
GOVERNMENT NOTICES

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 1011

26 September 2008



SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Task Team for

Radiography and Clinical Technology

registered by Organising Field 09 – Health Sciences and Social Services, publishes the following Qualification for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification. The full Qualification can be accessed via the SAQA web-site at www.saqqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification should reach SAQA at the address below and ***no later than 27 October 2008***. All correspondence should be marked **Standards Setting – Task Team for Radiography and Clinical Technology** and addressed to

The Director: Standards Setting and Development
SAQA

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
Doctor of Clinical Science

SAQA QUAL ID	QUALIFICATION TITLE		
63949	Doctor of Clinical Science		
ORIGINATOR		PROVIDER	
TT - Radiography and Clinical Technology			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Doctoral Degree	9 - Health Sciences and Social Services	Curative Health	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	360	Level 8 and above	Regular-ELOAC

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

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

The learner who successfully completes this qualification will be able to:

- > Apply high level problem-solving skills and critical reflective reasoning at the most advanced academic levels culminating in the production of a thesis that meets the accepted criteria and ethical principles for the academic institution.
- > Develop a comprehensive and high level of thinking, enquiry and insight by exploring untapped scientific territories in pursuit of universal knowledge.
- > Have an opportunity to engage in meaningful and sound academic discourse according to the National and International Community of Clinical Scientists.
- > Apply the acquired specialised knowledge by Mentoring and Coaching lower level research students.

Rationale:

The South African government has identified a critical need for Clinical Scientists who can make a significant and original contribution through independent research in a specialised area of technology.

This qualification has been structured to:

- > Meet that need and provide for advanced research within technology through the inclusion of a research dissertation that complies with the accepted norms, criteria and ethical principles for research at a doctorate level.
- > Contribute to the solutions which are aligned to the rising challenges of the Health Systems within the Continent and the Country.
- > Add value to Scientific Research Skills which is a critical factor in positioning Candidates for competitive global participation, innovation and leadership within the field of Science and technology.
- > To conduct original research within the field of technology and present their findings at local and international conferences/seminars as well as publish them in accredited publications.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

> Successful completion of the Master of Clinical Science (or equivalent).

Recognition of Prior Learning:

Recognition of prior learning will be applied on an individual basis and will be conducted in accordance with the institutional and accredited RPL policies. Providers are required to develop structured and accredited means of the assessment of individual learners against the exit-level outcome of the qualification on a case-by-case basis. Such procedures and the assessment of individual cases are subject to moderation by independent assessors.

Access to the Qualification:

Successful completion of a Master of Clinical Science or equivalent qualification in accordance with the selection protocol of the educational institution or through recognition of prior learning (RPL). Evidence of prior learning may be presented in a format agreed to by the relevant provider or the relevant Education and Training Quality Assurance body (ETQA) or ETQA that has a Memorandum of Understanding in place with the relevant ETQA.

QUALIFICATION RULES

A minimum total credits of 360 at NQF Level 9.

EXIT LEVEL OUTCOMES

The Clinical Scientist with a Doctoral Degree will show competence in the following exit level outcomes in order to contribute to original global knowledge in the particular field/area chosen, by applying scientifically appropriate research methods, theories and techniques appropriately and correctly and producing a thesis which meets international standards:

1. Conduct independent research into the literature within the broader context of the field/area of investigation to synthesise and critically evaluate existing information and knowledge.
2. Plan, design, motivate, budget for, and conduct a comprehensive scientific research project.
3. Critically analyse, evaluate and interpret the findings.
4. Report the findings in a thesis, in a scientific format for international consumption.

Critical Cross-Field Outcomes:

- > Identify and solve problems and think critically and creatively in designing, executing and reporting on a specialised area of Clinical Technology.
- > Collect, organise, analyse and evaluate information by data collection and its synthesis into a logical contribution to the knowledge in the particular field chosen for the study.
- > Work effectively with specialised scientists in the particular field at a high academic level.
- > Manage one's own time to achieve execution of a research plan and integrate all the conflicting information pertinent to the study within the stipulated time frames.
- > Communicate, particularly in scientific terms, in internationally acceptable language both verbally and in written reports and publications.
- > Using science and technology to contribute to the existing knowledge and future understanding in the field is an overt outcome of this qualification.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit-Level Outcome 1:

- > The research field and its implications are critically explored evaluated, analysed and justified in a research report.
- > Relevant and recent information on the research area is gathered from wide variety of sources.
- > Relevant and current information is critically analysed, evaluated and discussed in a detailed literature review.

Associated Assessment Criteria for Exit-Level Outcome 2:

- > Appropriate research design and methodology are selected, described, justified and defended in terms of the research topic.
- > A research proposal is compiled and presented in accordance with the institutional research policies and procedural criteria.
- > The budget for the research is drawn in an accurate, honest and responsible manner.
- > Medical and research ethics and legal issues pertinent to research in technology are critically reflected on, included in the proposal and adhered to during the research process.
- > The experimental research is responsibly and ethically conducted.

Associated Assessment Criteria for Exit-Level Outcome 3:

- > Data is analysed using the relevant instruments and statistical tools.
- > Logical interpretation of data reflects clear understanding of the relationship between facts in the study and the ability to evaluate contradictory information.

Associated Assessment Criteria for Exit-Level Outcome 4:

- > The dissertation is written up according to the institutional research policies and procedural criteria.
- > Information technology skills are applied effectively in the production of the thesis.
- > Language and numeracy skills are applied effectively and correctly in clearly communicating the research problem, its investigation, the outcome, and the recommendations.
- > New knowledge, or technology or solution to a problem is contributed and published in appropriate journals and presented at appropriate conferences and seminars.

Integrated Assessment:

Continuous assessment will be used to assess the learner's performance. The learner will be afforded opportunities to improve performance through formative assessment before summative assessment is performed.

INTERNATIONAL COMPARABILITY

Introduction:

The South African government has identified a need for both a specialist Clinical Technologist who can operate independently at an advanced level in the various categories of clinical technology as well as those who will make a contribution, through independent research in a chosen field. The developed qualification should further be comparable with qualifications offered elsewhere in the world. This will ensure that South Africa is on par with international trends and that the students who graduate with these qualifications will have employment and global competitive edge. This qualification was compared to those offered in America and the United Kingdom (UK). Documents on international as well as national curricula have been consulted.

USA Doctoral Degree Programmes:

The US PhD degree or doctoral degree is even more focused and specialized than the master's degree. Some students will complete a master's degree before applying to a doctorate degree programme, but that is not always necessary. Completion of a US doctorate degree typically takes between three and six years. The length of time will depend on the student's educational background (a student with a master's degree may take less time to complete his PhD if it is in the same field), the field of study selected, the student's dedication and ability, and the complexity of the thesis the student has chosen for his PhD. The thesis is a very long, extensive, and original research paper that is a requirement for completing the PhD programme.

Professional doctorates in the United States: In the United States, there are numerous degrees which incorporate the word "doctor" and are known as "professional doctorates". Such fields include audiology, chiropractic, dentistry, education, law, medicine, occupational therapy, optometry, osteopathic medicine, pharmacy, physical therapy, podiatry, practical theology, psychology, veterinary medicine, and many others that usually require such degrees for licensure, including several in development such as that for medical physics. Generally, these degrees are considered "first professional degrees". Professional doctorates were developed in the United States in the 19th century during a movement to improve the training of professionals by raising the requirements for entry and completion of the degree necessary to enter the profession. These professional doctorates were more rigorous than their bachelor equivalents in the U.S. and replaced them. The first professional doctorate was the M.D. in 1807 which was nearly sixty years before the first Ph.D. was awarded in the U.S. in 1861. The Juris Doctor was subsequently established by Harvard University for the same reasons that the Doctor of Medicine (MD) was established.

Doctor of Health Science (DHSc): The Doctor of Health Science degree was created in Europe and Australia. It is a post-professional doctorate and was usually awarded after completion of coursework and research to clinicians who do not hold the Doctor of Medicine (M.D.) degree. In Europe and Australia, the degree is awarded after completion of two to three years of coursework and research beyond the Masters degree. The degree found its place in the United States in early 2000 with the first "Doctor of Health Science" degree offered to Physical Therapists by the University of St. Augustine in Florida, USA. Concurrently, another programme was developing at Nova Southeastern University (NSU) in Fort Lauderdale, Florida. Nova Southeastern graduated its first class of Doctor of Health Science students in 2003. In 2008, A.T. Still University-Arizona School of Health Sciences in Mesa, Arizona became the second university offering this degree. While there are very few Doctor of Health Science programmes in the United States, these two programmes are the only unifying Doctorates open to Masters educated clinicians from all disciplines. Like its European counterparts, the degree requires two to three years of coursework and research beyond the Masters credential.

Argentina:

Similar to other countries, in Argentina the doctorate is the highest. The intention is that candidates produce true and original contributions in a specific field of knowledge within a frame of academic excellence. The doctoral candidate's work should be presented in a dissertation or thesis prepared under the supervision of a tutor or director, and reviewed by a Doctoral Committee. This Committee should be composed of examiners external to the programme, and at least one of them should also be external to the institution. The academic degree of Doctor is received after a successful defense of the candidate's dissertation. Currently, there are approximately 2,151 postgraduate careers in the country, of which 14% were doctoral degrees. Doctoral programmes in Argentina are overseen by the National Commission for University Evaluation and Accreditation, which is a decentralized agency in Argentina's Ministry of Education, Science and Technology.

Germany:

A research doctorate usually takes three to five years to complete. In Germany, most doctorates are awarded with specific designations for the field of research instead of a general "PhD" for all

fields. The degree is written in front of the first name for addresses (within texts, the abbreviation "Dr." is common) and accompanies the person's name (unlike in German-speaking Switzerland). There are no first degree doctorates but medical students can obtain a "Dr. med." after one semester of mostly undergraduate research or data evaluation. The "Dr. med." is not equivalent to a PhD but to a Masters degree. Medical Students going into research can obtain a research doctorate in some subjects, such as molecular medicine or human biology.

Upon the completion of the habilitation paper a senior doctorate (habil) is awarded. This senior doctorate is known as the habilitation. It is not a degree, but an additional qualification. It authorizes the owner to teach at German universities, plus qualifies the holder of the "habil." to teach in a certain subject. This or an equivalent professional experience is, traditionally the necessary prerequisite for a position of Professor.

Spain:

Doctor Degrees are regulated by Royal Decree (R.D. 778/1998). They are granted by the University on behalf of the King, and its Diploma has the force of a public document. The Ministry of Science keeps a National Registry of Theses called TESEO. According to the National Institute of Statistics, less than 5% of M.Sc. degree holders are admitted to Ph.D. programs, and less than 10% of 1st year Ph. D. students are finally granted a Doctorate. All doctoral programmes are of research nature. A minimum of 5 years of study are required, divided into 2 stages:

> A 3-year long period of studies, which concludes with a public dissertation presented to a panel of 3 Professors. If the project receives approval from the university, he/she will receive a "Diploma de Estudios Avanzados" (part qualified doctor).

> A 2-year (or longer) period of research, wherein extensions may be requested for up to 10 years. The student must write his/her thesis presenting a new discovery or original contribution to Science. If approved by his/her "thesis director", the study will be presented to a panel of 5 distinguished scholars. Any Doctor attending the public presentations is allowed to challenge the candidate with questions on his/her research. If approved, he/she will receive the doctorate. Four marks can be granted (Unsatisfactory, Pass, "Cum laude", and "Summa cum laude"). Those Doctors granted their degree "Summa Cum Laude" are allowed to apply for an "Extraordinary Award". A Doctoral Degree is required in order to apply to a teaching position at the University.

All Doctoral Degree holders are reciprocally recognized as equivalent in Germany and Spain ("Bonn Agreement of November 14th 1994").

United Kingdom:

All doctorates (except for those awarded *honoris causa*) granted by British universities are research doctorates in the sense described above, in that their main, and in many cases, only component is the submission of a thesis or portfolio of original research, examined by an expert panel appointed by the university. Even the relatively new 'vocational doctorates' such as the EngD, EdD, DSocSci and DClinPsych require the submission of a body of original research of a similar length to a PhD thesis. In the case of the EngD, however, this might be in the form of a portfolio of technical reports on different research projects undertaken by the candidate as opposed to a single, long monographical thesis. Another important difference is that traditional PhD programmes are mostly academic-oriented and normally require full-time study at the university, whereas, in an EngD programme, the candidate typically works full-time for an industrial sponsor on application-oriented topics of direct interest to the partner company and is jointly supervised by university faculty members and company employees.

The PhD itself is a comparatively recent introduction to the UK, dating from 1917. It was originally introduced in order to provide a similar level of graduate research training as was available in several other countries, notably Germany and the USA. Previously, the only doctorates available were the higher doctorates, awarded in recognition of an illustrious research career. The universities of Oxford and Sussex denote the degree of Doctor of Philosophy with the postnominal initials DPhil. The University of York also did this for some years, switching to the more conventional PhD quite recently.

Higher doctorates in the United Kingdom are awarded in recognition of a substantial body of original research undertaken over the course of many years. Typically the candidate will submit a collection of work, which has been previously published in a peer-refereed context. Most universities restrict candidacy to graduates or academic staff of several years' standing. The most common doctorates of this type are those in Divinity (DO), Medicine (MD or OM), Laws (IID), Civil law (DCI), Music (DMus or MusD), Letters (DLitt or LittD) and Science (DSc or ScD).

Conclusion:

This qualification compares well with international standards.

ARTICULATION OPTIONS

Any other recognised and relevant qualifications.

MODERATION OPTIONS

- > Assessment within this qualification will have to be qualified as such and satisfy the stipulated conditions as outlined by the relevant ETQA of the accrediting body.
- > Formative Assessment will be carried out internally whilst both internal and external moderation will be conducted by a recognised moderator.
- > At the exit points of the qualification, moderation of assessment will be executed internally and externally.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

In order for a Candidate to register as an assessor for this qualification, the candidate must:

- > Posses a relevant doctorate at NQF Level 8+.
- > Possess relevant experience and proven record in research within the related field of study.
- > Be familiar with the research community as an expert in the field of study.

NOTES

N/A

UNIT STANDARDS

This qualification is not based on Unit Standards.

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION

None