University of Pretoria Yearbook 2022

BRadHons *Radiation Therapy* (10247012)

Department	Radiography
Minimum duration of study	1 year
Total credits	120
NQF level	08

Programme information

Students who did not register at undergraduate level (i.e. from the second year of study) in Radiation Therapy, register according to this curriculum.

Admission requirements

1. BRad (or equivalent) degree with a weighted average of at least 60% in the final year **or** Bachelor in Technology: Radiography with a weighted average of at least 60% in the final year **or** National Diploma in Radiography and BRadHons bridging programme with a weighted average of at least 60%. Maximum of two attempts for the bridging examination
2. Applicants with BRad (or equivalent) or Bachelor in Technology: Radiography with a weighted average of less than 60% in the final year, must do the bridging programme and pass with a weighted average of at least 60%. A maximum of two attempts will be permitted in order to pass the bridging examination with the required weighted average of 60% and thereby gain admission to the relevant plan.
3. Research methodology passed at bachelor's level
4. Registration as a radiographer or a postgraduate student with the Health Professions Council of South Africa (HPCSA)
5. Access to accredited, suitable training facilities

Additional requirements

All students must register for NVB 700 Research principles.

Also consult the General Academic Regulations G16-G29.

Examinations and pass requirements

i. In accordance with the stipulations of the General Academic Regulations a year mark of at least 40% is required for admission to the standard examination in all postgraduate modules in the University where year marks apply.
ii. Each paper written for the standard examination must be passed individually with 50%.

iii. There is one examination period for the standard examination in October/ November and the supplementary examination in November/December of the same year.
iv. If a student fails the supplementary examination, the module must be repeated.
v. A supplementary examination in a module is granted to a student, if a student obtains a final mark of between 40%-49% in any module at the examination.
vi. Students intending to sit for 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.
vii. If a student fails a module in the standard examination, 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 quarter/semester/year will not be taken into calculation. If the student passes the module in the supplementary examination, a maximum of 50% is awarded as a pass mark to the module in question.
viii. 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).
ix. 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.
x. 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.
xi. A student who has failed one module but who has passed all other modules, may be admitted to a Chancellor’s examination in the module in question at the end of the first semester of the subsequent year, after obtaining a subminimum of 40% in the first semester.
xii. A final year student who has failed more than one module, must register for the whole year to complete the modules in question.

Pass with distinction

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

Curriculum: Final year

Minimum credits: 120

Fundamental modules

Research principles 700 (NVB 700)

Module credits	5.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 discussion class per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Semester 1

Module content

Development and submission of a research protocol.

Core modules

Radiotherapeutic dosage planning 700 (RDB 700)

Module credits	35.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 1 lecture per week, 1 practical per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Part 1

Target volumes determination, treatment filed localisation and treatment prescription. Treatment localisation equipment and principles of image geometry. Patient positioning, marking fields, and immobilisation in radiotherapy. Use of mechanical and mathematical radiation beam modification in treatment planning and delivery. Principles of 2-Dimensional and 3-Dimensional external beam photon radiation dose planning and dose calculation. Application of standard 2-Dimensional and 3-Dimensional external radiotherapy treatment planning. Principles of electron beam planning. Treatment planning quality assurance.

Part 2

Brachytherapy. ICRU level-3 Radiation dose planning. Stereotactic radio-surgery and stereotactic radiotherapy. Image-based and image-guided radiotherapy. Large field irradiation with photons. Current trends in Electron Therapy, proton therapy, heavy particle therapy and neutron therapy treatment planning and delivery.

Research report: Radiography 700 (RSK 700)

Module credits	30.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	as scheduled with study leader
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Continuation of the research process which includes the implementation of the approved research protocol and writing up a research essay of the completed research project.

Radiation therapy 701 (RSZ 701)

Module credits	35.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 1 lecture per week, 1 practical per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Part 1:

Clinical ethics and m patient care and support in radiotherapy. Medico-legal aspects in radiation therapy. Radiotherapy assessment, patient care and support for patients receiving radiation therapy for tumours of the oral cavity, digestive tract, respiratory system, urinary system, nervous system, reproductive system, skin and blood. Management of patients receiving radiotherapy with co-existing medical conditions of anaemia, infection, ascites, pleural effusion, pain and neutropenia. Care of patients with tracheostomy, mastectomy, amputations and dental care. Radiobiological principles and concepts that underpin the interaction of radiation with cells, tissues, whole body. Tumour kinetics and tumour response to radiation. Carcinogenesis. Tumour micro-environment. Fractionation. Normal tissue responses of skin, oral mucosa, salivary glands, bone marrow, bone, cartilage, lung, kidney, testis, central nervous system and peripheral nervous tissue. Radiation effects on developing embryo. Hyperthermia. Basic principles of application of superficial superficial x-ray, megavoltage x-ray, electron, neutron therapy, proton therapy, brachytherapy, intensity modulated radiotherapy and intra-operative radiotherapy. Basic radiotherapy treatment techniques in the treatment of malignant tumours of gynaecological, head and neck, skin, breast, genitourinary, gastrointestinal, lymphomas, leukemias, lung, mediastinum, bone, soft tissue, central nervous system and paediatric tumours. Radiotherapy treatment techniques for non-malignant tumours. Cancer biology and pathology. Epidemiology, prevention, early diagnosis and education. General principles in oncological management of the patient. Oncological principles related to the treatment of malignant tumours of different anatomical regions. Radiation oncology principles related to management of benign tumours, non-malignant medical conditions and oncological emergencies.

Part 2:

Basic management principles. Quality management. Brachytherapy. Treatment field conformation and treatment dose conformation in radiotherapy treatment delivery. Large field irradiation with photons and superficial photon therapy.

Radiation physics and radiation protection 700 (SFR 700)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 discussion class per week
Language of tuition	Module is presented in English
Department	Radiography
Period of presentation	Year

Module content

Basic radiation physics. Interactions of X-radiation and gamma rays with matter. Radiation beam attenuation. Treatment machines for external beam radiotherapy. External photon beam and dose quantities. Photon beam measurements and calibrations and treatment dose calculations. Photon beam modification for treatment dose optimisation. Electron interaction with matter and electron therapy. Radiotherapy quality assurance of external beam units and treatment planning systems. Radiation protection and shielding and personnel monitoring. Imaging in radiation oncology. Radiation physics principles of three dimensional conformal radiation therapy and intensity modulated radiation therapy. Procedures and processes involved in Stereotactic radiotherapy and stereotactic radiosurgery. Radiation physics principles of Brachytherapy. Principles of total body irradiation. Radiation interactions in proton and neutron therapy,

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.