SOUTH AFRICAN QUALIFICATIONS AUTHORITY

REGISTERED QUALIFICATION:

Bachelor of Radiation Therapy

SAQA QUAL ID	QUALIFICATION TITLE			
66951	Bachelor of Radiation Therapy			
ORIGINATOR		**ORIGINATING PROVIDER**		
Task Team - Radiography and Clinical Technology				
QUALITY ASSURING BODY				
-				
QUALIFICATION TYPE	**FIELD**		**SUBFIELD**	
National First Degree(Min 480)	Field 09 - Health Sciences and Social Services		Curative Health	
ABET BAND	**MINIMUM CREDITS**	**PRE-2009 NQF LEVEL**	**NQF LEVEL**	**QUAL CLASS**
Undefined	480	Level 7	NQF Level 08	Regular-ELOAC
REGISTRATION STATUS		**SAQA DECISION NUMBER**	**REGISTRATION START DATE**	**REGISTRATION END DATE**
Reregistered		SAQA 0695/12	2012-07-01	2015-06-30
LAST DATE FOR ENROLMENT		**LAST DATE FOR ACHIEVEMENT**		
2016-06-30		2019-06-30		

In all of the tables in this document, both the pre-2009 NQF Level and the NQF Level is shown. In the text (purpose statements, qualification rules, etc), any references to NQF Levels are to the pre-2009 levels unless specifically stated otherwise.

This qualification does not replace any other qualification and is not replaced by any other qualification.

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

The purpose of the qualification is to develop a professional, who is competent in the knowledge and skills required for Radiation Therapy and has gained experience in applying such knowledge and skills in

the appropriate workplace context.

This qualification enables the professional to competently apply an integration of theory, principles, proven techniques, practical experience and appropriate skills to the solution of well-defined and abstract problems in the selected field of Radiation Therapy. The learner should become a reflective practitioner and a life-long learner in his or her profession, thereby benefiting the community and society.

Appropriate applied skills in management and research will also be demonstrated allowing the holder of this qualification to work independently and in a supervisory capacity within the health care team.

Rationale:

Radiation Therapy is one of the scarce skill professions in South Africa and more Radiographers need to be trained in order to address this shortage. Healthcare is set to change in the future from the curative paradigm of the 20th century to a pre-emptive model. Medical Imaging and Radiation Therapy are central to this model and will drive that change to the benefit of the patient. The Radiation Therapist is involved in the planning and/or dose calculation and accurate administration of various forms of ionising radiation for the treatment and care of patients with malignant and benign neoplasms, according to a prescription of a Radiation Oncologist. Radiation Therapy has grown substantially as an individual allied health science discipline alongside the new ionising radiation and computer technologies that have emerged worldwide since the 1960's. Thus, the practice of Radiation Therapy has required an increasing range of skills and professional scope. The learning required for the practice of Radiation Therapy has grown accordingly from informal, hospital-based training to formal qualifications offered by higher education institutions in partnership with academic hospitals. This has been true in South Africa as well as across the globe.

Radiation therapy includes interdisciplinary fields such as Physics, Human Biology, Computer Sciences, Communication and Psychology to extract that information and apply it within the profession.

This qualification requires a minimum of 480 credits, which is normally a full-time programme. It is recognised by the relevant Professional Council as a requirement for registration to practise in the field of Radiation Therapy. The qualification is necessary for employment in both the public and the private sector as part of a team providing a holistic health care service in general and radiotherapy service in particular. All learners for this qualification are required to be registered as learners by the relevant Professional council for the duration of the period of study in an accredited clinical training centre.

LEARNING ASSUMED TO BE IN PLACE AND RECOGNITION OF PRIOR LEARNING

- Mathematics at NQF Level 4.
- Communication at NQF Level 4.
- Life Sciences at NQF Level 4.

Computer Literacy at NQF Level 3 is strongly recommended.

Recognition of Prior Learning:

This Qualification may be achieved in part through the recognition of relevant prior learning and through prior experience as a practitioner in another field of Radiography. Providers are required to develop structured and accredited means of assessment of learners against Exit-Level Outcomes of the qualification on an individual level. Recognition of prior learning will be applied on an individual basis and will be conducted in accordance with the institutions' accredited RPL policy. Such procedures and the assessment of individual cases are subject to moderation by independent assessors.

Access to the qualification:

Access to the qualification is open to learners who are in possession of a Senior certificate or equivalent at NQF Level 4 qualification and who meet the entry requirements of the institution offering the Qualification, as well as the specifications of the relevant Statutory Health Council.

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QUALIFICATION RULES

Fundamental and Core Component:

Exit Level Outcomes 1 to 7 constitute the Fundamental and Core Components of the Qualification and together total 440 credits. They are compulsory for all learners.

The allocation of credits to each Exit Level Outcome can be done by the individual institutions offering the qualification on condition such allocation meets the minimum number of credits for each Exit Level Outcome as stipulated by the relevant Statutory Health Council in its curriculum guidelines.

Elective Component:

The Elective Component consists of two parts:

The research Exit Level Outcome (Outcome 8) in which learners may choose any aspect or topic in the field which is relevant to them and for which they are required to produce the outcomes of their research in a manner, format and to a standard acceptable to the institution offering the qualification (40 credits minimum).

This may be assessed in an integrated way with Exit Level Outcomes 1 to 7.

The application of theoretical knowledge and skills in one of the chosen fields as listed below:
- Palliative patient care.
- Paediatric Radiation Oncology.
- Advanced fusion imaging use in Radiotherapy.
- Education in Health.
- Computer Tomography in Radio Therapy.
- Magnetic Resonance in Radio Therapy.

EXIT LEVEL OUTCOMES

1. Apply the principles of human rights, ethics and relevant medical law which ensure the well-being of the patient.

2. Demonstrate a critical understanding and application of quality assurance and radiation protection in a Radiation Therapy division.

3. Apply scientific knowledge and technical skills to perform radiation oncology laboratory techniques and procedures.

4. Perform radiotherapy procedures competently to ensure optimal radiation localization and immobilisation for radiation treatment.

5. Perform radiotherapy procedures competently to ensure optimal treatment planning.

6. Apply scientific knowledge and professional skills to perform therapeutic procedures for accurate delivery of the radiation treatment prescribed.

7. Plan, develop and apply total quality management appropriate to the radiation therapy context.

8. Demonstrate research skills and foster a research climate in radiation therapy.

9. Apply the principles, specific knowledge, skills and values related to the chosen elective subject.

- Range of possible electives:

> Paediatric Radiation Oncology.
> Palliative patient care.
> Advanced fusion imaging use in Radiotherapy.
> Education in Health.
> Computer Tomography in Radio Therapy.
> Magnetic Resonance in Radio Therapy.

Critical Cross-Field Outcomes:

The following critical cross-field outcomes will be developed in this qualification:

- Identify health problems in the contexts of radiation therapy and suggest and implement a solution or plan of action to solve the problem professionally.
- Perform professional duties with confidence in collaboration with other health care professionals and workers and where appropriate assume leadership in tasks or projects.
- Keep up with the current trends and changing needs of a radiation therapy service on regional, national and international level.
- Contribute towards and facilitate continuing professional development of radiation therapy staff.
- Communicate effectively in the learning and health care environment.
- Reflect on and explore a variety of strategies in order to improve radiation therapy practice.
- Demonstrate understanding of radiation therapy principles in order to solve practical problems within the radiation therapy context.

ASSOCIATED ASSESSMENT CRITERIA

Assessment Criteria for Exit-Level Outcomes 1:

1.1 Psychosocial support is provided with respect to the psychological impact of cancer and its treatment by applying knowledge of applied psychology to facilitate holistic patient care.
1.2 The patient is monitored for changes in their general condition together with dose related radiation reactions by applying knowledge of patient care skills and radiobiology principles in order to provide responsible and effective patient care.
1.3 Knowledge of professional ethics is demonstrated and applied in order to protect the rights of the patient for medico-legal purposes.
1.4 Rights of the patient, as entrenched in the Human Rights Bill and the Patients' Right Charter, are protected to maintain confidentiality and to provide a comprehensive radiotherapy service.

Assessment Criteria for Exit-Level Outcomes 2:

2.1 Quality Assurance programmes are implemented and adhered to in the localization, immobilisation, planning and treatment of patients to ensure optimal radiation delivery.
2.2 Standard operating procedures are implemented and adhered to, to ensure the safe and accurate delivery of ionizing radiation treatment.
2.3 Relevant knowledge and understanding of radiation protection regulations for personnel, public and patient safety is demonstrated and applied within the planning and treatment of patients.
2.4 Quality Assurance and Quality control procedures and data are accurately monitored and recorded for future planning and statistical purposes.

Assessment Criteria for Exit-Level Outcomes 3:

3.1 The capability to perform radiation laboratory technology, appropriate to clinical presentation or request, is demonstrated.
3.2 Quality immobilisation and positioning devices are produced for use during patient's set-up treatment.
3.3 The capability to manufacture beam modification devices appropriate to the radiation treatment prescribed is demonstrated.
3.4 The knowledge and application of different materials used in the construction of devices, as required during radiation treatment, is demonstrated.

3.5 The knowledge and application of isotopes according to clinical requirements laid down by current legislation is demonstrated.
3.6 Appropriate health and safety regulations, ethical principles, guidelines and codes of practice in the performance of mould room techniques are applied to ensure personnel, public and patient safety.
3.7 Radiation Protection regulations are implemented and adhered to in the planning and treatment of patients thus ensuring optimal radiation delivery.

Assessment Criteria for Exit-Level Outcomes 4:

4.1 The localization equipment and accessories are safely operated in order to provide the necessary images for treatment planning.
4.2 The patient is accurately positioned according to departmental standards for radiation treatment by applying anatomical knowledge.
4.3 The localization procedure is planned by interpretation and application of the anatomical, pathological and clinical data, for accurate and safe treatment of the patient.
4.4 Customised patient treatment accessories are prepared and constructed by interpreting, applying and verifying theoretical, clinical and technical knowledge and skills, for accurate and reproducible application of treatment plans.
4.5 Immobilisation procedures are appropriately utilised to ensure reproducibility of treatment position.
4.6 Anatomical and pathological knowledge is applied to assist in localization of the neoplasm and treatment fields (Simulation procedures as well as Computerised Tomography (CT) scanning, Magnetic Resonance Imaging (MRI), Positron Emission Technology (PET) and Ultrasound) in order to facilitate accurate and reproducible treatment set-ups for optimum treatment delivery.
4.7 Pathological, radiobiological and radiation physics, theoretical and clinical knowledge is applied to provide physical care to patients with different neoplasms.
4.8 Appropriate data recording of localization results and immobilisation parameters are implemented to further planning and treatment delivery procedures, and for medico-legal purposes.
4.9 Patients with different neoplasms are provided with physical care by applying pathological, radiobiological and radiation physics, theoretical and clinical knowledge.

Assessment Criteria for Exit-Level Outcomes 5:

5.1 The planning equipment, including accessories, is safely operated in order to optimally and accurately plan a patient using ionizing radiation.
5.2 Anatomical, pathological and clinical data are interpreted and applied in order to plan the treatment.
5.3 Computerised treatment plans (2D and 3D) for optimal treatment delivery, not exceeding prescribed doses for normal tissue, are effectively produced by implementing the information gained from localization procedures.
5.4 Radiation treatment doses and times/monitor units to be given to the patient to ensure the treatment delivery complies with the prescription are calculated by utilising knowledge and skills.
5.5 Patients with different neoplasms are provided with physical care by applying pathological, radiobiological and radiation physics, theoretical and clinical knowledge.

Assessment Criteria for Exit-Level Outcomes 6:

6.1 All radiation treatment equipment, including accessories, is safely operated in order to optimally and accurately treat a patient with ionizing radiation.
6.2 Optimal treatment procedures are performed by using integrated theoretical and clinical knowledge.
6.3 Patients are set up accurately for treatment according to prescription by applying anatomical, technical and pathological knowledge.
6.4 Radiation treatment is accurately and safely delivered by interpreting, using and verifying the correct treatment parameters according to prescription.
6.5 Appropriate data are recorded meticulously for medico-legal purposes.

Assessment Criteria for Exit-Level Outcomes 7:

7.1 Management principles and procedures are applied and implemented to ensure effective integration within the radiotherapy department and within the multi-disciplinary oncology team.
7.2 Management skills within the multidisciplinary team are applied to ensure effective and optimal

patient flow.
7.3 Departmental policies and standard operating procedures are implemented and adhered to for effective management of the radiotherapy division.
7.4 Analysis and evaluation of the departmental policies and standard operating procedures are performed for effective management of the radiotherapy division.
7.5 Knowledge and awareness of participation in Continuous Professional Development (CPD) and in-service training is demonstrated to maintain professional knowledge and life-long learning.

Assessment Criteria for Exit-Level Outcomes 8:

8.1 Knowledge production within the profession is understood and participated in to keep abreast of continuing and new developments within the radiotherapy profession.
8.2 Appropriate information technology is used to record, retrieve and communicate patient data.
8.3 An ongoing knowledge of appropriate information technology is maintained in order to keep abreast of modern technology.
8.4 Research principles and methodology in the field of radiotherapy research are applied in order to complete a research proposal, conduct research and present the conclusions in the required format.

Assessment Criteria for Exit-Level Outcomes 9:

9.1 Apply and integrate the principles and/or philosophy of the selected subject into related activities.
9.2 Apply the specialised techniques required to achieve the contextual objective.
9.3 Apply quality assurance principles to ensure optimal results within the context of the subject.

This may be assessed in an integrated way with Exit Level Outcomes 1 to 7.

Integrated Assessment:

Integrated assessment takes the form of an appropriate variety of assessment methods for example: Written and oral examinations, problem-solving assignments, projects, presentations, case studies, portfolios, log books, clinical reports, assessment of clinical competence through simulated and clinical assessment in situ, Objective Structured Clinical Examinations (OSCE) and the successful completion of a mini-dissertation.

The qualification will be awarded to a learner who has provided evidence to the satisfaction of the assessors that the qualification, as detailed in the stated outcomes, has been achieved, either through education and training in a single provider learning programme or though experience that complies with the stated specific outcomes i.e. RPL is applied.

However, the integrated assessment needs to have the following characteristics:

- It should assess the extent to which learners can practice competently, effectively and safely in any clinical context nationally and internationally.
- It should measure the extent to which learners have integrated the professional roles, knowledge, practice and skills delivered through the different outcomes reflected in the relevant programme.
- It should provide opportunities for reflection-in-action and reflection-on-action to develop reflexive competence.

INTERNATIONAL COMPARABILITY

The qualification was designed to meet the needs of Radiation Oncology in South Africa as identified by the National Department of Health and all stakeholders. Alignment with international standards has been considered. This degree was evaluated in terms of the minimum standards for developing countries, as presented in the document of the International Atomic Energy Agency (IAEA): A syllabus for the education and training of Radiation Therapists (RTTs) has reference. In addition, comparison with qualifications in developed countries was also made.

South Africa has had many years of experience in the education and training of Radiation Therapists and

contributes to the training needs for the African continent. In line with international trends, the education of Radiation Therapists moved from being a qualification following a qualification in Diagnostic Radiography to being an independent first qualification. Radiation Therapy has a specific knowledge area that requires high level cognitive and work integrated learning at degree level. This move towards degrees has taken place throughout the world.

In Canada, the British Columbia Institute of Technology (BCIT) offers two different programmes of study. One is a full time course of study over four academic terms. Successful candidates receive a Bachelor of Technology credential. The other course, also full time, is of 33 months duration and successful candidates graduate with a Bachelor of Technology in Radiation Therapy and are eligible to take the National Certification Examinations by the Canadian Association of Medical Radiation Therapists (CAMRT).

Academic and clinical training:

The programme includes both theoretical and clinical components. Each term requires 27-28 hours per week of course work. For every course that the student enrols, a minimum of 60% is required to progress to the next level.

Clinical training takes place in accredited facilities over eight to sixteen weeks. For the learner to graduate, a total of 48 weeks should have been spent in the clinical environment. In addition, the learner must meet the full stipulations and requirements for the CAMRT competency profile which includes patient care, communication, professional behaviour and quality of work.

The Radiation Therapy course offered by BCIT compares well with the proposed Bachelor's Degree in South Africa in that the theoretical component is offered by the academic institutions and the clinical training, at accredited training sites. Both stipulate the number of hours a learner needs to spend in the clinical environment to gain competence in performing various radiation therapy procedures. The major difference is that, in South Africa, there is no national examination. Learners who are successful at various accredited education and training institutions are eligible to register with the Health Professions Council of South Africa (HPCSA) and are awarded professional status and the right to practice within the scope of the HPCSA.

Entrance requirements:

One year of university level academic studies (30 credits) to include:

- Mathematics (preferably calculus based).
- Physics (Grade 12 or post secondary equivalent).
- English.
- Liberal studies course (should have been completed in the last five years or relevant to the current study).
- Complete a minimum of 40 hours volunteer work in a hospital or have previous experience in healthcare to demonstrate commitment to patient care.

These entrance requirements compare favourably with the South African qualification in that both have Maths, Physics and English at secondary school level. Some of the South African Higher Education Intuitions which offer the Radiation Therapy course do recommend that learners visit the hospital environment before enrolling for the course, but do not specify how much time should be spent there.

Accreditation:

Canadian Medical Association Conjoint Committee for Accreditation.

Course content for the Bachelor of Technology, Radiation Therapy:

- Anatomy and Physiology 1: Introduces the learner to cytology, histology, skeletal and muscular system.
- Applied Social Science 1: Assists learners to develop communication and coping skills needed in

healthcare. Also includes ethics, conflict resolution and other diverse cultural issues in the workplace.
- Anatomy and physiology 2: Higher level and includes cardiovascular, nervous, digestive and urinary systems together with concepts and applications for sectional and relational anatomy.
- Applied Social Science 1: Continues the exploration of the psychological and sociological issues that may impact cancer patients.
- Pathology: This includes principles of pathology and fundamental diseases at cellular, local and systemic levels. Learning includes cell injury and death which may be the result of cancer or incorrect treatment procedures.
- Management Skills and Application: This provides the learner with knowledge and skills needed in decision making, planning, organising, leading and controlling various resources in the department.
- Communication 1: This course enables learners to develop communication skills necessary for assignment writing and presentations as well as effective communication with supervisors, colleagues and other students. It may include report writing.
- Communication 2: Builds on communication 1 and helps the learner develop skills to use complex patterns for oral and written communication in preparation for the work environment.
- Canadian Health System: Enables the learners to develop critical thinking and evaluative skills in analysing the Canadian Health System in relation to other systems worldwide.
- Critical Reading and Writing: Helps learner develop advanced skills in critical analysis, to be able to evaluate materials from various sources like videos or music.
- Applied Ethics: Fosters abilities and values required for ethical decision making in the working environment.
- Imaging Technology I: Explores the fundamental principles of computed tomography and magnetic resonance imaging and their application to Radiation Therapy.
- Patient Care: Provides a solid theory base for safety and comfort aspects to be considered during radiation therapy procedures, in relation to the equipment in the patients' environment.
- Physics and Radiation Therapy 1: Introduces fundamental physics and mathematical concepts to the therapeutic use of ionising radiation.
- Physics and Radiation Therapy 2: Provides fundamental principles and concepts of dosimetry in the application of beam data to obtain the optimal treatment plan for each patient.
- Clinical Orientation: Learners spend a week in the clinical environment where they are introduced to treatment and planning procedures.
- Radiation Therapy: Provides for the introduction to the medical terminology in the discipline of oncology.
- Treatment Planning: Includes treatment delivery, roles and responsibilities of various members of the treatment planning team.
- Clinical experience 1: An eight week clinical practicum which enables participation in the patient care activities.
- Radiation Therapy 2: Examines the characteristics of the healthcare practitioner and how these characteristics are incorporated in clinical performance. Medico-legal issues of informed consent are an example.
- Treatment Planning 2: Quality assurance concepts and application to radiation therapy planning and treatment delivery.
- Clinical Techniques: 16 week period in treatment and planning units to gain exposure and experience in therapy techniques.
- Project Research 1: Provides guidance for the student to develop a suitable research project for radiation therapy.
- Radiation Biology and Safety: Provides an in-depth examination of the effects of radiation on living cells at both low and therapeutic doses.
- Clinical Oncology 1: Provides a foundation of knowledge for diagnosis, staging and treatment of malignancies affecting mostly female patients.
- Treatment Planning 3: Delivers clinical application of dosimetry and treatment planning in order to obtain optimal beam arrangements.
- Research Project 2: Enables completion of research project.
- Clinical experience 3: Continues the development and practice of patient care and technical skills. A period of eight weeks is allocated for this.
- Clinical Experience 4: taken in the last term of the study programme. Learner should demonstrate competent performance of all the techniques and procedures outlined in the CAMRT Summary of Clinical Competence.

- Care of the Oncology patient: Provides a holistic model which integrates the approach to healing and optimal outcomes for oncology patients.
- Clinical Oncology 2: Provides foundation and knowledge for the diagnosis, staging and treatment of childhood tumours.
- Treatment Planning 4: S Learners are exposed to manual methods performed to produce composite isodose distributions and the ability to manage digital information.
- Total quality Management: Theory and practice of quality management in healthcare setting.

All the subjects offered at BCIT except for Liberal Studies (Critical Reading and Writing) are in line with the way the South African qualification has been designed. They relate very well to the expected learning outcomes and assessment criteria. This then gives reassurance that the South African qualification is in line with the leaders in the world. The BCIT clinical training is offered throughout the study years at accredited training centres and this is similar to the way radiation therapy is offered by most education institutions in South Africa. The other institution in Canada that offers education and training for Radiation therapists is Alberta Cancer Board.

Alberta Cancer Board offers a training programme which runs for 28 months. Successful completion of the programme allows the learner to be awarded a Diploma in Radiation Therapy, authorised signature as required in the CAMRT clinical summary and endorsement to write the National CAMRT certification examination. This diploma is also recognised by the Athabasca University and the candidates are credited with 30 credits towards the Bachelor of General Studies or Bachelor of Science degree programme.

Entrance requirements are:

- English.
- Physics.
- Statistics.
- Psychology/Sociology.
- Anatomy and Physiology.

Theoretical subjects include the following:

- Radiation protection.
- Anatomy and physiology.
- Treatment planning and dosimetry.
- Professional practice.
- Physics and apparatus.
- Radiobiology.
- Research methodology and Health Administration offered by the Athabasca University as distance learning courses.

The learner is expected to demonstrate gradual increase in levels of knowledge and skills throughout the study programme. Clinical training takes place at accredited hospitals and the learners are allocated on rotational basis.

The content of these study programmes also compare favourably with the SA qualification and would well match an earlier exit level. This is not accommodated in the proposed qualification even though the current education programmes are similar to Alberta radiation therapy programme.

This further strengthens the fact that the radiation therapy programmes, as offered in South Africa currently or in future, are well in line with the international programmes by leaders in the field. To further demonstrate how South Africa compares with international states, the next section looks at the qualification offered in New Zealand.

The New Zealand University of Otago offers a Medical Radiation Therapy programme on full-time basis over three years. There is an opportunity to study further for a year in an honours programme. The study programme here also compares favourably with the Canadian and South African qualifications because it incorporates clinical training throughout the study years. Entrance requirements and subjects taught are

also comparable. What is different from the South African education programme is that learners are not expected to have a First Aid certificate as an entrance requirement. In Otago, students need this before they can be accepted to the course. The students are further required to keep their certification in first aid current throughout their study programme. In South Africa, learners are offered the opportunity to attend training and pass the examination while registered for the radiation therapy or any radiography programme. The learner is expected to pass first aid before a diploma or degree can be awarded on completion of their study years.

With regard to clinical training, learners are allocated to spend three weeks in the oncology department during the first year, the full first semester during the second year and during the third year; they spend the full second semester in the clinical department. The other important factor of the clinical training is that there is a major training centre as well as other centres where learners are rotated to gain clinical experience. This is similar to the situation in South Africa where the registration council stipulates that learners should be given the opportunity to gain all the experience needed for them to be clinically competent. It is made the responsibility of the education institution to ensure that learners rotate to various clinical training centres during their study years.

Learners are awarded a degree in Medical Radiation Therapy-BhealSc (MRT) on completion of the study programme. This offers them an opportunity to specialise either in the area of treatment delivery or planning, or to become an educator. There are also options to follow the Honours route. On graduating, the candidates are eligible to register with New Zealand Medical Radiation Technologists Board, which confers the professional status to take employment either in state or private healthcare institutions. This registration requirement is the same as in South Africa in that successful candidates from various accredited institutions in South Africa are required to register with the HPCSA before they can practice either in state or private healthcare institutions.

Hong Kong Polytechnic University offers a BSc Honours in Radiography which has two main streams, namely diagnostic radiography and radiation therapy. The course is offered on a full-time basis over three years. It includes both theoretical and clinical components. The first year of study provides a foundation for the following two years where the integration of theory and practice takes place. The choice of the two fields to follow is made in the second year.

Learners are introduced to Clinical Research during semester two of the second year of study. They then continue with a research project which should be completed before the degree can be awarded. Successful learners are employed in state, private hospitals and clinics, as well as by the commercial sector. The qualification is recognised internationally and as such graduates do not have a problem finding employment in other countries worldwide.

The Hong Kong qualification differs from that in South Africa with regard to the duration of study. With regard to subjects taught and mode of integrating theory and practice, they compare fairly well. The other similarity is that both qualifications are a prerequisite for registration to practice. In Hong Kong, qualified radiographers register on Part Two of the Register for the Hong Kong Radiographers' Board. There are also opportunities for further study into either a full- or part-time Master's programme, as is the case in South Africa.

The African Context:

South Africa is a leader in the education and training of RTTs in Africa. Hence this country played a significant role in developing minimum training requirements for this specialised group of health care practitioners. Learners from across Africa attend at South African institutions for training. Academics from South Africa have contributed to implementing training in Ghana, Nigeria, Ethiopia and Uganda and act as external examiners at the universities in Ghana and Zimbabwe. In terms of comparability the South African Qualification, together with Zimbabwe (3-year degree and diploma qualification) and Ghana (3-year degree programme), exceeds the minimum standards as presented by the IAEA.

A brief view of the emerging world:

Cancer incidence is rising in the emerging world economies, which according to Adams, Yang & Rosenman (2005: 83-89) could include countries in South and Central America, North African countries,

South Africa, Russia, China and India. These emerging countries have a concern for public health and can afford to buy access to better radiation technology in order to allow more patients the appropriate radiation therapy for cancer treatment. The increase in radiation technologies i.e., linear accelerators, digital imaging and planning, highlights the need for appropriately-trained RTT's in what is becoming an increasingly sophisticated and specialised work. South Africa and other African countries use Cobalt-60 treatment units fairly extensively. Linear accelerators, sophisticated digital imaging and increasingly specialised radiotherapy planning and treatment methods are being used in South Africa, in both the public and private sector. Therefore the curriculum content and Qualification should reflect and accommodate the required increase in skills levels in radiation therapy practice and research opportunities.

Conclusion:

Qualifications for RTTs exist in only 4 countries in Africa, with several other countries in the process of developing programmes for this category of health care professionals. The new qualification developed for South Africa is in line with what is being offered by leading and developing countries in the world. South Africa must continue to take the lead in Africa by offering a qualification that is comparable to international standards while accommodating the needs of the community for radiation oncology services in the local context.

ARTICULATION OPTIONS

Vertical articulation:

- ID 66229: Master of Radiography, NQF Level 8 and above.

Horizontal Articulation:

- ID 66949: Bachelor of Diagnostic Radiography, NQF Level 7.
- ID 66950: Bachelor of Nuclear Medicine: Radiography, NQF Level 7.
- ID 63449: Bachelor of Radiography: Diagnostic Ultrasound, NQF Level 7.

MODERATION OPTIONS

Internal and external moderation of learner achievement should be undertaken by those who have qualifications at or above the level of qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessments are conducted by one or more internal assessors/examiners employed by the relevant provider as well as an external moderator appointed from industry/other academic institution. Practising practitioner, registered with the relevant Statutory Health Council, with a Bachelor of Radiation Therapy, or equivalent, or higher, or appropriate research/teaching/academic/clinical experience in the category is appointed.

NOTES

As per the SAQA decision, after consultation with the Quality Councils, to re-register all qualifications and part qualifications on the National Qualifications Framework that meet the criteria for re-registration, this qualification has been re-registered from 1 July 2012.
Successful completion of this qualification will enable the applicant to be registered by the relevant Statutory Health Council.

UNIT STANDARDS:

This qualification is not based on Unit Standards.

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION:

NONE

PROVIDERS CURRENTLY ACCREDITED TO OFFER THIS QUALIFICATION:

This information shows the current accreditations (i.e. those not past their accreditation end dates), and is the most complete record available to SAQA as of today. Some Quality Assuring Bodies have a lag in their recording systems for provider accreditation, in turn leading to a lag in notifying SAQA of all the providers that they have accredited to offer qualifications and unit standards, as well as any extensions to accreditation end dates. The relevant Quality Assuring Body should be notified if a record appears to be missing from here.

NONE
