

# 2016 HANDBOOK BIOMEDICAL & CLINICAL TECHNOLOGY

FACULTY OF HEALTH SCIENCES

# HANDBOOK FOR 2016

# FACULTY OF Health sciences

# DEPARTMENT of BIOMEDICAL and CLINICAL TECHNOLOGY

The above department offers two programmes: Biomedical Technology Clinical Technology

This handbook offers information on both programmes.

# WHAT IS A UNIVERSITY OF TECHNOLOGY?

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

# NOTE TO ALL REGISTERED STUDENTS

Your registration is in accordance with all current rules of the Institution. If, for whatever reason, you do not register consecutively for every year/semester of your programme, your existing registration contract with the Institution will cease. Your reregistration anytime thereafter will be at the discretion of the institution and, if permitted, will be in accordance with the rules applicable at that time.

# **IMPORTANT NOTICES**

The rules in this departmental handbook must be read in conjunction with the General Rules (G Rules) contained in the DUT General Handbook for Students as well as the relevant subject Study Guides.

Your attention is specifically drawn to Rule G1 (8), and to the process of dealing with students issues

## FACULTY of HEALTH SCIENCES FACULTY VISION, MISSION, GOALS & VALUES

(November 2012 for 2013-2017)

# Vision:

The vision of the Faculty of Health Sciences at the Durban University of Technology is to be a leading Faculty in transformative and innovative education for health professionals, guided by National imperatives and a strong commitment to socially responsive education. We will strive to excellence in professional and teaching scholarship, as well as in the development of National and global linkages in education, and in the research and development of health.

# Mission Statement:

Within a value – driven centered ethos, the Faculty is committed to develop, quality health professionals that are practice oriented; receptive and responsive to health care needs of the people of South Africa and Africa as a whole. This will be achieved by providing the highest standards of learning, teaching, research, and community engagement, underpinned by a commitment to creating space for students and staff to succeed.

# Goals

The Faculty aims to:

- I. Respond to the National health human resource and industry needs within the health sector.
- 2. Ensure the offering of entrepreneurial and leadership skills as a core component of all programmes within the Faculty of Health Sciences.
- 3. Continue to develop community-based projects to foster social responsibility through collaborative projects between programmes.
- 4. Enhance established quality management frameworks to support teaching and learning.
- 5. Develop applied research responsive to community and industry needs.
- 6. Develop mechanisms for the dissemination and application of research outcomes to inform teaching and learning, assessment, community engagement and further research.
- 7. Improve research participation and output through increased post-graduate student enrolment, publications and establishment of research groups.
- 8. Enable the generation of third-stream income through research and innovation (patents / artifacts) in order to supplement existing sources of income for the next five years.
- 9. Attract and retain diverse quality staff, while promoting advancement of individual potential.
- 10. Position DUT Health Sciences nationally

# Values

The Faculty is guided by the following core values:

- I Transparency, openness, honesty, and shared governance
- 2 Professional and personal respect for others
- 3 Educational relevance, equity and transformation (curriculum, access and success)
- 4 Loyalty, accountability, dignity and trust

# **DEPARTMENTAL MISSION & GOALS**

The above department offers two programmes:

# **Biomedical Technology and Clinical Technology**

# Vision:

Our vision is to be the leading department in the Faculty of Health Sciences and the Durban University of Technology in providing socially responsive education for the development of health care graduates who are able to become leaders in the provision of high quality patient care.

# Mission:

The department of Biomedical and Clinical Technology is committed to student-centered approaches to teaching, learning, assessment and research within a dynamic and authentic real-world environment, whilst promoting and upholding professional values and ethics in response to needs of the community and the profession. We are also committed to continued education and professional development of staff, students and alumni.

# The graduate attributes as per our programme overview are listed below:

- 1. Use a range of information technologies to identify, gather and disseminate information.
- Engage in the generation of new knowledge in their specialist professional disciplines and academic fields which will be investigated and recorded scientifically.
- 3. Work independently, identify, critically analyse and solve problems in their professional, individual and societal environments
- 4. Lead and effectively manage team members in an organisation and within their communities.
- 5. Be aware of cultural diversity and show respect to indigenous knowledge, cultures and values
- 6. Think critically and have excellent decision making skills including awareness of personal strengths and limitations.
- 7. Communicate effectively within the health care and educational environment, using visual, mathematical and/or language skills in the modes of oral and or written presentation
- 8. Use science and technology effectively and critically, showing responsibility towards the environment and health of others
- 9. Participate as responsible citizens in the life of local, national and global communities

# Goals

The department aims to:

- I. Provide quality teaching, learning and support to students
- 2. Respond to national human resource and industry needs
- 3. Provide excellent professional value-driven education, promote entrepreneurship and leadership skills.
- 4. Produce graduates that are independent thinkers functioning within a team
- 5. Foster professional and ethical conduct
- 6. Keep abreast with current and future technological trends
- 7. Enhance the quality management frameworks to support teaching, learning, assessment and research.
- 8. Encourage research responsive to community and health needs
- 9. Position the Department of Biomedical and Clinical Technology nationally and internationally.
- 10. Attract and retain diverse quality staff while promoting advancement of individual potential
- 11. Maintain relationships within the institution, relevant professional bodies, industry, educational institutions, alumni and other stakeholders.
- 12. Foster national and international collaboration and partnerships
- 13. Strive for excellence and success
- 14. Embrace an attitude of life-long learning with the aim to improve professional clinical practice through research

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# I. DEPARTMENTAL & FACULTY CONTACT DETAILS

#### All departmental enquiries to:

Secretary:	Mrs Bongi Nene
Tel No:	(031) 373 5411
Fax No:	(031) 373 5295
Email:	nenebg@dut.ac.za
Location of Department:	MB 2-9 ML Sultan Campus

## All Faculty enquiries to:

Faculty Officer:Mr Vikesh SinghTel No:(031) 373 2701Fax No:(031) 373 2407Email:vikeshs@dut.ac.zaLocation:Health Faculty Office, Gate 8,<br/>Steve Biko Road, Mansfield Site<br/>Area, Ritson Campus

Executive Dean: Executive Dean's Secretary Tel No: Fax No: Email: Location: Prof T Puckree Mrs Bilkish Khan (031) 373 2704 (031) 373 2620 bilkishk@dut.ac.za Executive Dean's Office, Gate 8, Steve Biko Road, Mansfield Site Area, Ritson Campus

# 2. DEPARTMENTAL STAFF

Staff	NAME AND QUALIFICATION		
Head of Department	Dr D R Prakaschandra, PhD (Cardiology) (UKZN)		
Professor	Prof J K Adam, DTech: Clin Tech (DUT)		
Lecturer	Mr M E Memela <sup>1</sup> , MTech: Clin Tech (DUT)		
	Miss T S Ndlovu <sup>2</sup> , MTech: Biomed Tech (DUT)		
Senior Lecturers	Mrs B T Mkhize, MTech: Biomed Tech (DUT)		
	Mr M J Mohapi, MEd (UKZN),		
	Mrs P Pillay, MPH (UKZN)		
Lecturers	Mr D Govender, NHD: Med Tech (MLST)		
	Mrs J N Mtshali, MMed: Medical Micro (UN)		
	Mr C Sydney, M Med Sc (UKZN)		
Senior Lab Technician	Mrs Y Pillay, Comp Prog (MLST)		
Laboratory Technicians	Mr J Mbuyazi, ND: Pharmaceutical Mar- keting (MLST)		
	Ms T C Qangule, ND: Med Tech Micro (Pen Tech)		
	Mr D Reddy, Cytotechnician, (CTCMIAC)		
	Mr S Mzobe, BTech: Biomed Tech (DIT)		
Laboratory Assistant	Miss H Ramphal, ND: OMT (DUT)		
Departmental Secretary	Mrs B G Nene, BTech: OMT (DUT)		

<sup>1</sup> Head of Programme : Clinical Technology <sup>2</sup> Head of Programme : Biomedical Technology

# 3. DEPARTMENTAL INFORMATION & RULES

#### 3.1 Programmes offered by the department

This department offers two programmes, namely:

- o Biomedical Technology
- o Clinical Technology

### 3.2. Qualifications offered by the department

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

Qualification Important Dates	Qual Code	SAQA NLRD Number	Important Dates			
Biomedical Technology Programme						
ND: Biomedical Technology	NDBMTI	1895	Teach- out date: 2021			
ND: Biomedical Technology (ECP)	NDBMFI					
BTech: Biomedical Technology	BTBMT1/BTBMT2	1899	Phasing out date 2019			
Master of Health Sciences in Medical Laboratory Sci- ence	MHMLSI					
Doctor of Medical Laboratory Science	DRMLSI					
BHSc in Medical Laboratory Science			Awaiting DHET ap- proval			
Clinical Te	chnology Programme					
ND: Clinical Technology	NDCLTI	1879	Teach- out date: 2021			
ND: Clinical Technology (ECP)	NDCLF2		Phasing out date: 2017			
BTech: Clinical Technology	BTCLT1/BTCLT2	1889	Phasing out date: 2019			
Masters of Health Sciences in Clinical Technology	MHCLTI					
Doctor of Medical Clinical Sciences	DRMCSI					
BHSc in Clinical Technology			2017			

#### 3.3. Departmental Information

#### 3.3.1. Academic Integrity

Please refer to the General Rules pertaining to academic integrity G13 (1)(o). These will be enforced wherever necessary to safeguard the worthiness of our qualifications, and the integrity of the Faculty of Health Sciences at the DUT.

## 3.3.2. Code of Conduct for Students

In addition to the General Rules pertaining to Student Conduct SR3 (3), a professional code of conduct pertaining to behaviour, appearance, personal hygiene and dress shall apply to all students registered sessions with the Faculty of Health Sciences, at all times.

### 3.3.3. Uniforms

Students must adhere to instructions regarding specific dress code required during practical sessions and/ hospital visits. All students are required wear laboratory coats on top of their own clothing and closed shoes during practical and some practical sessions may also need students to wear masks and gloves.

#### 3.3.4. Attendance

Students are encouraged to achieve 100% attendance for all planned academic activities as these are designed to provide optimal support for the required competency. Where absence is unavoidable, the student must timeously advise the department of the reason. Only exceptional reasons will be accepted for absence from guest lectures, industry or field trips. Poor attendance records may lead to penalties as per programme rules. Where absence impacts on assessment, please refer to Section 3.4. (Departmental Rules) below.

#### 3.3.5. Health and Safety

Students must adhere to all Health and Safety regulations both while at DUT and in Work Integrated Learning (WIL) placements. Failure to do so will be treated as a breach of discipline.

#### 3.3.6. Registration with the Professional Board

**As a Student:** Within two weeks of registration with the Department, students are required to register as Student Medical Technologists or Student Clinical Technologists with the Health Professions Council of South Africa as determined in the regulations set out in the Allied Health Service Professions Act, 1982 (Act 63 of 1982) (Regulation R629, Government Gazette No 11221 of 31 March 1988).

### As a Graduate (Biomedical Technology)

A graduate, on successful completion of the qualification and the required internship, and after passing a competency assessment to satisfy the requirements of the Professional Board for Medical Technology, may register as a qualified Biomedical Technologist (as applicable) with the Health Professionals Council of South Africa (HPCSA). After registration with the HPCSA, graduates may work in government, private health care laboratories and research laboratories. Unregistered Biomedical Technologists may work in non-diagnostic laboratories. To practice independently as a Biomedical Technologist, two years post-registration experience is required.

As a Graduate (Clinical Technology):

A graduate, on successful completion of the qualification and after having satisfied the requirements of the Professional Board for Radiography and Clinical Technology, may register as a qualified Clinical Technologist (as applicable) with the HPCSA.

# 3.3.7. Student appeals:

Rule GI (8) in the DUT General Handbook apply.

# 3.4. DEPARTMENTAL RULES

# 3.4.1 Special Tests and condonement

No summative assessments will be condoned. Summative means all assessment marks that contribute to the final mark of a subject, but not including examinations for the purpose of this rule.

- If a student misses a summative written or oral or practical test, for reasons of illness, a special test may be granted if the student provides a valid medical certificate specifying the nature and duration of the illness, and a declaration that for health reasons it was impossible for the student to sit for the test. This certificate must be submitted to the programme coordinator, no later than one week after the date of the missed test.
- If a student misses a summative written or oral or practical test, for reasons other than illness, a special test may be granted if the student provides a valid declaration that for unavoidable reasons it was impossible for the student to sit for the test. This declaration must be submitted to the programme coordinator, no later than one week after the date of the missed test.
- In addition, a special test may be granted to students with borderline academic results. The special test which may take the form of an oral test, may be set at the end of the period of registration, and may include a wider scope of work than the original test.
- Any student who misses an assessment and who does not qualify for a special test, and any student who qualifies for a special test but fails to write it, shall be allocated a zero mark for the missed assessment. A student who qualifies for a special test granted for borderline academic results, but fails to write it, or achieves lower than their original results, shall be allocated their original results.

# 3.4.2 Student Appeals

• Rule GI (8) applies.

# SECTION A: BIOMEDICAL TECHNOLOGY PROGRAMME

# 4. NATIONAL DIPLOMA: BIOMEDICAL TECHNOLOGY (NDBMTI)

# 4.1. Programme Information

Biomedical Technology is a profession of highly knowledgeable and skilled individuals who perform clinical laboratory tests on patient samples. The services offered by Biomedical Technologists is an important component of patient health care, as the results obtained from these laboratory tests are a vital tool in the diagnosis, treatment and prevention of disease. The qualifying student will be able to organize and perform laboratory operations in clinical diagnostic laboratories and related fields in compliance with statutory requirements for ethics, safety and quality assurance. Supervisory, management and research skills are developed.

### 4.1.1 Duration of the programme

Students in Biomedical Technology must attend formal lectures and practical sessions at the Durban University of Technology in all subjects for the duration of their studies. The minimum study period is three years, including a six (6) months experiential learning component which occurs in the sixth semester.

Successful applicants for study towards a ND: Biomedical Technology will be accepted into either a three-year minimum or an extended, four-year minimum programme of study. The extended curriculum has been designed in order to enhance student development and to improve the student's chances of successful completion.

### 4.1.2 Assessment and Moderation

Most subjects in this programme have main and supplementary final examinations. Certain subjects in this programme do not have a final examination. The results for these subjects are determined through a weighted combination of assessments. As such, there are no supplementary examinations. Students are encouraged to work steadily through the period of registration in order to achieve the highest results possible. Assessment details are listed under each subject at the back of this handbook. Moderation follows the DUT requirements.

## 4.1.3 Registration with the Professional Board

**As a Student:** Within two weeks of registration with the Department, students are required to register as Student Medical Technologists or Student Clinical Technologists with the Health Professions Council of South Africa as determined in the regulations set out in the Allied Health Service Professions Act, 1982 (Act 63 of 1982) (Regulation R629, Government Gazette No 11221 of 31 March 1988).

#### As a Graduate

A graduate, upon successful completion of the qualification and the required internship, and having passed a competency assessment to satisfy the requirements of the Professional Board for Medical Technology, may register as a qualified Biomedical Technologist (as applicable) with the HPCSA. After registration with the HPCSA, graduates may work in government, private health care laboratories and research laboratories. Unregistered Biomedical Technologists may work in non-diagnostic laboratories. To practice independently as a Biomedical Technologist, two years post-registration experience is required.

## 4.1.4 Work Integrated Learning Rules

The WIL component includes a six (6) months placement which occurs in the sixth semester. This is a compulsory component of the programme. The student must be registered at the Durban University of Technology for the duration of this period. The student must comply with the rules and regulations as set out in the Medical Technology laboratory where placed.

Code	Subjects	Year of	NQF	Nated	Pre-req
Code	Subjects	Study	Level	Credits	Code
IMET 101	Introduction to Medical Technology	1	5	0.050	None
CSTAIOI	Calculation and Statistics	la	5	0.100	None
CHMB102	Chemistry	la	5	0.125	none
PYSC105	Physics	la	5	0.100	None
BIOA202	Biochemistry2	Ib	5	0.125	None
IMMU202	Immunology2	lb	5	0.125	None
ANPH114	Anatomy & Physiology(Module A)	la	5	0.125	None
ANPH124	Anatomy & Physiology(Module B)	Ib	5	0.125	None
PAPH201	Pathophysiology 2	Ib	5	0.125	None
BLTT201	Blood Transfusion Technology 2	2a	6	0.125	IMMU202
	Collular Pathology J	22	4	0.125	ANPH114,
CEFA IUI	Cellular Fathology I	Za	6	0.125	ANPH124,
CRATIO	Chemical Pathology I	2a	6	0.125	BIOA202,
CIATIO					CHMB102
MCGY101	MicrobiologyI	2a	6	0.125	
HAFM203	Haematology 2	2b	6	0.125	BLTT201,
10 (211205		20	•	0.125	PAPH201
CEPA201	Cellular Pathology 2	2b	6	0.125	CEPAIOI
CEITIEUT		20	•	0.125	PAPH201
CPAT202	Chemical Pathology 2	2h	6	0.125	CPAT101
CITATEOL		20	•	0.125	PAPH201
MCGY203	Microbiology 2	2b	6	0.125	MCGY101
11001200		20	0	0.125	PAPH201
HAEM 303	Haematology 3	3a	6	0.125	HAEM203
CEPA 301	Cellular Pathology 3	3a	6	0.125	CEPA201
CPAT303	Chemical Pathology 3	3a	6	0.125	CPAT202
MCGY301	Microbiology 3	3a	6	0.125	MCGY203
LABP301	Laboratory Practice 3	3b	6	0.500	

# 4.2 Learning Programme Structure

\*A pre-req means this subject must be passed prior to registration (prerequisite)

# 4.3 Programme Rules

## 4.3.1 Minimum admission requirements.

In addition to Rule G7, the minimum admission requirement for a student who registers for the National Diploma: Biomedical Technology are:

National Senior Certificate (NSC) with a Bachelor Degree endorsement and must include the following subjects at the stated ratings.

Compulsory Subjects	NSC Rating
English	3
Life Orientation	4
Mathematics	4
Life Science	4
Physical Science	4
And one 20 credit subject	3

Senior Certificate (SC) with matriculation exemption and must include the following subjects at the stated ratings:

COMPULSORY SUBJECTS	HG	SG
Mathematics	D	С
Physical Sciences	D	С
Biology / Life Sciences / Physiology	D	С

# Admission requirements based upon Work Experience, Age and Maturity and RPL

The DUT general rules G7 (3) and G7 (8) respectively, will apply.

#### Admission of International students

The DUT's Admission's Policy for International Students and general rules G4 and G7 (5), apply.

### 4.3.2 Selection Criteria

In accordance with Rule G5, acceptance into the programme is limited to 30 places. As more qualifying applications are received than can be accommodated, the following selection process will determine placement in the programme:

- All applicants must apply through the Central Applications Office (CAO).
- Initial shortlisting for selection is based on the applicant's academic performance in Grade 12 (Grade 11, or Grade 12 trial marks, will be used for current matriculants).
- Shortlisted students will be invited to undergo placement testing.
- Applicants who pass the placement tests are invited for an interview.
- Provisional acceptance is given to selected applicants awaiting National Senior Certificate (NSC) results. If the final Grade 12 NSC results do not meet the minimum entrance requirements, this provisional acceptance will be withdrawn.
- Final selection for placement will be based on results in the SC / NSC and DUT placement tests as well as on recommendations from the interview panel.

Assessment	Weighting (%)
Results of the Senior Certificate or National Senior Certificate	30%
Placement Testing	35%
Interview Score	35%

This department offers an Extended Curriculum learning programme for the ND: Biomedical Technology. On the basis of the placement assessments, successful applicants for study towards the National Diploma will be accepted into either the three-year minimum; or an augmented, four-year minimum, programme of study. An augmented, Extended Curriculum Programme has been devised in order to enhance student development and to improve the student's chances of successful completion.

# 4.3.3 Pass Requirements

Notwithstanding the DUT pass requirements (G14 and G15), and those detailed as follows, students are encouraged to apply themselves to their learning, and strive for the best academic results possible in order to adequately prepare themselves for their future careers, and to maximize possible employment opportunities.

- A first year student who fails four or more subjects with a final mark of less than 40% will not be allowed to re-register for the programme: ND Biomedical Technology.
- Promotion to semester 3 of study requires a pass in at least 50% of the previous level subjects, i.e. year 1 subjects; notwithstanding prerequisites and co-requisites. Students who have passed less than 50% of their subjects in a level are considered to be not making satisfactory academic progress.
- Promotion to semester 4 of study requires a pass in at least 50% of semester 3 subjects; notwithstanding prerequisites. Students who have passed less than 50% of their subjects in a level are considered to be not making satisfactory academic progress.
- Promotion to semester 5 of study requires a pass in at least 50% of the previous level subjects, i.e. semester 4 subjects; notwithstanding prerequisites. Students who have passed less than 50% of their subjects in a level are considered to be not making satisfactory academic progress.
- Prior to commencing with Laboratory Practice 3, a student must have passed all Semester 1 to Semester 4 subjects, and must have obtained a sub minimum of 40 % for: Chemical pathology 3, Cellular pathology 3, Haematology 3 and Microbiology 3.

## 4.3.4 Re-registration Rules

Rule GI6 applies

# 4.3.5 Exclusion Rules

In addition to Rule G17 the following departmental rule applies: A first year student who fails four or more subjects with a final mark of less than 40% will not be allowed to re-register for the programme: ND Biomedical Technology. Deregistration from any subject is subject to the provisions of Rule G6 (2).

# 4.3.6 Interruption of Studies

In accordance with Rule G21A (b), the minimum duration for this programme will be three (3) years of registered study and the maximum duration will be five (5) years of registered study, including any periods of work-integrated learning (WIL). Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

# 4.3.7 Registration with the Professional Board

**As a Student:** Within two weeks of registration with the Department, students are required to register as Student Medical Technologists or Student Clinical Technologists with the Health Professions Council of South Africa as determined in the regulations set out in the Allied Health Service Professions Act, 1982 (Act 63 of 1982) (Regulation R629, Government Gazette No 11221 of 31 March 1988).

**As a Graduate** A graduate, upon successful completion of the qualification and the required internship, and having passed a competency assessment to satisfy the requirements of the Professional Board for Medical Technology, may register as a qualified Biomedical Technologist (as applicable) with the HPCSA. After registration with the HPCSA, graduates may work in government, private health care laboratories and research laboratories. Unregistered Biomedical Technologists may work in non-diagnostic laboratories. To practice independently as a Biomedical Technologist, two years post-registration experience is required.

#### 4.3.8. Work Integrated Learning Rules

The WIL component includes a six (6) months placement which occurs in the sixth semester. This is a compulsory component of the programme. The student must be registered at the Durban University of Technology for the duration of this period. The student must comply with the rules and regulations as set out in the Medical Technology laboratory where placed.

### 5. NATIONAL DIPLOMA: BIOMEDICAL TECHNOLOGY: EXTENDED CURRICULUM PROGRAMME (NDBMFI)

#### 5.1. Programme Information

Biomedical Technology is a profession of highly knowledgeable and skilled individuals who perform clinical laboratory tests on patient samples. The service offered by Biomedical Technologists is an important component of patient health care, as the results obtained from these laboratory tests are a vital tool in the diagnosis, treatment and prevention of disease. The qualifying student will be able to organize and perform laboratory operations in clinical diagnostic laboratories and related fields in compliance with statutory requirements for ethics, safety and quality assurance. Supervisory, management and research skills are developed.

## 5.1.1 Duration of the Programme

Successful applicants for study towards a ND: Biomedical Technology will be accepted into an extended, four-year minimum programme of study. This extended curriculum has been designed in order to enhance student development and to improve the student's chances of successful completion.

Students in Biomedical Technology must attend formal lectures and practical sessions at the Durban University of Technology in all subjects for the duration of their studies. The minimum study period for the ND: Biomedical Technology (ECP) is four years, including a six (6) months experiential learning component.

### 5.1.3 Assessment and Moderation

Most subjects in this programme have main and supplementary final examinations. Certain subjects in this programme do not have a final examination. The results for these subjects are determined through a weighted combination of assessments. As such, there are no supplementary examinations. Students are encouraged to work steadily through the period of registration in order to achieve the highest results possible. Assessment details are listed under each subject at the back of this handbook. Moderation follows the DUT requirements.

### 5.1.4 Registration with the Professional Board

**As a Student:** Within two weeks of registration with the Department, students are required to register as Student Medical Technologists or Student Clinical Technologists with the Health Professions Council of South Africa as determined in the regulations set out in the Allied Health Service Professions Act, 1982 (Act 63 of 1982) (Regulation R629, Government Gazette No 11221 of 31 March 1988).

#### As a Graduate

A graduate, upon successful completion of the qualification and the required internship, and having passed a competency assessment to satisfy the requirements of the Professional Board for Medical Technology, may register as a qualified Biomedical Technologist (as applicable) with the HPCSA. After registration with the HPCSA, graduates may work in government, private health care laboratories and research laboratories. Unregistered Biomedical Technologists may work in non-diagnostic laboratories. To practice independently as a Biomedical Technologist, two years post-registration experience is required.

#### 5.1.5 Work Integrated Learning Rules

The WIL component includes a six (6) months placement which occurs in the eighth semester. This is a compulsory component of the programme. The student must be registered at the Durban University of Technology for the duration of this period. The student must comply with the rules and regulations as set out in the Medical Technology laboratory where placed.

			NOF	Nated	
Code	Subjects	Year of Study	Level	Credits	Pre-req Code
FCMR101	Foundation Chemistry	la	5	0.100	none
FPHY101	Foundation Physics	la	5	0.100	none
FLBTIOI	Laboratory Techniques	2a	5	0.175	none
FBIO202	Foundation Biochemistry	2a	5	0.063	none
FIMM202	Foundation Immunology	2a	5	0.062	none
IMET101	Introduction to Medical Technology	I	5	0.050	none
CSTAIOI	Calculation and Statistics	lb	5	0.100	none
CHMY101	Chemistry	lb	5	0.125	FCMR101
PYSC105	Physics	lb	5	0.100	FPHY101
BIOA202	Biochemistry2	2b	5	0.062	FBIO202
IMMU202	Immunology2	2b	5	0.063	FIMM202
ANPH114	Anatomy & Physiology(Module A)	2a	5	0.125	none
ANPH124	Anatomy & Physiology(Module B)	2b	5	0.125	none
PAPH201	Pathophysiology 2	2b	5	0.075	none
BLTT201	Blood Transfusion Technology 2	3a	6	0.100	IMMU202
CEPAIOI	Cellular Pathology I	3a	6	0.100	ANPH114, ANPH124,
CPAT101	Chemical Pathology I	3a	6	0.100	BIOA202, CHMB102
MCGY101	Microbiology I	3a	6	0.100	
HAEM203	Haematology 2	3b	6	0.100	BLTT201, PAPH201
CEPA201	Cellular Pathology 2	3b	6	0.100	CEPA 101 PAPH201
CPAT202	Chemical Pathology 2	3b	6	0.100	CPATI01 PAPH201
MCGY203	Microbiology 2	3b	6	0.100	MCGY101 PAPH201
HAEM303	Haematology 3	4a	6	0.100	HAEM203
CEPA301	Cellular Pathology 3	4a	6	0.100	CEPA201
CPAT303	Chemical Pathology 3	4a	6	0.100	CPAT202
MCGY301	Microbiology 3	4a	6	0.100	MCGY203
LABP301	Laboratory Practice 3	4b	6	0.475	nil

#### 5.2 Learning Programme Structure

## 5.2 Programme Rules

# 5.2.1 Minimum Admission Requirements

In addition to Rule G7, the minimum admission requirement for a student who registers for the National Diploma: Biomedical Technology are:

National Senior Certificate (NSC) with a Bachelor Degree endorsement and must include the following subjects at the stated ratings.

0,	
Compulsory Subjects	NSC Rating
English	3
Life Orientation	4
Mathematics	4
Life Science	4
Physical Science	4
And one 20 Credit Subject	3

Senior Certificate (SC) with matriculation exemption and must include the following subjects at the stated ratings:

Compulsory Subjects	HG	SG
Mathematics	D	С
Physical Sciences	D	С
Biology / Life Sciences / Physiology	D	С

Admission requirements based on work experience, age & maturity; and recognition of prior earning (RPL).

The DUT general rules G7 (3) and G7 (8) respectively, will apply.

### Admission of international students

The DUT's Admission's Policy for International Students and general rules G4 and G7 (5), apply.

## 5.2.2 Selection Criteria

In accordance with Rule G5, acceptance into the ECP programme is limited to 15 places.

As more qualifying applications are received than can be accommodated, the following selection process will determine placement in the programme:

- All applicants must apply through the Central Applications Office (CAO).
- Initial shortlisting for selection is based on the applicant's academic performance in Grade 12 (Grade 11, or Grade 12 trial marks, will be used for current matriculants).
- Shortlisted students will be invited to undergo placement testing.
- Applicants who pass the placement tests are invited for an interview.
- Provisional acceptance is given to selected applicants awaiting National Senior Certificate (NSC) results. If the final Grade 12 NSC results do not meet the minimum entrance requirements, this provisional acceptance will be withdrawn.
- Final selection for placement will be based on results in the SC / NSC and DUT placement tests as well as on recommendations from the interview panel.

Assessment	Weighting (%)
Results of the Senior Certificate or National Senior Certificate	30%
Placement Testing	35%
Interview Score	35%

#### 5.2.3 Pass Requirements

Notwithstanding the DUT pass requirements (G14 and G15), and those detailed as follows, students are encouraged to apply themselves to their learning, and strive for the best academic results possible in order to adequately prepare themselves for their future careers, and to maximize possible employment opportunities.

- A first year student who fails four or more subjects with a final mark of less than 40% will not be allowed to re-register for the programme: ND Biomedical Technology.
- Promotion to semester 3 of study requires a pass in Foundation Chemistry and Foundation Physics and at least 1 mainstream subject of the previous level, i.e. Introduction to Medical Technology, Calculations and Statistics, Physics 1 or Chemistry 1. Students who have passed less than 50% of their subjects in a level are considered not to be making satisfactory academic progress.
- Promotion to semester 4 of study requires a pass in Foundation Immunology, Foundation Biochemistry and Laboratory Techniques, and all year I subjects. Students who have passed less than 50% of their subjects in a level are considered not to be making satisfactory academic progress.
- Promotion to semester 5 of study requires a pass in at least 50% of the previous level subjects, i.e. semester 4 subjects. (Prerequisites have to be satisfied). Students who have passed less than 50% of their subjects in a level are considered not to be making satisfactory academic progress.
- Promotion to semester 6 of study requires a pass in at least 50% of the previous level subjects, i.e. semester 5 subjects; notwithstanding prerequisites. Students who have passed less than 50% of their subjects in a level are considered to be not making satisfactory academic progress.
- Promotion to semester 7 of study requires a pass in at least 50% of the previous level subjects, i.e. semester 6 subjects; notwithstanding prerequisites. Students who have passed less than 50% of their subjects in a level are considered to be not making satisfactory academic progress.
- Prior to commencing with Laboratory Practice 3, a student must have passed all Semester 1 to Semester 4 subjects, and must have obtained a sub minimum of 40% for: Chemical pathology 3, Cellular pathology 3, Haematology 3 and Microbiology 3.

# 5.2.4 Re-registration Rules

Rule GI6 applies

## 5.2.5 Exclusion Rules

In addition to Rule G17, the following departmental rule applies:

- A first year student who fails four or more subjects with a final mark of less than 40% will not be allowed to re-register for the programme: ND Biomedical Technology.
- Deregistration from any subject is subject to the provisions of Rule G6 (2).

## 5.2.6 Interruption of Studies

In accordance with Rule G21A (b), the minimum duration for this programme will be four (4) years of registered study and the maximum duration will be five (5) years of registered study, including any periods of WIL. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

## 6. BACHELOR OF TECHNOLOGY: BIOMEDICAL TECHNOLOGY (BTBMT2)

#### 6.1 Programme Information

The qualifying Student will be able to organize and perform laboratory operations in clinical diagnostic laboratories and related fields in compliance with statutory requirements for ethics, safety and quality assurance.

Supervisory, management and research skills are developed. They will be able to integrate laboratory tests and results with pathophysiological conditions. Students will be able to conduct research grounded in a deep knowledge of their area of specialization. Management skills are developed with a view to encouraging entrepreneurial development and business management.

After registration with the HPCSA, they may work in government, private and research laboratories. To practice independently as a Medical Technologist, two (2) years post-registration experience is required. Unregistered Biomedical Technologists may work in non-diagnostic laboratories.

#### Assessment and Moderation

Most subjects in this programme have main and supplementary final examinations. Certain subjects in this programme do not have a final examination. The results for these subjects are determined through a weighted combination of assessments. As such, there are no supplementary examinations. Students are encouraged to work steadily through the period of registration in order to achieve the highest results possible. Assessment details are listed under each subject at the back of this handbook. Moderation follows the DUT requirements.

## 6.2. Learning Programme Structure

Code	Subjects	Year of Study	NQF Level	NATED Credits
RMTQ 201	Research Methods and Techniques	1	7	0.125
MOLE401	Molecular Biology IV	1	7	0.250
LABM 201	Laboratory Management	2	7	0.125
IPAT401	Integrated Pathophysiology IV	2	7	0.250
RPBM101	Research Project	2	7	0.250

# 6.3 Programme Rules

## 6.3.1 Minimum Admission Requirements & Selection Criteria

In addition to Rule G23(1), G3, G4 and G7, students applying for this qualification must be in possession of a ND: Biomedical Technology or National Diploma: Medical Technology and proof of registration with the HPCSA in the Medical Technology category or have granted status or advanced standing according to rule G10. Applicants with a ND: Medical Technology have to demonstrate competence in the fundamentals of Biochemistry to the satisfaction of the department. Additional credits may have to be taken if this competence is not demonstrated

In accordance with Rule G5, acceptance into the programme is limited to 20 places and entry to the BTech programme is not automatic. As more qualifying applications are received than can be accommodated, the following selection criteria will determine entry into the programme, with the 20 highest ranking candidates gaining entry into the programme:

- Submission of BTech application forms by due date.
- Applicant's academic performance in the ND: Biomedical Technology see ranking criteria below.
- Workplace experience (post National Diploma)

# THE RANKING CRITERIA

I. Average marks of the final year of the National Diploma							
2. Years to complete the National Diploma qualification							
Minimum duration	Minimum duration	Minimum duration	Minimum duration				
+ 3yrs	+ 2 yrs	+ I yr					
0	1 3 5						
3. Workplace experient	3. Workplace experience post National Diploma						
0-1 year	I-3 years	3-5years	> 5years				
0	1	3	5				

An applicant's ranking criteria is determined by the total points score obtained by the addition of the scores obtained in the individual ranking criteria, as shown in the **example** in the table below

Criteria	Ranking score (points)
Average marks of the final year	60
National Diploma completed in minimum duration	5
Workplace experience (Diploma just completed)	0
Total	65

To gain access into the BTech programme, a student must have a minimum of 60 points.

(w.e.f. 28/08/2014)

## 6.3.2 Pass Requirements

In addition to Rule G14 and G15, the following rules apply. Students are encouraged to apply themselves to their studies, and strive for the best academic results possible in order to adequately prepare themselves for their future careers.

## 6.3.3 Re-registration Rules

Rule GI6 applies.

# 6.3.4 Exclusion Rules

Rule GI7 applies.

# 6.3.5 Interruption of Studies

In accordance with Rule G23A, the minimum duration for this programme will be one (1) year of registered study and the maximum duration will be two (2) years of registered study. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

# 7 MASTER OF HEALTH SCIENCES IN MEDICAL LABORATORY SCIENCE (MHMLSI)

## 7.1 Programme Information

This full research qualification is aligned to Rule G24 and the guidelines in the Post Graduate Student Handbook.

- The Student who successfully completes this qualification will be able to apply advanced problem solving skills and critical, reflective thinking to perform independent research in a chosen field and report their findings in a dissertation that meets the accepted criteria and ethical principles for the profession. In this way they will make a contribution to the existing body of knowledge and initiate change that will help develop and advance the profession of medical technology.
- The qualifying Student will be able to conduct independent research under minimal guidance in a chosen field, and contribute to knowledge production in that field. The research problem, its justification, process and outcome is reported in a dissertation which complies with the generally accepted norms for research at that level.

#### Assessment and Moderation

In addition to Rule G24 (4), postgraduate assessment of dissertations will be aligned to Postgraduate policies and guidelines. Please refer to the General Student Handbook and the Postgraduate Student Handbook.

Code	Module	Year of Study	Assessment Type	NATED Credits	Pre-requisites	Co-requisites
MHMLS I	Dissertation	2	External Exami- nation	1.0	None	none

# 7.2 Learning Programme Structure

# 7.3 Programme Rules

#### 7.3.1 Minimum Admission Requirements

In addition to the General Handbook for Students Rule G24 (I), candidates must be possession of a Bachelor's Degree in Biomedical Technology (NQF Level 8), or must have been granted conferment of status according to Rule G10A.

Candidates may also apply for admittance via Recognition of Learning (RPL) in accordance with Rule G7 (8) and / or G10B.

# 7.3.2. Selection Criteria

In accordance with Rule G5, acceptance into the programme is limited, and entry into the Master of Health Sciences in Medical Laboratory Practice is not automatic. Students are selected into the programme once they have completed an intention to study and the department has discussed the viability of the proposed topic for the Masters Qualification. The intention to study/ concept page must include the following: Problem statement or Title of the intended study, Objectives / sub-problems / Research Questions, Rationale/motivation to do the study, Brief literature review, Brief methodology.

## 7.3.3 Pass Requirements

Rule G24 and the Postgraduate Student Handbook apply. Students are encouraged to apply themselves to their research, and strive for the best academic results possible in order to adequately prepare themselves for their future careers.

**7.3.4 Re-registration Rules** Rule G24 (2), Rule G26 (5) and the Postgraduate Student Handbook apply.

#### 7.3.4 Exclusion Rules

Rule G24 (1) (d); Rule G24 (2), and the Postgraduate Student Handbook apply.

#### 7.3.5 Interruption of Studies

In accordance with Rule G24, the minimum duration for this programme will be one (1) year of registered study and the maximum duration will be three (3) years of registered study. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

## 8. DOCTOR OF MEDICAL LABORATORY SCIENCE (DRMLSI)

#### 8.1 Programme Information

This full research qualification is aligned to Rule G25 and G26 and the guidelines in the Post Graduate Student Handbook. The purpose of this qualification is to ensure that the student who successfully completes this qualification will be able to apply advanced problem-solving skills and critical, reflective thinking to perform independent research in a chosen field and report their findings in a dissertation that meets the accepted criteria and ethical principles for the profession. In this way they will make a contribution to the existing body of knowledge and initiate change that will help develop and advance the profession of medical technology.

#### Assessment and Moderation

Post graduate assessment will be aligned to Postgraduate policies and guidelines. Rule G25 (4) and the Postgraduate Student Handbook apply.

#### 8.2 **Programme learning structure**

Code	Module	Year of Study	Assess- ment Type	NATED Credits	Pre-requi- sites	Co-requisites
DRMLSI	Dissertation	3	External Ex- amination	2.0	None	none

### 8.3. Programme Rules

#### 8.3.1 Minimum Admission Requirements

In addition to Rule G25 (1), persons must be in possession of a Master's degree in Biomedical Technology (NQF 9), or have been granted status or advanced standing according to Rule G10. Please also refer to the Postgraduate Student Handbook.

Students are selected into the programme once they have completed an intention to study and the department has discussed the viability of the proposed topic for the qualification. A sound knowledge of the fundamental principles and concepts of research and statistical methods is required.

## 8.3.2 Re-registration Rules

Rule G26 (5) and the Postgraduate Student Handbook apply.

#### 8.3.3 Exclusion Rules

Rules G25 (2)(b; c(ii)) in the General Student Handbook; and the Postgraduate Student Handbook apply.

#### 8.3.4 Interruption of Studies

In accordance with Rule G25 (2), the minimum duration for this programme will be two (2) years of registered study and the maximum duration will be four (4) years of registered study. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration. Please refer to the Postgraduate Student Handbook.

## SECTION B: CLINICAL TECHNOLOGY PROGRAMMES 9 NATIONAL DIPLOMA: CLINICAL TECHNOLOGY (NDCLTI)

#### 9.1 Programme Information

This qualification will enable the Students to acquire the necessary knowledge, skills, attitudes and values to practice as a Clinical Technologist in one of the following specialist categories: Cardiology, Cardiovascular Perfusion, Critical Care, Nephrology, Neurology, Pulmonology or Reproductive Biology. They will be able to perform procedures in one of the above seven specialist categories in order to contribute in the diagnosis and treatment of various pathophysiological conditions in conjunction with other designated health care professionals. They also perform organ system support, diagnostic, therapeutic and corrective procedures on patients using specialized health technology and techniques for the treatment of physiological dysfunction.

# 9.1.1 Duration of the programme

The programme consists of three years full-time study at the Durban University of Technology. The third year is composed of the Work Integrated learning (WIL) component, where a student will choose one of seven categories and study the major specialist subjects appropriate to the chosen category. The categories are as follows: Cardiology, Cardio-Vascular Perfusion, Critical Care, Nephrology, Pulmonology, Reproductive Biology and Neurophysiology. The latter must be done at a training unit approved by the Health Professions Council of South Africa.

#### 9.1.2 Assessment and Moderation

Some subjects in this programme do not have a final examination. The results for these subjects are determined through a weighted combination of assessments. As such, there are no supplementary examinations. Other subjects do have final examinations. Students are encouraged to work steadily through the period of registration in order to achieve the highest results possible. Assessment details are listed under each subject at the back of this handbook. Moderation follows the DUT requirements.

### 9.1.3 Registration with the Professional Board

**As a Student:** On enrolment, it is mandatory that a student register as a student Clinical Technologist with the Health Professions Council of South Africa as determined in the regulations set out in the Government Gazette (No. R.1608 dated 24 July 1987).

**As a Graduate**: A graduate who has completed the qualification successfully, and has complied with all the conditions as set out by the HPCSA, may register as a qualified Clinical Technologist with the Health Professions Council of South Africa in terms of the current rules for registration.

## 9.1.4 Work-Integrated Learning Period (WIL)

WIL will run concurrently with the specialist subjects in the third year of study, at a training unit approved by the Health Professions Council of South Africa (HPCSA). During WIL, students would be required to pass the Competency Based Test (CBT) with a minimum mark of 70%, as a Board requirement.

# 9.2. Programme Learning Structure

Code	Subjects	Year of Study	NQF Level	Nated Credits	SAQA credits	Pre-req Code
ANAY101	Anatomy I	I	5	0.250	30	None
CHMB102	Chemistry I		5	0.125	15	None
CAPPIOI	Computer Appl I	1	5	0.125	15	None
PSIO 102	Physiology I	I	5	0.250	30	None
CSTATUT	Calculations & Stats	1	5	0.125	15	None
ANPH202	Anatomy & Physio 2	2	6	0.250	30	PSIO102, ANAY101
BAPO201	Biomedical Apparatus	2	6	0.250	30	None
OSPP201	Org & Systems Patho- physiology	2	6	0.250	30	PSIO 102, ANAY 101
PHAR201	Pharmacology 2	2	5	0.125	15	None
PYDN101	Psychodynamics	2	5	0.125	15	None
CPAB301	*Cardiology: Biomedi- cal Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
CACP310	*Cardiology: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
CCTP310	*Cardiology: Clinical Tech Practice 3	3	6	0.300	36	All level I & 2 sub- jects
CCBA301	*Critical Care: Biomed- ical Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
CCC301	*Critical Care: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
CTPR301	*Critical Care: Clinical Tech. Prac. 3	3	6	0.300	36	All level I & 2 sub- jects
NEAP301	*Nephrology: Biomedi- cal Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
NCLI301	*Nephrology: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
NCTP301	*Nephrology: Clinical Tech. Prac. 3	3	6	0.300	36	All level I & 2 sub- jects
NBMA301	*Neurophysiology: Bio- medical Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
NCLP301	*Neurophysiology: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
NTPR301	*Neurophysiology: Clinical Tech. Prac. 3	3	6	0.300	36	All level I & 2 sub- jects
FBAP301	*Perfusion: Biomedical Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
PCTP301	*Perfusion: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
PCTP301	*Perfusion: Clinical Tech Prac 3	3	6	0.300	36	All level I & 2 sub- jects
PBAP301	*Pulmonology: Biomed- ical Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
PCLP301	*Pulmonology: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
PTPR301	*Pulmonology: Clinical Tech Prac 3	3	6	0.300	36	All level I & 2 sub- jects
RBAP301	*Reproduction: Bio- medical Apparatus 3	3	6	0.350	42	All level I & 2 sub- jects
RCPR301	*Reproduction: Clinical Practice 3	3	6	0.350	42	All level I & 2 sub- jects
RTPR301	*Reproduction: Clinical Tech Prac 3	3	6	0.300	36	All level I & 2 sub- jects

\* Elective Specialist Category Subjects

# 9.3 Programme Rules

### 9.3.1 Minimum Admission Requirements

In addition to Rule G7, the minimum admission requirement for a student who registers for the National Diploma: Biomedical Technology are:

National Senior Certificate (NSC) with a Bachelor Degree endorsement and must include the following subjects at the stated ratings.

Compulsory Subjects	NSC Rating
English	3
Life Orientation	4
Mathematics	4
Life Science	4
Physical Science	4
And one 20 Credit Subject	3

Senior Certificate (SC) with matriculation exemption and must include the following subjects at the stated ratings.

Compulsory Subjects	HG	SG
Mathematics	D	С
Physical Sciences	D	С
Biology / Life Sciences / Physiology	D	С

Admission requirements based on work experience, age & maturity; and recognition of prior earning (RPL).

Rules G7 (3) and G7 (8) respectively, will apply.

#### Admission of international students

The DUT's Admission's Policy for International Students and general rules G4 and G7 (5), apply.

#### 9.3.2 Selection Criteria

In accordance with Rule G5, acceptance into the programme is limited to 30 places. As more qualifying applications are received than can be accommodated, the following selection process will determine placement in the programme:

- All applicants must apply through the Central Applications Office (CAO).
- Initial shortlisting for selection is based on the applicant's academic performance in Grade 12 (Grade 11, or Grade 12 trial marks, will be used for current matriculants).
- Shortlisted students will be invited to undergo placement testing.
- Applicants who pass the placement tests are invited for an interview.
- Provisional acceptance is given to selected applicants awaiting National Senior Certificate (NSC) results. If the final Grade 12 NSC results do not meet the minimum entrance requirements, this provisional acceptance will be withdrawn.
- Final selection for placement will be based on results in the SC / NSC and DUT placement tests as well as on recommendations from the interview panel.

Assessment	Weighting (%)
Results of the Senior Certificate or National Senior Certifi-	30%
cate	
Placement Testing	35%
Interview Score	35%

## 9.3.3 Pass Requirements

Notwithstanding the DUT pass requirements (G14 and G15), and those detailed as follows, students are encouraged to apply themselves to their learning, and strive for the best academic results possible in order to adequately prepare themselves for their future careers, and to maximize possible employment opportunities. The General rules (G5) and in terms of Rule G7 apply to the National Diploma: Clinical technology.

### 9.3.4 Re-registration Rules

Rule GI6 applies.

### 9.3.5 Exclusion Rules

In addition to Rule G17, the following programme rule applies:

A first year student who fails four or more subjects with a final mark of less than 40% will not be allowed to re-register for the programme: ND Clinical Technology. Deregistration from any subject is subject to the provisions of Rule G6 (2).

## 9.3.6 Interruption of Studies

In accordance with Rule G21A (b), the minimum duration for this programme will be three (3) years of registered study and the maximum duration will be five (5) years of registered study, including any periods of WIL. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

## 9.3.7 Work Integrated Learning Rules (WIL)

In addition to Rule G28, the following programme rules apply:

The student must comply with the rules and regulations as set out in the Industrial Environment where placed.

Students who have not passed all first and second year subjects will not be placed for Work Integrated Learning (WIL).

(wef November 2015)

# 10 NATIONAL DIPLOMA: CLINICAL TECHNOLOGY: EXTENDED CURRICULUM PROGRAMME (NDCLF2)

## 10.1 Programme Information

Successful applicants for study towards a ND: Clinical Technology will be accepted into either a three-year minimum or an extended, four-year minimum

programme of study. This extended curriculum has been designed in order to enhance student development and to improve the student's chances of successful completion.

This qualification will enable the Students to acquire the necessary knowledge, skills, attitudes and values to practice as a Clinical Technologist in one of the following specialist categories: Cardiology, Cardiovascular Perfusion, Critical Care, Nephrology, Neurology, Pulmonology or Reproductive Biology. They will be able to perform procedures in one of the above seven specialist categories in order to contribute in the diagnosis and treatment of various pathophysiological conditions in conjunction with other designated health care professionals. They also perform organ system support, diagnostic, therapeutic and corrective procedures on patients using specialized health technology and techniques for the treatment of physiological dysfunction.

Students in Clinical Technology must attend formal lectures and practical sessions at the Durban University of Technology in all subjects for the duration of their studies.

## **10.1.1 Duration of the programme**

The programme consists of four (4) years full-time study at the Durban University of Technology. The fourth year comprises the Work Integrated learning [WIL] component, where a student will choose one of seven categories and study the major specialist subjects appropriate to the chosen category. The categories are as follows: Cardiology, Cardio-Vascular Perfusion, Critical Care, Nephrology, Pulmonology, Reproductive Biology and Neurophysiology.

The latter must be done at a training unit approved by the Health Professions Council of South Africa.

#### 10.1.2 Assessment and Moderation

Some subjects in this programme do not have a final examination. The results for these subjects are determined through a weighted combination of assessments. As such, there are no supplementary examinations. Other subjects do have final examinations. Students are encouraged to work steadily through the period of registration in order to achieve the highest results possible. Assessment details are listed under each subject at the back of this handbook. Moderation follows the DUT requirements.

## 10.1.3 Registration with the Professional Board

**As a Student:** On enrolment, it is mandatory that a student register as a student Clinical Technologist with the Health Professions Council of South Africa as determined in the regulations set out in the Government Gazette (No. R.1608 dated 24 July 1987).

**As a Graduate**: A graduate who has completed the qualification successfully and has complied with all the conditions as set out by the HPCSA may register as a qualified Clinical Technologist with the Health Professions Council of South Africa in terms of the current rules for registration.

# 10.1.4 Work-Integrated Learning Period (WIL)

The Work-Integrated Learning period will run concurrently with the specialist subjects, in the fourth year of study, at a training unit approved by the Health Professions Council of South Africa (HPCSA). During WIL students would be required to pass the Competency Based Test (CBT) with a minimum mark of 70%, as a Board requirement.

Code	Subjects	Year of	NQF	Nated	Pre-req
ECMYLOL	Foundation Chamister	Study	Levei	Credits	Code
FCMITIUI	Foundation Chemistry		5	0.100	-
	Introduction to Clinical Technology	1	5	0.100	4
CAPRIAL			5	0.230	-
CHMBI02	Computer Applications I		5	0.135	FCMYIAI
PYSC 105	Physics		5	0.00	EPYC IOI
CSTAIOI	Calculation & Statistics		5	0.00	THEIT
ANAYIOI	Anatomy I	2	5	0.200	
FBAP101	Foundation Biomedical Apparatus	2	5	0.2	+
FOSP101	Foundation Organs & Systems Pathophysiology	2	5	0.135	
PCLY101	Pharmacology I	2	5	0.035	-
PSIO102	Physiology I	2	5	0.200	-
PYDN101	Psychodynamics	2	5	0.135	1
	Antonio R. Dhusia I.a. et 2	2	,	0.200	PSIO102,
AINPH202	Anatomy & Physiology 2	3	6	0.200	ANAY101
BAPO201	Biomedical Apparatus & Procedures II	3	6	0.07	FBAPIOI
OSPP201	Organs & Systems Pathophysiology II	3	6	0.10	PSIO102, ANAY101 & FSOP101
PHAR201	Pharmacology II	3	5	0.100	PCLY101
CPAB301	*Cardiology: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
CACP310	*Cardiology: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects
CCTP310	*Cardiology: Clinical Tech Practice 3	4	6	0.300	All level1,2 & 3 subjects
CCBA301	*Critical Care: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
CCC301	*Critical Care: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects
CTPR301	*Critical Care: Clinical Tech. Prac. 3	4	6	0.300	All level1,2 & 3 subjects
NEAP301	*Nephrology: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
NCLI301	*Nephrology: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects
NCTP301	*Nephrology: Clinical Tech. Prac. 3	4	6	0.300	All level1,2 & 3 subjects
NBMA301	*Neurophysiology: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
NCLP301	*Neurophysiology: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects
NTPR301	*Neurophysiology: Clinical Tech. Prac. 3	4	6	0.300	All level1,2 & 3 subjects
FBAP301	*Perfusion: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
PCTP301	*Perfusion: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects

**10.2.** Programme Learning Structure + Assessment column

PCTP301	*Perfusion: Clinical Tech Prac 3	4	6	0.300	All level1,2 & 3 subjects
PBAP301	*Pulmonology: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
PCLP301	*Pulmonology: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects
PTPR301	*Pulmonology: Clinical Tech Prac 3	4	6	0.300	All level1,2 & 3 subjects
RBAP301	*Reproduction: Biomedical Apparatus 3	4	6	0.350	All level1,2 & 3 subjects
RCPR301	*Reproduction: Clinical Practice 3	4	6	0.350	All level1,2 & 3 subjects
RTPR301	*Reproduction: Clinical Tech Prac 3	4	6	0.300	All level1,2 & 3 subjects

### 10.3 Programme Rules

#### 10.3.1 Minimum Admission Requirements

In addition to Rule G7 the minimum entrance requirement for entry into the programme of study is a National Senior Certificate (NSC) with endorsement for diploma entry with the following subjects:

Compulsory subjects	NSC Rating
English	3
Life Orientation	4
Mathematics	4
Life Science	4
Physical Science	4
And one 20-credit subject	3

The minimum requirement for holders of the Senior Certificate is a matriculation exemption with the following subjects at the stated ratings:

Compulsory Subjects	HG	SG
English	E	D
Mathematics	D	С
Physical Sciences	D	С
Biology/Life Sciences	D	С

The DUT general rules G7 (3) and G7 (8) respectively, will apply for admission requirements based on work experience, age & maturity; and recognition of prior learning (RPL).

The DUT Admission's Policy for International Students and general rules G4 and G7 (5), apply for admission of international students.

# 10.3.2 Selection Criteria

In accordance with Rule G5, placement into the ECP programme is limited to 10 places. The following selection process will determine placement in the programme:

Successful applicants for study towards a ND: Clinical Technology will be accepted into either a three-year minimum or an extended curriculum programme (four-year minimum) of study. An extended curriculum is devised in order to enhance student development and to improve the student's chances of successful completion. As more qualifying applications are received than can be accommodated, the following selection process will determine placement in the programme:

- All applicants must apply through the Central Applications Office (CAO).
- Initial shortlisting for selection is based on the applicant's academic performance in Grade 12 (Grade 11, or Grade12 June marks, will be used for current matriculating students).
- Shortlisted students will be invited to undergo placement testing.
- Applicants who pass the placement tests may be invited for an interview.
- Provisional acceptance may be given to selected applicants awaiting National Senior Certificate (NSC) results. If the final Grade 12 NSC results do not meet the minimum entrance requirements, then provisional acceptance will be withdrawn.
- Final selection for placement will be based on results in the SC/ NSC and DUT placement tests, as well as on recommendations from the interview panel.
- Students will be ranked according to the following criteria:

Assessment	Weighting (%)
Results of the Senior Certificate or National Senior Certificate	30%
Placement Testing	35%
Interview Score	35%

#### 10.3.3 Pass Requirements

- 1. Promotion to year 2: First year students registered in the extended curriculum program will only be eligible for subsequent registration provided that a student passes the following subjects:
  - All four Foundation subjects, i.e., Introduction to Clinical Technology, Foundation Biomedical Apparatus, Foundation Chemistry and Foundation Physics
  - Two out of the three mainstream subjects, i.e., Chemistry I, Physics I, Computer Applications I
- 2. Promotion to year 3 will only be allowed if the student passes the following subjects:
  - Anatomy I, Physiology I and Calculation and Statistics I

- Foundation Organs and Systems Pathophysiology and Foundation Pharmacology
- 3. Promotion to year 4 will only be allowed if the student passes all 3<sup>rd</sup> year subjects
- 4. The minimum duration to complete the N Dip: Clinical Technology (Extended Curriculum Programme) is 4 years and the maximum duration is 5 years of consecutive study.
- 5. Students who do not comply with any of the rules outlined in points 1 to 4 above may need to apply for re-registration in the ECP Programme to the Department of Biomedical and Clinical Technology.

## 10.3.4 Re-registration Rules

Rule GI6 applies

## 10.3.5 Exclusion Rules

In addition to Rule G17, the following departmental rule applies:

A first year student who fails four or more subjects with a final mark of less than 40% will not be allowed to re-register for the programme: ND Clinical Technology (ECP). Deregistration from any subject is subject to the provisions of Rule G6 (2).

#### 10.3.6 Interruption of Studies

In accordance with Rule G21A(b), the minimum duration for this programme will be four (4) years of registered study and the maximum duration will be five (5) years of registered study, including any periods of WIL. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

# II. BACHELOR'S DEGREE IN TECHNOLOGY: CLINICAL TECH-NOLOGY (BTCLT 2)

## 11.1 Programme Information

Completion of the qualification will enable the student to independently conduct advanced diagnostic, therapeutic, corrective procedures and organ system support on patients using specialised equipment and techniques for the treatment and/or interpretation of a diagnosis of abnormalities and disease. The individual is able to strategically manage clinical technology practice, maintain QA, perform research and train members of the health care team. The individual may be self-employed or employed by a recognised health care facility.

#### **Registration with the Professional Board**

A candidate who has completed the course successfully and has satisfied the requirements of the Professional Board for Clinical Technology may register as a Graduate Clinical Technologist with the Health Professions Council of South African (HPCSA).

#### Assessment

Some subjects in this programme do not have a final examination viz: Research Methodology Clinical Technology Research Project, as well as the advanced specialist subject. The results for these subjects are determined through a weighted combination of assessments. As such, there are no supplementary examinations. One subject (Principles of Management I) has a final examination. Students are encouraged to work steadily through the period of registration in order to achieve the highest results possible. Assessment details are listed under each subject at the back of this handbook. Moderation follows the DUT requirements.

Code	Subjects	Year of Study	NQF Level	Nated Credits	Compulsory, elective or WIL
RMNC201	Research Methodology	4	7	0.250	Compulsory
PRMG101	Principles of Management	4	7	0.250	Compulsory
CLRPIOI	Clinical Technology Research Project	4	7	0.200	Compulsory
ACDT401	Advanced Cardiac Technology	4	7	0.300	Elective
ACRT401	Advanced Critical Care Technology	4	7	0.300	Elective
ARNT401	Advanced Renal Technology	4	7	0.300	Elective
ANPT401	Advanced Neurophysiologic Technology	4	7	0.300	Elective
APFT401	Advanced Perfusion Technology	4	7	0.300	Elective
ARST401	Advanced Respiratory Technology	4	7	0.300	Elective
ARPT401	Advanced Reproductive Technology	4	7	0.300	Elective

#### **II.2 Programme Learning Structure**

\*Elective subject

# II.3 Programme Rules

# 11.3.1 Minimum Admission Requirements & Selection Criteria

In accordance with Rule G5, acceptance into the programme is limited to 30 places, and entry to the BTech programme is not automatic. As more qualifying applications are received than can be accommodated, the following selection criteria will determine entry into the programme, with the 30 highest ranking candidates gaining entry into the programme:

- Applicants must have completed the ND: Clinical Technology.
- Applicants are required to formally apply to the department, by the due date, to be considered for the B Tech: Clinical Technology programme.
- Applicants must submit proof of placement in a Clinical Technology training unit under the supervision of a Graduate Clinical Technologist
- Applicant's academic performance in the ND: Clinical Technology using the ranking criteria below:

# THE RANKING CRITERIA

I.Average marks of the final year of the National Diploma						
2.Years to complete N	D: Clinical Technology					
Minimum duration	Minimum duration	Minimum duration	Minimum duration			
+ 3 years	+ 2 years	+ I year				
0		3	5			
3.Workplace experien	3.Workplace experience post National Diploma in an accredited training unit					
0-1 year	I-3 years	3-5 years	> 5 years			
0	5	10	15			

• An applicant's ranking is determined by the total points score obtained by the addition of the scores obtained in the individual ranking criteria, as shown in the example in the table below:

Criteria	Ranking (points)	Score
Average final year mark in year 3 of the ND: Clinical Technology is 70%	70	
ND: Clinical Technology completed in minimum duration (3 years)	5	
Workplace experience (Diploma just completed)	0	
Total	75	

(w.e.f. 28/08/2014)

#### 11.3.2 Pass Requirements

In addition to Rule G14 and G15, the following rules apply. Students are encouraged to apply themselves to their studies, and strive for the best academic results possible in order to adequately prepare themselves for their future careers.

- **11.3.3 Re-registration Rules** Rule G16 applies.
- **11.3.4** Exclusion Rules Rule G17applies.

#### 11.3.5 Interruption of Studies

In accordance with Rule G23A, the minimum duration for this programme will be one (1) year of registered study and the maximum duration will be two (2) years of registered study. Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration.

# 12. MASTERS OF HEALTH SCIENCES IN CLINICAL TECHNOLOGY (MHCLTI)

## 12.1 Programme Information

This full research qualification is aligned to Rule G24 and the guidelines in the Post Graduate Student Handbook.

- The Student who successfully completes this qualification will be able to apply advanced problem solving skills and critical, reflective thinking to perform independent research in a chosen field and report their findings in a dissertation that meets the accepted criteria and ethical principles for the profession. In this way they will make a contribution to the existing body of knowledge and initiate change that will help develop and advance the profession of medical technology.
- The qualifying Student will be able to conduct independent research under minimal guidance in a chosen field, and contribute to knowledge production in that field. The research problem, its justification, process and outcome is reported in a dissertation which complies with the generally accepted norms for research at that level.

#### Assessment and Moderation

In addition to Rule G24 (4), postgraduate assessment of dissertations will be aligned to Postgraduate policies and guidelines. Please refer to the General Student Handbook and the Postgraduate Student Handbook.

#### 12.2 Programme learning structure

Code	Module	Year of Study	Assessment Type	NATED Credits	Pre-requisites	Co-requisites
MHCLTI	Dissertation	2	External Ex- amination	1.0	None	none

#### 12.3. Programme Rules

#### 12.3.1 Minimum Admission Requirements

In addition to the General Handbook for Students Rule G24 (I), candidates must be possession of a Bachelor's Degree in Clinical Technology (NQF Level 8), or must have been granted conferment of status according to Rule G10A. Candidates may also apply for admittance via Recognition of Learning (RPL) in accordance with Rule G7 (8) and / or G10B.

#### Selection Criteria

In accordance with Rule G5, acceptance into the Masters of Health Sciences programme is limited, and not automatic. Students are selected into the programme once they have completed an intention to study and the department has discussed the viability of the proposed topic for the Masters Qualification. The intention to study/ concept page must include the following: Problem statement or Title of the intended study, Objectives / sub-problems / Research Questions, Rationale/motivation to do the study, Brief literature review, Brief methodology.

Applicants must have an aggregate of 60% overall for the B Tech Degree.

## 12.3.2 Pass Requirements

Rule G24 and the Postgraduate Student Handbook apply.

Students are encouraged to apply themselves to their research, and strive for the best academic results possible in order to adequately prepare themselves for their future careers.

#### 12.3.3 Re-registration Rules

Rule G24 (2), Rule G26 (5) and the Postgraduate Student Handbook apply.

#### 12.3.4 Exclusion Rules

Rule G24 (1)(d); Rule G24 (2), and the Postgraduate Student Handbook apply.

#### 12.3.5 Minimum and maximum duration

The minimum duration for this programme shall be one (1) year of registered study and the maximum duration shall be three (3) years of registered study.

### 12.3.6. Interruption of Studies

Should there be bona fide reasons for the interruption of studies for a period of one (1) year or more once the candidate is formally registered, the student may apply for an interruption of registration. Registration may be interrupted under exceptional circumstances only and is not done retrospectively.

### 13. DOCTOR OF MEDICAL CLINICAL SCIENCES (DRMCSI)

### 13.1 Programme Information

This full research qualification is aligned to Rule G25 and G26 and the guidelines in the Post Graduate Student Handbook. The purpose of this qualification is to ensure that the student who successfully completes this qualification will be able to apply advanced problem-solving skills and critical, reflective thinking to perform independent research in a chosen field and report their findings in a dissertation that meets the accepted criteria and ethical principles for the profession. In this way they will make a contribution to the existing body of knowledge and initiate change that will help develop and advance the profession of Clinical Technology.

#### Assessment and Moderation

Post graduate assessment will be aligned to Postgraduate policies and guide-lines.

Rule G25 (4) and the Postgraduate Student Handbook apply.

## **13.2 Learning Programme Structure**

Code	Module	Year Study	of	Assessment Type	NATED Credits	Pre-requi- sites	Co-requi- sites
DRMCSI	Dissertation	2		External Examina- tion	2.0	None	none

# 13.3 Programme Rules

#### 13.3.1 Minimum Admission Requirements

In addition to the General Handbook for Students Rule G24 (I), candidates must be possession of a Master's Degree in Clinical Technology (NQF Level 9), or must have been granted conferment of status according to Rule G10A. Candidates may also apply for admittance via Recognition of Learning (RPL) in accordance with Rule G7 (8) and / or G10B. Students are selected into the programme once they have completed an intention to study and the department has discussed the viability of the proposed topic for the qualification. A sound knowledge of the fundamental principles and concepts of research and statistical methods is required.

#### 13.3.2 Re-registration Rules

Please refer to Rule G26 (5) and the Postgraduate Student Handbook.

### 13.3.3 Exclusion Rules

Please refer to Rules G25 (2)(b; c(ii)) in the General Student Handbook; and the Postgraduate Student Handbook.

13.3.4 Minimum and maximum duration

In accordance with Rule G25 (2), the minimum duration for this programme will be two (2) years of registered study and the maximum duration will be four (4) years of registered study.

#### 13.3.5. Interruption of Studies

Should a student interrupt their studies by more than three (3) years, the student will need to apply to the department for permission to reregister and will need to prove currency of appropriate knowledge prior to being given permission to continue with registration. Please refer to the Postgraduate Student Handbook.

# 14 SUBJECT CONTENT

**NB:** Students are to read this section in conjunction with the relevant study guide.

Module Name	Learning Content	Assessment
		The CONTINUOUS ASSESSMENT
FOUNDATION	Atomic structure, Periodic table, molecular elements	mark shall be made up of
CHEMISTRY	& compounds, Composition and	Theory tests: 50%
(ECMPIAL)	stoichiometry	Practical tests: 30%
(FCMRT0T)	Amines and amides	Practical reports: 5%
		Assignments: 15%
		The CONTINUOUS ASSESSMENT
FOUNDATION PHYSICS	Basic Mathematics, vectors, Problem solving skills in Physics, Conceptual physics	mark shall be made up of
(FPHY101)		Theory tests: 60%
		Practical tests: 40%
		The CONTINUOUS ASSESSMENT
		mark
FOUNDATION	Antibody structure Complement HIA	shall be made up of
IMMUNOLOGY	Structures in general	Theory tests: 50%
(FIMM101)	structures in general	Practical tests: 30%
		Practical reports: 5%
		Assignment /s: 15%

14.1 National Diploma: Biomedical Technology

		The CONTINUOUS A	SSESSMENT
		mark	
FOUNDATION	Amino acids, Physiological buffers, Structures	shall be made up of	
BIOCHEMISTRY	in general, denaturation of proteins/DNA	Theory tests:	50%
(FBIO101)	Ionisation of amino acids	Practical tests:	40%
. ,		Practical reports:	5%
		Assignment /s:	5%
		The CONTINUOUS A	SSESSMENT
		mark	
LABORATORY		shall be made up of	
TECHNIOUES	Solutions, Laboratory Mathematics,	Theory tests:	50%
(FLBTIOI)	Laboratory ware, Safety, Microscopy	Practical tests:	40%
· · · · ·		Practical reports:	5%
		Assignment /s:	5%
	Communication strategies, Personal		
	management skills, accessing and processing	The CONTINUOUS A	V22E22IMEINI
	information	mark	
ACADEMIC	Language practices and conventions	shall be made up of	
LITERACY*	*This is not a subject on its own but will be incorpo-	(a)Tests	
	rated in all the foundation subjects as a tool to help	(b) oral presentation	
	the Students.	(c) individual class exer	rcises
	Medical Technology the profession and the	The CONTINUOUS A	SSESSMENT
	professional. Legal and Ethical aspects.	mark shall be ma	de up of
INTRODUCTON TO	Laboratory safety	Theory Tests:	25%
MEDICAL TECHNOL-	Laboratory glassware and plastics. Laboratory	Practical Tests	25%
OGY (IMET101)	techniques and apparatus. Laboratory	Communication skills:	25%
	organization	Computer skills:	25%
	General arrangement of the body. The cell	Compater skins.	23/0
	and tissues, haematology, cardiovascular	Theory Tests	24%
ΑΝΑΤΟΜΥ &	system	Practical Tests	12%
PHYSIOLOGY	Lymphatic system Respiratory system	Practical reports:	2%
(ANPHI04)	Nervous system, Endocrine system,	Project:	2%
(Altheory)	Reproductive system	Examination	60%
	Repail system Gastrointestinal system	Examination	0078
	Mathematical calculations: Algebra Graphs		
CALCULATION &	Trigonometry		
STATISTICS	Statistical calculations: Descriptive Statistics Flemen-	Theory tests:	40%
(CSTA101)	tary probability Probability distributions Correlation	Examination:	60%
(CSTAIN)	Analysis		
	Mechanics thermal physics wave	Theory Tests:	24%
	motion, electricity and magnetism, light	Practical Tests	12%
PHYSICS I	and optics	Practical reports:	2%
(PYSC105)	Introduction to atomic and nuclear	Project:	2%
	physics	Examination	60%
	p., y	Theory Tests:	24%
	Matter and Energy, Chemical Equations and Stoichi-	Practical Tests:	12%
CHEMISTRY I	ometry, solution Chemistry, Rates of Reactions and	Practical reports:	2%
(CHMB102)	Chemical Equilibrium Organic Chemistry	Project:	2%
	enemiea Equileriani, engance enemieary	Examination	60%
	The normal and the adapted cell. Cell iniury and cell		
	death, Inflammation and repair, Neoplasia, Clinical as-		
	pects of neoplasia. Genetic disorders. Respiratory	Theory Tests:	32%
PATHOPHYSIOLOGY II	system disorders. Circulatory system disorders. Uri-	Project:	8%
(PAPH201)	nary system disorders. Digestive system disorders	Examination	60%
	Nervous system and sensory organs disorders. Endo-	Examination	00/0
	crine system disorders		
	Bio-elements and biomolecules	Theory Tests	24%
	Carbohydrates, Nucleic acids, Proteins	Practical Tests	12%
BIOCHEMISTRY II	and amino acids	Practical reports	2%
(BIOA202)	Lipids, Enzymes, ph and buffers, Introduction to me-	Project:	2%
	tabolism. Metabolism of carbohydrates	Examination	60%
	Introduction to Cytology, Specimen collection & fixa-	Theory Tests	24%
(IMMU202)	tion, Specimen preparation, Staining & mounting	Practical Tests:	12%

	Special techniques in Cytology, Biological behaviour of cells and tissues, Evaluation of the cellular sample, Histology & cytology of the FGT, Hormonal Cytol- ogy, Agents of infection, Inflammatory, degenerative and regenerative changes, Premalignant changes, Ma- lignant changes, Rare tumours	Practical reports: Project: Examination	2% 2% 60%
BLOOD TRANSFUSION TECHNOLOGY (BLTT201)	Government regulations, General aspects of blood transfusion, The blood group systems Transmission of disease, Pretransfusion testing, Unto- ward transfusion reactions, quality Assurance	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 12% 2% 2% 60%
CELLULAR PATHOLOGY I (CEPA101)	Introduction to Histology, Fixation, Tissue pro- cessing, Dehydration &dealcoholization, Impregnation & embedding, Decalcification, Microtomy, Staining, artefacts & pigments, Immunohistochemistry	Theory Tests: Practical Tests: Assignment: Examination	24% 13% 3% 60%
CHEMICAL PATHOLOGY I (CPAT101)	Basic principles, Water balance, osmolality, electro- lytes, pH and blood gases, Kidney and tests of renal function, Amino acids and proteins	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 11% 3% 2% 60%
MICROBIOLOGY I (MCGY101)	History and development, Survey of Microorganisms and classification, Microscopy and staining, Bacterial structure, reproduction and growth, Bacterial cultiva- tion, Microbial metabolism, Bacterial genetics, Host parasite relationships, Control of microorganisms	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 12% 2% 2% 60%
CHEMICAL PATHOLOGY II (CPAT202)	Enzymes, Liver and tests of hepatic function, Disor- ders of carbohydrate metabolism, Lipid metabolism Pharmacology,	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 11% 3% 2% 60%
HAEMATOLOGY II (HAEM203)	Origin and normal development of haematopoietic el- ements, the erythrocyte, The leucocytes in the circu- lation The platelet/megakaryocytic system, Haemostasis, Basic haematological values	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 12% 2% 2% 60%
MICROBIOLOGY II (MCGY203)	Parasitology, mycology, virology, introduction to bac- teriology	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 12% 2% 2% 60%
CELLULAR PATHOLOGY III (CEPA301)	Respiratory tract, Serious effusions, Urinary tract, Gastrointestinal tract, Central nervous system	Theory Tests: Practical Tests: Practical reports/Assign Project: 2% Examination	24% 12% ment: 2% 60%
CHEMICAL PATHOLOGY III (CPAT303)	Mineral metabolism, CSF and other body fluids, Im- munochemical techniques, Endocrinology Pharmacology	Theory Tests: Practical Tests: Practical reports: Project: 2% Examination	24% 11% 3%
HAEMATOLOGY III (HAEM303)	Red cell morphology; The anaemias; The leucocytes, The myeloproliferative;syndromes; The acute leukae- mias, The myelodysplastic syndromes, The lym- phoproliferative disorders, Platelets, Haemostasis, Parasites, Quality Assurance	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 12% 2% 2% 60%
MICROBIOLOGY III (MCGY301)	Specimen collection, transport and processing, gram positive bacteria, gram negative bacteria, mycobacte- ria, Atypical bacteria, spirochaetes, serology, antimi- crobial agents, nosocomial infection	Theory Tests: Practical Tests: Practical reports: Project: Examination	24% 12% 2% 2% 60%
LABORATORY PRACTICE 3 (WORK INTEGRATED	Performing, interpretation and integration of laboratory tests in the following disciplines Medical Microbiology, Virology, Chemical Pathology,	Workplace assessment Integrated learning proj	60% ect 40%

LEARNING)	
(LABP 301)	

# **11.4.2 BTECH: BIOMEDICAL TECHNOLOGY**

Module Name	Learning Content	ASSESSMENT
RESEARCH METHOD & TECHNIQUES (RMTQ201)	Biostatistics, Research methods and appli- cations	The CONTINUOUS ASSESSMENT mark shall be made up of   Assessment weightings:   Article critique: 20%   Proposal: 50%   Poster: 10%   Statistics assignment: 20%
RESEARCH PROJECT (RPBM101)	Preparation and submission of a research dissertation	Oral presentation 10% Chapter I draft 5% Chapter2 draft 5% Thesis 80%
INTEGRATED PATH- OPHYSIOLOGY IV (IPAT401)	Clinical diagnosis and laboratory diagnosis of disorders in Integument, Skeletal, Mus- cular, nervous, Endocrine, Cardiovascular, Jymphatic, Respiratory, Digestive, Urinary, Reproductive	Theory tests:32%Assignment:8%Examination60%
LABORATORY MANAGEMENT (LABM201)	Principles of Management, Laboratory or- ganization, Hunam resourses manage- ment, Physical resources management,, Fi- nancial Management,, Quality Assurance and Safety, , Entrepreneurship	Theory tests:24%Project:16%Examination60%
MOLECULAR BIOLOGY IV (MOLE401)	DNA structure and gene expression, Bac- terial genetics, Regulation of gene function in bacterial and eukaryotic cells, Cancer at genetic level, molecular biology applica- tions	The CONTINUOUS ASSESSMENT mark shall be made up of Theory tests: 60% Practical tests: 40%

## 14.3 SUBJECT CONTENT: ND: CLINICAL TECHNOLOGY NB: Students to read this section in conjunction with the relevant Student guides

Module Name	Learning Content	ASSESSMENT	
		The CONTINUOUS ASS	Sessment
FOUNDATION PHYSICS	Basic Mathematics, vectors, Problem solving	mark shall be made up of	
(FPYCI0I)	skills in Physics, Conceptual physics	Theory tests:	60%
		Practical tests:	40%
	Introduction to biomedical instrumentation,	The CONTINUOUS ASSE	SSMENT
FOUNDATION BIOMEDICAL	Medical terminology and physiological measure-	mark shall be made up of	
APPARATUS (FRADIAL)	ments, Bio-signals and noise, Bio-medical elec-	Theory tests	60%
	tronics – Analog and digital, and SI metric units	Practical tests	30%
	and equivalencies.	Assignment	10%
	Introduction to specialist categories, Infection		
	control, Sterilisation and disinfection techniques,		
INTRODUCTION TO CLINI-	Medical and surgical asepsis, Communicable	Theory tests	50%
CAL TECHNOLOGY (ICLT101)	disease patient control, Laboratory techniques	Practical tests	30%
· · · · · · · · · · · · · · · · · · ·	(microscopes, incubators, refrigerators and	Assignments	20%
	autoclaves), Safety, and Language practices and		
	conventions		
	Introduction to inflammation, Diseases caused		COMENIT
FOUNDATION ORGANS &	by Inhammation and associated changes to tissue	mark shall be made	-SSIFIEINI
SYSTEMS PATHOPHYSIOL-	architecture, introduction to genetics and dis-	Theory tests	70%
OGY (FOSPI0I)	nisms related to pathogenesis and Introduction	Assignments	30%
	to cell injury and cell death	Assignments	50%
	Introduction, Nervous system, Endocrine sys-		
	tem. Cardiovascular system. Immunology	Theory Tests	30%
PHYSIOLOGY I (PSI102)	Respiratory system, Gastrointestinal system, Re-	Practical Tests	10%
	nal system. Reproductive system	Examination Mark	60%
		Theory Tests 2	.0%
		Practical Work	16%
		Attendance	4%
	Introduction to Anatomy, Thorax, Abdomen	Examination Mark	60%
ANATOMITI (ANATIUI)	and Peivis, Limbs, Neuroanatomy, Head and	PAPER I: Theory (75% of E	xam Mark)
	песк	and	
		PAPER II: Spotter (25% o	f Exam
		Mark).	
	Atomic structure, Periodic table, Molecular ele-	Assessment Plan	
CHEMISTRY (CHEMI01)	ments and compounds	Theory tests 2	.0%
(0.12.1001)	Composition and stoichiometry, Amines and	Practical tests 2	.0%
	amides	Examination 60	%
		The CONTINUOUS ASSE	SSMEN I
COMPUTER APPLICATIONS	Introduction to computing, Hardware, software,	The same tests	09/
I(CAPPI0I)	orPoint (Reginner to intermediate)	Practical tests 7	.0 /o /0%
	erroint (beginner to intermediate)	Assignment	0%
	Introduction & Mathematical Concepts King	Assignment	0/8
	matics in One Dimension, Forces and Newton's		
	Laws of Motion		
	Dynamics of Uniform Circular Motion Work	Theory Tests 26	%
	and Energy, Rotational Dynamics, Fluids Heat	Practical test 10	%
PHYSICS I (PYSCI05)	and the transfer of heat. Simple Harmonic Mo-	Practical book 4	%
	tion and Elasticity, Waves and Sound, Electric	Examination 60	%
	Circuits		
	The Reflection of Light: Mirrors, Lenses and Op-		
	tical Instruments		
	Quadratics, Exponents, Logarithms, Graphs,	Theory tests 40	0/
	Equations of a straight line, Conversion of ex-	File File File File File File File File	/o o/
STATISTICS (CSTATUT	perimental data to linear form, Linear program-	Examination 60	/0

	asian Collection & constantion of data Cons		
	ming, Collection & presentation of data, Sam-		
	sion for raw & grouped data. The normal curve		
	The Nervous System inclusive of the Central &		
	Parisharal Naryous System Inclusive of the Central &		
	Physiology		
	The Cardiovescular System including Plead		
	Vessele Hemodynamics		
	The Beeningtony System including Devoiced		
	Associate and Machanics of Ventilation and Asid	Theory Tests	20%
ANATOMY AND PHYSIOLOGY	Aspects and Mechanics of Ventilation and Acid-	Prestical Tests	30%
2 (ANAPH202)	Base Balance	Practical Tests	10%
	Production and Repair Control of Floatmakets and	Examination Mark	60%
	A sid Data Dalarse		
	Acid-Base Balance		
	The Reproductive System inclusive of the endo-		
	crine regulation of both the male and females		
	systems as well as fertilization, pregnancy and		
	parturition		
	Diseases of Immunity, Fluid and haemodynamic		
	derangements, Nutritional disorders, Systemic		
	diseases, and infectious diseases		
ORGAN AND SYSTEM PATHO-	Introductory Concepts with reference to the	Theory Tests - 40%	20%
PHYSIOLOGY 2 (OSPP201)	following systems:	Examination Mark	60%
	Respiratory system, Circulatory system, Orinary		
	system, Digestive system,		
	ivervous system and sense organs, Endocrine		
	Concerned Accorded of Drives Thermony		
	Bearmacokinotics and Bharmacodynamics		
	Administration of drugs to patients. Adverse		
	offects of drugs. Drugs affecting the autonomic		
	somatic and sonsony norvous system. Drugs		
	affecting the control pervous system. Analgosics		
	anecung the central her yous system, Analgesics	Theory Tosts	40%
(PHAR201)	Hormonos and hormono antagonists	Examination Mark	40%
(111A(201)	Antimicrobial and other anti-infective drugs		00%
	Cardiovascular drugs. Drugs affecting the		
	haemonoietic system Drugs that affect the		
	respiratory system. Drugs that affect the		
	digestive tract, and Poisoning and drug		
	treatment in emergencies		
	Introduction to Biomedical Instrumenta-		
	tion Systems		
	Biometrics. Introduction to the Man-Instrument		
	System and Problems Encountered in Measuring		
	a Living System		
	Basic Transducer Principle		
	The Transducer and Transducer Principle, Ac-		
	tive Transducers, Passive Transducers and	<b>T</b> I 200/	2.404
BIOMEDICAL APPARATUS	Transducer for Biomedical Applications	Theory tests - 30%	26%
AND PROCEDURES II	Electrodes	Practical tests – 10%	14%
(BAPO201)	Electrodes Theory, Bio-potential Electrodes, Bi-	Examination - 60%	60%
	ochemical Transducers and Blood gas analyser		
	Overview Of Biomedical		
	Instrumentation Systems for the		
	following:		
	Cardiology, Respiratory System, Cardiovascular		
	Perfusion, Neurophysiology, Renal System and		
	Reproductive Biology		
	Personality, learning, memory and adjustivebe-		
	haviour	Theory tests	24%
	Basic Principles of human development and the	Assignments	16%
	biological basis of behaviour	Examination	60%
	Attachment theory and psychoanalytic concepts	1	

	of development Psychological, cognitive and social learning theo- ries of development Psychological, cognitive and social learning theories of development. Emotions, motivation and perception Legal and ethical responsibilities, patient's right charter, Batho Pele principle, National Health Act and Health Professions Act, 1974.	
CARDIOLOGY: BIOMEDICAL APPARATUS 3 (CPA301)	Electrocardiography, Exercise stress testing, Ar- rhythmia monitoring, Cardiac catheterization, Pacemakers, Echocardiography, Intra-aortic bal- loon pump, Intra vascular ultrasound system, Defibrillator, Blood gas analyzer, Electrical Safety	The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
CARDIOLOGY: CLINICAL PRACTICE 3 (CACP310)	Electrocardiography, Exercise stress testing, Ar- rhythmia monitoring, Cardiac catheterization, Pacemakers, Echocardiography, Intra-aortic bal- loon pump, Intra vascular ultrasound system, Defibrillator Blood gas analyzer, Electrical Safety	The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
CARDIOLOGY: CLINICAL TECHNOLOGY PRACTICE 3 (CCTP310)	Left and right heart catheterization; Coronary angiography; Percutaneous coronary intervention; Pacemak- ers Intra-aortic balloon pump; Intravascular ul- trasound; Defibrillation; Exercise stress testing; Holter monitoring;Head-up tilt test; Pacemaker check-ups; Programming of pacemakers; Echo- cardiography;	The CONTINUOUS ASSESSMENT mark shall be made up of Proficiency based practical tests 80% Process portfolio 20%
CARDIOVASCULAR PERFUSION: BIOMEDICAL APPARATUS 3 (CCBA301)	Embryology of cardiovascular system, Anatomy and physiology of the heart, Anatomy and physi- ology of the lungs Oxygenators, Gas exchange, Heat exchangers, Blood gas analyser, Arterial and venous cannu- lae, Coagulation Anatomy and physiology of the kidney, Ultra- sonic scanning, Blood pressure monitoring equipments, Pumps Cardiotomy reservoir, Cell saver, Filters, Cardioplegia, Thermoregulators, Ultrafiltration, Electrocardiography Transesophageal echocardiography, Pacemakers, Pulse oximeter	The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
CARDIOVASCULAR PERFU- SION: CLINICAL PRACTICE 3 (CCC301)	Pulmonary diseases, blood disorders, Coagula- tion disorders, Effects of oxygenatorsConstrains on rate of heat transfer, Functions of CPB, Renal Failure, Cannulation Blood pressure measurements, Pumps, Heat ex- changers, Venting, Ultrafiltration Cardiovascular disorders, Myocardial injuries, Anticoagulation, Electrocardiography Hemodynamic monitoring, Thermoregulation, Cardioplegia, Neurological monitoring Blood gas analyses, Diuretics, benzodiazepine, antiarrhyth- mics and inotropes	The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
CARDIOVASCULAR PERFU- SION: CLINICAL TECHNOL- OGY PRACTICE 3 (CTPR301)	Calculation of blood flow rate, selection of by- pass circuitry and cannulae Aseptic setting-up of bypass circuitry, priming, and debubbling Calibration and zeroing of pressure transducers and troubleshooting Placement of reliable and rapidly sensing safety devices and monitors Monitoring of urinary output Analysis of blood gas and electrolytes Monitor- ing of anticoagulation	The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30% Proficiency based practical tests 80% Process portfolio 20%

	Supervised conduct of cardiopulmonary bypass	
	procedure	
	Monitoring of electrocardiography and hemody-	
	namic parameters	
	Cardiovascular anatomy & physiology	
	Blood Pressure monitoring equipments, Pulse	
	oximeter& co-oximeter, venous flow measure-	
	Electrocardiography, Cardioversion and	
	defibrillation Blood flow meters	
	Respiratory system anatomy and	The CONTINUOUS ASSESSMENT
	physiology, Respiratory therapy	mark shall be made up of
CRITICAL CARE: BIOMEDICAL	equipments	Theory test 70%
APPARATUS 3 (NEAP301)	Gastrointestinal tract anatomy and physiology	Assignments 30%
	History of anaesthesia ,Anaesthetic equipment,	Theory test 70%
	Drugs used in anaesthesia	Assignments 30%
	Oxygen sensors, Medical gas cylinders and their	
	associated components Thermo-regula-	
	tory device, Neurological disorders	
	Hematological measurements including activated	
	clotting time [ACT], Infections	
	Topics covered:	
	Blood Pressure monitoring equipments, Pulse	
	oximeter& co-oximeter, venous flow	
	measurement Condicuses ulan disconders. A suite negal failune	
	Electrocardiography, Cardioversion and defibril	
	lation	
	Blood flow meters. Respiratory therapy equip-	The CONTINUOUS ASSESSMENT
CRITICAL CARE: CLINICAL	ments, Respiratory disorders, GIT disorders.	mark shall be made up of
PRACTICE 3 (NCLI301)	Endocrine disorders	Theory test 70%
· · · · ·	History of anaesthesia ,Anaesthetic equipment,	Assignments 30%
	Drugs used in anaesthesia	5
	Oxygen sensors, Medical gas cylinders and their	
	associated components	
	Thermo-regulatory device, Neurological disor-	
	ders	
	Hematological measurements including activated	
	clotting time [AC1], infections	
	parameters i.e. BP. Pulse, and RP: Blood gas	
	analysis:	
	Patient care before, during and after the proce-	
	dure; Thermoregulation Patient transport, ox-	
	ygen therapy, pulse oximetry and capnography.	The CONTINUOUS ASSESSMENT
TECHNOLOGY PRACTICE 3	Prepare anaesthetic and ventilation equipment	mark shall be made up of Proficiency
(NCTP301)	Effectively assist with bronchoscopy, perfor-	based practical tests 80%
(	mance of CPR and during anaesthesia.	Process portfolio 20%
	Intubation and intravenous cannulation.	
	Measure an interpret ACT, glucose, Hct, ESK	
	Maintonance of the prescribed theatre and ICL	
	equipments	
	History of Dialysis, Principles of Dialysis, Sterility	The CONTINUOUS ASSESSMENT
NEPHROLOGY: BIOMEDICAL	and safety, Dialysis Apparatus, Dialysis Repro-	mark shall be made up of Theory
APPARATUS 3 (NBAMA301)	cessing	test 70%
	Water Treatment, Dialysis Facility Design	Assignments 30%
	Anatomy & Physiology of the Excretory system	
	Pathophysiology of Renal Disease	The CONTINUOUS ASSESSMENT
NEPHROLOGY: CLINICAL	Blood result analysis & Clinical Invasive and	mark shall be made up of Theory
PRACTICE 3 (NCLP301)	Non-invasive investigation	test /0%
	Cardia Pulmanany Posussitation	Assignments 30%
1	Cardio-runnonary Resuscitation	1

	Anticoagulation, Vascular Access, Peritoneal Di- alysis, Hypertension, Diabetis Mellitus Complications during dialysis Drugs used in Dialysis and Transplantation Blood Transfusions and Universal Precautions, Haemoperfusion, Plasmapheresis Continuous Renal Replacement Therapies, Acute and Chronic Dialysis Prescription Nutrition, Pediatric Dialysis	
NEPHROLOGY: CLINICAL TECHNOLOGY PRACTICE 3 (NTPR301)	Observe patient's vital signs [i.e. heart rate, blood pressure, temperature]; physical appear- ance of a patient and interpretation of blood re- sults. Apply aseptic techniques and follow safety pro- cedures. Set up disposables / equipment for following procedures:- Chronic Hemodialysis, Acute Hemodialysis, Continuous therapies, Apheresis, Haemoperfu- sion Paediatric procedures.	The CONTINUOUS ASSESSMENT mark shall be made up of Proficiency based practical tests 80% Process portfolio 20%
NEUROPHYSIOLOGY: BIO- MEDICAL APPARATUS 3 (FBAP301)	Electroencephalography Modes of Operation of an EEG Components: Selection of recording systems, Pre and main amplifiers, Simulators, Electrode Terminals, Ohmeter Types of Electrode, Sensors and Cables, Con- trol Functions effect and Calibrations. Preparation, use and maintenance Electromyography and Nerve Conduction Studies Principle utilised in EMG/ENG Recordings. Modes of Operation of EMG/ENG components: Composition, Accessories, Power supply, Earth; Display and Recording Systems, Control func- tions, effect and Calibration. Audio Monitor, Signal Delay and Storage unit, Theory of a Strain Gauge Amplifier. Evoked Potential Systems Modes of operation of Evoked Potential Re- cording systems component: Pre and main Amplifiers, Recording and Display systems, Stimulators, Electrode Terminals Earth (Patient as well as equipment), Control Functions effect and Calibration Averager and other Computer facilities, Memory Storage Facilities, Cursors. TranscranialDopplers Mode of operation, Recording and Display sys- tems, Probes, Hydrocephalus and SAH Polysomnography Instrumentation Principle of Polysomnograph components:	The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%

Recording Systems, Pre and Main Amplifiers. Electrode Terminals, Earth (Patient as well as equipment) Electrodes, Sensors and Cables, Modules for Recording of Additional Parameters. **Epilepsy Monitoring** Principles of Epilepsy monitoring; Recording

NEUROPHYSIOLOGY:

Electroencephalography, Electromyography And The CONTINUOUS ASSESSMENT

CLINICAL PRACTICE 2	Name Conduction Studies, Evolved Potential	mark shall be made up of
(PCTP201)	Sustance Transported Decelore Polyacerease	Theory test
(FCTF30T)	Systems, Transcrama Doppiers, Polysonnogra-	
	phy instrumentation and Epilepsy Monitoring	Assignments 50%
	Perform Electroencephalography	
	Perform Nerve Conduction Studies	
NEUROPHYSIOLOGY	Perform Evoked Potential Testing	mark shall be made up of Profi-
	Perform Trans-cranial Dopplers	sianay based are sticel
CEINICAL TECHNOLOGT	Assist in Sleep studies and In Long Term Epi-	
PRACTICE 3 (PCTP301)	lepsy Monitoring	tests 80%
	Perform Polysomnography	Process portfolio 20%
	Practice electrical and laboratory safety	
	Anatomy and physiology of the airways	
	Heart and lung circulation	
	Pasis lung function aquipment	
	Caline mattern Elementary devices Transactor	
	spirometer, riow measuring devices, Transcuta-	
	neous monitoring devices, Gas chromatography	
	Mass spectrometer, Oxygen analysers, Nitrogen	
PULMONOLOGY BIOMED.	analysers, Blood gas analysers, Lung mechanics	The CONTINUOUS ASSESSMENT
ICAL APPAPATUS 3	Pulmonary gas exchange	mark shall be made up of
	Transport of respiratory gases	Theory test 70%
(FBAF301)	Control of respiration	Assignments 30%
	Systems for the determination of lung function	-
	Spirometry and flow-volume systems. Comput-	
	erised lung function systems. Whole body ple-	
	thysmograph	
	Diffusion constitu systems. Evension study equip	
	Diffusion capacity systems, Exercise study equip-	
	luna inium. Dessington diseases lafestione dis	
	Lung injury, Respiratory diseases, infectious dis-	
	eases, Immunological disorders, Cardiovascular	
	disorders, Pulmonary function laboratory safety,	
PULMONOLOGY:	Pulmonary function measurement, Lung volume	The CONTINUOUS ASSESSMENT
CLINICAL PRACTICE 3	evaluation	mark shall be made up of
(PCI P301)	Ventilation tests and artificial ventilation, Basic	Theory test 70%
	flow-volume curves, Gas distribution evaluations	Assignments 30%
	Diffusion tests Bronchial provocation Broncho-	
	Diffusion tests, Di offeniar provocation, Di offeno-	
	dilators, Diagnostic bronchoscopy, Allergy in-	
	dilators, Diagnostic bronchoscopy, Allergy in- vestigations	
	dilators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu-	The CONTINUOUS ASSESSMENT
PULMONOLOGY: CLINI-	dilators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge;	The CONTINUOUS ASSESSMENT mark shall be made up of Profi-
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC-	dilators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood eas analysis: MIP and	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	Allators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP: Vital signs monitoring: Assist with bron-	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	Allators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy.	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	dilators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala-	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	dilators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus Anatomy& Physiology of Male and Female	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	Antomy and a second sec	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	Antomy Spirology, Pituitary and Hypothala- mus, Anatomy Physiology of Male and Female Reproductive Organs & System, Spermatogene	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301)	Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Cervical mucus Approximation of the physiology of Cervical mucus Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Cervical mucus Applied Embryology of Cervical mucus	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY:	Analysis response of the second secon	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS	Antion tests, Dionchaip forocation, Droncho- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration,	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Cervical mucus Apparent System, System and System and System MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Cervical mucus Apparatus for semenality, Physiology of Cervical mucus Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Analysis in tests, profection profection, profection vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo-	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Antion tests, Dionchain protocation, Drontono vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Antion tests, proferina protocation, profetion vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography)	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT mark shall be made up of   Theory test 70%   Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	All ators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT mark shall be made up of   Theory test 70%   Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Analysis in the production of the productive of	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Analysis in the second	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301)	Allators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract.	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301) REPRODUCTIVE BIOLOGY:	Spironetry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract. Pathophysiology of Male and Female Reproduc- tive organs & Systems	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301) REPRODUCTIVE BIOLOGY: CLINICAL PRACTICE 3	Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract. Pathophysiology of Male and Female Reproduc- tive organs & Systems Semen analysis. Cervical mucus Fxaminations	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20% The CONTINUOUS ASSESSMENT mark shall be made up of Theory test 70% Assignments 30% The CONTINUOUS ASSESSMENT mark shall be made up of
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301) REPRODUCTIVE BIOLOGY: CLINICAL PRACTICE 3 (RCPR301	Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract. Pathophysiology of Male and Female Reproduc- tive organs & Systems Semen analysis, Cervical mucus Examinations, Semen (Snermatosco) - Cervical mucus Examinations,	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301) REPRODUCTIVE BIOLOGY: CLINICAL PRACTICE 3 (RCPR301	Allators, Diagnostic bronchoscopy, Allergy in- vestigations Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract. Pathophysiology of Male and Female Reproduc- tive organs & Systems Semen analysis, Cervical mucus Examinations, Semen (Spermatosoa) - Cervical mucus-interac- tion tests	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301) REPRODUCTIVE BIOLOGY: CLINICAL PRACTICE 3 (RCPR301	Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry& blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract. Pathophysiology of Male and Female Re- productive tract.	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%
PULMONOLOGY: CLINI- CAL TECHNOLOGY PRAC- TICE 3 (PTPR301) REPRODUCTIVE BIOLOGY: BIOMEDICAL APPARATUS 3 (RBAP301) REPRODUCTIVE BIOLOGY: CLINICAL PRACTICE 3 (RCPR301	Spirometry tests, Plethysmography and a diffu- sion measurement; Histamine challenge; Pulse oximetry & blood gas analysis; MIP and MEP; Vital signs monitoring; Assist with bron- choscopy. Applied Embryology, Pituitary and Hypothala- mus, Anatomy& Physiology of Male and Female Reproductive Organs & System, Spermatogene- sis, Oogenesis, Physiology of Cervical mucus Apparatus for semen analysis, Preparation of media, ART Laboratory Equipment, Aspiration, Identification, Evaluation and Manipulation of Ova, Fertilization and transfer of ova, Embryo transfer and artificial insemination, Cryo- preservation of semen, ova, and embryos Reproductive Imaging (Hysterosalphingography) and Contraception Congenital Anomalies of Male and Female Re- productive tract. Pathophysiology of Male and Female Reproduc- tive organs & Systems Semen analysis, Cervical mucus Examinations, Semen (Spermatosoa) - Cervical mucus-interac- tion tests Extended antispermatosoa antibody tests in se-	The CONTINUOUS ASSESSMENT   mark shall be made up of Proficiency based practical   tests 80%   Process portfolio 20%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%   The CONTINUOUS ASSESSMENT   mark shall be made up of   Theory test 70%   Assignments 30%

	Sexual transmitted infections and blood borne viruses in ART Identification, judgement and manipulation of ova, Fertilization and transfer of ova and em- bryos Cryopreservation of semen, ova and embryos, Embryo scoring for transfer/cryopreservation, Infertility and Persistent Pregnancy Failure, Quality Assurance, Risk management and Labor- atory organization, and Patient-Technologist-Re- lationship	
REPRODUCTIVE BIOLOGY: CLINICAL TECHNOLOGY PRACTICE (RTPR301) 3	Sterility and Washing Procedures, Sperm counts, Preparation of culture media and dishes, Blood/Serum concentration and processing, Di- agnostic semen analyses, Oocyte retrieval: Screening and Grading TSE/MSA/PESA aspiration, Testicular Biopsy processing, Removal of granulosa cells, Fertiliza- tion evaluation Embryo transfer in sterile room and at patient, Cryopreservation, Sperm processing for correc- tive procedures and Insemination procedures	The CONTINUOUS ASSESSMENT mark shall be made up of Profi- ciency based practical tests 80% Process portfolio 20%

# 14.4 BTECH CLINICAL TECHNOLOGY

Module Name	Learning Content	Assessment
	A. Biostatistics	The CONTINUOUS ASSESSMENT
	Statistics: general introduction, Measures of	mark shall be made up of
	location and dispersion, Ordering of multi-	Proposal 50%
	variable data, Probability theory, Probability	Assignments 50%
	distributions, Confidence intervals	0
	Hypothesis testing, Correlation, The chi-	
RESEARCH METHODOLOGY	square statistic, Analysis of variance	
(RMDTIOI)	B. Research Methodology	
	The aim of research, Steps in the research	
	process. Measurements of incidence. Study	
	structures in research. Causality: Risk: Bias:	
	Measurement. The research protocol	
	C. Application	
	Foundations of management. Management theory	The CONTINUOUS ASSESSMENT
	and perspectives. The complete organisational envi-	mark shall be made up of Theory
PRINCIPLES OF MANAGE-	ronment. Social responsibility and ethics.	test 24%
MENT (PRMG10	Plan, Organise, Lead & Control, Quality, productiv-	Assignments 16%
	ity and consumer satisfaction	Exams 60%
	Electroencephalography, Polysomnography,	The CONTINUOUS ASSESSMENT
ADVANCED	Evoked potentials, and Electromyography/neurogra-	mark shall be made up of Clinical
NEUROPHYSIOLOGIC	phy , c , c , c , c , c , c , c , c , c ,	competency – 50% 10%
(ANPT401)	r /	Assignment – 10%
~ /		Portfolio 40%
	Micro-manipulation, Cell culturing, Bio-assays,	The CONTINUOUS ASSESSMENT
ADVANCED REPRODUCTIVE	Sperm function tests, Computer assisted sperm mo-	mark shall be made up of Clinical
ADVANCED REPRODUCTIVE	tility, Fluorescence micxroscopy, Electron micros-	competency – 50% I0%
TRECHNOLOGT (ARP1401)	copy, Biochemical separation techniques, Sperm	Assignment – 10%
	quality controls	Portfolio 40%
	Physiology calculations of flow rates and cannulas,	The CONTINUOUS ASSESSMENT
	Physiological fluids, Effects of temperature changes,	mark shall be made up of
	Monitoring pre- intra- post, Cardiac drugs —anaes-	Clinical competency –
ADVANCED PERFUSION	thetic, Cardioplegia, Perfusion organs, Tissue	50% 10%
TECHNOLOGY (APFT401)	changes, Blood physiology, Pathology of cardio-pul-	Assignment – 10%
	monary bypass on different organs, Flow dynamics,	Portfolio 40%
	Blood conservations, Differential perfusion, and	
	paediatric perfusion	
ADVANCED CARDIAC	A. Specialised Echocardiography	The CONTINUOUS ASSESSMENT
TECHNOLOGY (ACDT401	Current technological advances, Specialised	mark shall be made up of Clinical

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	flow, Complex congenital defects, Foetal echocardiography, Extensive ventricular as- sessment, Pericardial disease, Cardiac tu-	Assignment – 10% Portfolio 40%
	mours and masses, Prosthetic heart valves,	
	B. Mechanisms Of Arrythmogenesis	
	Disorders of impulse formation, Disorders of	
	impulse conduction, and Combined disorders	
	C. Advanced Electrophysiological Studies	
	Aberrant conduction, Newer approaches in the investigation of sinus-node disorders	
	Atrioventricular conduction delays and	
	blocks, Investigation of tachycardias, Mecha-	
	nisms of tachycardias, and Drug studies	
	D. Interventional Management Of	
	Arrythmias	
	Arrhythmias, Cardiac Failure, and Ischaemic	
	Heart Failure	
	Anatomy of the Renal System, Functions of the Kid-	The CONTINUOUS ASSESSMENT
	ney, The Three Basic Mechanisms Underlying the	mark shall be made up of
ADVANCED RENAL TECH-	Excretory Function Of The Kidney, Renal Pro-	Clinical competency –
NOLOGI (ARN1401)	Micturition and Renal Function Tests and Abnor-	SU% IU% Assignment – I0%
	malities.	Portfolio 40%
	All sections to include detail studies on: Equipment,	The CONTINUOUS ASSESSMENT
	Techniques and procedures, Patient evaluation	mark shall be made up of
	Evaluation of results obtained:	Clinical competency –
	Exercise Studies - Cardiopulmonary evaluation, Athletes Metabolic studies	50% 10% Assignment - 10%
	Sleep Studies - Sleep Appoea, Diagnostics, CPAP ti-	Portfolio 40%
	trations, other respiratory abnormalities during	
	sleep	
	Advanced Body Plethismographic Studies	
	Control of Ventillation (CO2 Response) Studies	
ADVANCED RESPIRATORY	Industrial Respiratory Disease	
TECHNOLOGY (ARS1401)	Allergies - Skin testing, Bronchial and other prov-	
	ocation techniques, IgE mediated reactions	
	Clinical trials and procedures	
	niques	
	Nebulisation, and pharmacology of nebulised medi-	
	cations	
	Pulmonary related procedures, with diagnostic radi-	
	ology, cat scanning Ventilation/perfusion studies with radioactive mate	
	rials	
	Pathophysiology and Treatment regimes: Ventila-	The CONTINUOUS ASSESSMENT
	tion, resuscitation, induction, cell saver and contin-	mark shall be made up of
	uous renal replacement therapies (CRRT)	Clinical competency –
TECHNOLOGY (ACR1401)		50% 10% Assignment – 10%
		Portfolio 40%
	Preparation and submission of a research thesis	The CONTINUOUS ASSESSMENT
CLINICAL TECHNOLOGY		mark shall be made up of The-
		sis 50% Presentation - 30%
(02.0.101		Poster – 20%