cross-sectional anatomy with emphasis on three-dimensional reconstruction.

Research methodology for healthcare sciences 300 (RHC 300)

Module credits	30.00
NQF Level	07
Service modules	Faculty of Humanities
Prerequisites	(ELH 121 and 122); AIM 111, prerequisites for BA Audiology: ODL 210 and 220; KMP 210 and 220, prerequisites for BA Speech-Language Pathology students: SPP 210 and 220; KMP 210 and KMP 220.
Contact time	2 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Nursing Science
Period of presentation	Year

Module content

Concepts of research; research process; research studies appraisal; planning and developing literature review; developing research idea and research question; research principles in designing research proposal; research proposal writing.

Radiation physics 300 (RPH 300)

Module credits	10.00
NQF Level	07
Prerequisites	RPH 200, RSC 200, DIR 200, CDR 200
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Semester 1

Module content

Digital radiography: data acquisition (equipment, detectors, analogue to digital conversion), image properties, image matrix, bit depth, file formats, data compression. Image processing (filters, frequency, spatial, Fourier transform), contrast adjustment (histogram equalisation, gamma-, linear and logarithmic adjustment), edge enhancement (pixel shifting, subtraction). Image quality (noise, resolution).
Computed tomography: technological developments in construction and design. Data acquisition (parameters, field size). Image reconstruction (fundamental equations and algorithms). Image processing (CT number, window width, window height). Image quality (resolution, quantum mottle, spatial uniformity, frequency modulation transfer function).
Magnetic resonance imaging: principles (spin angular momentum, torque, precession, magnetic moment, spin orientation, lamor frequency), acquisition (RF pulses, magnetic field gradient, superconductivity, spin echo sequence, weighted images).
Fluoroscopy: Imaging chain, image intensifiers, IQ, CCDs & CMOS detectors, flat panel detectors, cine cameras, fluoroscopic modes of operation, digital subtraction angiography (DSA), quality assurance, dose area product, diagnostic reference levels
Mammography: X-ray tube and beam filtration, X-ray generator & photo timer (AEC) system, breast compression, magnification techniques, digital mammography, radiation dose, average glandular dose.
Ultrasound: Physics of ultrasound, characteristics of sound, US transducers, production and reception of sound, Freznel zone and Fraunhofer zone, interactions between US and matter, US display echo modes, Doppler ultrasound.

Core modules

Clinical practice in diagnostic radiography 300 (CDR 300)

Module credits	15.00
NQF Level	07
Prerequisites	CDR 200, RSC 200, DIR 200, RPH 200, RAN 280
Contact time	4 discussion classes per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Clinical practice to operationalise and integrate the fundamental theoretical components of the third year of studies and to build on the competencies developed in the first and second years of study. Aspects covered in this module include the basic clinical practice and image interpretation of excretory urography, angiography, intervention radiology, mammography, hysterosalpingography, bone densitometry, CT scanning, MRI scanning and myelography. Aspects covered within this module to include radiation protection of patients, public and personnel. Community engagement

Note:
This module comprises 30% of the specified clinical training hours necessary to complete specified clinical competencies for the course in an HPCSA accredited facility.

Diagnostic radiography 300 (DIR 300)

Module credits	20.00
NQF Level	07
Prerequisites	DIR 200, RSC 200, CDR 200, RPH 200, RAN 280
Contact time	1 discussion class per week, 1 lecture per week, 1 seminar per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Needle placement: The preparation of patients for contrast media radiographic investigations, technical imaging procedures, and needle placements. Venous needle placement.
Cardiovascular system: Selective angiography. Intervention techniques (vascular and non-vascular). Venography. Seldinger technique, contrast media, medication, catheters, guide wires and accessories. Quality assurance and quality control. Patient care. Medico-legal aspects. Pattern recognition.
Mammography: Introduction to principles of soft tissue radiography. Communication and health promotion. Medico-legal aspects. Management of breast disease, patient care, radiation safety and technique factors. Processing requirements. Positioning principles and special procedures. Systematic evaluation of the images. Pattern recognition.
Hystero-salpingography: Booking procedures, patient-radiographer relationship, procedural considerations and evaluation criteria. Pattern recognition.
Bone densitometry: Principles, bone biology and remodelling, osteoporosis, core competencies for radiographers, physical principles of dual X-ray absorptiometry and other bone densitometry techniques.
Ultrasonography: General principles in obstetrics and gynaecology, abdomen and pelvis, musculo-skeletal system.
Computer Tomography: Protocols for different examinations. Patient care. Image interpretation.
Magnetic resonance imaging: Principles and protocols for the different examinations. Patient care. Myelography.
Contrast media administration: Contrast media used in 2-D and 3-D imaging procedures (including MRI), overview of chemical make-up and physical properties of contrast agents, patient risk factors, pre-medication strategies, indicators/symptoms of patient reactions, care and treatment of reactions to contrast agents.

Integrated healthcare leadership 310 (IHL 310)

Module credits	8.00
NQF Level	07
Service modules	Faculty of Humanities
Prerequisites	IHL 210, IHL 221/2/3/4 (For Audiology and Speech-Language Pathology and Dietetics students only IHL 210 is applicable).
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Nursing Science
Period of presentation	Semester 1

Module content

Community needs assessment. Leadership in community development. Planning and implementation of collaborative community-based interventions. Application of principles of monitoring and evaluation. NB: Only for School of Healthcare Sciences and Department of Speech - Language Pathology and Audiology students.

Diagnostic radiographic science 300 (RSC 300)

Module credits	15.00

NQF Level	07
Prerequisites	RSC 200, RPH 200, DIR 200, CDR 200
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Informatics: Basic Computer Terminology, Integrating Healthcare Enterprise (IHE), PACS, Radiology Information System (RIS), Hospital Information System (HIS), Electronic Medical Record (EMR), Health Level 7 (HL7) Networks. Film digitisers.
Storage: Hardware, Storage Requirements, Disaster Recovery. DICOM: Modality Worklist, Image and Non-Image Objects, Components and Terminology, DICOM Conformance.
Data Compression: Clinical Impact, Lossy, Lossless, Image and Video Formats.
Security and Privacy: Encryption, Firewalls
Image quality optimisation in CT, Artefacts, factors affecting patient dose. Intervention Radiography (including digital subtraction angiography). Introduction to Quality assurance and quality control in CT, Intervention Radiography (including Digital subtraction angiography), Mammography, Bone densitometry and MRI. The preparation of patients for contrast media radiographic investigations, technical imaging procedures, and needle placements.

Curriculum: Final year

Minimum credits: 120

Fundamental modules

Multimodality imaging 400 (MMI 400)

Module credits	24.00
NQF Level	08
Prerequisites	RPH 300, RSC 300, DIR 300, CDR 300
Contact time	1 discussion class per week, 1 lecture per week, 1 seminar per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Application of multimodality imaging in Oncological diseases- staging, therapy monitoring and individual risk assessment, and image guided intervention. Neurological diseases. Patient management models in multimodality imaging. Radiographic pathology. Image interpretation of multimodality imaging i.e., CT scan; MRI; PET/CT; PET/MRI; PET/Mammography; Ultrasonography; Radiation Therapy delivery accuracy verification with Image Guided systems. Technical aspects of management of multimodality imaging systems. Quality assurance in multimodality imaging
Three-Dimensional Representations, Image Fusion/Registration, Computer-Aided Detection (CAD) and Diagnosis.

Research in healthcare sciences 400 (RHC 400)

Module credits	10.00
NQF Level	08
Prerequisites	RHC 300
Contact time	1 lecture per week, 1 practical per week
Language of tuition	Module is presented in English
Department	Nursing Science
Period of presentation	Year

Module content

Conducting process of obtaining ethics clearance, data collection, data analysis, research report writing.

Core modules

Clinical practice in diagnostic radiography 400 (CDR 400)

Module credits	35.00
NQF Level	08

Prerequisites	CDR 300, DIR 300, RPH 300, RSC 300
Contact time	4 discussion classes per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Clinical practice to operationalise and integrate the fundamental theoretical components of the fourth-year elective selected and to build on the competencies developed in the first, second and third years of study.

Note:
This module comprises 35% of the specified clinical training hours necessary to complete specified clinical competencies for the course in an HPCSA accredited facility.

Diagnostic radiography 400 (DIR 400)

Module credits	35.00
NQF Level	08
Prerequisites	RPH 300, RSC 300, DIR 300, CDR 300
Contact time	1 discussion class per week, 1 lecture per week, 1 seminar per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Needle placement, research, quality assurance, imaging procedures, unit management, clinical practice, digital image acquisition and display, ethics and law, patient care, pharmacology and drug administration and safe practice in one (1) of the following electives (to be offered based on feasibility):

i. CT Scanning
ii. MRI Scanning
iii. Intervention radiography
iv. Advanced pattern recognition (this may be in any speciality or system and is at the discretion of the provider)
v. Introduction to education principles
vi. Small and medium business enterprises

Management and leadership 400 (RML 400)

Module credits	16.00
NQF Level	08
Prerequisites	IHL 310, RSC 300, DIR 300, CDR 300
Contact time	1 discussion class per week, 1 lecture per week, 1 seminar per week
Language of tuition	Module is presented in English

Department	Radiography
Period of presentation	Year

Module content

Comprehensive quality management for the radiation Science including diagnostic radiography and relevant modalities e.g., mammography, digital imaging, CT, and MRI. Advanced concepts, current quality management theory, accreditation, and audit documentation are covered. Basic principles and practices necessary for effective supervision and leadership in a health care environment. Inter-disciplinary teamwork principles and practice pertinent to radiography. Principles and practices in human resource management in health care settings. Risk management. Management of change and transformation. Ethical and legal issues influence on practice and the environment. Defining advanced practitioner role; participation within professional bodies; Methods to assess professional outcomes; Customer satisfaction survey components;
Process and procedures for continuous professional development. Novel working practices Reflective practitioner in radiography; Professional role within the community and responsibilities to the community. Establishing own private practice in diagnostic radiography.

Regulations and rules

The regulations and rules for the degrees published here are subject to change and may be amended after the publication of this information.

The General Academic Regulations (G Regulations) and General Student Rules apply to all faculties and registered students of the University, as well as all prospective students who have accepted an offer of a place at the University of Pretoria. On registering for a programme, the student bears the responsibility of ensuring that they familiarise themselves with the General Academic Regulations applicable to their registration, as well as the relevant faculty-specific and programme-specific regulations and information as stipulated in the relevant yearbook. Ignorance concerning these regulations will not be accepted as an excuse for any transgression, or basis for an exception to any of the aforementioned regulations.

University of Pretoria Programme Qualification Mix (PQM) verification project

The higher education sector has undergone an extensive alignment to the Higher Education Qualification Sub-Framework (HEQF) across all institutions in South Africa. In order to comply with the HEQSF, all institutions are legally required to participate in a national initiative led by regulatory bodies such as the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and the South African Qualifications Authority (SAQA). The University of Pretoria is presently engaged in an ongoing effort to align its qualifications and programmes with the HEQSF criteria. Current and prospective students should take note that changes to UP qualification and programme names, may occur as a result of the HEQSF initiative. Students are advised to contact their faculties if they have any questions.