

FACULTY of HEALTH SCIENCES

DEPARTMENT of
RADIOGRAPHY

Handbook for 2012

DEPARTMENTAL MISSION

The department is committed to promoting a values-driven ethos sustainable with industry, community and society; by developing quality health professionals that are practice oriented, receptive and responsive to the health care needs of the people of South Africa and Africa as a whole by providing the highest standards of teaching, learning and community engagement underpinned by a commitment to empowering staff and students to succeed.

What is a University of Technology?

A university of technology is characterized by being research informed rather than research driven where the focus is on strategic and applied research that can be translated into professional practice. Furthermore, research output is commercialized thus providing a source of income for the institution. Learning programmes, in which the emphasis on technological capability is as important as cognitive skills, are developed around graduate profiles as defined by industry and the professions.

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IMPORTANT NOTICE

The departmental rules in this handbook
must be read in conjunction with the University of Technology's
General Rules contained in the current
General Handbook for Students.

1. CONTACT DETAILS

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2. STAFFING	Name and Qualification
Head of Department Senior Lecturer	Mrs Subhadranalene Naidoo: Degree of Master of Applied Science (MRT; Bachelor of Technology: Radiography Nuclear Medicine; National Diploma Radiography: Diagnostic; Higher Education Diploma: Technical (Rad) (UNISA.)
Lecturers	Mrs Lynda Dawn Swindon: M.Ed. (Higher Education); Bachelor of Technology: Radiography Diagnostic; Higher Education Diploma: Technical (Rad) (UNISA).
	Mrs Roshnee Sunder: Master of Technology: Radiography; Bachelor of Technology: Radiography Diagnostic.
	Mr Nkululeko Phalson Gam: Bachelor of Technology: Radiography Diagnostic.
	Mr Ntokoza Gqweta: Bachelor of Technology: Radiography Diagnostic.
	Mrs Mpho Mbhele: National Diploma Radiography: Diagnostic: (Technikon Witwatersrand); National Diploma Radiography: Therapy (Technikon Witwatersrand); Bachelor of Technology: Radiography Therapy; (University of Johannesburg). Post-graduate Diploma: Finance, Banking, and Investment management (UKZN)
	Mrs Zombuso Cynthia Dlodla: Higher Diploma: Education: (UKZN); Bachelor of Technology: Radiography Ultrasound: (DUT).
Technical Assistant	Vacant

3. PROGRAMMES OFFERED BY THE DEPARTMENT

Programmes are offered in this Department which, upon successful completion, lead to the award of the following qualifications:

Qualification	SAQA NLRD Number
• N.D.:Radiography:Diagnostic	NDRDD1
• N.D.:Radiography:Nuclear Medicine	NDRDN1
• N.D.:Radiography:Therapy	NDRDT1
• N.D.:Radiography:Ultrasound	NDRDU1
• B.TECH:Radiography	BTRAD1
• M.TECH:Radiography	MTRAD1
• D.TECH:Radiography	DTRAD1

4. PROGRAMME INFORMATION AND RULES

The following information applies to all four National Diploma Programmes in Radiography: Diagnostic, Nuclear Medicine, Therapy and Ultrasound.

4.1 Minimum admission requirements.

	N Dip: Radiography		
Compulsory Subjects	HG	SG	NSC Rating
English (1st additional)	D	B	4
Biology/Life Sciences	D	B	4
Physical Science	D	B	4
Mathematics	D	B	4

4.2 Lectures

Lectures are offered at the Ritson Road Campus of the DUT. Clinical training/placement could be in any HPCSA accredited clinical training centre in KwaZulu-Natal. Lectures are conducted during the day, however some lectures may be conducted during the evenings and on week ends.

4.3 Student Selection

4.3.1 Initial selection is done based on the applicant's academic performance in Grade 11 and/or mid-year Grade 12.

4.3.2 Short-listed applicants will be required to visit the Radiography clinical environment. Essays will be written on observations and experiences whilst in the clinical environment, as well as reasons for choosing radiography as a career.

4.3.3 Further short-listed students will write academic intelligence tests and attend interviews.

4.3.5 Provisional acceptance will be given to the successful applicants until the National Senior Certificate (NSC) results are available for review. If the NSC results do not meet the minimum entrance requirements, acceptance will be declined.

4.4 Compulsory HPCSA registration.

A student radiographer must be registered with the Health Professions Council of South Africa [HPCSA] throughout the training programme. This duty will be the responsibility of the student.

4.5 Appeal.

Any appeal against the rule G17 [unsatisfactory academic progress] must be in accordance with rule G1[9] as per rule book for students.

4.6 Exclusions.

Besides the pre-requisite/s for subjects, students will not be able to carry subjects of two different years due to timetable clashes G3(1)(l).

4.7 Experiential Training.

All diploma and second category B.Tech students have to register for experiential training/work integrated learning (WIL) each year. The cost will be approximately R650.00 for 2010. All travel, accommodation, uniform and other costs relating to experiential training will be the responsibility of the student. Experiential training is compulsory for all students. A minimum of 2500 hours over a three year period is required in order to complete the National Diploma Radiography qualification and thereafter register with the HPCSA as a radiographer. Note that the Department of Radiography's WIL hours may exceed the minimum hours recommended by the HPCSA. Student placement at the experiential training centers will be done by the department of Radiography at the DUT. Uniform and related training costs will be the responsibility of the student. These need to be budgeted for prior to registration. All rules and regulations associated with the attendance, behavior, and attitude of students during WIL will be abided by. Verbal and written warnings, as well as possible expulsion will be the consequences of any individual who does not respect the rules and regulations whilst a registered student in this department.

- 4.8 RULES FOR QUALIFICATIONS. The following rules apply to all four National Diploma Radiography Qualifications.
NATIONAL DIPLOMA: RADIOGRAPHY: Diagnostic (72258)
NATIONAL DIPLOMA: RADIOGRAPHY: Nuclear Medicine (72259)
NATIONAL DIPLOMA: RADIOGRAPHY: Therapy (72260)
NATIONAL DIPLOMA: RADIOGRAPHY: Ultrasound.

- **LR.N1 Definitions.**

'Approved' means approved by the Minister of Education.

'Professional Board' means Professional Board for Radiography and Clinical Technology.

'Approved institution' means an institution approved for radiographic training by the Health Professions Council of South Africa.

LR.N2 Entrance Requirements.

In addition to the requirements of the General Rules a student who registers for the National Diploma: Radiography: Diagnostic, Nuclear Medicine, Therapy or Ultrasound must be:

1. At least 18 years of age and in possession of a matriculation exemption certificate or a senior certificate in the first year of registration.
2. The student shall have higher grade (D)/standard grade (A) passes in English, Mathematics, Physical Science, and Biology/Life Sciences or their respective equivalents or a NSC rating of 4 and above.

LR.N3 Registration.

In addition to the requirements of the General Rules a student who registers for the National Diploma: Radiography: shall be registered as a Student Radiographer and conform to the requirements as laid down by Government Notice R1855 (Dated 16/9/77); No R 1379 (12/7/94).

LR.N4 Pass Requirements.

1. A student must pass all pre-requisite subjects before he/she is admitted to the next level.
2. A student shall achieve the required level of clinical competency, determined by the employers/ clinical training centers and department, before application for the issuing of the diploma will be made.
3. Notwithstanding anything to the contrary in the General Rules, no supplementary examinations shall be available for any continuous assessment subject in this department.

4. A first year student who fails with a final mark of less than 40% in each of three failed subjects will not be allowed to re-register in the Department of Radiography.

This rule is to be read in conjunction with Rule G6 from the General Rule Book for students.

The following information and rules apply to all four Bachelor of Technology Programmes in Radiography: Diagnostic, Nuclear Medicine, Therapy and Ultrasound.

Bachelor of Technology Radiography: Diagnostic.

Bachelor of Technology Radiography: Nuclear Medicine

Bachelor of Technology Radiography: Therapy.

Bachelor of Technology Radiography: Ultrasound.

LR.B1 DEFINITIONS

'Approved' means approved by the Minister of Education.

'Professional Board' means Professional Board for Radiography and Clinical Technology.

'Approved institution' means an institution approved for diagnostic radiographic training by the Health Professions Council of South Africa.

LR.B2 Entrance Requirements.

1. Persons must be in possession of a three year National Diploma: Radiography: Diagnostic or equivalent.
2. Persons with a two (2) year National Diploma: Diagnostic or equivalent were eligible until 1997 (first category).
3. Students wishing to obtain a radiographic qualification in a second category will have to pass the elective subject (Clinical Practice II) in the first year of the B.Tech registration as well as all third level subjects in the National Diploma: Radiography. This will allow him/her entry to the B.Tech. Radiography programme. The student has to register as a full time student.
4. Students must be eligible for registration with the Health Professions Council of South Africa.
5. Entry into the B.Tech programme is not automatic. Places are limited and selection will be on the basis of previous academic performance as determined by a ranking system.
6. A student wishing to register for the B.Tech. Radiography programme must have a minimum of 1 year post-diploma clinical experience.
7. A student must be placed or employed in the relevant clinical environment, for e.g. CT,MRI,PET/CT etc. in order to meet the outcomes of the programme.

LR.B3 Registration.

In addition to the requirements of the General Rules a student who registers for the second category [LR.DB2(3)] shall be registered as a student radiographer with the Health Professions Council of South Africa and conform to the requirements as laid down by Government Notice R1855 (Dated 16/9/77); No. R1379 (12/7/94).

LR.B5 Pass Requirements.

1. A student shall obtain a minimum of 50% in a subject to pass that subject.
2. A student who fails more than one subject will not be allowed to repeat the programme and will be instructed to leave the Institution.
3. Students in Rule LR.DB2(3) shall achieve the required competency before the issuing of the Baccalaureus Technology: Radiography: will be made.
4. Notwithstanding anything to the contrary in the General Rules, no supplementary examinations shall be available for any continuous assessment subject in this department.

Master of Technology: Radiography

Register Code	Subject
RPRD5101	Research Project and Registration (1st registration)
RPRD5201	Research Project and Registration (2nd registration)
RPRD5301	Research Project and Registration (successive years)
RPRD5001	Research Project and Registration (year one – full year)

See General Handbook Rules and G28.

DOCTORATE DEGREE: RADIOGRAPHY

NLRD SAPSE CODE: 72111 PROGRAMME CODE: DTRAD1
See General Handbook Rules: G29

5. PROGRAMME STRUCTURE

All subjects are compulsory.

All subjects are annual subjects.

All subjects except for Management Principles and Practice 1 (level 4) are continuous assessment; which includes but is not limited to written tests, practical and clinical assessments, OSCE, projects, portfolios, and assignments.

Programme: National Diploma Radiography: Diagnostic NQF level 5 - SAQA NLRD number - 72258			
Code	Subjects	Pre-requisite	Co- req.
ANAT101	Anatomy I		
PHSI101	Physiology I		
RCSI101	Radiation Sciences I		
PDPM101	Psychodynamics of Patient Management		
RPRA101	Radiographic Practice I		
CRPR101	Clinical Radiographic Practice I		
EXRR101	Experiential Learning (Year 1)		
RPRA201	Radiographic Practice II	Radiographic Practice I	
RSCI201	Radiation Sciences II	Radiation Sciences I	
RPAT201	Radiographic Pathology II	Anatomy I; Physiology I	
CRPD201	Clinical Radiographic II (D)	Radiographic Practice I Clinical Radiographic Practice I	
EXRR201	Experiential Learning (Year 2)		
RMGT301	Radiographic Management III (D)	Radiographic Practice II Clinical Radiographic II (D)	
RSCD301	Radiation Sciences III (D)	Radiation Sciences II A and II B	
RPRD301	Radiographic Practice III (D)	Radiographic Practice II Radiographic Pathology II Clinical Radiographic Practicell	
CRPD301	Clinical Radiographic Practice III (D)	Radiographic Practice 11 Clinical Radiographic Practice II	
EXRR301	Experiential Learning (Year 3)		

Programme: National Diploma Radiography: Nuclear Medicine
 NQF level 5 – SAQA NLRD number 72259

Code	Subjects	Pre-requisite	Co- req.
ANAT101	Anatomy I		
RCSI101	Radiation Sciences I		
PHSI101	Physiology I		
PDPM101	Psychodynamics of Patient Management		
RPRA101	Radiographic Practice I		
CRPR101	Clinical Radiographic Practice I		
EXRR101	Experiential Learning (Year 1)		
RPRA201	Radiographic Practice II	Radiographic Practice I	
RSCI201	Radiation Sciences II	Radiation Sciences I	
RPAT201	Radiographic Pathology II	Anatomy I; Physiology I	
CRPN201	Clinical Radiographic II (NM)	Radiographic Practice I Clinical Radiographic Practice I	
EXRR201	Experiential Learning (Year 2)		
CRPN301	Clinical Radiographic Practice III (NM)	Clinical Radiographic II (NM) Radiographic Practice II	
RPRN301	Radiographic Practice III (NM)	Radiographic Practice II Radiographic Pathology II Clinical Radiographic Practice II	
NMIN301	Nuclear Medicine Instrumentation III	Radiation Sciences II	
RPHM301	Radiopharmacy III (NM)	Radiation Sciences II	
EXRR301	Experiential Learning (Year 3)		

Programme: National Diploma Radiography: Therapy- NDRDT1
 NQF level 5 – SAQA NLRD number 72260

Code	Subjects	Pre-requisite	Co- req.
ANAT101	Anatomy I		
PHSI101	Physiology I		
RCSI101	Radiation Sciences I		
PDPM101	Psychodynamics of Patient Management		
RPRA101	Radiographic Practice I		
CRPR101	Clinical Radiographic Practice I		
EXRR101	Experiential Learning (Year 1)		
RPRA201	Radiographic Practice II		
RSCI201	Radiation Sciences II	Radiation Sciences I	
RPAT201	Radiographic Pathology II	Anatomy I; Physiology I	
CRPT201	Clinical Radiographic II (T)	Radiographic Practice I Clinical Radiographic Practice I	
EXRR201	Experiential Learning (Year 2)		
CRPT301	Clinical Radiographic Practice III (T)	Radiographic Practice II Clinical Radiographic Practice II	
RPRT301	Radiographic Practice III (T)	Radiographic Practice II Clinical Radiographic Practice II Radiographic Pathology II	
RBI0301	Radiobiology III (T)	Radiation Sciences II	
RSCT301	Radiation Sciences III (T)	Radiation Sciences II	
APST301	Applied Psychology III (T)		
EXRR301	Experiential Learning (Year 3)		

Programme: National Diploma Radiography: Ultrasound			
NOF level 5 – SAQA NLRD number-			
Code	Subjects	Pre-requisite	Co- req.
ANAT101	Anatomy I		
RCSI101	Radiation Sciences I		
PHSI101	Physiology I		
PDPM101	Psychodynamics of Patient Management		
RPRA101	Radiographic Practice I		
CRPR101	Clinical Radiographic Practice I		
EXRR101	Experiential Learning (Year 1)		
RPRA201	Radiographic Practice II	Radiographic Practice I	
RSCI201	Radiation Sciences II	Radiation Sciences I	
RPAT201	Radiographic Pathology II	Anatomy I; Physiology I	
CRPU201	Clinical Radiographic II (US)	Radiographic Practice I Clinical Radiographic Practice I	
EXRR201	Experiential Learning (Year 2)		
CRPU301	Clinical Radiographic III (US)	Radiographic Practice II Clinical Radiographic Practice II	
RPRU301	Radiographic Practice III (US)	Radiographic Practice II Clinical Radiographic Practice II Radiographic Pathology II	
UPEQ301	Ultrasound Physics & Equipment III (US)	Radiation Sciences II	
EXRR301	Experiential Learning (Year 3)		
Programme: Bachelor of Technology: Radiography Diagnostic/Nuclear Medicine/Therapy/Ultrasound			
NOF level 6 – SAQA NLRD number			
MPRD101	Management Principles and Practice I	Nat.Dip: Radiography	
RMTQ203	Research Methods and Techniques	Nat.Dip: Radiography	
RPRD401	Radiographic Practice IV —Diagnostic	Nat.Dip: Radiography	
RPRT401	Radiographic Practice IV —Therapy	Nat.Dip: Radiography	
RPRN401	Radiographic Practice IV Nuclear M.	Nat.Dip: Radiography	
RPRU401	Radiographic Practice IV —Ultrasound	Nat.Dip: Radiography	
Programme: Master of Technology: Radiography			
NOF level 7 – SAQA NLRD number 72200			
		B.Tech. Radiography	
Programme: Doctorate of Technology Radiography:			
NOF level 8 – SAQA NLRD number 72111			
		M.Tech.Radiography	

6. Assessment Plan.

The continuous assessment method is used for all subjects, except Management Principles and Practice 1. The relevant learner guides for each subject will have additional information on the specific assessment plans.

7. Subject Content.

Students must read this section in conjunction with the relevant learner guides for a more detailed description.

SUBJECT	LEARNING AREAS
ANATOMY I	<ul style="list-style-type: none"> ● Embryology. ● Organisation of the human body. ● Systems of the body. ● Cross-sectional anatomy.
APPLIED PSYCHOLOGY (T)	<ul style="list-style-type: none"> ● Psycho-social aspects of cancer. ● Counseling skills. ● Interpersonal relationships. ● Stress management
CLINICAL RADIOGRAPHIC PRACTICE I	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice
CLINICAL RADIOGRAPHIC PRACTICE II (D)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice
CLINICAL RADIOGRAPHIC PRACTICE II (T)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice
CLINICAL RADIOGRAPHIC PRACTICE II (NM)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice
CLINICAL RADIOGRAPHIC PRACTICE II (US)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice.
CLINICAL RADIOGRAPHIC PRACTICE III (D)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice.
CLINICAL RADIOGRAPHIC PRACTICE III (T)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice.
CLINICAL RADIOGRAPHIC PRACTICE III (NM)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice.

CLINICAL RADIOGRAPHIC PRACTICE III (US)	<ul style="list-style-type: none"> ● Patient care. ● Radiographic practice.
MANAGEMENT PRINCIPLES AND PRACTICE I YEAR MARK AND EXAMINATION	<p>The year mark shall be made up of:</p> <ul style="list-style-type: none"> ● theory tests and/or ● assignments. ● The examination shall consist of one 3-hour paper. <p>Learning Areas</p> <ul style="list-style-type: none"> ● Evolution of management ● The practice of management ● Small business and undertakings ● Planning ● Organisation ● Leading ● Controlling ● The nature of managerial work.
NUCLEAR MEDICINE INSTRUMENTATION III (NM)	<ul style="list-style-type: none"> ● Dosimetry ● Radiation detectors ● Imaging devices ● In vivo and in vitro counting devices ● Counting statistics ● Digital image processing ● Quality control ● New departments
PHYSIOLOGY I	<ul style="list-style-type: none"> ● General physiology ● Systems of the body. ● Introduction to biochemistry.
PSYCHODYNAMICS OF PATIENT MANAGEMENT	<ul style="list-style-type: none"> ● Professionalism and ethics ● Communication ● Patient care

RADIATION SCIENCE I	<p>Physics</p> <ul style="list-style-type: none"> ● Heat ● Optics ● Electrostatics ● Electricity ● Magnetism ● Solid state (detectors/electronics) ● Ultrasound: Introduction to physics and principles ● Introduction to radiation physics and protection <p>Chemistry</p> <ul style="list-style-type: none"> ● General principles of chemistry <p>Medical imaging</p> <ul style="list-style-type: none"> ● Basic principles ● Image recording and display
RADIATION SCIENCE II (A)	<p>Equipment</p> <ul style="list-style-type: none"> ● Mains supply ● Generators ● X-Ray tubes ● Accessory equipment ● Fluoroscopy equipment ● Digital systems ● Data processing ● Gamma camera ● Ultrasound units ● Radiotherapy units <p>Imaging</p> <ul style="list-style-type: none"> ● Sensitometry ● Image processing ● Radiation exposure <p>Quality assurance</p>
RADIATION SCIENCE II (B)	<ul style="list-style-type: none"> ● Radiation physics and protection ● Radiobiology ● Medical ultrasound and an introduction to the biological effects of ultrasound
RADIATION SCIENCE III (D)	<ul style="list-style-type: none"> ● Specialised diagnostic equipment ● Alternative diagnostic equipment ● Quality assurance.
RADIATION SCIENCE III (T)	<ul style="list-style-type: none"> ● Specialised equipment, ● Principles of teletherapy ● Principles of brachytherapy

RADIOBIOLOGY (T)	<ul style="list-style-type: none"> ● Oncogenesis ● Tumour kinetics ● Biological interaction of radiation ● Dose response curves ● Physical, chemical and radiation modifiers
RADIOGRAPHIC MANAGEMENT III (D)	<ol style="list-style-type: none"> 2.1 Principles of the management of a diagnostic X-Ray department 2.2 Stock control 2.3 Personnel management 2.4 Planning
RADIOGRAPHIC PATHOLOGY II	<ol style="list-style-type: none"> 2.1 Introduction to pathology 2.2 Basic pathology 2.3 Integrated applications of pathology of the systems of the body
RADIOGRAPHIC PRACTICE I	<ol style="list-style-type: none"> 2.1 Introduction to Radiography (D, T, NM, US) 2.2 Basic terminology 2.3 Positioning: <ol style="list-style-type: none"> 2.3.1 Extremities 2.3.2 Chest, heart, lungs 2.3.3 Abdomen 2.3.4 Vertebral column and S.I. Joints 2.3.5 Skull 2.3.6 Thorax 2.3.7 Pelvis 2.4 Normal radiographic anatomy
RADIOGRAPHIC PRACTICE II	<ol style="list-style-type: none"> 2.1 Integrated radiographic practice with reference to: <ol style="list-style-type: none"> 2.1.1 Contrast media 2.1.2 High kV 2.1.3 Abdomen 2.1.4 Gastro-intestinal system 2.1.5 Biliary-system 2.1.6 Genito-urinary system 2.1.7 Obstetrics and gynaecology 2.1.8 Soft tissue 2.1.9 Respiratory system 2.1.10 Skull, sinuses and facial bones 2.1.11 Ward and theatre radiography 2.2 Applications to D, T, NM and US 2.3 Radiographic anatomy

RADIOGRAPHIC PRACTICE III (D)	<ul style="list-style-type: none"> 2.1 Skull 2.2 Tomography 2.3 Computerised tomography 2.4 Central nervous system <ul style="list-style-type: none"> 2.4.1 Myelography 2.4.2 Angiography 2.5 Cardiovascular system 2.6 Dental radiography 2.7 Obstetrics and gynaecology 2.8 Respiratory system 2.9 Miscellaneous 2.10 Paediatric radiography 2.11 Critical care radiography 2.12 Advanced radiographic anatomy, applied physiology & pathology
RADIOGRAPHIC PRACTICE III (T)	<ul style="list-style-type: none"> 2.1 Overview of malignant disease 2.2 Treatment of systems <ul style="list-style-type: none"> 2.2.1 Non-malignant 2.2.2 Malignant
RADIOGRAPHIC PRACTICE III (NM)	<ul style="list-style-type: none"> 2.1 Imaging procedures and practical applications of all systems.
RADIOGRAPHIC PRACTICE III (US)	<ul style="list-style-type: none"> 2.1 Obstetrics 2.2 Gynaecology 2.3 Abdomen 2.4 Small part scanning
RADIOGRAPHIC PRACTICE IV (D)	<ul style="list-style-type: none"> 2.1 Introduction to training and data presentation 2.2 Developments in radiography equipment 2.3 Quality assurance in diagnostic radiography 2.4 Advances in diagnostic radiography 2.5 New developments in diagnostic procedures
RADIOGRAPHIC PRACTICE IV (T)	<ul style="list-style-type: none"> 2.1 Introduction to training and data presentation 2.2 Developments in radiography equipment 2.3 Advances in oncological management 2.4 Clinical trials 2.5 Quality assurance 2.6 Departmental management 2.7 Specialised planning

RADIOGRAPHIC PRACTICE IV (NM)	<ul style="list-style-type: none"> 2.1 Introduction to training and data presentation 2.2 Developments in radiography equipment 2.3 In-vitro procedures 2.4 Cell labeling 2.5 Advanced imaging procedures 2.6 Clinical competence in above
RADIOGRAPHIC PRACTICE IV (US)	<ul style="list-style-type: none"> 2.1 Introduction to training and data presentation 2.2 Developments in radiography equipment 2.3 New trends in ultrasound procedures & techniques 2.4 Developments in radiography 2.5 Quality assurance in ultrasound
RADIOPHARMACY III (NM)	<ul style="list-style-type: none"> 2.1 Hot laboratory and general procedures 2.2 Production of radionuclides 2.3 Radiochemistry 2.4 Radiopharmacology 2.5 Quality control
RESEARCH METHODS AND TECHNIQUES	<ul style="list-style-type: none"> 1. Purpose, nature and meaning of research 2. The research process and general procedures 3. Statistical methods 4. Compiling of reports and research Dissertations
ULTRASOUND PHYSICS & EQUIPMENT III (US)	<ul style="list-style-type: none"> 2.1 Nature of ultrasound 2.2 Wave generation and detection 2.3 Ultrasound field 2.4 Ultrasound systems 2.5 Doppler ultrasound 2.6 Image artefacts 2.7 Measurements from image