APPLICATION FORM FOR PROGRAMME ACCREDITATION:

The first part of the form requires information about the programme submitted for accreditation. Once the application is submitted a reference number will be issued. This reference number is for use in subsequent correspondence.

Please indicate all delivery sites for the proposed programme. (Tuition Centres to be used for Distance Education should not be listed in this form.)

Site name	Physical Address	Postal Address	Contact Name	Contact Title	Contact email	Contact Tel. No.	Contact Fax No.
Mangosuthu University of Technology	Mangosuthu Highway		Wiseman Nsele	Mr.	nsele@mut.ac.za	031-907 7150	031-907 7150

A) PROGRAMME INFORMATION

<table>
<tr><td colspan="2">Programme Name:</td></tr>
<tr><td>Mode of Delivery:</td><td>
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<tr><td>Contact</td><td>x</td></tr>
<tr><td>Contact and Distance</td><td></td></tr>
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<tr><td>Mixed mode</td><td></td></tr>
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<tr><td>Programme Type:</td><td>
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<tr><td>Non-professional</td><td></td></tr>
<tr><td>Teacher Education Programme</td><td></td></tr>
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<tr><td>Advanced certificate</td><td></td></tr>
<tr><td>Diploma</td><td></td></tr>
<tr><td>Advanced diploma</td><td></td></tr>
<tr><td>Bachelor’s degree (3 years)</td><td></td></tr>
<tr><td>Bachelor’s degree (4 years)</td><td>x</td></tr>
<tr><td>Postgraduate diploma</td><td></td></tr>
<tr><td>Bachelor Honours degree</td><td></td></tr>
<tr><td>Masters degree</td><td></td></tr>
<tr><td>Doctoral degree</td><td></td></tr>
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<tr><td>Qualification Designation: (This only applies to degree programmes)</td><td>
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<tr><td>Education</td><td></td></tr>
<tr><td>Engineering</td><td></td></tr>
<tr><td>Law</td><td></td></tr>
<tr><td>Medicine</td><td></td></tr>
<tr><td>Science</td><td>X</td></tr>
<tr><td>Social Science</td><td></td></tr>
<tr><td>Other-Alternative Designator</td><td></td></tr>
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<tr><td>Alternative designator: (This only applies if Other-Alternative Designator was selected as Qualification Designation above)</td><td></td></tr>
<tr><td>Motivation for use of designator alternative: (This only applies if an alternative designator is specified)</td><td></td></tr>
<tr><td>CESM Classification: (e.g. Education) (refers to DOE CESM classification)</td><td>CESM 09: Health Professions and Related Clinical Sciences</td></tr>
<tr><td>First Qualifier: (e.g. 0703 – Education Management and Leadership) (refers to DOE CESM classification)</td><td>Medical Laboratory Sciences</td></tr>
<tr><td>Second Qualifier: (e.g. 070305 Higher Education) (refers to DOE CESM classification)</td><td>Prospective Biomedical Laboratory Scientists need to select one field of specialisation. They have a choice of 12 electives :
• Clinical pathology (a broad specialisation consisting of Clinical Chemistry, Haematology and Microbiology)
*090706 Chemical Pathology
*130502 Medical Microbiology and Bacteriology
*130504 Parasitology
*130505 Mycology
*Haematological Pathology</td></tr>
</table>

	• Clinical Chemistry *090706 Chemical Pathology • Haematology *090728 Haematological Pathology • Microbiology (incorporates 3 different fields) *130502 Medical Microbiology and Bacteriology *130504 Parasitology *130505 Mycology • Immunohaematology *130506 Immunology • Cytology *090766 Cytopathology • Histology *130401 Cell/Cellular Biology and Histology • Immunology *090729 Immunopathology • Virology *130503 Virology • Forensic Sciences *090721 Forensic Pathology • Pharmacology *130901 Pharmacology *Cytogenetics *130706 Human/Medical Genetics • Clinical pathology (a broad specialisation consisting of Clinical Chemistry, Haematology and Microbiology) *090706 Chemical Pathology *130502 Medical Microbiology and Bacteriology *130504 Parasitology *130505 Mycology *Haematological Pathology • Clinical Chemistry *090706 Chemical Pathology • Haematology *090728 Haematological Pathology • Microbiology (incorporates 3 different fields) *130502 Medical Microbiology and Bacteriology *130504 Parasitology *130505 Mycology • Immunohaematology *130506 Immunology • Cytology *090766 Cytopathology • Histology *130401 Cell/Cellular Biology and Histology • Immunology *090729 Immunopathology • Virology

	*130503 Virology • Forensic Sciences *090721 Forensic Pathology • Pharmacology *130901 Pharmacology *Cytogenetics *130706 Human/Medical Genetics	
NQF Level: (e.g. Level 5,6,7,8,9 or 10)	8	
Total Number of Credits:	502	
Minimum duration for completion - Full Time: (number of years)		4
Minimum duration for completion - Part Time: (number of years)		
Has the programme been approved by the relevant governance structure within the institution? (yes or no)		Yes
If Yes: Date of approval:		
Date by which you plan to start offering the programme	January 2016	

B) APPLICATION FORM FOR PROGRAMME ACCREDITATION

This part of the form requires an evaluation of the extent to which the proposed programme fulfils the HEQC accreditation criteria. Please note that the information provided should demonstrate compliance with the minimum standards.

Minimum standards provide the full text of the minimum standards programmes are expected to meet in relation to each criterion.

1. PROGRAMME DESIGN (criterion 1)

Minimum standards:
The programme is consonant with the institution's mission, forms part of institutional planning and resource allocation, meets national requirements, the needs of students and other stakeholders, and is intellectually credible. It is designed coherently, and articulates well with other relevant programmes, where possible.

1.1 How does this programme fit in with the mission and plan of the institution?

- **Mission Statement**

  "Our mission is to provide advanced, technology-based programmes and services that are career- and business-oriented in the broad fields of engineering, natural and management sciences for the uplift of talented but mainly disadvantaged individuals. By so doing, the University shows its commitment to social redress. It contributes to creating an equitable and prosperous Southern Africa in which individuals have the opportunity to achieve their full potential."

The input of qualified Medical Laboratory Scientists is necessary in the diagnosis, monitoring and treatment of disease.

There is a great demand for highly skilled and suitably qualified Medical Laboratory Scientists as a health care resource and there is currently a critical shortage in South Africa.

The acquisition of advanced competencies is required by the sector in order to meet the HPCSA legislative and operational requirements.

The qualification provides for learners with operational competencies as well as management skills, including supervision, mentoring and leadership.

1.2 Provide a rationale for this programme, taking into account the envisaged student intake and stakeholder needs.

Medical technologists play an integral part in the healthcare of any country. Qualified medical technologists are specialised health professionals who provide vital information about a patient's state of health. Their input is necessary in the diagnosis, monitoring and treatment of disease. The analytical and diagnostic services provided by medical technologists require them to have advanced scientific knowledge and skills, superior reasoning ability and empathy for human kind.
Although the training of medical technologists is regarded highly overseas, a Professional degree is required for international benchmarking. A programme of international standing will also attract international students and academics. In order to fulfill this need, the Medical Technology fraternity which encompasses both practitioners and academia, investigated

the need for a Professional Degree in South Africa, as well as a name change to Medical Laboratory Scientist, in order to bring South Africa in line with international trends
The Professional degree has been structured to produce graduates with stronger scientific knowledge and skills, better reasoning ability and research skills through the development of higher level cognitive skills and competencies associated with this professional degree at NQF level 8
The Bachelor of Science in Medical Laboratory Sciences (B Sc MED LAB SCI) is a four-year Professional degree that differs from its predecessor, the ND: Biomedical Technology, which is a three-year diploma. Currently applicants wishing to become medical technologists need to complete the ND: Biomedical Technology at an institution accredited for training with the Health Professions Council of South Africa (HPCSA). They also need to complete a 12 month internship at an accredited laboratory and then write the National Board Examination in their chosen field of specialization before they can register as qualified medical technologists. The institutions that award the ND: Biomedical Technology have no input into the internship and National Board Examination.
The Professional Degree has been structured so that it contains elements of both the National Diploma, as well as the B. Tech: Biomedical Technology. The internship period falls away and is replaced by *Clinical Practice IV*. The content of these courses will be updated to reflect the latest advances in scientific knowledge and technology. The National Board Examination will be incorporated into the Professional degree. This will be the student's final integrated summative assessment (FISA) which they will need to pass in order to graduate.
Previously the National Board Examination fell outside the realm of the Universities of Technology and was administered by the Professional Board for Medical Technologists of the HPCSA. Although South African medical technologists are well-skilled, overseas countries do not readily accept the credentials of the three-year diploma. The Internship year that graduates complete after their National Diploma is not readily recognised internationally as it is not a formalized academic qualification. The standard of the National Board Examinations in the various disciplines seems to vary significantly and it has been of concern particularly to academics in Medical Technology. Very few of the assessors and moderators of the National Board Examinations have experience or are not suitably qualified in the discipline of education resulting in the poor design of assessment tools and therefore the variation in standards of the National Board Examinations papers. With the introduction of the Professional Degree, the universities will have control over the standard of the papers, thereby ensuring uniformity throughout the disciplines.
The content of the current National Diploma has been modified substantially by the incorporation of material reflecting the advances in science and technology that is currently employed in the pathology industry. The cognitive level of the course has also been upgraded to that expected of NQF level 8 qualifications. New courses such as Cell Biology have been introduced. The content of the first-year courses of Physics, Chemistry and Calculations & Statistics has been streamlined to include materials more applicable to Medical Laboratory Scientists. The names of these courses have been changed to *Health Physics*, *Health Chemistry* and *Biostatistics* to reflect the medical slant of these courses. Names of courses have been altered to reflect international trends. For example, Blood Transfusion has been changed to *Immunohaematology* while Chemical Pathology is named *Clinical Chemistry*.
All material covered in the different courses will be integrated in a course named *Integrative Medical Laboratory Sciences III* in the third year. The rationale behind this course is that the human body is complex. When one is affected by disease or syndrome, the aberration in the body is not one of purely, for example, chemistry that has gone wrong (related to the discipline of clinical chemistry), or defects with the cellular components of blood (related to the discipline of haematology). It is a cascade of events that occurs which affect the chemical processes, the haematology, the cellular and tissue morphology. Disease is defined as any deviation from or interruption of the normal functions of any organ or system of the body. The pathophysiology, i.e the disturbance of physiological processes, affects chemical processes within the body, structure of tissues and the ability of cells to function normally. Students have the tendency to compartmentalize information within a course. The realization

that disease is a multifaceted process needs to be instilled in them. Therefore, students need to be taught how to integrate information to come to a final diagnosis. In this course students will be presented with case studies they will use the information acquired in the various clinical subjects to analyse and solve the case study. (Annexure 10: DoHET application)
There is a stronger research component built into the programmed. Research *Methods* is to be presented in the third year. Students are expected to complete a research project in the field of their elective in the fourth year.
Students in their fourth year of study will need to select an area of specialisation in which they will practice. During that year they will spend the majority of their time in the laboratory where they will build on and acquire further theoretical and practical competencies in the work environment of their field of specialization and complete their research project under supervision of the mentor in the laboratory and their research supervisor from CPUT. They will attend lectures at the University for the remainder of the time.
The function of the training co-ordinator will be to implement training for Module B of "*Medical Integrative Science III*" and "*Clinical Practice IV*". Training co-ordinators will need to have the following qualifications and competencies:
• B Tech: Biomedical Technology or NHD: Medical Technology or higher.
• Registered with the HPCSA in the discipline in which they train/practice.
• An educational qualification (e.g. Train-the-Trainer)
• Registered as an assessor and moderator
• Have at least five years of experience in the field in which they are registered.

1.3 Describe the articulation possibilities of this programme.

Both horizontal and vertical articulation will be possible with this degree.
Horizontal Articulation:
(a) Graduates wishing to register with the Professional Board for Medical Laboratory Scientists of the HPCSA and practice in another discipline offered by the University, other than that in which they are already qualified, may complete a one-year postgraduate certificate (120 credits) in their discipline of choice. For example, a person that has qualified and registered to practice in the discipline of Clinical Pathology may decide to specialise in the discipline of Virology. In order to practice in the field he or she will need to complete the postgraduate certificate in Virology. This would be equivalent to the fourth year course of *Clinical Practice IV* in the specialisation of Virology.
(b) B Sc graduates, or students having commenced studies for a relevant B Sc or MBCHB wishing to follow a career in medical laboratory sciences may receive recognition for relevant credits for some of the courses successfully completed in their BSc. Recognition of subjects will be allowed where there is an 80% overlap in content between the course for which the student requests credits and the content of the course completed in their first degree. Students will need to provide a certified academic transcript as well as the content of the course which he or she completed as proof that the course work was covered.

Vertical Articulation:
(a) B Sc in Medical Laboratory Science graduates or graduates with an appropriate B Sc Honours, with an overall achievement of 60% or more in their undergraduate degree may be admitted to a Master's degree in Science in Biomedical Science.

(b) Successful completion of the Master's degree in Science in Biomedical Science will allow a student access to the PhD in Biomedical Science.

(c) A graduate with the B Sc in Medical Laboratory Science professional degree would be able to access Master's and PhD programmes in related science fields at other institutions both nationally and internationally.

(d) A medical technologist who has qualified with a ND: Medical Technology, NHD: Medical Technology, ND: Biomedical Technology or B Tech: Biomedical Technology will be able to articulate to the Professional degree i.e the B Sc in Medical Laboratory Science.

Numerous queries have been received from medical technologists expressing interest in the Professional degree. Recognition of prior learning (RPL) will be employed to allocate credits to these applicants for knowledge and skills that they have acquired over the years. However, as scientific knowledge has increased and technology changed over the years, many of these applicants may need to upgrade their current qualification by completing additional modules in courses such as Immunology, Molecular Biology, Research Methodology, Laboratory Management and Integrated Pathophysiology.
Many medical technologists, particularly long standing ones, only have a ND: Medical Technology or a ND: Biomedical Technology. The current B Tech: Biomedical Technology qualification has been viewed as not worthy by the Profession as it is too generic and does not offer a field of specialisation. Hence few medical technologists have furthered their education on completing the national diploma. The offering of a professional degree with a specialization (an elective) and the implications of better status associated with a degree will spur numerous medical technologists to improve their qualifications. Scientific knowledge, and therefore the professional practice, has changed significantly in the past thirty years and mechanisms such as RPL will need to be employed to credit them for what they have done and then they will have to complete at least 50% of the courses towards the Professional degree.
Various means of articulation will be necessary to accommodate Medical Technologists that have completed the different offerings of the National Diploma in either Medical Technology or Biomedical Technology in South Africa. Laboratory staff, particularly those who have been in the laboratories for fifteen years or more, will be able to update their scientific knowledge and broaden their horizons. A committee consisting of academics and practitioners in medical technology will be guided by experts in the field of articulation and RPL in designing this process.

1.4 Provide the names of the modules/courses which consitute the programme - and for each course, specify:

- Module name
- NQF Level of the module
- Credits per module
- Compulsory/optional
- Year (1, 2, 3, 4)
- Total credits per year

Course Name	NQF level	Credits	Core/ Elective	Year level
YEAR 1				
Human Anatomy, Physiology and Disease 1	5	30	C	1
Integrative Medical Sciences 1 (4 modules)	5	46.5	C	1
Introduction to Medical Laboratory Sciences 1 (6 modules)	5	19.5	C	1
Cell Biology 1	5	12	C	1
Immunology 1	5	12	C	1

		120		
YEAR 2				
Clinical Chemistry 11	6	24	C	2
Medical Microbiology 11	6	24	C	2
Haematology 11	6	24	C	2
Immunohaematology 11	6	12	C	2
Histology 11	6	12	C	2
Cytology 11	6	24	C	2
		120		
YEAR 3				
Clinical Chemistry 111	7	12	C	3
Medical Microbiology 111	7	12	C	3
Haematology 111	7	12	C	3
Cytology 111	7	12	C	3
Integrative Medical Laboratory Sciences 111 (2 modules)	7	69	C	3
Research Methods 111	7	9	C	3
		126		
YEAR 4				
Clinical Practice 1V (Students need to select one area in they wish to specialize from the choices below)	8	119	E	4
• Clinical Pathology 1V	8		E	4
• Clinical Chemistry 1V	8		E	4
• Medical Microbiology 1V	8		E	4
• Haematology 1V	8		E	4
• Immunohaematology 1V	8		E	4
• Cytology 1V	8		E	4
• Histology 1V	8		E	4
• Immunology 1V	8		E	4
• Virology 1V	8		E	4
• Forensic Sciences 1V	8		E	4
• Pharmacology 1V	8		E	4
• Cytogenetics 1V	8		E	4
Research Project 1V	8	13.6	C	4
Laboratory Management 1V	8	4.2	C	4
		136.8		

1.5 LEARNING ACTIVITIES:

Complete the following table for the whole programme:

Contact Y/N	Distance Y/N	Other (specify) Y/N	Types of learning activities	% Learning time
Y	N		Lectures (face to face, limited interaction or technologically mediated)	50
Y	N		Tutorials: individual groups of 30 or less	5
	N		Syndicate groups	10
Y	N		Practical workplace experience (experiential learning/work-based learning etc)	15
Y	N		Independent self-study of standard texts and references (study guides, books, journal articles)	15
Y	N		Independent self study of specially prepared materials (case studies, multi-media, etc)	5
			Other (specify)	

If you selected "Other" as the mode of delivery in the third column of the table above, please give a detailed explanation below.

If you selected "Other" as a type of learning activity in the last row of the table above, please give a detailed explanation below.

1.6 Specify the programme purpose and indicate how the proposed curriculum will contribute towards the intended outcomes.

Programme Purpose:

* The ability to integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements. The areas of specialisation include Medical Microbiology, Virology, Clinical Chemistry, Haematology, Clinical Pathology, Blood Transfusion Technology, Cytology, Histopathology, Cytogenetics, Immunology and Forensic Medicine.
* The ability to critically evaluate current and new trends in technology to improve practices and solve problems in a variety of contexts.
Science in compliance with legislated and ethical research principles, to develop the academic skills, values and attributes necessary to undertake independent research and evaluate new information, evidence and concepts from a range of sources.
* The ability to apply management and entrepreneurship skills in the context of medical laboratory sciences.

Programme Outcomes and associated assessment criteria:

Exit Level Outcome 1
The ability to integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements.

Range Statement:
Fields of specialization include: Medical Microbiology, Virology, Clinical Chemistry, Haematology, Clinical Pathology, Blood Transfusion Technology, Cytology, Histopathology, Cytogenetics, Immunology, and Forensic Medicine. In the fourth year, the learner will select one of the above mentioned specific fields.

Associated assessment criteria:

1. Select, perform, interpret, and integrate routine and specialized, diagnostic techniques (including molecular biology techniques) in a specific field in accordance with statutory requirements in place of study, workplace or both.
2. Laboratory results evaluated through correlation of data in the context of the principles, techniques and instruments used.
3. Factors that affect procedures and test results are recognized and appropriate action taken.
4. Laboratory results are interpreted through correlation of data with physiological and pathophysiological conditions.
5. Findings are evaluated, interpreted and integrated through application of an in-depth knowledge of disease processes.
6. Standard operating procedures are assessed, reviewed and updated where necessary.
7. Equipment is monitored for efficient functioning and appropriate action is taken when necessary.
8. Work activities are planned, organized and prioritized.
9. Laboratory safety procedures are described and applied.
10. Quality assurance procedures are described and applied.

Exit Level Outcome 2

Critically evaluate current and new trends in technology to improve practices and solve problems in a variety of contexts.

Range Statement
Learners will be able to evaluate equipment and methodologies in relation to laboratory constraints, integration with existing equipment, space, budgeting, usefulness, and practicality.

Associated assessment criteria:

1. Information s analysed, synthesized, and evaluated relative to the constraints within a given laboratory.
2. New equipment, techniques, and methods are evaluated.
3. Appropriate new techniques and methods are recommended on the basis of methodological scientific principles.

Exit Level Outcome 3

Develop research skills and conduct research in the field of medical laboratory science in compliance with legislated and ethical research principles, to develop the academic skills, values and attributes necessary to undertake independent research and evaluate new information, evidence and concepts from a range of sources.

Associated assessment criteria:

1. Research needs within the field of medical laboratory sciences are correctly indentified, articulated and investigated.

2. Appropriate research methods are applied.
3. Applicable literature is reviewed and documented according to accepted scientific practices
4. Data is correctly collected, analyzed and interpreted using appropriate qualitative and/ or quantitative techniques
5. Research findings are evaluated and conclusions are recommendations are formulated based on sound theoretical principles
6. A research report is produced in accordance with to required accepted research guidelines

Exit Level Outcome 4

Demonstrate management and entrepreneurship skills in the context of medical laboratory sciences

Associated assessment criteria:

1. Human. Infrastructure, operational and financial resources are managed efficiently and effectively
2. A business plan is developed, approved and implemented
3. Principles of entrepreneurship skills are explained.
4. Appropriate legislation is explained and applied
5. Appropriate professional conduct is demonstrated
6. All clinical interactions and related principles are aligned with the provisions and rules of the code of ethics of the HPCSA and professional associations.

1.7 Specify the rules of combination for the constituent modules/courses and, where applicable, progression rules from one year to the next.

The courses in Years 1, 2 and 3 are all compulsory and need to be completed by all students. In order to pass the course "*Integrative Medical Sciences I*", the student needs to pass each of the 4 modules of the course. The student needs to successfully complete each of the 6 modules of "*Introduction to Medical Sciences I*".
Due to the practical nature of the Medical Laboratory Scientist's work, most subjects have a theory and a practical component. It is imperative that students pass each of these components in order to pass the course. Students also need to demonstrate the ability to integrate these two components in an integrated assessment successfully. Successful completion of the courses requires students attend to **all** their practical sessions. Absence from a practical will only be condoned on the presentation of a medical certificate or other official document, as per the University's rules.
The first year courses provide students with foundational knowledge and skills for understanding and mastering the coursework in year 2. Therefore, students need to pass all their first year courses before they may progress to Year 2. The prerequisites for subjects in the second, third and fourth years are listed in the Table below.
In order to register for "*Clinical Chemistry III*", "*Microbiology III*", "*Haematology III*" or "*Cytology III*", the student needs to pass the necessary prerequisites. Should a student fail one or two of the Year 2 courses, the student may register for Year 3 courses as long as he or she has passed the prerequisites for the level 3 courses for which the student wishes to register. However, a student may not register for "*Integrative Medical Laboratory Sciences III*" or "*Research Methods*", unless he or she has successfully completed **all** the courses in Year 2.
Progression to the year 4 of study is permitted only if the student has successfully completed all Year 3 subjects. In Year 4 the student must select one of the 12 optional electives for "*Clinical Practice IV*". However, initially the Department will not be offering all the 12 electives as the Department does not have the expertise to offer them. The Department does possess

the expertise to offer electives that are currently in demand by the public and private pathology employers, namely "*Clinical Pathology IV, Clinical Chemistry IV, Microbiology IV, Haematology IV, Immunology IV, Virology IV, Immunohaematology IV and Histology IV and Cytology IV*". The other three electives will be offered once the Department acquires staff that are experts in these fields. Students will be made aware of which electives are on offer in their first year of study. In "*Research Project IV*", students need to complete a research project in the area of their chosen elective.
The B Sc in Medical Laboratory Science will be awarded to candidates who have successfully completed the national final integrated summative assessment for the elective that they selected as well as assessments in all the other required courses.

1.8 Provide a brief explanation of how competences developed in the programme are aligned with the appropriate NQF level.

The following credit values are associated with outcomes at each of the NQF levels in the qualification, leading up to the exit level outcomes stated.

	NQF LEVEL				
	5	**6**	**7**	**8**	**TOTAL CREDITS**
Exit Level Outcome 1 The learner will be able to integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements.	66	95	123	76	360
Exit Level Outcome 2 Critically evaluate current and new trends in technology to improve practices and solve problems in a variety of contexts.	0	4	11	26	41
Exit Level Outcome 3 Develop research skills and conduct research in the field of medical laboratory science in compliance with legislated and ethical research principles, to develop the academic skills, values and attributes necessary to undertake independent research and evaluate new information, evidence and concepts from a range of sources.	5	10	14	34	63

Exit Level Outcome 4 Demonstrate management and entrepreneurship skills in the context of medical laboratory sciences	5	5	10	20	40
	76	**114**	**158**	**156**	**504**

N.B. A total of 180 credits will be achieved in the workplace and will comprise of 30 credits at NQF level 6 and 30 credits at NQF level 7, and 120 credits at NQF level 8.

1.9 If the proposed programme is a professional degree, has approval been applied for from the relevant professional body? No

If "yes", please upload letter of application or the letter of approval.

1.10 WORK PLACEMENT FOR EXPERIENTIAL LEARNING:

- Does your programme have work placement / experiential learning?

YES.

The courses, Integrative Medical Laboratory Sciences III and Clinical Practice IV in years 3 and 4 contain curriculated components of experiential learning. The administration of the Experiential Learning component is guided by CPUT's policy on Co-operative Education (Annexure 44).
Please note that the following table is mandatory if the programme includes experiential learning.
• Year(s) of study when experiential learning takes place:

Learning will occur in years 3 and 4.

• Duration of the placement:

Year 3: 15 weeks - students will spend 4 days of the week in the laboratory and 1 day of the week in lectures.
Year 4: 30 weeks - students will spend 4 days of the week in the laboratory and 1 day of the week in lectures. During this period, students will conduct research for their research project while they are in the laboratory environment.
• Credit Value:

Year 3: 60 credits
Year 4: 120 credits
• Expected learning outcomes

The learning outcomes for *Integrative Medical Sciences III* – Module: *Clinical Practice III* are:
• Explain and apply laboratory work ethics, medical law and human rights to the work place.
• Discuss the work flow in all disciplines which include Clinical Chemistry, Haematology, Microbiology, Cytology, Histology and Immunohaemotology.
• Apply safety procedures in all disciplines and laboratories
• Apply quality assurance principles and corrective action to non-conforming quality control in all disciplines

• Process and demonstrate competence in performing routine laboratory testing in all disciplines and laboratories
• Interpret and correlate the laboratory results with clinical data and other laboratory tests.
• Demonstrate a working knowledge of all instrumentation used in a routine diagnostic laboratory
• Be able to integrate the knowledge and interpretive skills acquired by completing a project which will consist of a case presentation incorporating the laboratory results from all the laboratory disciplines. In addition, a review article of the disorder and the laboratory diagnosis must be completed.

In the fourth year of study students need to select a discipline in which they are to specialise and complete the national examination which will enable them to register as Medical Laboratory Scientists with the HPCSA. In order to obtain credits for "*Clinical Practice IV",* students need to select one of the electives that are offered for "*Clinical Practice IV*". These electives are offered as modules. For "*Clinical Practice IV*" students will need to complete a period of practice and demonstrate their proficiency in the workplace of the area of specialisation (the elective). The learning outcomes for Clinical Practice IV will be different for each module. Therefore, the learning outcomes are as follows for the different electives:

The learning outcomes for the course: "*Clinical Practice IV*" - *Module: Clinical Pathology IV:*
At the end of this course the student will be able to:
• Describe the Medical Technology Ethical code as it applies to technologists and the role of the appropriate professional bodies.
• Describe the optimal sample collection and preservation requirements for all prescribed tests.
• Assess specimens for suitability for the test requested.
• Collect specimens within current statutory limitations.
• Operate and maintain all laboratory glassware, apparatus, equipment and analyzers.
• Describe the principles of operation of equipment and analyzers.
• Use resources cost effectively.
• Maintain all required documentation.
• Comply with legislation, policies and procedures regarding safety in the laboratory, injury and accident prevention and the control and management of laboratory acquired infections.
• Apply the principles of laboratory Quality Assurance and Good Laboratory Practice.
• Perform basic calculations, unit conversions, chemical titrations and dilutions.
• Prepare and store routine and specialised solutions, media, stains and reagents.
• Apply principles and concepts of quality control to evaluate media, stains, reagents and standards in accordance with established criteria.
• Apply an in depth knowledge of all principles, procedures, calculations and interpretation of all quality control.
• Explain the principles of the automated and manual testing methods used in the processing of specimens.
• Prepare specimens for analysis.
• Analyse specimens using appropriate standard operating procedures.
• Describe limitations of the automated or manual methods used in specimen analysis and apply the appropriate remedial action when required.
• Record and document results using the correct units.
• Apply the correct medical and technical terminology in all communications.
• Evaluate the results through the application of knowledge of reference ranges, critical results, disease process and pathophysiological conditions.
• Apply appropriate action within predetermined limits in the event of abnormal results.
• Recommend appropriate additional tests for diagnostic confirmation.
• Demonstrate professional communication skills in oral, written and electronic format.

The learning outcomes for the course "*Clinical Practice IV*" - *Module: Clinical Chemistry IV*

• Name the different types of specimens that are received in the chemistry laboratory and their application.
• Describe patient preparation and precautions in order to obtain the correct specimen from the patient.
• Discuss the importance of correct specimen collection and transport conditions in the quality of the final result.
• Understand the importance of maintaining the integrity and suitability of specimens of all types for laboratory investigations.
• Describe the use, purpose and method of action of anticoagulants and preservatives.
• Describe the correct procedure for the preparation, cleaning, inspection and storage of glassware for laboratory use.
• Operate and maintain all laboratory equipment.
• Perform basic calculations, unit conversions, chemistry titrations, dilutions and prepare standard solutions.
• Have an in depth understanding of protocols regarding laboratory injuries and accidents prevention, control and management of laboratory acquired infections
• Have in depth knowledge of principles and practice of laboratory Quality Assurance and Good Laboratory Practice.
• Have in depth knowledge of all principles, procedures, calculations and interpretation of all related Quality Control.
• Describe the Medical Technology Ethical code as it applies to technologists and their work environment
• Understand the correct terminology in a chemistry laboratory.
• Explain the principles of the methods used in the processing of specimens.
• Rationalise the choice of tests for specific clinical chemistry disorders.
• Prepare specimens for analysis.
• Demonstrate practically or orally, where appropriate, knowledge of all the tests, quantitative or qualitative, run on automated instruments or by manual methods.
• Describe limitations of the methods used for analysis and remedial action.
• Demonstrate knowledge of analyte units, reference ranges, critical results and clinical significance of abnormal results.

The learning outcomes for the course "*Clinical Practice IV*" - *Module: Microbiology IV:*
At the end of this course the student will be able to:
• The learner will be able to perform the various clinical laboratory investigations (analyses, diagnosis and treatment of pathological abnormalities) using optimal techniques in order to benefit the diagnosis and management of the patient.
• Will be able to function as part of a team (communicate effectively in English, consult, negotiate, share, delegate).
• Ability to "delegate" to and "supervise" others.
• Adherence to safety guidelines for self and others.
• Compliance with standards and regulations.
• Ability to follow instructions/procedures with accuracy and precision
• Ability to maintain intellectual and emotional stability and maturity under stress, while also maintaining appropriate performance standards.
• Learn and exhibit professional attributes.
• Demonstrate professional responsibility.

The learning outcomes for the course "*Clinical Practice IV*" - *Module: Haematology IV:*
At the end of this course the student will be able to:
• Perform all routine haematology investigations including the Full Blood Count, Differential Counts, analysis of blood and bone marrow smears, tests for haemolysis and other anaemias, coagulation and platelet disorders, and investigations used to diagnose haematological malignancy (flow cytometry, cytochemistry, cytogenetics and molecular biology)
• Understand and explain the principles of all tests and investigations
• Correlate test findings with the pathogenesis and pathophysiology of the disease.

• Interpret and correlate test findings with the clinical presentation and other laboratory tests.
• Understand and be able to solve quality control and quality assurance problems
• Understand and explain the process of accreditation in a haematology laboratory
• Understand and apply laboratory safety principles
• Understand and apply good medical ethics.

The learning outcomes for the course "*Clinical Practice IV" - Module: Immunohaematology IV:*
At the end of this course the student will be able to:
• Discuss ethics & conduct Customer Care
• Discuss Health & Safety, Waste Management and Materials & Equipment
• Describe Blood Collection
• Explain and perform Donation testing
• Discuss and prepare Blood Components
• Understand the different Blood Group Systems
• Describe and perform Compatibility testing
• Discuss the Risks Associated with Transfusion as well as tests necessary to perform investigations on transfusion reactions
• Understand the Principle and application of Serological Tests
• Discuss the prevention and management of Haemolytic disease of the Newborn
• Explain reagent preparation and standardization
• Explain Paternity testing
• Discuss HLA testing
• Describe Quality Assurance and its application

The learning outcomes for the course "*Clinical Practice IV" - Module: Histology IV:*
At the end of this course the student will be able to:
• demonstrate a thorough knowledge of the administrative structure of the laboratory that he/she is working in.
• have a sound knowledge of the collection, logging, distribution, data recording, reporting, accession and retrieval of data.
• recognise the dangers posed by fresh, unfixed tissue.
• be aware of the storage and safe usage of liquids, chemicals and stains/dyes in the laboratory.
• have a working knowledge of the behaviour of light and electrons.
• recognise the component parts of light and electron microscopes.
• distinguish the similarities and differences of the two types of microscopes.
• set up and operate a light microscope
• have a thorough knowledge of fixatives and fixation.
• predict the effect of specific fixatives on tissues and organs.
• recognise poor fixation and fixation artefacts.
• carry out corrective action on artefacts of fixation.
• have a thorough knowledge of tissue processing.
• be familiar with dehydrating and clearing agents.
• recognise processing artefacts and take corrective action.
• have a thorough knowledge of microtomes and microtome knives.
• use a microtome and sharpen and use microtome knives safely.
• recognise cutting artefacts and employ corrective measures.
• have a thorough knowledge of frozen section microtomes and cryostats.
• have a working knowledge of freeze-drying and freeze substitution.
• have a thorough knowledge of stains and staining.
• have a working knowledge of the theory of staining.
• be familiar with all staining procedures encountered in a diagnostic histopathology laboratory.
• show awareness of the importance of the use of "control tissue" for specific diagnostic staining procedures.

• recognise faults/artefacts of staining and remedy them.
• have a thorough knowledge of the staining and preparative procedures covered in it.
• recognise tissues and tissue components.
• deduce which stain to use for a specific component/structure.
• understand the use of "control" tissue.
• recognise staining artefacts and use corrective measures.
• "troubleshoot" out of the ordinary staining reactions.
• identify and have a knowledge of the four basic tissue types.
• identify and have a knowledge of the basic structure of each organ system.
• identify and have a knowledge of the structures specific to each organ or system.
• have a basic knowledge of in situ hybridisation (DISH).
• have a basic knowledge of DNA, RNA, nucleotides etc.
• have an understanding of molecular cell biology.
• have basic knowledge of fixation and processing of specimens for electron microscopy.
• have a basic knowledge of the operation of an electron microscope.
• recognise organelles and components of cells under the electron microscope.

The learning outcomes for the course "*Clinical Practice IV" - Module: Immunology IV:*
At the end of this course the student will be able to:
• Define the structural and cellular components of the immune system.
• Demonstrate a proficiency in performing routine immunological investigations according to Standard Operating Practices.
• Employ sterile procedures in performing tissue culture techniques.
• Understand and be able to solve quality control and quality assurance problems.
• Understand and describe the pathogenesis of disorders of the immune system including autoimmunity, allergy, immunodeficiency, leukaemia/lymphoma and transplant rejection.
• Demonstrate an understanding of principles of instrumentation used in the immunology laboratory.
• Explain the principles of the tests that are conducted for immunological investigations in the laboratory.
• Select and apply appropriate tests for the investigation of primary immunodeficiency diseases.
• Select and apply appropriate tests for the investigation auto-immune diseases.
• Select and apply appropriate tests for the investigation of allergies.
• Correlate test findings with the pathogenesis and pathophysiology of the disease
• Demonstrate an understanding of the inheritance patterns of genes associated with the immune system.
• Access and review scientific literature and critically appraise data.
• Demonstrate the ability to communicate using appropriate genres.
• Have developed skills in the planning and implementation of a research project, and in the analysis and interpretation of scientific data; be able to source information in the scientific literature and on the web concerning topics related to the discipline;
• Understand and explain the process of accreditation in an immunology laboratory.
• Understand and apply laboratory safety principles.
• Understand and apply good medical ethics.
• Understand the research strategies used to investigate protective immunity.

The learning outcomes for the course "*Clinical Practice IV" - Module: Virology IV:*
Learning Outcomes:
At the end of this course the student will be able to:
• Name the different types of specimens that are received in the virology laboratory.
• Describe how the different specimens are obtained from the patient.
• Discuss the importance of correct sampling and transport in the quality of the final result.
• Apply the correct terminology to the classification of the viruses.
• Differentiate between different viral genera and species associated with human disease.
• Discuss the replication cycle of both RNA and DNA viruses.

• Select the appropriate method/s to isolate viruses from various specimens.
• Outline the methods used to process the specimens.
• Explain the principles of the methods used in the processing of specimens.
• Choose the correct tests to identify the viral pathogens.
• Rationalize the choice of culture media and tests selected for the isolation and identification of virus.
• Give examples of treatment used in the various diseases.
• Explain the principles of the methods and tests used in the isolation and identification of viruses.
• Interpret the results of identification tests.
• Discuss the impact of various diseases in populations around the world.
• Discuss the prophylaxes available for the prevention of various diseases.

The learning outcomes for the course "*Clinical Practice IV" - Module: Cytogenetics IV:*
At the end of this course the student will be able to:
• Select Appropriate Methods for Collection and Transport of Specimens for chromosomal analysis
• Verify Appropriate Data
• Select Appropriate Culture System for cells
• Perform Aseptic Culture Techniques when culturing cells.
• Monitor and Document Cell Growth
• Select Appropriate Techniques for Harvesting of cells
• Assess the quality of cell preparation
• Troubleshoot errors arising in the preparation of cells and slides for karyotyping.
• Employ chromosome banding and staining techniques and explain the principle of these techniques.
• Operate and maintain a variety of microscopes used in the cytogenetics laboratory.
• Operate Imaging Systems.
• Describe the principles of instrumentation used in the cytogenetics laboratory.
• Identify and document constitutional or acquired chromosome abnormalities using a variety of Techniques (e.g., G-, Q-, and C-banding, NOR, DAPI, conventional staining).
• Interpret and correlate test findings with the clinical presentation.
• Employ molecular techniques in the analysis of chromosomes. Interpret the results of molecular techniques
• Understand and be able to solve quality control and quality assurance problems
• Understand and explain the process of accreditation in a haematology laboratory
• Understand and apply laboratory safety principles to work conducted in the laboratory.
• Understand and apply good medical ethics.
• Employ good laboratory practice.
• Demonstrate an understanding of the inheritance patterns of genes associated with the immune system.
• Access and review scientific literature and critically appraise data.
• Demonstrate the ability to communicate using appropriate genres.
• Apply their developed skills in the planning and implementation of a research project, and in the analysis and interpretation of scientific data; be able to source information in the scientific literature and on the web concerning topics related to the discipline;
• Understand and explain the process of accreditation in a cytogenetics laboratory.
• Understand and apply laboratory safety principles.
• Understand and apply good medical ethics.

• **Assessment methods:**

Both formative and summative assessments are used in assessing the competencies of students in "*Clinical Practice III*" and *Clinical Practice IV*". Formative assessments are used as a means of assisting students to improve their level of learning a competency in a particular

learning area. Summative assessments are used to grade and judge a student's understanding and ability to apply learning material to a particular context.
The competencies of students during experiential learning in the module "*Clinical Practice III*" of the course "*Integrative Medical Sciences III*" will be assessed by means of different assessment tools:
• Production of research paper based on a case study encountered during their course of study in the laboratory.
• Development of a portfolio containing work performed by the student in the laboratory demonstrating the student's ability to master the particular technique.
• Oral Presentations – journal club and presentation based on their research paper of the case study.
• One summative test in each discipline which will assess the student's ability to apply their theoretical knowledge to practical situations.
• Case Studies will be used to assess the student's ability to integrate knowledge over the course of the semester.
• Production of posters.
The competencies of students during experiential learning in the course "*Clinical Practice IV*" will be assessed by means of different assessment tools over the course of the year:
• Their ability to integrate knowledge will be assessed by means of case studies.
• Development of a portfolio containing work performed by the student in the laboratory demonstrating the student's ability to master the particular technique.
• Oral Presentations – journal club and presentation based on their mini-thesis.
• Three summative tests over the course of the year.
• Production of posters
• Participation in debates.
• A national final integrated summative examination held at the end of the fourth year. Students who succeed in this examination will be able to register as a Medical Laboratory Scientist with the HPCSA.

An integrated assessment approach will be used to ensure that all Exit Level Outcomes, Embedded Knowledge and Critical Cross-Field Outcomes are evaluated. The wide variety of teaching methodologies used in the transfer of knowledge will be complemented by appropriate assessment tools. (See Annexure 8: SAQA submission). The term, `Integrated Assessment', implies that theoretical and practical components should be assessed together. During integrated assessments the assessor will assess combinations of practical, applied, foundational and reflective competencies.
Assessment practices will be open, transparent, fair, valid, and reliable so as to ensure that no learner is disadvantaged in any way whatsoever. Integrated assessment in the fourth year of study will be conducted collaboratively in accordance with the requirements of the HPCSA as well as CPUT. Assessment and moderation will be done in close collaboration with registered assessors and moderators from Industry
• **Assessment Criteria:**

For the module "*Clinical Practice III*" of the course "*Integrative Medical Sciences III*":
A log book consisting of assignments in each discipline must be completed and assessed by the training co-ordinator in each laboratory. This will account for 60% of the mark. A portfolio of evidence will be submitted to the University for moderation. 40% will be made up of an integrated case presentation and the research article which will be assessed by the university.
For the course "*Clinical Practice IV*":
Continuous assessment contributing towards the semester mark is made up of constituting 50 % of the final mark, and the final integrated summative assessment (examination) constituting 50 % of the final mark. The semester mark will be calculated from the results obtained from 3 tests (30% - 10% per test) and the portfolio (20%).

• **Monitoring procedures**

The co-ordinators of the module "*Clinical Practice III*" of the course "*Integrative Medical Sciences III*" and the course, "*Clinical Practice IV*", are university staff. They will monitor the learning processes and oversee the assessment processes in the laboratory. Mentors will be appointed to train the students in the laboratory. Mentors are experts in practice who have undergone training as trainers and assessors. The co-ordinators of the course will visit the laboratories regularly, sometimes without making appointments to ensure that learning is taking place. Forms will document the training received by the students on a daily basis. Both students and the mentor are to sign acknowledging that training took place. Evidence of monitoring will be accumulated in a similar manner with both the co-ordinator and the mentors signing off on the co-ordinator's visit to the laboratory. Mentors are accountable to the co-ordinators.

Placement is an institutional responsibility *(Yes/no) YES*

- Who is responsible? (only if answered "No" in previous question) N/A

The following documentation to be uploaded as it pertains to this programme

- Budget for the development of learning materials.
- Examples of contract arrangements with workplaces for student placements.
- Outline of all courses and modules (core, fundamental and optional) that constitute the programme.
- SAQA submission.
- List of prescribed and recommended readings.
- Any other documentation which will indicate your compliance with this criterion.

2. STUDENT RECRUITMENT, ADMISSION AND SELECTION: (Criterion 2)

Minimum standards:
Recruitment documentation informs students of the programme accurately and sufficiently, and admission adheres to current legislation. Admission and selection of students are commensurate with the programme's academic requirements, within a framework of widened access and equity. The number of students selected takes into account the programme's intended learning outcomes, its capacity to offer good quality education and the needs of the particular profession (in the case of professional and vocational programmes).

2.1 State the admission requirements for this programme.

National Senior Certificate (NSC) with the following are compulsory:
Mathematics Level 4
English (Home) or English (First Additional) Level 4
Physical Science Level 4
Life Sciences Level 4
or

Mathematics	(HG) D / (SG) C
English	(HG) D / (SG) C
Physical Science	(HG) D / (SG) C
Biology	(HG) D / (SG) C

2.2 Specify the selection criteria for this programme.

Students are required to apply via the Central Applications Office.
A short list is generated and 60 eligible students with the highest scores in the pre-requisite subjects will sit for an aptitude test. The top 30 scoring candidates will be admitted into the programme and given letters of acceptance enabling them to proceed with registration.

2.3 Provide the enrolment plan for this programme.

The annual intake into the programme will be 30 as per above selection criteria.

2.4 Describe how the objective of widening access to higher education will be promoted.

The University engages in a number of outreach activities with schools in KZN, particularly previously disadvantaged, as well as in rural areas such as Ixopo and Matubatuba.

One such activity is Science Week and Opened Day which is held at the University for a period of 1 week where high school pupils are invited to experience the various science programmes on offer and to engage with students and facilitators on all aspects of the programmes. Science week not only aims to promote the sciences but to also raise aspirations for higher education in previously disadvantaged communities.

The University also widely advertises funding opportunities available to first year and returning students in an attempt to attract the prospect of higher education in lower income households.

As a department we also provide the tools to assist student at risk in passing and completing their studies by employing tutors and engaging students in mentorship programmes.

2.5 Provide details of how RPL will be applied (if applicable).

The qualification can be achieved in part through the Recognition of Prior Learning and the Qualification may be granted, according to the policies governing higher education, to learners who have acquired the skills and knowledge, without attending formal courses, providing they can demonstrate competence in the outcomes of the qualification as required by the Fundamental, Core, and Elective areas stipulated in the Qualification and the Exit Level Outcomes.

An RPL process may also be used to credit learners with credits in which they have developed the necessary competencies because of work-place and work-integrated learning, for example, people currently holding the HPCSA specialisation certificates could be awarded credits towards the qualification based on RPL assessment.

RPL may also be used by learners, who are not in possession of NSC or equivalent qualification, to gain access to the qualification.

Learners submitting themselves for RPL should be thoroughly briefed prior to the assessment, and may be required to submit a Portfolio of Evidence in the prescribed format to be assessed for formal recognition. While this is primarily a professional qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit level outcomes.

FLOWCHART FOR RPL APPLICATION AND FOR APPROVAL PROCESSES FOR APPLICANTS WITH INFORMAL AND NON-FORMAL QUALIFICATIONS

CANDIDATE

- Applies for recognition of prior learning
- Identifies his/her prior learning
- Proves that the prior learning matches the learning outcomes of a particular programme

RPL ADMIN

- Markets RPL
- Coordinates the application process viz. application form and payment of the application fee, forwards the application fee to the various department

ACADEMIC HoD

- Appoints an advisor, assessor and moderator

ADVISOR

- Counsels and guides the candidate throughout the RPL process

ASSESSOR

- Judges evidence provided against the standards or learning outcomes

MODERATOR

- Gives second opinion about the evidence submitted for credit award

DEAN OF THE FACULTY

- Submits the recommendation to award the credit to the faculty board

FACULTY BOARD

- Recommends the applications to the Senate

SENATE

- Approves the award of the credit

The following documentation to be uploaded as it pertains to this programme

- Admission policy for this programme

- RPL policy
- Any other documentation, including advertising of the programme, which will indicate your compliance with this criterion.

3. STAFF QUALIFICATIONS: (Criterion 3)

Academic staff responsible for the programme are suitably qualified and have sufficient relevant experience and teaching competence, and their assessment competence and research profile are adequate for the nature and level of the programme. The institution and/or other recognised agencies contracted by the institution provide opportunities for academic staff to enhance their competences and to support their professional growth and development.

The HEQC-online institutional administrator for your institution is required to sign a declaration regarding the following:

In verifying compliance, the following minimum standards as they pertain to Criterion 3 should be addressed:

- All the academic staff (fulltime/part-time/contract) teaching on this programme hold the required minimum qualifications (one level above that of programme) and have appropriate experience to teach on the programme.
- The unit responsible for the programme has identified a programme coordinator.
- The programme coordinator is trained and informed on the roles and responsibilities of the programme coordinator and is able to provide academic leadership for the programme.
- The unit responsible for the programme makes provision for opportunities for academic staff to enhance their competences and to support their professional growth and development in the interest of programme quality.
- The unit (department/school/faculty) responsible for the programme makes adequate provision for the programme in the workload allocation model taking into account the number of academic staff attached to the programme and envisaged student enrolments.

4. STAFF SIZE AND SENIORITY: (Criterion 4)

Minimum standards:
The academic and support staff complement is of sufficient size and seniority for the nature and field of the programme and the size of the student body to ensure that all activities related to the programme can be carried out effectively. The ratio of full-time to part-time staff is appropriate. The recruitment and employment of staff follows relevant legislation and appropriate administrative procedures, including redress and equity considerations. Support staff are adequately qualified and their knowledge and skills are regularly updated.

The HEQC-online institutional administrator for your institution is required to sign a declaration regarding the following:

The institutional quality assurance office must verify that:

- The academic and support staff complement is of sufficient size and seniority for the nature and field of the programme and the size of the student body to ensure that all activities related to the programme can be carried out effectively.
- The ratio of full-time to part-time staff is appropriate.
- The recruitment and employment of staff follows relevant legislation and appropriate administrative procedures, including redress and equity considerations.
- Support staff are adequately qualified and their knowledge and skills are regularly updated.

  ?? funding from TLDC for upgrading of skills

5. TEACHING AND LEARNING STRATEGY: (Criterion 5)

Minimum standards:
The institution gives recognition to the importance of promoting student learning. The teaching and learning strategy is appropriate for the institutional type (as reflected in its mission), mode(s) of delivery and student composition, contains mechanisms to ensure the appropriateness of teaching and learning methods, and makes provision for staff to upgrade their teaching methods. The strategy sets targets, plans for implementation, and mechanisms to monitor progress, evaluate impact and effect improvement.

5.1 Describe how the teaching and learning strategy reflects the institution's mission.

Our mission is to provide advanced, technology-based programmes and services that are career- and business-oriented in the broad fields of engineering, natural and management sciences for the uplift of talented but mainly disadvantaged individuals. By so doing, the University shows its commitment to social redress. It contributes to creating an equitable and prosperous Southern Africa in which individuals have the opportunity to achieve their full potential.

The main outcome of teaching and learning is that of lifelong learning. This we believe can only be achieved through reflective learning and through practical application of knowledge gained in the classroom. Our main focus is therefore that of timely and appropriate practicals that are carried out on campus laboratories.
The course content is revised annually in consultation with the other UOT's and stakeholders from industry (Advisory Board). Part of the revision process ensures that methodology and techniques taught are in keeping with current trends being utilized in industry and that the latest advancements in technology and research are factored into the courses.
After taking lecture and laboratory courses at the university, students then rotate through clinical/hospital placements to integrate their academic knowledge with professional skills and attitudes. At the clinical laboratories students are assigned to supervisors who supervise the students' education and practice in the real clinical setting. The supervisors are responsible for patient results as well as instruction of students. After the students have been in controlled campus laboratories, these supervisors are expected to guide the students through a learning process until they develop entry-level competence in the complex situations encountered in clinical practice.
Supervisors help the students learn not just practical skills but also professional behaviours. They assist the students integrating didactic knowledge learned at the university with clinical practice and decision-making.
M.U.T also fosters a culture of on-going improvement of teaching and learning skills amongst facilitators by means of courses on curriculum development, materials development and pedagogy.

5.2 Explain the teaching methods, mode of delivery and the materials development for the achievement of the stated outcomes of the qualification.

50% of the course constitutes formal lectures in the form of/ combination of 'chalk n talk', powerpoint presentations, group discussions, assessments, assignments and 'Blackboard'. Practical sessions, and assessments thereof also form a large component of the course.

Materials are developed in consultation with industry stakeholders (private pathology laboratories and NHLS) and the advisory board.

5.3 Provide an overview of academic support programmes or assistance provided to students on the programme per site.

The programme employs tutors, and has a mechanism for timely identification of at risk students. A referral system is in place where students are sent for assistance in areas of need including student counceling and clinical and medical care. Periodical programme reviews are conducted, and the Department has an annual improvement plan.

5.4 Describe the mechanisms in place to monitor student progress, evaluate programme impact and effect improvement.

Timely formal and informal assessments will be carried out in the form of written tests, pre-lecture MCQ's and practical tests which will gauge student progress prior to final assessment.
To ensure programme impact, materials are developed in close collaboration with industry stakeholders and professionals in the field of pathology.
The advisory board together with UOT's in KZN host an annual seminar to discuss issues concerning Work Integrated Learning (WIL), student placements and to provide a platform for training laboratories to engage in dialog concerning student performance during WIL and integrated projects. All comments are minuted and implemented in the next year, thus effecting improvement and maintaining a course that is current and cutting edge.

5.5 If the institution offers the programme at different sites or modes of delivery, an account should be provided on how the quality of teaching and learning is maintained. N/A

- Areas to be covered in the report should include:
- Learning materials and study guides
- Details of student assistance and support

5.6 Describe processes in place to identify and support inactive and/or underperforming students.

Students at risk

Definition: A student who has performed poorly in formative assessment/s (below class average) or in pre-assessments, is identified as being at risk of not obtaining a course mark, or at risk of failing the summative assessment.

Procedure:

1. Students are identified after poor performance in assessment 1 or pre-assessment/s (see definition).
2. The student concerned is counseled privately by the facilitator to ascertain if the student has a personal problem or if learning methods are not productive etc.
3. The student is tutored by the lecturer, subject tutor or by the Teaching and learning development unit if applicable (pure science subjects).
4. Assessments and/ tutorials may be given to guide student's learning.
5. The student's formative assessments are carefully monitored thereafter and remedial exercises are given if needs be.

The following documentation to be uploaded as it pertains to this programme

- The teaching and learning policy of the institution/faculty
- Module outlines, student guides, and programme handbooks
- Suggested documents.
  Please zip documents and upload electronically:
  - Implementation of the teaching and learning policy
  - Policy for the monitoring and evaluation of teaching and learning or equivalent

6. ASSESSMENT: (criterion 6)

Minimum standards:
The different modes of delivery of the programme have appropriate policies and procedures for internal assessment; internal and external moderation; monitoring of student progress; explictness, validity and reliability of assessment practices; recording of assessment results; settling of disputes; the rigour and security of the assessment system; RPL; and for the development of staff competence in assessment.

6.1 Describe the assessment policy of the institution in relation to the programme, covering the following areas:

- Description of the number and types of tests / assignments / projects / case studies
- Formative and summative assessment

  Formative assessment may include:

  - Tests
  - Written and practical assignments
  - Literature reviews
  - Case studies
  - Presentations
  - Seminars
  - Peer reviews

  Summative assessment may include:

- Written examinations
- Oral examinations
- Practical examinations
- Supervisor reports (WIL)

- Internal and external moderation / examination
- Assessment of experiential learning (if applicable)

The following set of assessments:
- 3 class tests (30 % of the final mark)
- Portfolio of practical reports (10 % of the final mark)

• 1 assignment (10 % of the final mark)

• 2 other assessments – either case studies or tutorials (10% of the final mark)

• 1 final summative assessment of 3 hours (40% of the final mark)

will be used to assess students in Anatomy, Physiology and Disease I, Cell Biology I, Immunology I, Microbiology II, Clinical Chemistry II, Haematology II, Histology II, Cytology II, Immunohaematology II, Microbiology III, Clinical Chemistry III, Haematology III, Cytology III.
Integrative Medical Sciences I consists of four modules: *Health Physics I, Health Chemistry I, Biostatistics I, and Laboratory instrumentation*. Each module contributes 25% to the final mark of the course.
The modules, *Health Physics I and Health Chemistry I and Biostatistics I,* will be assessed as follows:
• 2 class tests (30 % of the final mark of the module)

• Portfolio of practical reports (15 % of the final mark of the module)

• 1 assignment (5 % of the final mark of the module)

• 2 tutorials (10% of the final mark of the module)

• 1 final summative assessment of 3 hours (40% of the final mark of the module)

The module, *Biostatistics I,* will be assessed as follows:
• 1 class test - theory (20 % of the final mark of the module)
• Portfolio of practical reports (20 % of the final mark)

• 1 assignment (10 % of the final mark)

• 2 tutorials (10% of the final mark)

• 1 practical test (40% of the final mark)

Introduction to Medical Laboratory Science I consists of six modules: *The Role of the Medical Laboratory Scientist, Computer Skills, Ethics and Medical Law, Communication for the Medical Laboratory Scientist, Safety and Quality Assurance*.
Each module contributes to the final mark of the course as follows:
• *The Role of the Medical Laboratory Scientist* – 20%

• *Computer Skills* – 15 %

• *Ethics and Medical Law* – 20%

• *Communication for the Medical Laboratory Scientist* – 15%

• *Safety* – 15%

• *Quality Assurance* – 15%

In each of the above modules assessment will be as follows:
• 1 class test (40 % of the final mark of the module)

• 1 assignment or 2 tutorials (60 % of the final mark of the module)

The third year course, *Integrative Medical Laboratory Sciences III*, consists of 2 modules, namely *Clinical Practice Theory III* and *Clinical Practice III*. *Clinical Practice Theory III* carries a 30% weighting towards the final mark of the course while *Clinical Practice III* has a weighting of 70%.

The module, *Clinical Practice Theory III,* will be assessed by means of:
• 1 Assignment (40 % of the final mark of the module)
• Oral Presentation of a Journal article (20% of the final mark of the module)
• Case Studies (40 % of the final mark of the module)

The course, *Clinical Practice IV,* will be assessed by means of:
• 3 tests – 30% of the final mark
• Portfolio of evidence – 20% of the final mark
• The National Final Integrated Summative Assessment (examination) constituting 50 % of the final mark.
• *Formative and summative assessment*

The Exit Level outcomes are:
(i) The ability to integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements.
(ii) The ability to critically evaluate current and new trends in technology to improve practices and to solve problems in a variety of contexts.
(iii)The ability to evaluate new information, concepts and evidence from a range of sources and develop the academic skills, values and attributes necessary to undertake independent research in the field of medical laboratory sciences, in compliance with legislated and ethical research principles.
(iv)The ability to apply management and entrepreneurship skills
in the context of medical laboratory sciences.
The Critical Cross-field Outcomes are:
(i) Communicate effectively
(ii) Identify and solve problems
(iii)Collect, analyse, organise, and critically evaluate information
(iv)Work in a team
(v) Maintain effective working relationships
(vi)Use of Science and Technology

• *Internal and external moderation / examination*

All first, second and third level subjects are moderated internally while all exit level subjects (fourth year) are moderated both internally and externally according to the procedures outlined in the document, Procedures and Rules for Assessment" of the 17th November 2008 (Annexure 57).
Both internal and external moderators must have appropriate qualifications in the discipline and experience. They must have a qualification that is one level higher than the assessment level of the course to be moderated. Moderators are appointed for a period of three years.
Internal moderators may be academic staff of CPUT either within the department or within the faculty. They must be either teaching or have taught a course within the discipline or have a qualification in the discipline in which they are appointed, to moderate.
The number and type of assessments will be agreed upon by both the assessor and moderator of a course prior to the semester commencing. All assessments need to be moderated prior to assessment with respect to the design and assessment criteria.

• *Assessment of experiential learning (if applicable)*

Both formative and summative assessments are used in assessing the competencies of students in "*Clinical Practice III*" and *Clinical Practice IV*". Formative assessments are used as a means of assisting students to improve their

level of learning a competency in a particular learning area. Summative assessments are used to grade and judge a student's understanding and ability to apply learning material to a particular context. The competencies of students during experiential learning in the module "*Clinical Practice III*" of the course "*Integrative Medical Sciences III*" will be assessed by means of different assessment tools:

- Production of research paper based on a case study encountered during their course of study in the laboratory.
- Development of a portfolio containing work performed by the student in the laboratory demonstrating the student's ability to master the particular technique.
- Oral Presentations – journal club and presentation based on their research paper of the case study.
- One summative test in each discipline which will assess the student's ability to apply their theoretical knowledge to practical situations.
- Case Studies will be used to assess the students ability to integrate knowledge over the course of the semester.
- Production of posters.

The competencies of students during experiential learning in the course "*Clinical Practice IV*" will be assessed by means of different assessment tools over the course of the year:

- Their ability to integrate knowledge will be assessed by means of case studies.
- Development of a portfolio containing work performed by the student in the laboratory demonstrating the student's ability to master the particular technique.
- Oral Presentations – journal club and presentation based on their mini-thesis.
- Three summative tests over the course of the year.
- Production of posters
- Participation in debates.
- A national final integrated summative examination held at the end of the fourth year. Students who succeed in this examination will be able to register as a Medical Laboratory Scientist with the HPCSA.

Assessment Criteria:

For the module "*Clinical Practice III*" of the course "*Integrative Medical Sciences III*":
A log book consisting of assignments in each discipline must be completed and assessed by the training co-ordinator in each laboratory. This will account for 60% of the mark. A portfolio of evidence will be submitted to the University for moderation. 40% will be made up of an integrated case presentation and the research article which will be assessed by the university.
For the course "*Clinical Practice IV*":
Continuous assessment contributing towards the semester mark counts 50 % of the final mark, and the final integrated summative assessment (examination) constituting 50 % of the final mark. The semester mark will be calculated from the results obtained from 3 tests (30% - 10% per test) and the portfolio (20%).

6.2 Describe processes to provide feedback to students on assessment tasks.

The following documentation to be uploaded as it pertains to this programme

- Experiential learning assessment and monitoring policy
- The following documents are required. Please zip documents and upload electronically.

- The unit's policy on assessment and examinations as applicable per module or programme
- Documents describing the policy for student assessment, including internal assessment; external moderation / examination; student progress; validity and reliability of assessment; grievance procedures; supplementary examinations and recording of results and security
- External examiner systems; mark schedules; internal moderation systems: rules and regulations pertaining to the award of the qualification.

- Upload any other documentation which will indicate your compliance with this criterion.

7. INFRASTRUCTURE AND LIBRARY RESOURCES: (Criterion 7)

Minimum standards:
Suitable and sufficient venues, IT infrastructure and library resources are available for students and staff in the programme. Policies ensure the proper management and maintenance of library resources, including support and access for students and staff. Staff development for library personnel takes place on a regular basis.

The HEQC-online institutional administrator for your institution is required to sign a declaration regarding the following:

In verifying compliance, the following minimum standards as they pertain to Criterion 7 should be addressed:

- Adequacy of teaching and learning facilities in relation to this programme (classrooms, seminar rooms, work rooms, studios, etc.)
- Availability of laboratory or special equipment required for the programme.
- Compliance with health and occupational safety, and clinical regulations.
- Availability of adequate IT infrastructure (hardware and software) in relation to staff and students.
- Adequacy of library and other resources for this programme
- Sufficiency of training provided to both staff and students in IT and usage of the library and other resource facilities.
- Financial plan for the maintenance and upgrading of infrastructure/resources.

8. PROGRAMME ADMINISTRATIVE SERVICES: (Criterion 8)

Minimum standards:
The programme has effective administrative services for providing information; managing the programme information system; dealing with a diverse student population; and ensuring the integrity of processes leading to certification of the qualification obtained through the programme.

The HEQC-online institutional administrator for your institution is required to sign a declaration regarding the following:

No information regarding this criterion needs to be provided, but the institutional quality assurance office must verify the above minimum standards.

9. POSTGRADUATE POLICIES, PROCEDURES AND REGULATIONS: (Criterion 9)

Minimum standards: Postgraduate programmes have appropriate policies, procedures and regulations for the admission and selection of students; the selection and appointment of supervisors; and the definition of the roles and responsibilities of supervisors and students, etc.

The questions below need to be completed per site:

9.1 Provide a description of the process for approval of student research proposals and completed dissertations/theses:

9.3 Outline the criteria for the selection and appointment of supervisors:

9.4 How is supervision built into workload models?

9.5 Summarise the guidelines governing the roles and responsibilities of students and supervisors. Attach all policies and procedures in relation to supervision (in "Documentation" section, below).

9.6 Describe policies and procedures in place to deal with student complaints, grievances, plagiarism, re-marking, etc.

9.7 Detail the assessment procedures for long essays, dissertations and theses.

9.8 Existing postgraduate institutions:

- Discuss staff development practices undertaken over the last 3 years in relation to postgraduate supervision.
- Expenditure on research for the past 3 years
- Research/scholarly output for the past 3 years

9.9 What plans are in place to mentor academic staff into research activities?

9.10 Provide a description of how the programme enables students to undertake independent research and other scholarly activities.

9.11 Provide a budget for research.

The following documentation to be uploaded as it pertains to this programme

- Research policy:
- Policies/procedures for the appointment of supervisors:
- Code of Ethics:
- Any other documentation which will indicate your compliance with this criterion.

C) PROGRAMMES OFFERED THROUGH DISTANCE EDUCATION

Please note that this section should be completed by public higher education institutions not classified by the DoE as distance education institutions, but who are applying for accreditation to offer a programme through distance education.

10.1 Provide a rationale for the use of distance education for the delivery of this programme to the intended target learners.

10.2 Provide evidence of the institution's systems, structures, policies, procedures and processes for materials development and delivery for distance learning.

10.3 Describe quality assurance policy and procedures for monitoring teaching and learning.

10.4 Indicate how staff are trained, monitored and supported for the specialised distance education roles they perform, including the design, management and delivery of the programmes.

10.5 Indicate how the design of the programme relates to the strategy for teaching and learning at a distance, including arrangements for students to access texts and materials required by the curriculum.

10.6 Describe in detail the policy for formative and summative assessment, including mention of feedback to students and the conduct of examinations.

10.7 Describe mechanisms for student support. If contact sessions are offered, describe the systems in detail.

Upload documents:

- Any other documentation which will indicate your compliance with this criterion.