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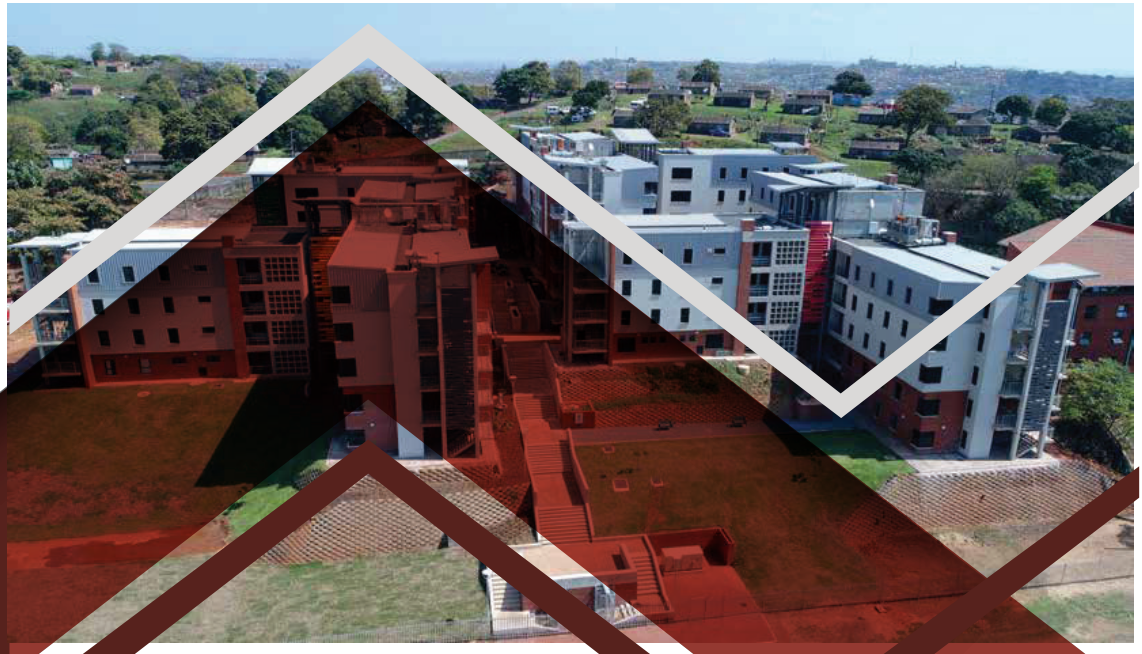
UNIVERSITY OF TECHNOLOGY



FACULTY OF **NATURAL SCIENCES**

2023

shape and own the future

FACULTY

OF

NATURAL SCIENCES

PROSPECTUS

2023

All National Diploma programmes will be completely phased out at the end of 2023 academic year.

Registration towards National Diploma programmes will not be permitted beyond 2023 academic year.

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This faculty prospectus must be read in conjunction with the Mangosuthu University of Technology General Rules contained in the current General Regulations handbook for Students. Further information may be obtained from: The Registrar , Mangosuthu University of Technology
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1.1 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 96847
Diploma in Agriculture in Crop Production

NQF Level: 6 **SAQA Credits**: 371
Programme code: CROPDP

Rationale for the Qualification
The qualifying learner will have exposure and orientation to different agricultural production units and will be competent to manage a production unit under supervision of an agricultural technologist and apply their basic knowledge skills and attitudes towards agricultural production.

Statement of Purpose
The purpose of this qualification is to supply the agricultural industry with competent agricultural technicians that can manage agricultural production units effectively, under supervision of an agricultural practitioner, as part of a production team.

Qualification Rules
The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes
A learner who successfully completes this programme will be able to:

1. Apply basic entrepreneurial principles as they relate to crop production.
2. Demonstrate systematic understanding of environmental science and its relevance to plant enterprises.
3. Manipulate environmental factors to improve productivity of field crops, fruit and vegetables.
4. Select implement and manage appropriate mechanisation systems.
5. Coordinate and monitor agricultural extension programs.
6. Write interpretive reports based on descriptive statistics.
7. Understand crop enterprises as being controlled by different factors.
8. Communicate efficiently verbally and in writing.
9. Practice computer literacy where appropriate.

A. Admission requirements

National Senior Certificate with		
English	4	
Agriculture or Life Sciences	4	
Mathematics	3	OR
Mathematical Literacy	4	
Physical Science	3	

OR

Senior Certificate with a minimum of	
English	HG D or SG C
Agriculture or Life Sciences	HG D or SG C
Mathematics or Math Literacy	HG E or SG D

Physical Science HG E or SG D

B. Duration of Study

The duration of the course is a minimum of three years, beginning with at least five semesters of attendance at the University, followed by a further one semester of appropriate work-integrated learning.

C. Curriculum Compilation and Pre-Requisites

Subjects	Subject Code	*C/O	Semester /Year	Assessment Method	Credits	NQF Level	Pre-requisites
Agricultural Mechanisation I	AGME101	C	S1	T1, T2, A, E	13	5	
Agricultural Statistics I	ASTA101	C	S1	T1, T2, E	12	5	
Aspects of Crop Enterprises	AOCE101	C	S1	T1, T2, A, E	13	5	
Computer Skills IA	CPUT101	C	S1	T1, T2,	8	5	
English Communication Skills I	ENGS101	C	S1	T1, T2, A, E	8	5	
Agricultural Economics I	AGEC102	C	S2	T1, T2, A, E	12	5	
Agricultural Extension I	AGRE102	C	S2	T1, T2, A, E	12	5	ENGS101
Computer Skills IB	CSKL102	C	S2	T1, T2	8	5	CPUT101
Crop Production I	CPRO102	C	S2	T1, T2, A, E	13	5	AOCE101
English Communication Skills II		C	S2	T1, T2, A, E	8	5	ENGS101
Soil Science I	SOSC102	C	S2	T1, T2, A, P, E	13	5	
Agricultural Extension II	AGRE201	C	S3	T1, T2, A, E	12	5	AGRE102
Agricultural Marketing II	AMKT201	C	S3	T1, T2, P, E	12	5	AGEC102
Crop Protection I	CROP201	C	S3	T1, T2, A, P, E	13	5	
Fruit Production II	FRUP201	C	S3	T1, T2, P, E	13	5	CPRO102
Vegetable Production II	VEGP201	C	S3	T1, T2, A, P, E	13	5	CPRO102
Agricultural Extension III	AGRE202	C	S4	T1, T2, A,E	12	6	AGRE201
Crop Production II	CRPD202	C	S4	T1, T2, A, P, E	13	5	CPRO102
Crop Protection II	CROP202	C	S4	T1, T2, A, P, E	13	5	CROP201
Soil Science II	SOSC202	C	S4	T1, T2, P,E	13	5	SOSC102
Subtropical Fruit and Sugarcane Production II	SFSP202	C	S4	T1, T2, A, E	13	5	CPRO102
Agricultural Production Management III	AGPM301	C	S5	T1, T2, P, E	12	6	AMKT201
Crop Production III	CRPD301	C	S5	T1, T2, A, P,E	13	6	CRPD202
Crop Protection III	CROP301	C	S5	T1, T2, A, P, E	13	6	CROP202
Fruit Production III	FRUP301	C	S5	T1, T2, P, E	13	6	FRUP201
Soil Science III	SOSC301	C	S5	T1, T2, A, P, E	13	6	SOSC202
Work Readiness	AGCD000	C	S5	At	-	6	
Agricultural Practice	APRC302	C	S6	WIL report	60	6	AGCD000
	A = Assignment, E = Written examination, P = Practical, T = Test **C = Compulsory; O = Optional; At = Attendance**						

D. Teaching, Learning and Assessment

D.1 Study guides

- Lecturer's attention is drawn to the policy principles of the 'Selection, Development and Review of Learning Materials Policy' in the course of preparing study guides.
- Study guides should be prepared using template approved by Senate.
- Study guides should be issued to students on the first day of lecture attendance.
- The study guide/study material should be given to the respective moderator for comments and suggestions

- The study guide should be compiled so as to help the student how to understand the subject.
- Study guides are revised at the end of the semester, especially with respect to course contents, based on suggestions from moderators, mentors of students on work-integrated learning and rest of colleagues.

D.2 Teaching and learning

- Teaching and learning are guided by the Teaching and Learning policy of the university. Lecturers are especially urged to take cognisance of Principles 4.5, 4.6 and 4.12. Lecturers and students are alerted particularly to Principles 4.3, 4.7, 4.8 and 4.9.
- Lecturers and students should note that the style of teaching is linked to the style of assessment.
- Lecturers must attend workshops that develops them into modern teachers - in other words they should acquire skills in e-learning; students must be appropriately trained as well.
- Use is made of the 'Monitoring and Evaluation of Teaching and Learning' policy to have lecturers evaluated by students in their respective subjects at the end of each semester. This exercise is done under the auspices of Quality Management Directorate who analyses the results and send them to the respective lecturer and Head of Department. The results inform the lecturer and department on which areas improvements have to be effected.

D.3 Class attendance

- Lecturers and students are directed to **Rule G21**:-
- Class attendance time tables are handed out on the first day of lectures.
- Electronic attendance registers must be used. Every lecturer and student attending a particular subject must swipe card followed by scanning of thumbprint: a green flashing light indicates that the attendance is recorded. Cards should also be swiped when leaving, and before a lecturer for another subject commences.
- If card or thumb scan does register a green light, the matter should be taken up with the office of the Head of Department: failure to do so would indicate poor attendance and possible exclusion from writing examinations.
- If subjects clash on the time table, only the one at a lower level must be registered (See also **Rules G.16 and G18.e**).
- A student repeating a subject will attend all lectures, seminars, tutorials and practicals as if he/she is taking the course for the first time and shall report for all the papers again, provided that a Faculty Board may grant exemption from any class and other obligations (**Rule G.18 d and e).**

D.4 Formative assessments

- Lecturers and students are directed to the Learning Assessment policy; principles 5.5, 5.7 and 5.9 particularly relate to some principles of the Teaching and Learning policy (See 5.2 above).
- Number and types of assessments may differ between subjects, but at least three assessments should be used in the generation of course marks and they should not all be tests.
- Tests and examination papers should be stored on external devices.
- Test papers must be models for examination papers in respect of the ratio of the kind of questions prescribed by the department.
- The assessor should send test papers and model answer to the moderator for comments and suggestions.
- Comments on the test paper must be formally recorded by the moderator and brought by the examiner to the Department meeting where test results are reviewed.
- Assessor should make use of moderator suggestions for the next assessments; disagreements should be brought to the attention of the Head of Department.

- Feedback to the students should be provided within **10 working days** after the date of the test.
- A questionnaire should be filled in by students after receiving their scripts; the lecturer should then discuss the students' responses with them so as to address problems before the next 'test series'.
- 'At-risk' students (like those who fail more than one subject) will be identified and attended to; each specific case will be treated on its own merit.
- Copies of test papers, model answers and moderator comments must be filed at the end of marking.
- The attention of lecturers and students is drawn to **Rule G.22.1.3** (Rule for writing tests and examinations), and Principle 5.9 of the Learning Assessment policy. Lecturers and students should familiarize themselves with the rules of writing tests before the first test week arrives.

E. **Work Integrated Learning**
- All students are required to complete one semester of work integrated learning in a suitable agriculture environment.
- No student requiring more than one subject to complete the theoretical portion of the Diploma may register for work integrated learning; also, the student should have acquired a course mark in that subject.
- On registration a student will be issued with a work integrated learning manual outlining the possible tasks and assignments to be done.

1.2 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 96847
Diploma in Agriculture in Crop Production (ECP)

NQF Level: 6 **SAQA Credits**: 461
Programme code: CROPEC

Rationale for the Qualification
The qualifying learner will have exposure and orientation to different agricultural production units and will be competent to manage a production unit under supervision of an agricultural technologist and apply their basic knowledge skills and attitudes towards agricultural production.

Statement of Purpose
The purpose of this qualification is to supply the agricultural industry with competent agricultural technicians that can manage agricultural production units effectively, under supervision of an agricultural practitioner, as part of a production team.

Qualification Rules
The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes
A learner who successfully completes this programme will be able to:

1. Apply basic entrepreneurial principles as they relate to crop production
2. Demonstrate systematic understanding of environmental science and its relevance to plant enterprises
3. Manipulate environmental factors to improve productivity of field crops, fruit and vegetables
4. Select implement and manage appropriate mechanisation systems
5. Coordinate and monitor agricultural extension programs.

6. Write interpretive reports based on descriptive statistics
7. Understand crop enterprises as being controlled by different factors
8. Communicate efficiently verbally and in writing
9. Practise computer literacy where appropriate

A. Admission requirements

National Senior Certificate with		
English	4	
Agriculture or Life Sciences	4	
Mathematics	3	OR
Mathematical Literacy	4	
Physical Science	3	

OR

Senior Certificate with a minimum of	
English	HG D or SG C
Agriculture or Life Sciences	HG D or SG C
Mathematics or Math Literacy	HG E or SG D
Physical Science	HG E or SG D

B. Duration of Study

The duration of the course is a minimum of four years, beginning with at least seven semesters of attendance at the University, followed by a further one semester of appropriate work integrated learning.

C. Curriculum Compilation and Pre-Requisites

Subjects	Subject code	*C/O	Semester /Year	Assessment Method	Credits	NQF Level	Pre-requisites
Basic English	BAEN001	C	S1	T, A1, A2, E	9		
Basic Numeracy	BNUM001	C	S1	T1, T2, E	9		
Elements of Agriculture	ELOA001	C	S1	T1, T2, A, E	9		
Physical Science	PHSC001	C	S1	T1, T2, A, P, E	9		
Plant Biology	PLBI001	C	S1	T1, T2, A, E	9		
Agricultural Chemistry	AGCH002	C	S2	T1, T2, A, P, E	9		PHSC001
Agricultural Numeracy	AGNU002	C	S2	T1, T2, E	9		BNUM001
Animal Biology	ANBI002	C	S2	T1, T2, A	9		
Communication	COMU002	C	S2	T, A1, A2, E	9		BAEN001
Computer Literacy	COLI002	C	S2	T1, T2,	9		
Agricultural Mechanisation I	AGMH101	C	S3	T1, T2, A, E	13	5	
Agricultural Statistics I	ASTT101	C	S3	T1, T2, E,	12	5	AGNU002
Aspects of Crop Enterprises	ASCE101	C	S3	T1, T2, A, E	13	5	PLBI001
Computer Skills IA	CUTK101	C	S3	T1, T2,	8	5	COLI001
English Communication Skills I	ECML101	C	S3	T1, T2, A, E	8	5	COMU002
Agricultural Economics I	AECM102	C	S4	T1, T2, A, E	12	5	
Agricultural Extension I	AXTS102	C	S4	T1, T2, A, E	12	5	ECML102
Computer Skills IB	CUTK102	C	S4	T1, T2	8	5	CUTK101
Crop Production I	CPRD102	C	S4	T1, T2, A, E	13	5	ASCE101
English Communication Skills II	ECML102	C	S4		8	5	ECML101
Soil Science I	SLSC102	C	S4	T1, T2, A, P, E	13	5	AGCH002
Agricultural Extension II	AXTS201	C	S5	T1, T2, A, E	12	5	AXTS102
Agricultural Marketing II	AMRK201	C	S5	T1, T2, P, E	12	5	AECM102

Crop Protection I	CPTC201	C	S5	T1, T2, A, P, E	13	5	PLBI001
Fruit Production II	FPRD201	C	S5	T1, T2, P, E	13	5	CPRD102
Vegetable Production II	VPRD201	C	S5	T1, T2, A, P, E	13	5	CPRD102
Agricultural Extension III	AXTS202	C	S6	T1, T2, A, E	12	6	AXTS201
Crop Production II	CPRD202	C	S6	T1, T2, A, P, E	13	5	CPRD102
Crop Protection II	CPTC202	C	S6	T1, T2, A, P, E	13	5	CPTC201
Soil Science II	SLSC202	C	S6	T1, T2, P, E	13	5	SLSC102
Subtropical Fruit and Sugarcane Production II	SUSP202	C	S6	T1, T2, A, E	13	5	CPRD102
Agricultural Production Management III	APMA301	C	S7	T1, T2, P,E	12	6	AMRK201
Crop Production III	CPRD301	C	S7	T1, T2, A, P, E	13	6	CPRD202
Crop Protection III	CPTC301	C	S7	T1, T2, A, P, E	13	6	CPTC202
Fruit Production III	FPRD301	C	S7	T1, T2, P,E	13	6	FPRD201
Soil Science III	SLSC301	C	S7	T1, T2, A, P, E	13	6	SLSC202
Work Readiness	AGCE000	C	S7	At	-	6	
Agricultural Practice	APRT302	C	S8	WIL report	60	6	AGCE000
A = Assignment, E = Written examination, P = Practical, T = Test **C = Compulsory; O = Optional; At = Attendance**							

D. Teaching, Learning and Assessment

D.1 Study guides

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- The study guide should be compiled so as to help the student how to understand the subject.
- Study guides are revised at the end of the semester, especially with respect to course contents, based on suggestions from moderators, mentors of students on work-integrated learning and rest of colleagues.

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- Teaching and learning are guided by the Teaching and Learning policy of the university. Lecturers are especially urged to take cognisance of Principles 4.5, 4.6 and 4.12. Lecturers and students are alerted particularly to Principles 4.3, 4.7, 4.8 and 4.9.
- Lecturers and students should note that the style of teaching is linked to the style of assessment.
- Lecturers must attend workshops that develops them into modern teachers - in other words they should acquire skills in e-learning; students must be appropriately trained as well.
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D.3 Class attendance

- Lecturers and students are directed to **Rule G21**:-
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- If card or thumb scan does register a green light, the matter should be taken up with the office of the Head of Department: failure to do so would indicate poor attendance and possible exclusion from writing examinations.
- If subjects clash on the time table, only the one at a lower level must be registered (See also **Rules G.16 and G18.e**).
- A student repeating a subject will attend all lectures, seminars, tutorials and practicals as if he/she is taking the course for the first time and shall report for all the papers again, provided that a Faculty Board may grant exemption from any class and other obligations (**Rule G.18 d and e).**

D.4 Formative assessments

- Lecturers and students are directed to the Learning Assessment policy; principles 5.5, 5.7 and 5.9 particularly relate to some principles of the Teaching and Learning policy (See 5.2 above).
- Number and types of assessments may differ between subjects, but at least three assessments should be used in the generation of course marks and they should not all be tests.
- Tests and examination papers should be stored on external devices.
- Test papers must be models for examination papers in respect of the ratio of the kind of questions prescribed by the department.
- The assessor should send test papers and model answer to the moderator for comments and suggestions.
- Comments on the test paper must be formally recorded by the moderator and brought by the examiner to the Department meeting where test results are reviewed.
- Assessor should make use of moderator suggestions for the next assessments; disagreements should be brought to the attention of the Head of Department.
- Feedback to the students should be provided within **10 working days** after the date of the test.
- A questionnaire should be filled in by students after receiving their scripts; the lecturer should then discuss the students' responses with them so as to address problems before the next 'test series'.
- 'At-risk' students (like those who fail more than one subject) will be identified and attended to; each specific case will be treated on its own merit.
- Copies of test papers, model answers and moderator comments must be filed at the end of marking.
- The attention of lecturers and students is drawn to **Rule G.22.1.3** (Rule for writing tests and examinations), and Principle 5.9 of the Learning Assessment policy. Lecturers and students should familiarize themselves with the rules of writing tests before the first test week arrives.

E. Work Integrated Learning

- All students are required to complete one semester of work integrated learning in a suitable agriculture environment.
- No student requiring more than one subject to complete the theoretical portion of the Diploma may register for work integrated learning; also, the student should have acquired a course mark in that subject.
- On registration a student will be issued with a work integrated learning manual outlining the possible tasks and assignments to be done.

1.3 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 96848
Diploma in Agriculture in Animal Production

NQF Level: 6 **SAQA Credits**: 371
Programme code: ANIPDP

Rationale for the Qualification

The qualifying learner will have exposure and orientation to the different animal production units and will be competent to manage, under supervision any agricultural animal production unit and apply their basic knowledge skills and attitudes towards animal production.

Statement of Purpose

The purpose of this qualification is to supply the agricultural industry with competent agricultural technicians that can manage production units effectively, under supervision of an agricultural practitioner, as part of a production team.

Qualification Rules

The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes

A learner who successfully completes this programme will be able to:

1. Manage natural resources, especially veld, and producing herbage for animals.
2. Demonstrate systematic understanding of basic anatomy and physiology of animals and its relevance in the context of animal production.
3. Apply basic economic and human resource management principles as they relate to animal production.
4. Formulate basic feeding programs for animal production units.
5. Manage, under supervision, beef, milk, pig, poultry and small stock production units.
6. Coordinate and implement agricultural extension programmes.
7. Identify and treat animal diseases.
8. Write interpretive reports based on descriptive statistics
9. Communicate efficiently both verbally and in writing
10. Apply basic computer skills where appropriate

A. **Admission requirements**

National Senior Certificate with		
English	4	
Agriculture or Life Sciences	4	
Mathematics	3	OR
Mathematical Literacy	4	
Physical Science	3	

OR

Senior Certificate with a minimum of	
English	HG D or SG C
Agriculture or Life Sciences	HG D or SG C
Mathematics or Math Literacy	HG E or SG D
Physical Science	HG E or SG D

B. **Duration of Study**

The duration of the course is a minimum of three years, beginning with at least five semesters of attendance at the University, followed by a further one semester of appropriate work-integrated learning.

C. **Curriculum Compilation and Pre-Requisites**

Subjects	Subject code	*C/O	Semester	Assessment Method	Credits	NQF Level	Pre-requisites
Agricultural Anatomy & Physiology I	AGAP101	C	S1	T1, T2, P, E	13	5	
Agricultural Statistics I	AGST101	C	S1	T1, T2, E	12	5	
Animal Production I	ANPR101	C	S1	T1, T2, A, E	13	5	
Computer Skills IA	CMSK101	C	S1	T1, T2,	8	5	
English Communication Skills I	ECOS101	C	S1	T1, T2, A, E	8	5	
Agricultural Economics I	AECO102	C	S2	T1, T2, A,E	12	5	
Agricultural Extension I	AEXS102	C	S2	T1, T2, A, E	12	5	
Computer Skills IB	CMSK101	C	S2	T1, T2,	8	5	CMSK101
English Communication Skills II	ECOS102	C	S2	T1, T2, A, E	8	5	ECOS102
Pasture Science I	PASC102	C	S2	T1, T2, A, E	13	5	
Small Stock Production II	SSPR102	C	S2	T1, T2, A, E	13	5	ANPR101
Agricultural Extension II	AGRX201	C	S3	T1, T2, A, E	12	5	AEXS102
Agricultural Marketing II	AGRM201	C	S3	T1, T2, A, E	12	5	AECO102
Animal Health Management II	ANMH201	C	S3	T1, T2, A,E	13	5	AGAP101
Animal Nutrition II	ANUT201	C	S3	T1, T2, A, E	13	5	AGAP101
Pasture Science II	PASS201	C	S3	T1, T2, A, E	13	5	PASC102
Agricultural Extension III	AGRX202	C	S4	T1, T2, A, E	12	6	AGRX201
Beef Production II	BPRO202	C	S4	T1, T2, A, E	13	5	ANPR101
Milk Production II	MPRO202	C	S4	T1, T2, A, E	13	5	ANPR101
Pig Production II	PPRD202	C	S4	T1, T2, A, E	13	5	ANPR101
Poultry Production II	PPRO202	C	S4	T1, T2, A, E	13	5	ANPR101
Agricultural Production Management III	AMAN301	C	S5	T1, T2, P, E	12	6	AGRM201
Beef Production III	BPRO301	C	S5	T1, T2, A, E	13	6	BPRO202
Milk Production III	MPRO301	C	S5	T1, T2, A, E	13	6	MPRO202
Pig Production III	PPRD301	C	S5	T1, T2, A, E	13	6	PPRD301
Poultry Production III	PPRO301	C	S5	T1, T2, A, E	13	6	PPRO301
Work Readiness	AGAD000	C	S5	At	-	6	
Production Practice III	PPRA302	C	S6	WIL report	60	6	AGAD000
A = Assignment, E = Written examination, P = Practical, T = Test **C = Compulsory; O = Optional; At = Attendance**							

D. **Teaching, Learning and Assessment**

D.1 Study guides

- Lecturer's attention is drawn to the policy principles of the 'Selection, Development and Review of Learning Materials Policy' in the course of preparing study guides.
- Study guides should be prepared using template approved by Senate.
- Study guides should be issued to students on the first day of lecture attendance.
- The study guide/study material should be given to the respective moderator for comments and suggestions
- The study guide should be compiled so as to help the student how to understand the subject.
- Study guides are revised at the end of the semester, especially with respect to course contents, based on suggestions from moderators, mentors of students on work-integrated learning and rest of colleagues.

D.2 Teaching and learning

- Teaching and learning are guided by the Teaching and Learning policy of the university. Lecturers are especially urged to take cognisance of Principles 4.5, 4.6 and 4.12. Lecturers and students are alerted particularly to Principles 4.3, 4.7, 4.8 and 4.9.
- Lecturers and students should note that the style of teaching is linked to the style of assessment.
- Lecturers must attend workshops that develops them into modern teachers - in other words they should acquire skills in e-learning; students must be appropriately trained as well.
- Use is made of the 'Monitoring and Evaluation of Teaching and Learning' policy to have lecturers evaluated by students in their respective subjects at the end of each semester. This exercise is done under the auspices of Quality Management Directorate who analyses the results and send them to the respective lecturer and Head of Department. The results inform the lecturer and department on which areas improvements have to be effected.

D.3 Class attendance

- Lecturers and students are directed to **Rule G21**:-
- Class attendance time tables are handed out on the first day of lectures.
- Electronic attendance registers must be used. Every lecturer and student attending a particular subject must swipe card followed by scanning of thumbprint: a green flashing light indicates that the attendance is recorded. Cards should also be swiped when leaving, and before a lecturer for another subject commences.
- If card or thumb scan does register a green light, the matter should be taken up with the office of the Head of Department: failure to do so would indicate poor attendance and possible exclusion from writing examinations.
- If subjects clash on the time table, only the one at a lower level must be registered (See also **Rules G.16 and G18.e**).
- A student repeating a subject will attend all lectures, seminars, tutorials and practicals as if he/she is taking the course for the first time and shall report for all the papers again, provided that a Faculty Board may grant exemption from any class and other obligations (**Rule G.18 d and e).**

D.4 Formative assessments

- Lecturers and students are directed to the Learning Assessment policy; principles 5.5, 5.7 and 5.9 particularly relate to some principles of the Teaching and Learning policy (See 5.2 above).
- Number and types of assessments may differ between subjects, but at least three assessments should be used in the generation of course marks and they should not all be tests.
- Tests and examination papers should be stored on external devices.
- Test papers must be models for examination papers in respect of the ratio of the kind of questions prescribed by the department.
- The assessor should send test papers and model answer to the moderator for comments and suggestions.
- Comments on the test paper must be formally recorded by the moderator and brought by the examiner to the Department meeting where test results are reviewed.
- Assessor should make use of moderator suggestions for the next assessments; disagreements should be brought to the attention of the Head of Department.
- Feedback to the students should be provided within **10 working days** after the date of the test.
- A questionnaire should be filled in by students after receiving their scripts; the lecturer should then discuss the students' responses with them so as to address problems before the next 'test series'.
- 'At-risk' students (like those who fail more than one subject) will be identified and attended to; each specific case will be treated on its own merit.

- Copies of test papers, model answers and moderator comments must be filed at the end of marking.
- The attention of lecturers and students is drawn to **Rule G.22.1.3** (Rule for writing tests and examinations), and Principle 5.9 of the Learning Assessment policy. Lecturers and students should familiarize themselves with the rules of writing tests before the first test week arrives.

E. **Work Integrated Learning**

- All students are required to complete one semester of work integrated learning in a suitable agriculture environment.
- No student requiring more than one subject to complete the theoretical portion of the Diploma may register for work integrated learning; also, the student should have acquired a course mark in that subject.
- On registration a student will be issued with a work integrated learning manual outlining the possible tasks and assignments to be done.

1.4 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 96848
Diploma in Agriculture in Animal Production (ECP)

NQF Level: 6 **SAQA Credits**: 461
Programme code: ANIPEC

Rationale for the Qualification
The qualifying learner will have exposure and orientation to the different animal production units and will be competent to manage, under supervision any agricultural animal production unit and apply their basic knowledge skills and attitudes towards animal production.

Statement of Purpose
The purpose of this qualification is to supply the agricultural industry with competent agricultural technicians that can manage production units effectively, under supervision of an agricultural practitioner, as part of a production team.

Qualification Rules
The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes
A learner who successfully completes this programme will be able to:

1. Manage natural resources, especially veld, and producing herbage for animals.
2. Demonstrate systematic understanding of basic anatomy and physiology of animals and its relevance in the context of animal production.
3. Apply basic economic and human resource management principles as they relate to animal production.
4. Formulate basic feeding programs for animal production units.
5. Manage, under supervision, beef, milk, pig, poultry and small stock production units.
6. Coordinate and implement agricultural extension programmes.
7. Identify and treat animal diseases.
8. Write interpretive reports based on descriptive statistics
9. Communicate efficiently both verbally and in writing

10. Apply basic computer skills where appropriate

A. **Admission requirements**

National Senior Certificate with

English	4	
Agriculture or Life Sciences	4	
Mathematics	3	OR
Mathematical Literacy	4	
Physical Science	3	

OR

Senior Certificate with a minimum of

English	HG D or SG C
Agriculture or Life Sciences	HG D or SG C
Mathematics or Math Literacy	HG E or SG D
Physical Science	HG E or SG D

B. **Duration of Study**

The duration of the course is a minimum of four years, beginning with at least seven semesters of attendance at the University, followed by a further one semester of appropriate work integrated learning.

C. **Curriculum Compilation and Pre-Requisites**

Subjects	Subject code	*C/O	Semester /Year	Assessment Method	Credits	NQF Level	Pre-requisites
Basic English I	BENG001	C	S1	T, A1, A2, E	9		
Basic Numeracy I	BASN001	C	S1	T1, T2, E	9		
Elements of Agriculture I	ELEA001	C	S1	T1, T2, A, E	9		
Physical Science I	PSCI001	C	S1	T1, T2, A, P	9		
Plant Biology I	PBIO001	C	S1	T1, T2, A, E	9		
Agricultural Chemistry I	ACHE002	C	S2	T1, T2, A, P, E	9		PSCI001
Agricultural Numeracy I	ANUM002	C	S2	T1, T2, E	9		BASN001
Animal Biology I	ABIO002	C	S2	T1, T2, A, E	9		
Communication I	CMUN002	C	S2	T, A1, A2	9		BENG001
Computer Literacy I	COML002	C	S2	T1, T2,	9		
Agricultural Anatomy & Physiology I	AANA101	C	S3	T1, T2, P, A	13	5	ABIO002
Agricultural Statistics I	ATAT101	C	S3	T1, T2, E	12	5	ANUM002
Animal Production I	AMPR101	C	S3	T1, T2, A, E	13	5	ABIO002
Computer Skills IA	CMPT101	C	S3	T1, T2,	8	5	COML002
English Communication Skills I	ENSH101	C	S3	T1, T2, A,E	8	5	CMNU002
Agricultural Economics I	AECN102	C	S4	T1, T2, A, E	12	5	
Agricultural Extension I	AXTE102	C	S4	T1, T2, A, E	12	5	ENSH101
Computer Skills IB	CMPT102	C	S4	T1, T2,	8	5	CMPT101
English Communication Skills II	ENSH102	C	S4	T1, T2, A,E	8	5	ENSH101
Pasture Science I	PSSC102	C	S4	T1, T2, A, E	13	5	
Small Stock Production II	SLSP102	C	S4	T1, T2, A, E	13	5	AMPR101
Agricultural Extension II	AXTE201	C	S5	T1, T2, A, E	12	5	AXTE102
Agricultural Marketing II	ACMA201	C	S5	T1, T2, A, E	12	5	AECN102
Animal Health Management II	AHEA201	C	S5	T1, T2, A, E	13	5	AANA101
Animal Nutrition II	AMNU201	C	S5	T1, T2, A, E	13	5	AANA101
Pasture Science II	PSSC201	C	S5	T1, T2, A,E	13	5	PSSC102
Agricultural Extension III	AXTE202	C	S6	T1, T2, A, E	12	6	AXTE201

Beef Production II	BFPR202	C	S6	T1, T2, A, E	13	5	AMPR101
Milk Production II	MKPR202	C	S6	T1, T2, A,E	13	5	AMPR101
Pig Production II	PGPR202	C	S6	T1, T2, A, E	13	5	AMPR101
Poultry Production II	PYPR202	C	S6	T1, T2, A, E	13	6	AMPR101
Agricultural Production Management III	APRM301	C	S7	T1, T2, P, E	12	6	ACMA201
Beef Production III	BFPR301	C	S7	T1, T2, A, E	13	6	BFPR301
Milk Production III	MKPR301	C	S7	T1, T2, A, E	13	6	MKPR301
Pig Production III	PGPR301	C	S7	T1, T2, A, E	13	6	PGPR301
Poultry Production III	PYPR301	C	S7	T1, T2, A, E	13	6	PYPR301
Work Readiness	AGAE000	C	S7	At	-	6	
Production Practice III	PRAC302	C	S8	WIL report	60	6	AGAE000
A = Assignment, E = Written examination, P = Practical, T = Test **C = Compulsory; O = Optional; At = Attendance**							

D. Teaching, Learning and Assessment

D.1 Study guides

- Lecturer's attention is drawn to the policy principles of the 'Selection, Development and Review of Learning Materials Policy' in the course of preparing study guides.
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D.4 Formative assessments

- Lecturers and students are directed to the Learning Assessment policy; principles 5.5, 5.7 and 5.9 particularly relate to some principles of the Teaching and Learning policy (See 5.2 above).
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- Assessor should make use of moderator suggestions for the next assessments; disagreements should be brought to the attention of the Head of Department.
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- A questionnaire should be filled in by students after receiving their scripts; the lecturer should then discuss the students' responses with them so as to address problems before the next 'test series'.
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E. Work Integrated Learning

- All students are required to complete one semester of work integrated learning in a suitable agriculture environment.
- No student requiring more than one subject to complete the theoretical portion of the Diploma may register for work integrated learning; also, the student should have acquired a course mark in that subject.
- On registration a student will be issued with a work integrated learning manual outlining the possible tasks and assignments to be done.

1.5 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 99750
Advanced Diploma in Agriculture in Crop Production

NQF Level: 7 **SAQA Credits**: 120
Programme code: ADVAGC

Rationale for the Qualification
The purpose of this programme is to supply the agricultural industry with graduates who are competent as advisers to individuals and communities on best crop production practices and as entrepreneurs to create jobs in the sector. The programme also prepares students to be able to further their studies to higher qualifications in agriculture.

Statement of Purpose
The Advanced Diploma curriculum is such that it prepares students to be agricultural advisers to individuals and communities, to be entrepreneurs and also to be in a position to pursue further studies.

Qualification Rules
The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes
A learner who successfully completes this programme will be able to:

1. Plan profitable and sustainable use of agricultural land.
2. Read appropriate scientific publications, write seminars, develop research proposals and statistically analyse research results.
3. Understand different crop improvement technologies and their applications as well as theoretically apply principles of crop improvement to local and international situations.
4. Manage water usage in agricultural activities to be efficient and environmentally safe.
5. Develop a business plan that is sound so as to guide operations of the business, and also takes into account all the requirements for the achievement of the economic efficiency and success in the operation of the business.
6. Solve market-led agricultural extension challenges, identify opportunities and apply salient features of various theories and approaches in management of agricultural projects.
7. Apply holistic approaches to agricultural pest management..
8. Use practical knowledge to manage different aspects of soil ecology to ensure sustainable soil quality under cropping activities.

A. Admission Requirements

- An NQF level 6 qualification with Crop Production and Agricultural Extension or Agricultural Economics as major subjects.
- A minimum 60% aggregate pass for the major subjects indicated above; appropriate experience would be an advantage for those who have not achieved this pass level.
- Process of recognition of prior learning (RPL) would be applied for those applicants without the NQF level 6 qualification

B. Duration of Programme
The duration of the programme is 1 year full time and 2 years part time.

C. Curriculum Compilation and Pre-Requisites

Subjects	Subject code	*C/O	Semester	Assessment Method	Credits	NQF Level
Crop Production IV	ADCP401	C	S1	T, S, E	20	7
Land Use Planning IV	ADLP401	C	S1	T, R	20	7
Research Methodology	ADRM401	C	S1	T, P	20	7
Agricultural Water Management IV	ADWM402	C	S2	T, S, E	20	7
Agricultural Economics IV	ADEC402	O*	S2	T, S, E	20	7
Agricultural Extension IV	ADEX402	O*	S2	T, S, E	20	7
Crop Protection IV	ADCP402	O**	S2	T, S, E	20	7
Soil Science IV	ADSS402	O**	S2	T, S, E	20	7
C = Compulsory; O = Optional (choose1 from O* and 1 from O** grouping) T =Test; S = Seminar; E = Examination; R = Report; P = Research proposal						

D. Teaching, Learning and Assessment

- Contact teaching is for over 2 x 2 weeks a semester
- Distance contact will continue when students are not on campus through telephones, electronically, social media, etc.
- Assessment will vary from subject to subject as indicated in Section C above

1.6 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 110927
Advanced Diploma in Agriculture in Animal Production

NQF Level: 7 **SAQA Credits**: 120
Programme code: ADVAGA

Rationale for the Qualification

The purpose of this programme is to supply the agricultural industry with graduates who are competent as advisers to individuals and communities on best animal production practices and as entrepreneurs to create jobs in the sector. The programme also prepares students to be able to further their studies to higher qualifications in agriculture.

Statement of Purpose

The Advanced Diploma curriculum is such that it prepares students to be agricultural advisers to individuals and communities, to be entrepreneurs and also to be in a position to pursue further studies.

Qualification Rules

The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes

A learner who successfully completes this programme will be able to:

1. Develop a business plan that is sound so as to achieve the economic efficiency in the operation of the animal production business.
2. Apply salient features of various theories and approaches on animal production projects.
3. Apply advanced knowledge on the animal production industry.
4. Use feed formulation programmes to develop feed rations for different animal enterprises.
5. Apply advanced knowledge on breeding and selecting of animals.
6. Apply biosecurity measures.
7. Understand the value-addition options of animal products.

E. Admission Requirements

- An NQF level 6 qualification with Animal Production and Agricultural Extension or Agricultural Economics as major subjects.
- A minimum 60% aggregate pass for the major subjects indicated above; appropriate experience would be an advantage for those who have not achieved this pass level.
- Process of recognition of prior learning (RPL) would be applied for those applicants without the NQF level 6 qualification

F. Duration of Programme

The duration of the programme is 1 year full time and 2 years part time.

G. Curriculum Compilation and Pre-Requisites

Subjects	Subject code	*C/O	Semester	Assessment Method	Credits	NQF Level
Land Use Planning IV	ADLA401	C	S1	T, R	20	7
Pig Production IV	ADPI401	O*	S1	T, S, E	20	7
Poultry Production IV	ADPO401	O*	S1	T, S, E	20	7
Research Methodology	ADRE401	C	S1	T, P	20	7
Agricultural Extension IV	ADAX402	O**	S2	T, S, E	20	7
Agricultural Economics IV	ADCO402	O**	S2	T, S, E	20	7
Beef Production IV	ADBE402	C	S2	T, S, E	20	7
Milk Production IV	ADMI402	C	S2	T, S, E	20	7
C = Compulsory; O = Optional (choose1 from O* and 1 from O** grouping) T =Test; S = Seminar; E = Examination; R = Report; P = Research proposal						

H. Teaching, Learning and Assessment

- Contact teaching is for over 2 x 2 weeks a semester
- Distance contact will continue when students are not on campus through telephones, electronically, social media, etc.
- Assessment will vary from subject to subject as indicated in Section C above

2. DEPARTMENT OF BIOMEDICAL SCIENCES

Qualifications offered by the Department of Biomedical Sciences

- **Bachelor of Health Sciences: Medical Laboratory Science**
- **National Diploma in Biomedical Technology:** This qualification is currently being phased out. Therefore, there will be no new intake of students for this qualification in 2023. Students already registered in this programme are required to complete the qualification by December 2023.
- **National Diploma in Biomedical Technology (Extended Curriculum Program)**: This qualification is currently being phased out. Therefore, there will be no new intake of students for this qualification in 2023. Students already registered in this programme are required to complete the qualification by December 2023.
- **Baccalaureus Technologiae: Biomedical Technology**: This qualification is currently being phased out. Therefore, there will be no new intake of students for this qualification in 2023. Students already registered in this programme are required to complete the qualification by December 2023.

2.1.1. Bachelor of Health Sciences: Medical Laboratory Science

HEQSF Qualification Type: 68 **SAQA Qualification ID: 97931**
CESM Code: 0907 **SAQA Credits: 522**
NQF Level: 8

2.1.2. Rationale for qualification:

Qualified medical laboratory scientists are specialised health professionals who play an integral role in healthcare by aiding in the diagnosis, monitoring and treatment of diseases. The analytical and diagnostic services provided by medical laboratory scientists require strong scientific knowledge, reasoning ability and empathy for humanity. In addition, these professionals also undertake medical science research that responds to global health challenges.

2.1.3. Statement of purpose

The purpose of this programme is to produce competent graduates that will be able to apply scientific and analytical principles in the field of medical laboratory science. The qualifying graduate will be able to organise and perform laboratory operations in clinical diagnostic laboratories and related fields in accordance with the statutory requirements of the Health Professions Council of South Africa (HPCSA). In addition, he/she will be able to integrate laboratory test results with pathophysiological conditions and conduct research grounded in a deep knowledge of the subject area and based on sound scientific principles. Within the programme, supervisory and management skills are developed to foster good business management and entrepreneurship skills. A distinguishing feature of this programme is the development and application of research skills. This four-year degree programme has been structured to produce graduates with stronger scientific knowledge and skills, better reasoning ability and research skills through the development of higher-level cognitive skills and competencies associated with a professional degree at NQF level 8. The outcomes of the qualification are underpinned by compliance with statutory requirements including quality assurance, ethics, and safety. Qualifying graduates may work in the healthcare sector in government pathology laboratories, private pathology laboratories and research laboratories. To practice independently as a Medical Laboratory Scientist, two (2) years post-registration experience is required.

The Medical Laboratory Science degree that will be offered at Mangosuthu University of Technology, will at the onset, offer the following specialisation options: Clinical Pathology IV, Cytology IV, Immunohaematology IV, and Virology IV.
In the fourth year of study, the student must select one of the above-mentioned disciplines as an area of specialisation.
Other specialisation modules will be added on later as per industry demand and institutional capacity.

2.1.4. Qualification Rules

- On enrolment, it is mandatory that each student registers with the HPCSA as a student Medical Laboratory Scientist.
- A student in Medical Laboratory Science must attend formal lectures and practical sessions at Mangosuthu University of Technology in all modules for the period of study. This includes Work Integrated Learning (WIL) in the 3rd year of study and Clinical Practice IV in the 4th year of study where students will be placed in accredited training laboratories.

2.1.5. Exit Level Outcomes

Exit Level Outcome 1
The graduate will be able to perform and integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements

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

Exit Level Outcome 2
The graduate will be able to critically evaluate current and new trends in technology in order to improve practices and to solve problems in a variety of contexts.

- Information is analysed, synthesized, and evaluated relative to the constraints within a given laboratory.
- New equipment, techniques and methods are evaluated.
- Appropriate new techniques and methods are recommended based on methodological scientific principles.

Exit Level Outcome 3
The graduate will be able to apply research skills and conduct research in the field of medical laboratory science in compliance with legislated and ethical research principles, to develop the academic skills, values and attributes necessary to undertake independent research and evaluate new information, evidence and concepts from a range of sources.
Exit Level Outcome 4

The graduate will be able to demonstrate management and entrepreneurship skills within the scope of the profession.

2.1.6. Admission requirements

[1] National Senior Certificate with

English Home Language	4 and above
Life Sciences	4 and above
Mathematics	4 and above
Physical Science	4 and above
English Additional Language	4 and above

OR

[2] Senior Certificate with a minimum of

English	D (HG)
Mathematics	D (HG)
Physical Science	D (HG)
Biology	D (HG)

[3] Applicants from FET colleges and elsewhere must have the minimum qualifications of NQF4 in Mathematics, Life Science, Physical Science and English.

Additional Entry Requirements: Applicants are required to undergo an interview as well as placement testing.

2.1.7. Duration of Study:

The duration of the course is a minimum of four years. This includes Work Integrated Learning (WIL) for a total of six (6) months in the 3rd year of study and Clinical Practice IV for a total of 12 months in the 4th year of study, where students will be placed in accredited training laboratories.

2.1.8. Curriculum Compilation

Bachelor of Health Sciences - Medical Laboratory Science						
Code	**Subject Description**	**SAQA Credit**	**Sem /Year**	**Assess Method**	**NQF Level**	**Pre-requisite**
BHAP100	Human Anatomy, Physiology and Disease I	30	S1&S2/ Y1	*	5	
BIMSC01 1. BHEC101 2. BHEP101 3. BBIO102 4. BLAT102	Integrative Medical Sciences I (4 modules) 1. Health Chemistry 2. Health Physics 3. Biostatistics 4.Laboratory instrumentation & techniques	 10 10 10 10	 S1/Y1 S1/Y1 S2/Y1 S2/Y1	 * * * *	 5 5 5 5	
BIME100	Introduction to Medical Laboratory Sciences I	18	S1&S2/ Y1	*	5	
BCEB102	Cell Biology I	12	S2/Y1	*	5	
BIMM102	Immunology I	12	S2/Y1	*	5	
BECS101	English Communication Skills I	8	S1/Y1	*	5	
BMMI200 1. BMMI201 2. BMMI202	Medical Microbiology II (2 modules) Medical Microbiology IIA Medical Microbiology IIB	 12 12	 S1/Y2 S2/Y2	 * *	 6 6	 BHAP100 BIME100 BMMI201

BIMH201	Immunohematology II	12	S1/Y2	*	6	BIMM102 BIME100
BECS201	English Communication Skills II	8	S1/Y2	*	5	BECS101
BHIS201	Histology II	12	S2/Y2	*	6	BHAP100 BIME100
BCTO202	Cytology II	12	S1/Y2	*	6	BHAP100 BIME100
BCMB202	Molecular Biology II	12	S2/Y2			BCEB102 BIME100
BITS100	Computer Skills II	16	S1 & S2/Y2	*	6	None
BCCH301	Clinical Chemistry III	18	SI/Y3	*	7	BCCH200
BMMI301	Medical Microbiology III	18	S1/Y3	*	7	BMMI200
BHAE301	Haematology III	18	S1/Y3	*	7	BHAE202
BCTO301	Cytology III	18	S1/Y3	*	7	BCTO202
BECS301	English Communication Skills III	8	S1Y3		7	BECS201
BIOP000	Work Readiness (P0)	Nil	S1/Y3	**		All levels 5 & 6 courses
BIML302	Integrative Medical Laboratory Sciences III	30	S2/Y3	*	7	All Levels 5 & 6 courses
BREM302	Research Methods III	16	S2/Y3	*	7	BBIO102
BRES400	Research Project IV	70	S1&S2/ Y4		8	BREM 302
BLAM400	Laboratory Management IV	18	S1/Y4		8	None
Clinical Practice IV (Students must select one area of specialisation from the choices offered below)		56	S1&S2/ Y4	+	8	All Levels 5, 6 and 7 courses
BCPA400	Clinical Practice IV (*Clinical Pathology)*				8	
BCCH400	Clinical Practice IV (*Clinical Chemistry)*				8	
BMMI400	Clinical Practice IV (*Medical Microbiology)*				8	
BHAE400	Clinical Practice IV (*Haematology)*				8	
BIMH400	Clinical Practice IV (*Immunohematology)*				8	
BCTO400	Clinical Practice IV (*Cytology)*				8	
BHIS400	Clinical Practice IV (*Histology)*				8	
BIMM400	Clinical Practice IV (I*mmunohaematology)*				8	
BVIR400	Clinical Practice IV (*Virology)*				8	
BFSC400	Clinical Practice IV (*Forensic Sciences)*				8	
BPHA400	Clinical Practice IV (*Pharmacology)*				8	
BCTG400	Clinical Practice IV (*Cytogenetics)*				8	

*Assessment Methods will include a combination of some or all of the following: theory tests, assignments, practical assessments and a final theory examination.
+ Assessment Methods will include a combination of some or all of the following: theory tests, practical assessments, portfolios of evidence and a final theory examination
** The Work Readiness (P0) module is a non-credit bearing module. However, it is mandatory that students complete this module prior to completing the Work Integrated Learning (WIL) and Clinical Practice IV modules.

2.1.9. Teaching and Learning

The department uses a variety of teaching and learning strategies, including but not limited to lectures, tutorials, practical sessions, e-learning platforms, assignments, case studies, group and individual

assignments, and summative and formative assessments. Attendance at all lectures and practical sessions is compulsory and therefore monitored.

Workshops and library sessions are also conducted for the Research Methods III course. In the 3rd and 4th year of study, students will spend a total of 6 and 12 months respectively in an accredited training laboratory to learn workplace skills.

Assessment
A combination of some or all of the following will be used:

- Continuous evaluation
- Theory tests
- Laboratory practicals
- Assignments
- Practical Tests
- Research projects
- Final three-hour theory examinations

Examinations
Examinations are set during the semester in which the particular subject is offered as per the regulations in the General Handbook (Rule: 22).

Pass Requirements
A minimum of two tests are written in each subject in each semester. These contribute to the student's course mark. If the student is absent from a test due to sickness a medical certificate must be provided. The student will then be given an opportunity to write a theory test or be given an oral examination at the discretion of the lecturer and at a time convenient to the lecturer. If the student does not provide a medical certificate, he/she will be given no marks for the test.
Laboratory practicals and assignments may be used to contribute to the student's course mark.
A minimum of 40% is needed for a course mark for each subject. The course mark constitutes 40% of the final mark of each subject.
A subminimum of 40% is needed in an examination. The examination mark constitutes 60% of the final mark of each subject.
The combined course mark and examination mark must be at least 50% which is the pass mark for each subject.

Promotion
Students progressing from one level to another may register at the higher level in those subjects for which the required prerequisite subjects in the lower level have been passed.
Students registering for subjects at different levels may encounter timetable clashes which cannot be adjusted for individual students as the timetable for the normal programme is predetermined.

2.1.10. Work Integrated Learning

During the second semester of 3rd year of study, the student is required to complete work integrated learning (WIL) in an accredited training laboratory, where he/she participates in focused clinical practice activities under supervision.
The student is required to make his/her own arrangements for accommodation and transport at his/her own expense during this period.

Clinical Practice IV

In the 4th year, the student must spend 12 months in an accredited training laboratory. The student will be placed in the chosen area of specialisation. He/she will attend Laboratory Management IV through blended learning (e-Learning platforms and blocked contact sessions) during the first semester of the 4th year of study. He/she will also complete his/her research project before writing the final examination in his/her area of specialisation.

The Medical Laboratory Science degree that will be offered at MUT, will at the onset, offer the following specialisation options: Clinical Pathology IV, Cytology IV, Immunohaematology IV, and Virology IV.
In the fourth year, the student must select one of the above-mentioned disciplines as an area of specialisation.
Other specialisation modules will be added on later as per industry demand and institutional capacity.

2.1.11. Registration as a Medical Laboratory Scientist

Successful completion of this qualification will entitle the student to register with the HPCSA as a Medical Laboratory Scientist.

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2.2.1. National Diploma in Biomedical Technology

This qualification is currently being phased out. Therefore, there will be no new intake of students for this qualification in 2023. Students already registered in this program are required to complete the qualification by December 2023.

HEQSF Qualification Type: 63
CESM Code: 131101
NQF Level: 6

SAQA Qualification ID: 72286
SAQA Credits: Minimum 360

2.2.2. Rationale for qualification:

Qualified medical laboratory technologists are specialised health professionals who play an integral role in healthcare by aiding in the diagnosis, monitoring and treatment of diseases. The analytical and diagnostic services provided by medical laboratory technologists require strong scientific knowledge, reasoning ability and empathy for humanity.

2.2.3. Statement of purpose

The purpose of this programme is to produce competent graduates that will be able to apply scientific and analytical principles in the field of medical laboratory technology. The qualifying graduate will be able to organise and perform laboratory operations in clinical diagnostic laboratories and related fields in accordance with statutory requirements of the Health Professions Council of South Africa (HPCSA).
The outcomes of the qualification are underpinned by compliance with statutory requirements including quality assurance, ethics, and safety. Qualifying graduates may work in the healthcare sector in government pathology laboratories and private pathology laboratories in one of the following disciplines: Clinical Pathology, Cytology, Blood Transfusion Technology and Virology. To practice independently as a Medical Laboratory Scientist, two (2) years post-registration experience is required.

2.2.4. Qualification Rules

- On enrolment, it is mandatory that each student registers with the HPCSA as a student Medical Laboratory Technologist.
- A student in Biomedical Technology must attend formal lectures and practical sessions at Mangosuthu University of Technology in all modules for the period of study. This includes Work Integrated Learning

(WIL) in the 3rd year of study where he/she will be placed in accredited training laboratories.

2.2.5. Exit Level Outcomes

Exit Level Outcome 1

The graduate will be able to perform and integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements

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

Exit Level Outcome 2

The graduate will be able to critically evaluate current and new trends in technology in order to improve practices and to solve problems in a variety of contexts.

- Information is analysed, synthesized, and evaluated relative to the constraints within a given laboratory.
- New equipment, techniques and methods are evaluated.
- Appropriate new techniques and methods are recommended based on methodological scientific principles.

2.2.6. Admission requirements

[1] National Senior Certificate with

English Home Language	4 and above
Life Sciences	4 and above
Mathematics	4 and above
Physical Science	4 and above
English Additional Language	4 and above

OR

[2] Senior Certificate with a minimum of

English	D (HG)
Mathematics	D (HG)
Physical Science	D (HG)
Biology	D (HG)

[3] Applicants from FET colleges and elsewhere must have the minimum qualifications of NQF4 in Mathematics, Life Science, Physical Science and English.

Additional Entry Requirements: Applicants are required to undergo an interview as well as placement testing.

2.2.7. Duration of Study:

The duration of the course is a minimum of three years. This includes Work Integrated Learning (WIL) for a total of six (6) months in the 3rd year of study where students will be placed in accredited training laboratories.

2.2.8. Curriculum Compilation

National Diploma in Biomedical Technology						
Code	**Subject Description**	**SAQA Credit**	**Sem /Year**	**Assess Method**	**NQF Level**	**Pre-requisites**
ANAP100	Anatomy & Physiology IA	.125	S1&S2/Y1	*	5	
CALS111	Calculations & Statistics	.100	S1/Y1	*	5	
CHEB211	Chemistry I	.125	S1/Y1	*	5	
IMTE100	Introduction to Medical Technology (Module A & B)	.025	S1&S2/Y1	*	5	
PHYB211	Physics 1	.010	S1/Y1	*	5	
ECSBO11	English Communication Skills	.080	S1/Y1	*	5	
BIOC021	Biochemistry II	.125	S2/Y1	*	5	CHEB211
IMMU021	Immunology II	.125	S2/Y1	*	5	
PATO021	Pathophysiology 11	.125	S2Y1	*	5	
CSKB011	Computer Skills 1A	.080	S2/Y1		5	
BTTE111	Blood Transfusion Technology	.125	S1/Y2	*	5	ANAP100 IMMU021 IMTE100 PATO021
CELP010	Cellular Pathology I	125	S1/Y2	*	5	ANAP10 IMTE100
CHEP010	Chemical Pathology I	125	S1/Y2	*	5	ANAP100 BIOC021 IMMU021 IMTE100 PATO021
MBIO010	Microbiology I	125	S1/Y2	*	5	ANAP1000 IMMU021 IMTE100 PATO021
ECSB012	English Communication Skills 11	.080	S1/Y2	*	5	ECSB011
CSKB012	Computer Skills 1B	.080	S1/Y2		5	CSKB011
CELP020	Cellular Pathology II	.125	S2/Y2	*	5	CELP010
CHEP020	Chemical Pathology II	.125	S2/Y2	*	5	CHEP010
HAEM221	Haematology II	.125	S2/Y2	*	5	BTTE111
MBIO020	Microbiology II	.125	S2/Y2	*	5	MBIO010
CELP131	Cellular Pathology III	.125	S1/Y3	*	6	CELP020
CHEP231	Chemical Pathology III	.125	S1/Y3	*	6	CHEP020
HAEM231	Haematology III	.125	S1/Y3	*	6	HAEM221
MBIO231	Microbiology III	.125	S1/Y3	*	6	MBIO020
ECSB013	English Communication Skills	.080	S1/Y3	*	6	ECSB012
BIOP000	Work Readiness (P0)	Nil	S1/Y3	**		All levels 5 & 6 courses
LAPR011	LABORATORY PRACTICE III	.500	S2/Y3	+		ANAP100 BIOC021 BTTE111 CALS111 CELP010 CELP020 CHEB211 CHEP010 CHEP020

						HAEM221 IMMU021 IMTE100 MBIO010 MBIO020 PATO021 PHYB211

*Assessment Methods will include a combination of some or all of the following: theory tests, assignments, practical assessments and a final theory examination.
+ Assessment Methods will include continuous evaluation in the workplace and an integrated learning project presentation.
** The Work Readiness (P0) module is a non-credit bearing module. However, it is mandatory that students complete this module prior to completing the Work Integrated Learning (WIL) module.

2.2.9. Teaching and Learning

The department uses a variety of teaching and learning strategies, including but not limited to lectures, tutorials, practical sessions, e-learning platforms, assignments, case studies, group and individual assignments, and summative and formative assessments. Attendance at all lectures and practical sessions is compulsory and therefore monitored.
In the 3rd year of study, the student will spend a total of 6 months in an accredited training laboratory to learn workplace skills.

Assessment
A combination of some or all of the following will be used:

- Continuous evaluation
- Theory tests
- Laboratory practicals
- Assignments
- Practical Tests
- Integrated learning projects
- Final three-hour theory examinations

Examinations
Examinations are set during the semester in which the particular subject is offered as per the regulations in the General Handbook (Rule: 22).

Pass Requirements
A minimum of two tests are written in each subject in each semester. These contribute to the student's course mark. If the student is absent from a test due to sickness a medical certificate must be provided. The student will then be given an opportunity to write a theory test or be given an oral examination at the discretion of the lecturer and at a time convenient to the lecturer. If the student does not provide a medical certificate, he/she will be given no marks for the test.
Laboratory practicals and assignments may be used to contribute to the student's course mark.
A minimum of 40% is needed for a course mark for each subject. The course mark constitutes 40% of the final mark of each subject.
A subminimum of 40% is needed in an examination. The examination mark constitutes 60% of the final mark of each subject.
The combined course mark and examination mark must be at least 50% which is the pass mark for each subject.

Promotion

Students progressing from one level to another may register at the higher level in those subjects for which the required prerequisite subjects in the lower level have been passed.

Students registering for subjects at different levels may encounter timetable clashes which cannot be adjusted for individual students as the timetable for the normal programme is predetermined.

2.2.10. Work Integrated Learning

During the second semester of the 3rd year of study, the student is required to complete work integrated learning (WIL) in an accredited training laboratory, where he/she participates in focused clinical practice activities under supervision.

The student is required to make his/her own arrangements for accommodation and transport at his/her own expense during this period.

2.2.11. Registration as a Medical Laboratory Technologist

On completion of the National Diploma in Biomedical Technology, the graduate is required to complete an internship programme at an accredited training laboratory for a minimum period of 12 months. Thereafter he/she must successfully complete an examination set by the Society of Medical Laboratory Technologists of South Africa (SMLTSA) in order to register with the HPCSA as a qualified Medical Technologist.

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2.3.1. National Diploma in Biomedical Technology (Extended Curriculum Programme)

This qualification is currently being phased out. Therefore, there will be no new intake of students for this qualification in 2023. Students already registered in this program are required to complete the qualification by December 2023.

HEQSF Qualification Type: 63
CESM Code: 131101
NQF Level: 6

SAQA Qualification ID: 72286
SAQA Credits: Minimum 360

2.3.2. Rationale for qualification

Qualified medical laboratory technologists are specialised health professionals who play an integral role in healthcare by aiding in the diagnosis, monitoring and treatment of diseases. The analytical and diagnostic services provided by medical laboratory technologists require strong scientific knowledge, reasoning ability and empathy for humanity.

2.3.3. Statement of Purpose

The purpose of this programme is to produce competent graduates that will be able to apply scientific and analytical principles in the field of medical laboratory technology. The qualifying graduate will be able to organise and perform laboratory operations in clinical diagnostic laboratories and related fields in accordance with statutory requirements of the Health Professions Council of South Africa (HPCSA).
The outcomes of the qualification are underpinned by compliance with statutory requirements including quality assurance, ethics, and safety. Qualifying graduates may work in the healthcare sector in government pathology laboratories and private pathology laboratories in one of the following disciplines: Clinical Pathology, Cytology, Blood Transfusion Technology and Virology. To practice independently as a Medical Laboratory Scientist, two (2) years post-registration experience is required.

2.3.4. Qualification Rules

- On enrolment, it is mandatory that each student registers with the HPCSA as a student Medical Laboratory Technologist.
- A student in Biomedical Technology must attend formal lectures and practical sessions at Mangosuthu University of Technology in all modules for the period of study. This includes Work Integrated Learning (WIL) in the final year of study where he/she will be placed in accredited training laboratories.

2.3.5. Exit Level Outcomes

Exit Level Outcome 1
The graduate will be able to perform and integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements

- Select, perform, interpret, and integrate routine and specialised diagnostic techniques in a specific field in accordance with statutory requirements in place of study, workplace, or both.
- Laboratory results are evaluated through correlation of data in the context of the principles, techniques and instruments used.
- Factors that affect procedures and test results are recognized and appropriate action taken.
- Laboratory results are interpreted through correlation of data with physiological and pathophysiological conditions.
- Findings are evaluated, interpreted, and integrated through application of an in-depth knowledge of disease processes.
- Standard operating procedures are assessed, reviewed, and updated where necessary.

- Equipment is monitored for efficient functioning and appropriate action is taken when necessary.
- Work activities are planned, organized, and prioritized.
- Laboratory safety procedures are described and applied.
- Quality assurance procedures are described and applied

Exit Level Outcome 2
The graduate will be able to critically evaluate current and new trends in technology in order to improve practices and to solve problems in a variety of contexts.

- Information is analysed, synthesized, and evaluated relative to the constraints within a given laboratory.
- New equipment, techniques and methods are evaluated.
- Appropriate new techniques and methods are recommended based on methodological scientific principles.

2.3.6. Admission requirements

[1] National Senior Certificate with

English Home Language	4 and above
Life Sciences	4 and above
Mathematics	4 and above
Physical Science	4 and above
English Additional Language	4 and above

OR

[2] Senior Certificate with a minimum of

English	D (HG)
Mathematics	D (HG)
Physical Science	D (HG)
Biology	D (HG)

[3] Applicants from FET colleges and elsewhere must have the minimum qualifications of NQF4 in Mathematics, Life Science, Physical Science and English.

Additional Entry Requirements: Applicants are required to undergo an interview as well as placement testing.

2.3.7. Duration of Study:

The duration of the course is a minimum of four years. This includes Work Integrated Learning (WIL) for a total of six (6) months in the 4th year of study where students will be placed in accredited training laboratories.

2.3.8. Curriculum Compilation

National Diploma in Biomedical Technology (ECP)						
Code	**Subject Description**	**SAQA Credit**	**Sem /Year**	**Assess Method**	**NQF Level**	**Pre-requisites**
EFCS101	Computer Skills	.050	S1/Y1		5	
EFBC101	Basic Chemistry	.050	S1/Y1	*	5	
EFBP101	Basic Physics	0.50	S1/Y1	*	5	
EFBA101	Basic Anatomy	0.50	S1/Y1	*	5	
EFEC101	English Communication Skills	0.80	S1/Y1	*	5	
EFBB102	Basic Biochemistry	0.50	S2/Y1	*	5	EFBC101

EFBI102	Basic Immunology	0.50	S2/Y1	*	5	EFBA101
EFLT102	Laboratory Techniques	.050	S2/Y1	*	5	NONE
EFLM102	Laboratory mathematics	.050	S2/Y1	*	5	NONE
EFLI102	Laboratory Information System	.050	S2/Y1	*	5	EFCS101
ERPH201	Physics I	.100	S1/Y2	*	5	EFBP101
ERCH201	Chemistry I	.100	S1/Y2	*	5	EFBC101
ANAPE10	Anatomy and Physiology (Module A & B)	.025	S1&S2/ Y2	*	5	EFBI102
ERCS201	Calculations and Statistics	.050	S1/Y2	*	5	EFLM102
IMTEE10	Introduction to Medical Technology (Module A & B)	.025	S1&S2/ Y2	*	5	EFLT102
EREC201	English Communication Skills	.080	S1/Y2	*	5	EFEC101
ERPP202	Pathophysiology II	.125	S2/Y2	*	5	ANAPE10
ERSK201	Computer skills 1	.080	S1/Y2	*	5	EFCS101
ERIM202	Immunology II	.125	S2/Y2	*	5	ANAPE10
ERBC202	Biochemistry II	.125	S2/Y2	*	5	EFBB102
ERBP301	Blood Transfusion Technology II	.125	S1/Y3	*	5	ERIM202
ERSK202	Computer skills 11	.080	S2/Y2	*	5	ERSK201
ERCP301	Cellular Pathology I	.100	S1/Y3	*	5	ANAPE10
ERCH301	Chemical Pathology I	.100	S1/Y3	*	5	ERBC202
ERMB301	Microbiology I	.100	S1/Y3	*	5	ERPP202
EREC301	English Communication Skills	.080	S1/Y3	*	5	EREC201
ERHA302	Haematology II	.125	S2/Y3	*	5	ERBP301
ERCP302	Cellular Pathology II	.125	S2/Y3	*	5	ERCP301
ERCH302	Chemical Pathology II	.125	S2/Y3	*	5	ERCH301
ERMB302	Microbiology II	.125	S2/Y3	*	5	ERMB301
ERCP401	English Communication Skills	.080	S1/Y4	*	6	ERMB301
ERCP401	Cellular Pathology III	.125	S1/Y4	*	6	ERCP302
ERCH401	Chemical Pathology III	.125	S1/Y4	*	6	ERCH302
ERHA401	Haematology III	.125	S1/Y4	*	6	ERHA302
ERMB401	Microbiology III	.125	S1/Y4	*	6	ERMB302
BIOP000	Work Readiness (P0)	Nil	S1/Y4	**		All level 5 courses
ERLP402	Laboratory Practice	.125	S2/Y4	+		EFCS101 EFBC101 EFBP101 EFBA101 EFEC101 EFBB102 EFBI102 EFLT102 EFLM102 EFLI102 ERPH201 ERCH201 ANAPE10 ERCS201 EIMT201 EREC201 ERPP202 ERIM202 ERBC202 ERAP202 IMTEE10 ERBP301 ERCP301 ERCH301 ERMB301 EREC301

						ERHA302 ERCP302 ERCH302 ERMB302

*Assessment Methods will include a combination of some or all of the following: theory tests, assignments, practical assessments and a final theory examination.
+ Assessment Methods will include continuous evaluation in the workplace and an integrated learning project presentation
** The Work Readiness (P0) module is a non-credit bearing module. However, it is mandatory that students complete this module prior to completing the Work Integrated Learning (WIL) module.

2.3.9. Teaching and Learning

The department uses a variety of teaching and learning strategies, including but not limited to lectures, tutorials, practical sessions, e-learning platforms, assignments, case studies, group and individual assignments, and summative and formative assessments. Attendance at all lectures and practical sessions is compulsory and therefore monitored.
In the 4th year of study, students will spend a total of 6 months in an accredited training laboratory to learn workplace skills.

Assessment
A combination of some or all of the following will be used:

- Continuous evaluation
- Theory tests
- Laboratory practicals
- Assignments
- Practical Tests
- Integrated learning projects
- Final three-hour theory examinations

Examinations
Examinations are set during the semester in which the particular subject is offered as per the regulations in the General Handbook (Rule: 22).

Pass Requirements
A minimum of two tests are written in each subject in each semester. These contribute to the student's course mark. If the student is absent from a test due to sickness a medical certificate must be provided. The student will then be given an opportunity to write a theory test or be given an oral examination at the discretion of the lecturer and at a time convenient to the lecturer. If the student does not provide a medical certificate, he/she will be given no marks for the test.
Laboratory practicals and assignments may be used to contribute to the student's course mark.
A minimum of 40% is needed for a course mark for each subject. The course mark constitutes 40% of the final mark of each subject.
A subminimum of 40% is needed in an examination. The examination mark constitutes 60% of the final mark of each subject.
The combined course mark and examination mark must be at least 50% which is the pass mark for each subject.

Promotion

Students progressing from one level to another may register at the higher level in those subjects for which the required prerequisite subjects in the lower level have been passed.

Students registering for subjects at different levels may encounter timetable clashes which cannot be adjusted for individual students as the timetable for the normal programme is predetermined.

2.3.10. Work Integrated Learning

During the second semester of the 4th year of study, the student is required to complete work integrated learning (WIL) in an accredited training laboratory, where he/she participates in focused clinical practice activities under supervision.

The student is required to make his/her own arrangements for accommodation and transport at his/her own expense during this period.

2.3.11. Registration as a Medical Laboratory Technologist

On completion of the National Diploma in Biomedical Technology (Extended Curriculum Programme), the graduate is required to complete an internship programme at an accredited training laboratory for a minimum period of 12 months. Thereafter he/she must successfully complete an examination set by the Society of Medical Laboratory Technologists of South Africa (SMLTSA) in order to register with the HPCSA as a qualified medical technologist.

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2.4.1. Baccalaureus Technologiae: Biomedical Technology

This qualification is currently being phased out. Therefore, there will be no new intake of students for this qualification in 2023. Students already registered in this program are required to complete the qualification by December 2023.

SAQA ID Number: 3309022

NQF Level	**HEMIS Credits**
Level: 7	**1.000**

2.4.2. Rationale for qualification

Qualified medical laboratory technologists are specialised health professionals who play an integral role in healthcare by aiding in the diagnosis, monitoring and treatment of diseases. The analytical and diagnostic services provided by medical laboratory technologists require strong scientific knowledge, reasoning ability and empathy for humanity. The Baccalaureus Technologiae: Biomedical Technology qualification allows medical laboratory technologists to progress to a Master's level of study at institutions where this is available.

2.4.3. Statement of Purpose

The purpose of this programme is to produce competent graduates that will be able to apply scientific and analytical principles in the field of medical laboratory technology. The qualifying graduate will be able to organise and perform laboratory operations in clinical diagnostic laboratories and related fields in accordance with statutory requirements of the Health Professions Council of South Africa (HPCSA).

Additionally, in this programme, supervisory, management and research skills are developed.
The outcomes of the qualification are underpinned by compliance with statutory requirements including quality assurance, ethics, and safety. Qualifying graduates may work in the healthcare sector in government pathology laboratories and private pathology laboratories in one of the following disciplines: Clinical Pathology, Cytology, Blood Transfusion Technology and Virology. To practice independently as a Medical Laboratory Technologist, two (2) years post-registration experience is required.

2.4.4. Qualification Rules

- On enrolment, it is mandatory that each student is registered with the HPCSA as a student medical laboratory technologist/medical laboratory technologist.
- A student in Biomedical Technology must attend formal lectures and practical sessions at Mangosuthu University of Technology in all modules for the period of study.

2.4.5. Exit Level Outcomes

Exit Level Outcome 1
The graduate will be able to perform and integrate laboratory tests with pathophysiological conditions in a specific field of specialisation in accordance with statutory and operational requirements

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

Exit Level Outcome 2
The graduate will be able to critically evaluate current and new trends in technology in order to improve practices and to solve problems in a variety of contexts.

- Information is analysed, synthesized, and evaluated relative to the constraints within a given laboratory.
- New equipment, techniques and methods are evaluated.
- Appropriate new techniques and methods are recommended based on methodological scientific principles.

Exit Level Outcome 3
The graduate will be able to apply research skills and conduct research in the field of medical laboratory technology in compliance with legislated and ethical research principles.

Exit Level Outcome 4
The graduate will be able to demonstrate supervisory and management skills within the scope of the profession.

2.4.6. Admission requirements

[1] 60% aggregate in final semester subjects completed at the University or at least two years laboratory experience after qualifying as a medical technologist.
[2] Biochemistry II is a prerequisite for Molecular Biology IV.

2.4.7. Duration of Study:

The duration of the course is a minimum of one year (full time) or a minimum of two years (part time).

2.4.8. Curriculum Compilation

Baccalaureus Technologiae: Biomedical Technology			
Subject Code	**Subject Name**	**PRE-REQUISITES**	**CREDITS**
LABM041	Laboratory Management		.125
REST041	Research Methods and Techniques		.125
INPA041	Integrated Pathophysiology IV		.500
MOLB041	Molecular Biology IV	Biochemistry II	.250

2.4.9. Teaching and Learning

The department uses a variety of teaching and learning strategies, including but not limited to lectures, tutorials, practical sessions, e-learning platforms, assignments, case studies, group and individual assignments, and summative and formative assessments. Participatory problem-based learning, workshops and library sessions are also conducted for the Research Methods and Techniques module.

Assessment

A combination of some or all of the following will be used:

- Continuous evaluation
- Theory tests
- Laboratory practicals
- Assignments
- Research proposal, project and mini dissertation
- Final three-hour theory examination

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3. DEPARTMENT OF CHEMISTRY

3.1 Diploma in Analytical Chemistry (3215061)

3.1.1 Admission requirements

i) National Senior Certificate (NSC) with following rating code:

Mathematics	(4)
Physical Science	(4)
English First Additional or Home Language	(4)

ii) Senior Certificate or equivalent qualification with passes of at least

Physical Science	D (HG)
Mathematics	D (HG)
English First Additional or Home Language	D (HG)

iii) Students who have successfully completed the access course will also be considered.

iv) Applicants from FET colleges and elsewhere must have the minimum qualifications of NQF4 in Mathematics, Physical Science and English.

3.1.2 Duration of Study

3 years

3.1.3 A Subjects and Curriculum Compilation (ANCDIP)

	National Diploma in Analytical Chemistry							
Code	Subject	Level	SAQA Credit	Notional hours	Assessment Method	NQF Level	Pre-requisites	Co-requisites
ANCH101	Analytical Chemistry I (T&P)	S1	15	150	Summative / Formative	5		
CHMS101	Chemistry I (T&P)	S1	15	150	Summative / Formative	5		
MATH101	Mathematics I	S1	10	100	Summative / Formative	5		
CHCS101	Chemistry Communication Skills I	S1	10	100	Summative / Formative	5		
PSIC101	Physics I (T&P)	S1	10	100	Summative / Formative	5		
ANCH102	Analytical Chemistry II	S2	12	120	Summative / Formative	5	ANCH101 CHMS101 MATH101	ANCP102
ANCP102	Analytical Chemistry: Practical II	S2	12	120	Summative / Formative	5	ANCH101 CHMS101 MATH101	ANCP102
IORC102	Inorganic Chemistry II (T&P)	S2	12	120	Summative / Formative	5	CHMS101	
ORCH102	Organic Chemistry II (T&P)	S2	12	120	Summative / Formative	5	CHMS101	
PSIC102	Physical Chemistry II (T&P)	S2	12	120	Summative / Formative	5	CHMS101 PSIC101 MATH101	
CURS201	Computer Skills I	S3	12	120	Summative / Formative	5		
INCH201	Inorganic Chemistry III (T&P)	S3	16	160	Summative / Formative	6	IORC102	
ORCH201	Organic Chemistry III (T&P)	S3	16	160	Summative / Formative	6	ORCH102	
PHCH201	Physical Chemistry III (T&P)	S3	16	160	Summative / Formative	6	PSIC102	
ANCP202	Analytical Chemistry: Practical III	S4	24	240	Summative / Formative	6	ANCP102	ANCH202
ANCH202	Analytical Chemistry III	S4	24	240	Summative / Formative	6	ANCH102	ANCP202
CHQA202	Chemical Quality Assurance	S4	12	120	Summative / Formative	6		
CHER000	Work Readiness Programme	S4				6	ANCH102 ANCP102	ANCH202 ANCP202
CHIP301	Chemical Industry Practical	S5	60	600	Quarterly Written Report	6	ANCH202 ANCP202	
CHPR302	Chemistry Project III	S6	60	600	Oral Presentation Written Report	6	ANCH202 ANCP202	

3.1.3 B **Subjects and Curriculum Compilation (ANCHED)**

National Diploma in Analytical Chemistry (3215061)						
Code	Subject	Level	Assessment Method	NQF Level	Pre-requisites	Co-requisites
ANAC011	Analytical Chemistry I (T&P)	S1	Summative / Formative	5		
CHEM211	Chemistry I (T&P)	S1	Summative / Formative	5		
MATAN01	Mathematics I	S1	Summative / Formative	5		
COMS311	Communication Skills I	S1	Summative / Formative	5		
PHYS411	Physics I (T&P)	S1	Summative / Formative	5		
ANAC321	Analytical Chemistry II	S2	Summative / Formative	5	Analytical Chemistry I; Chemistry I; Mathematics I	Analytical Chemistry: Practical II
APRA021	Analytical Chemistry: Practical II	S2	Summative / Formative	5	Analytical Chemistry I; Chemistry I; Mathematics I	Analytical Chemistry II
INOC321	Inorganic Chemistry II (T&P)	S2	Summative / Formative	5	Chemistry I	
ORCH221	Organic Chemistry II (T&P)	S2	Summative / Formative	5	Chemistry I	
CHYC221	Physical Chemistry II (T&P)	S2	Summative / Formative	5	Chemistry I; Physics I; Mathematics I	
COSAN01	Computer Skills I	S3	Summative / Formative	5		
INOC231	Inorganic Chemistry III (T&P)	S3	Summative / Formative	6	Inorganic Chemistry II	
ORCH231	Organic Chemistry III (T&P)	S3	Summative / Formative	6	Organic Chemistry II	
PHYC231	Physical Chemistry III (T&P)	S3	Summative / Formative	6	Physical Chemistry II	
ANAP231	Analytical Chemistry: Practical III	S4	Summative / Formative	6	Analytical Chemistry: Practical II	Analytical Chemistry III
ANAC231	Analytical Chemistry III	S4	Summative / Formative	6	Analytical Chemistry II	Analytical Chemistry: Practical III
CQAS031	Chemical Quality Assurance	S4	Summative / Formative	6		
CHER000	Work Readiness Programme	S4	Not a credit bearing subject	6	Analytical Chemistry: Practical II Analytical Chemistry II	Analytical Chemistry III Analytical Chemistry: Practical III
CHIP031	Chemical Industry Practical	S5	Continuous / Quarterly Written Report	6	Analytical Chemistry III Analytical Chemistry: Practical III	
CPRO031	Chemistry Project III	S6	Oral / Poster Presentation Written Project	6	Analytical Chemistry III Analytical Chemistry: Practical III	

3.1.4 **Examination Regulations**

i) A sub-minimum of 50% in the practical component of a subject in order to achieve a course mark for that subject.

ii) G20 rule (refer to General Handbook for rules applicable to G20)

iii) The practical component mark of a subject obtained is only valid for ONE ADDITIONAL SEMESTER.

iv) Rules for supplementary exams (refer to General Handbook)

v) Refer to General Handbook for all other rules regarding examinations.

3.2 **Access Course: Analytical Chemistry**

3.2.1 **Admission requirements**

i) National Senior Certificate (NSC) with rating codes:

Mathematics (3)
Physical Science (3)
English (3)

ii) Standard 10 Certificate (or equivalent) with a pass in

Mathematics	E (SG)
Physical Science	E (SG)
English	E (SG)

iii) An N3 qualification including Grade 12 English, Mathematics and Physical Science and another language

iv) An appropriate GCE Certificate

ADMISSION OF A CANDIDATE IS DETERMINED ON A SELECTION TEST

3.2.2 **Duration of Study**

1 semester (six months)

PLEASE NOTE: THIS COURSE MAY NOT BE REPEATED

3.2.3 **Subjects and Curriculum Compilation**

Access Course: Analytical Chemistry						
Code	Subject	Level	Assessment Method	NQF Level	Pre-Requisite	Co-Requisite
ACHEM11	Chemistry		Summative / Formative	4		
APHYC11	Physics		Summative / Formative	4		
AMACH11	Mathematics		Summative / Formative	4		
ADRAW11	Drawing		Summative / Formative	4		
ACOCH11	Communications		Summative / Formative	4		
ALABC11	Lab Practice		Summative / Formative	4		

3.2.4. **Restriction on Course**

- There is no subminimum mark for exam entrance BUT the Final Mark (FM) must be 50% to pass a subject
- There will be NO SUPPLEMENTARY exams written for any subject of the Access Course and no remarks are allowed.
- All other rules for examinations apply as in the general handbook for Rules and Regulations for students.

3.2.5 **Promotion to Higher Level**

To qualify for admission to the National Diploma in Analytical Chemistry, students should pass (obtain 50%) the following subjects:

- Chemistry
- Physics
- Mathematics
- Lab Practice
- Communications

3.3 Advanced Diploma in Analytical Chemistry (ADVACH)

3.3.1 Rationale for the qualification

The qualification is needed because an environmental scan has shown that there is a paucity of similar qualifications in South Africa. Students who successfully complete will be able to take up positions in industry such as chemists, supervising technicians and technologists in product and process development and quality control. Industries such as petrochemical, pharmaceuticals, mining and metallurgy can employ graduates from this programme. This will provide learners with skills in advanced analytical techniques and expose them to advanced latest analytical instrumentation and general training in laboratory management.

The institution is situated in an "industrially-rich" area and students will not have to travel far to find employment. The proposed programme therefore addresses local needs and fills this gap of workers who are at a higher skill and competency level than those who have only a diploma qualification. Graduates can also take up further study opportunities at the postgraduate or Honours level where appropriate. In other words, as indicated earlier, the proposed programme is aligned to the natural progression route of the HEQSF.

The advanced theoretical knowledge that will be developed in students and the active or "hands-on" teaching and learning strategy that will be covered in the practical components will benefit students by improving their skills, competences and abilities in advanced analytical methods making them more employable. It will also benefit industry that employs students with this qualification by providing them with better-prepared personnel who have been trained to operate advanced instruments and analyses the data acquired thereof. Graduates of the programme will acquire advanced instrument operation skills that would allow them to work in research institutions and in research and development divisions of various industries.

3.3.2 Purpose of qualification

The purpose of this programme is to develop highly skilled technicians with advanced knowledge of various analytical instrumentation used in analytical chemistry laboratories. On completion of the programme learners must be able to plan and execute an analysis with minimal supervision and also be able to diagnose instrument errors (trouble-shoot), provide basic maintenance, calibrate instruments and repair fundamental instrumentation faults.

3.3.3 Exit level outcomes

In summary, on completion of the programme learners must be able to:

- Demonstrate advanced knowledge in operation and application of different analytical techniques in chemical analysis as outlined in the module contents.
- Independently undertake basic instrument maintenance, troubleshoot and calibrate advanced analytical instruments.
- Write an adequate and appropriate scientific report and be able to orally disseminate it.
- Plan and identify a suitable method/instrumentation required to execute various chemical analysis using advanced analytical instruments.
- Demonstrate a clear understanding of laboratory organization and related safety regulations as part of their professional conduct.
- Integrate theoretical knowledge with practical application of instrumental techniques within the analytical chemistry field.

3.3.4 **Admission requirements**

Diploma in Analytical Chemistry or Equivalent

3.3.5 **Duration of Study**

One year (full time) or Two years (part time).

3.3.6 **Subjects and Curriculum compilation**

Module Code	Module Name	NQF Level	SAQA Credits	Compulsory/ Optional	Semester
ACHE701	Advanced Analytical Chemistry I	7	25	Compulsory	1
AICH701	Inorganic Chemistry	7	12	Compulsory	1
ACHQ701	Analytical Chemical Quality Assurance	7	10	Compulsory	1
ARES701	Research Project I	7	12	Compulsory	1
ACHE702	Advanced Analytical Chemistry II	7	25	Compulsory	2
APCH702	Physical Chemistry	7	12	Compulsory	2
AOCH702	Organic Chemistry	7	12	Compulsory	2
ARES702	Research Project II	7	12	Compulsory	2

3.3.7 **Compulsory instructional offerings**

(i) A pass in all subjects is compulsory to obtain this qualification.

(ii) Part time candidates may not register for more than two modules per semester.

3.3.8 **Examination Regulations**

(i) A subminimum of 50% in the practical component of each module in order to achieve a course mark for that module is required.

(ii) G20 rule (refer to general handbook for rules applicable to G20)

(iii) The practical component mark of a module obtained is only valid for ONE ADDITIONAL SEMESTER.

(iv) Rules for supplementary examinations (refer to General Handbook).

(v) Refer to General Handbook for all other rules regarding examinations.

Bachelor of Technology: Chemistry (3315000) (being phased out)

3.3.1 **Admission requirements**

The National Diploma in Analytical Chemistry or equivalent.

3.3.2 **Duration of Study**

One year (full time) or Two years (part time).

3.3.3 **Subjects and Curriculum Compilation**

Bachelor of Technology: Chemistry (3315000)						
Code	Subjects	Level	Assessment Method	NQF Level	Pre-Requisite	Co-Requisite
ANAC051	Analytical Chemistry IVA	S1	Summative / Formative	7		
INOC051	Inorganic Chemistry IVA	S1	Summative / Formative	7		
PHYC051	Physical Chemistry IVA	S1	Summative / Formative	7		
ORCH051	Organic Chemistry IVA	S1	Summative / Formative	7		
CPRO050	Chemistry Project IV	S1	Written project report and oral presentation	7		
ANAC052	Analytical Chemistry IVB	S2	Summative / Formative	7		
INOC052	Inorganic Chemistry IVB	S2	Summative / Formative	7		
PHYC052	Physical Chemistry IVB	S2	Summative / Formative	7		
ORCH052	Organic Chemistry IVB	S2	Summative / Formative	7		
CPRO050	Chemistry Project IV	S2	Written project report and oral presentation	7		

3.3.4 **Compulsory Instructional Offerings**

i) A pass in all subjects is compulsory to obtain this qualification.
ii) Part time candidates may not register for more than two modules per semester.

3.3.5 **Examination Regulations**

i) A sub-minimum of 50% in the practical component of each module in order to achieve a course mark for that module.
ii) G20 rule (refer to General Handbook for rules applicable to G20)
iii) The practical component mark of a module obtained is only valid for ONE SEMESTER.
iv) Rules for supplementary exams (refer to General Handbook)
v) Refer to General Handbook for all other rules regarding examinations.

4. DEPARTMENT OF COMMUNITY EXTENSION

4.1. Diploma in Community Extension

HEQSF Qualification Type 63 **SAQA Qualification ID 72288**
SAQA Credits: Minimum 360
NQF Level: 6

4.2. Rationale for qualification

Diploma in Community Extension addresses issues related to food security. Food security is one of the challenges faced by South Africa whereby the majority of the people within society do not have access to safe, adequate and nutritious food to meet their dietary needs and food preferences for an active healthy life. The urgent challenges of food security require professionals that are competent in fields of agriculture, extension, food & nutrition and community development.

4.3. Statement of Purpose

To provide the learners with knowledge and skills within agricultural field in product production, processing, extension and marketing so that the learner will be competent in the fields of agriculture, food & nutrition, and sustainable community development.

4.4. Exit Level Outcomes

1. Establish, design and implement agricultural projects in the community.
2. Demonstrate personal competence and communicate effectively with all interested and affected parties using appropriate media.
3. Conduct production, marketing and sales of agricultural and household products and/or services.
4. Utilise agricultural resources in a sustainable manner.
5. Understand and apply principles and approaches of community development and extension.
6. Promote water management in terms of water harvesting and water conservation and prohibit water losses during convergence and application.
7. Understand and apply principles of food science, processing and preservation, and food storage.
8. Understand and apply principles of food safety, food nutrient composition, food microbial knowledge and classification.
9. Understand and apply principles of handling, preservation and storage of food products and raw agricultural products.
10. Educate and facilitate
11. Formulate, implement, monitor, manage and evaluate projects.

4.5. Admission requirements

National Senior Certificate with rating codes: English First Additional Language (4)

English Home Language	(4)
Agricultural Science	(4)
Consumer Studies	(4)
Life Sciences & Geography	(4)
or Life Sciences & Economics	(4)

Senior Certificate (or equivalent) with a minimum of

English	E (HG) or D (SG)
Home Economics	E (HG) or D (SG)
Agricultural Science	E (HG) or D (SG)

A pass mark in Biology and Geography and/or Biology and any commercial subject with a minimum of "E" symbol on the Higher Grade or "D" symbol on the Standard Grade is compulsory. People with relevant work experience on Agriculture/Home Economics or Community Development are also given a preference.

4.6. Duration of Study

The duration of the course is a minimum of six semesters (three years) of study at the University, interspersed with regular work integrated learning opportunities in the communities.

4.7. Curriculum Compilation

Diploma in Community Extension							
Code	**Subjects**	***C /O**	**Sem /Year**	**Assessment Method**	**Pre-requisites**	**Co-requisites**	**SAQA Credits**
AGEX 101	Agriculture: Extension IA	C	S1	2 tests, practical reports, project report(s), final examination			10
BASE 101	Basic English	C	Y1	4 tests, assignments, final examination			10
BASC 101	Basic Science IA	C	S1	2 tests, assignments, final examination			10
HAHY101	Health and Hygiene IA	C	S1	2 tests & assignments, practical test(s), final examination			10
HUEC101	Human Ecology IA	C	S1	2 tests, assignments, final examination			10
SKIL 101	Computer Skills 1A	C	S1	Continuous Assessment			10
AGEX102	Agriculture: Extension IB	C	S2	2 tests, assignment, practical reports, final examination	AGEX 101		10
BASC102	Basic Science IB	C	S2	2 tests, assignments, practical reports, final examination	BASC 101		10
HAHY102	Health and Hygiene IB	C	S2	2 tests, assignments, final examination	HAHYA01 1		12
HUEC102	Human Ecology IB	C	S2	2 tests, assignments, final examination	HECA 101		10
COMK102	Computer Skills 1B	C	S2	Continuous Assessment	SIKL 101		10
ARCE201	Agriculture: Extension IIA	C	S3	4 tests, assignment, practical reports, final examination	AGEX 102		15

BAFO201	Basic Food I	C	S3	2 tests, assignments, practical reports, practical examination, final examination	BASC 102		10
BASS201	Basic Skills IA	C	S3	2 tests, assignments, project (s) reports, practical examination, final examination			10
EXTE201	Extension IA	C	S3	2 tests, assignments, final examination			12
HUEC201	Human Ecology IIA	C	S3	2 tests, assignments, final examination	HUEC 102		15
ARCE202	Agriculture: Extension IIB	C	S4	4 tests, assignments, practical reports, final examination	ARCE 201		15
BNUT202	Basic Nutrition I	C	S4	2 tests; assignments, practical examination, final examination	BASC 102		10
BASS202	Basic Skills IB	C	S4	2 tests, assignments, practical examination, final examination	BASS 201		10
EXTE202	Extension IB	C	S4	2 tests, assignments, final examination	EXTE 201		12
HUEC202	Human Ecology IIB	C	S4	2 tests, assignments, final examination	HUEC 201		15
ARCE301	Agriculture: Extension IIIA	C	S5	4 tests, assignments, practical reports, final examination	ARCE 202		15
BAFO301	Basic Food II	C	S5	2 tests, assignments, practical reports, practical examination, final examination	BAFO 201		10
EXTE301	Extension IIA	C	S5	2 tests, assignments, final examination	EXTE 202		12
HUEC301	Human Ecology IIIA	C	S5	2 tests, assignments, final examination	HUEC 202		15
ARCE301	Agriculture: Extension IIIB	C	S6	3 tests, assignments, practical reports, final examination	ARCE 301		15
BNUT302	Basic Nutrition II	C	S6	2 tests, assignments, practical reports, final examination	BNUT 202		10
EXTE302	Extension IIB	C	S6	2 tests, assignments, final examination	EXTE 301		12
HUEC302	Human Ecology IIIB	C	S6	2 tests, assignments, project report, final examination	HUEC 301		15
LAPL302	Land use Planning III	C	S6	2 tests, assignments, Land use planning projects **(WIL project)**	ARCE 301;	ARCE301 EXTE 302 HUEC302	20

Examination Regulations

Refer to Part One: Rule 22.

4.8. Pass Requirements

A student is given a course mark for tests written, practicals completed and/or assignments submitted throughout the semester. All students must attain a sub-minimum course mark of at least 40% in order to gain exam entry in that subject.

A student who has gained exam entry requires a subminimum of 40% in the examination in order to be eligible to pass that subject. The final mark for a subject is made up of 40% by the course mark and 60% by the examination mark. A final mark of at least 50% is required to pass that subject.
In order to be promoted to the next level of the course a student may not fail no more than one subject, or have no more than one lower level subject outstanding. In addition, a student will not register for a higher level subject if the prerequisites as laid down in the curriculum have not been fully complied with.

No student may register more than three times for a subject, and a student is allowed a maximum of five years to complete the requirements for the Diploma.

4.9. Practicals

The attendance of all practical classes and all organised field trips is compulsory. Students failing to attend practical classes and/or field trips will not gain exam entry for that subject, irrespective of marks attained.

4.10. Work integrated learning

- All Final Year students are required to do project based work integrated learning of about 30 days over a period of two semesters in the appropriate industry.
- To be eligible for work integrated learning during first semester, the student should register for Agriculture: Extension IIIA (ARCE 301), Extension IIA (EXTE 301), Basic Food II (BAFO 301), and Human Ecology IIIA (HUEC 301) subjects.
- The student must compile work integrated learning report project that will be part of the Land Use Planning III subject as a measure of WIL assessment.
- The student who fails the work integrated learning project will repeat Land Use Planning III subject.
- The department will organise WIL activities and sessions with the appropriate industry.

4.11. Advanced Diploma in Agricultural Extension and Community Development

HEQSF Qualification Type **SAQA Qualification ID 101894**
CESM Code 010106 **SAQA Credits: Minimum 120**
NQF Level: 7

Rationale for qualification

The Advanced Diploma programme in Agricultural Extension and Community Development will provide access to Post Graduate Diploma qualifications by the students. It is stated clearly in the Norms and Standards for Extension and Advisory Services in Agriculture (Department of Agriculture, Forestry and Fisheries- which is a major stakeholder for the programme in addition to other industries) that there is an urgent need to improve the human resource capacity of Extension Personnel in terms of competence and skills and qualifications to render high quality extension service to clients which are farmers, communities. Extension and advisory services therefore need a cadre of well-trained, dedicated and motivated staff skilled in agricultural production (scientific and technical expertise), business (economics, marketing and financial management expertise), extension and communication technique. The provision of effective training through development programmes is therefore in the long term interest of the agricultural extension and advisory service. Therefore, this statement from the Norms and Standards for Extension affirms the needs for advanced programmes in Agricultural Extension related qualifications and this Advanced Diploma in Agricultural Extension and Community Development address such needs.

The programme will also provide agricultural industry, food processing industry, public sector with competent agricultural extension officer/advisors or community development officers.
The proposed Agricultural Extension and Community Development programme addresses issues related to food security. Food security is one of the challenges faced by South Africa whereby the majority of the people within society do not have access to safe, adequate and nutritious food to meet their dietary needs and food preferences for an active healthy life. Food security is part of the vision of the Integrated Food Security Strategy for South Africa whereby the vision is to attain universal physical, social and economic access to sufficient, safe and nutritious food by all South Africans at all times. Food security is part of the Section 27 Constitutional rights in South Africa where the Constitution states that every citizen has the right to have access to sufficient food and water and the State must by legislation and other measures, within its available resources, avail to progressive realization of the right to sufficient food. The urgent challenge of food security requires professionals that are competent in fields of agriculture, agro processing, food processing, extension and community development in ensuring that food security and sustainable development exist in the country. Therefore, the programme contributes to national priorities.

Statement of Purpose

The programme is designed to provide the learner with knowledge, skills and competencies within the agricultural field in product production, processing, extension and marketing. The learner will be competent in the fields of agriculture, extension and sustainable community development as part of ensuring physical, economic access to sufficient, safe and nutritious food at all times. Therefore, this programme will provide agricultural industry, food processing industry, public sector with competent agricultural extension officers/advisors or community development officers. The research skills to be acquired will equip the learners to be able to do Advanced Diploma Programme in terms of writing mini research projects.

Exit Level Outcomes

1. Understand and apply agronomic principles applied to field crops.
2. Classify land capabilities and recommend appropriate agronomic practices.

3. Utilize, manage, and monitor resources in a sustainable manner.
4. Understand and apply principles of financial management, marketing and sales of agricultural and household products in agribusiness environment.
5. Understand and apply the principles of horticulture with reference to fruit production and vegetable production.
6. Understand and apply basic concepts and terms in research and statistical techniques.
7. Plan, recommend and apply scientific extension programmes.
8. Demonstrate the skills of product development and conduct sensory evaluation for consumer appeal.
9. Develop sustainable products/ Projects.
10. Develop products with indigenous produce and cultural heritage identified and presented to the target audience.
11. Understand principles and apply various experimental designs.
12. Understand statistical techniques for data analysis in agricultural research.
13. Conduct research experiment, present research results, and write scientific reports.
14. Understand and apply principles of food security.
15. Utilize, manage, and monitor resources for food security in a sustainable manner.
16. Understand and apply principles of agricultural food production systems for increasing productivity and nutritional value improvements.
17. Understand and apply agro-processing techniques of agricultural products.
18. Establish, design, implement and manage projects in the community.
19. Understand and apply principles of food labelling, nutrition and food additives.
20. Understand the effects of the environment on the condition of the animal and thermal balance.
21. Understand and recognise diseases of sheep and goats and apply the principles of animal health care.
22. Manage profitable poultry units through formulation of balanced poultry rations and implementing appropriate health programmes.
23. Understand and apply land use and soil management techniques.
24. Utilize, manage, and monitor natural resources in a sustainable manner.
25. Understand and apply water management principles in relation to climate change.
26. Apply water management and conservation techniques for sustainable agricultural production.

Admission requirements

ADVANCED DIPLOMA APPLICANTS: Advanced Diploma in Agricultural Extension and Community Development

The general entrance requirements to Advanced Diploma (NQF Level 7) is a final pass mark of at least 60% in Agronomy III/Field Crop Production III and Food Processing III

Qualification name	Entrance requirements	Duration	Career opportunities (areas of work that a graduate would be employed in after completing the programme	Any further information
Advanced Diploma in Agricultural Extension and	Diploma in Agricultural Extension and Community	Minimum duration: One year	The programme will provide opportunities to Graduates to work in various	**SAQA Credits**: 120 **NQF Level**: 07

Community Development	Development/		Agricultural Industries, Agro-processing Industries, Food Processing Industries, Public Sector, relevant Research	**Mode of delivery**: Contact **Intake for the**
	Diploma in Community Extension/ND: Community Extension with 60% Pass Mark in relevant subjects of Field Crop Production III/ Agronomy III and Food Processing III		Institutes, etc. as Extension Officers/ Agricultural Advisors/ Community Development Officers/ Technicians/ Farm managers/ Farmer/Researchers, etc.	**Qualification**: First semester only (in January)

Curriculum Compilation

Code	Module name	NQF level of module			Credits
CBOM401	Biometry IV	7			10
CABM401	Agri-business Management IV	7			12
CFFP401	Food and Food Processing IV	7			12
CREM402	Research Methodology IV	7	CBOM401		10
CETE402	Extension IV	7			12
CNUT402	Nutrition IV	7			12
CHUM401	Human Ecology IV	7			12
CLAN402	Land Use Planning IV	7	CAGR401; CFOS401; CHUM401	CAPR402; CETE402; CREM402	15
CWAM401	Water Management IV	7			10
CFOS401	Food Security IV	7			10
CAPR402	Agro-Processing IV	7	CFFP401		10
CAGR401	Agronomy IV	7			10
CFVP402	Principles of Fruit and Vegetable Production IV	7			10

Electives

Code	Module name	NQF level of module	Credits
CSSP402	Small Stock Production IV	7	10
CPOP402	Poultry Production IV	7	10

5. DEPARTMENT OF ENVIRONMENTAL HEALTH

5.1 Diploma in Environmental Health

HEQSF Qualification Type 63 **SAQA Qualification ID: 72294**
CESM Code: 091302 **SAQA Credits: Minimum: 360**
NQF Level: 6

There is no new intake of Diploma in Environmental Health qualification at Mangosuthu University of Technology as of January 2018. This qualification has been phased out and no longer on offer.

5.2 Bachelor of Science in Environmental Health (BSc)

HEQSF Qualification Type 68 **SAQA Qualification ID 94099**
CESM Code : 091302 **SAQA Credits: Minimum 480**
NQF Level: 8

5.2.1 Rationale

This programme is designed to address scarce and critical skills in the country. Learning and Development which forms an integral part of this qualification and Human Resource Management are cited as the third and fifth critical skills out of fifteen critical skills in the country.

5.2.3 Purpose

The purpose of this programme is to produce a corps of Environmental Health Practitioners that will be able to implement the principles of risk assessment and management in order to improve the health of the community and contribute to sustainable development. The curriculum will enable them to be able to evaluate the effectiveness and efficiency of control measures in order to make necessary improvements. In addition, they will be able to apply research skills and interpret and apply legislation, regulations and policies related to Environmental Health and to advise/educate role players on specific issues. It is also intended that the Environmental Health Practitioner who graduates with this qualification will function as a member of a multi-disciplinary team of professionals in accordance with the scope of the profession. This graduate is expected to be able to communicate effectively, foster entrepreneurship, uphold professional and Environmental Health ethics and manage human, financial and physical resources within the scope of profession.

5.2.4 Exit Level Outcomes

1. Apply the principles of ethics, relevant legislation and professional behaviour within the Environmental Health milieu.
2. Integrate and apply foundational scientific principles and knowledge to Environmental Health sciences. Range includes, but is not limited to Chemistry, Microbiology, Physics, Mathematics, Ecology/Geology, Anatomy and Physiology (human and animal), Sociology and Anthropology.
3. Undertake experiential learning in the workplace.
4. Manage Environmental Health risks within natural, socio-economic, built and working environments within the scope of the profession.
5. Manage Environmental Health promotion programmes. Range: manage refers to: design, develop, implement, and evaluate.
6. Manage Environmental Health services. Range: Manage will involve financial, human, physical resources, as well as the planning, control, and utilisation thereof.

7. Demonstrate project management skills within a project management lifecycle.
8. Conduct and participate in Environmental Health research.
9. Demonstrate interpersonal relations and professional behaviour in terms of the ethical code.

5.2.5 Access to the Qualification

To qualify for admission to this programme, candidates must meet the minimum entrance requirements with the following National Senior Certificate (NSC) subjects at level 4 or above.

i. **Minimum Entrance Requirements** (Core or designated Subjects):

Physical Sciences	Level 4
Mathematics	Level 4
Life Sciences	Level 4
English	Level 4

Recommended Subjects (Additional)

Geography	Level 4
Agricultural Sciences	Level 4

ii. **Additional Requirement**

All students who have been enrolled in this programme will be required to register with the Health Professions Council of South Africa (HPCSA).
Applicants with a National Certificate – Vocational (NCV) as an NQF Level 4 qualification, especially where performance in NCV meets the requirements for entry into this programme, will be considered in line with the general University admission rules. The University also applies the Recognition of Prior Learning (RPL) to accommodate mostly older candidates who could be employed and who have exposure to the field of Environmental Health.

iii. **Learning Assumed to be in Place**

Students enrolling in this programme should be aware about the environmental health issues and be willing to work diligently and with communities. They are expected to have competence in science core subjects at the specified minimum levels and be computer literate with for the following:
Mathematics; Life Sciences; Communication; Physical Science; Life Orientation; Computer literacy

5.2.6 **Duration of Study**

The BSc in Environmental Health is a four-year fulltime qualification.

5.2.7 **Curriculum compilation**

BSc in Environmental Health module distribution over the study period:

Year 1						
No	**Module Description**	**SAQA Credits**	**NQF**	**Module Code**	**Prerequisite**	**Year/ Semester**
1	Anatomy and Physiology	13,7	5	BSAP101	Entry Requirements	Y1
2	Biochemistry	7,2	5	BSBC101	Entry Requirements	S2

3	Chemistry	8	5	BSCH101	Entry Requirements	S1
4	Communication	7	5	BSCOM01	Entry Requirements	S2
5	Computer Literacy	3,5	5	BSCL101	Entry Requirements	S1
6	Introduction to Environmental Health	7	5	BSIEH01	Entry Requirements	S1
7	Mathematics for Environmental Health	7	5	BSMEH01	Entry Requirements	S1
8	Microbiology	13,7	5	BSMB101	Entry Requirements	Y1
9	Physics	9	5	BSPH101	Entry Requirements	S2
10	Sociology and Anthropology	7,9	5	BSSA101	Entry Requirements	S1
11	Sustainable Development	9	5	BSSD101	Entry Requirements	S2
12	Bachelor of Science Work Integrated Learning (WIL)	4	5	BSWIL01	NONE	Y1

Year 2						
No	**Module Description**	**SAQA Credits**	**NQF**	**Module Code**	**Prerequisite**	**Year/ Semester**
1	Biostatistics	9,7	6	BSBIO02	BSMEH01	S2
2	Environmental Health Management and Administration	10	6	BSEHM02	BSCOM01	S2
3	Environmental Health Promotion	13	6	BSEHP02	BSCOM01 BSSA101	S1
4	Epidemiology	15	6	BSEPI02	BSAP101 BSMB101	S1
5	Food and Meat Safety	10	6	BSFMS02	BSAP101 BSMB101	Y2
6	Occupational Health and Safety (Physical Stressors)	17	6	BSOHS02	BSCH101 BSPH101	Y2
7	Planning for the Built Environment	7	6	BSPBE02	BSSD101	S2
8	Vector Control	13	6	BSVC002	BSEPI02	S2
9	Water Quality Management	13	6	BSWQM02	BSMB101 BSCH101	Y2
10	Computer Literacy	3,5	6	BSCL202	NONE	S2
11	Bachelor of Science Work Integrated Learning (WIL)	32,1	6	BSWIL02	NONE	Y2

Year 3						
No	**Module Description**	**SAQA Credits**	**NQF**	**Module Code**	**Prerequisite**	**Year/ Semester**
1	Air Quality Management	15	7	BSAQM03	BSPBE02	Y3
2	Environmental Health Management and Administration	13,9	7	BSEHM03	BSEHM02	S1
3	Environmental Law and Legal Processes	13	7	BSELP03	NONE	S2
4	Epidemiology	13	7	BSEPI03	BSEP102	S1
5	Food and Meat Safety	14	7	BSFMS03	BSFMS02	Y3
6	Occupational Health and Safety (Chemical Stressors)	13	7	BSOHS03	BSOHS02	Y3
7	Project Management	7,6	7	BSPM003	NONE	S2
8	Research Methodology	7	7	BSRM003	BSBIO02	S1
9	Waste Management	14	7	BSWAS03	NONE	S2
10	Bachelor of Science Work Integrated Learning (WIL)	11,2	7	BSWIL03	NONE	Y3

Year 4						
No	**Module Description**	**SAQA Credits**	**NQF**	**Module Code**	**Prerequisite**	**Year/ Semester**
1	Disaster Management	9	8	BSDM004	NONE	S2
2	Environmental Health Management and Administration	13	8	BSEHM04	BSEHM03	Y4
3	Environmental Law and Legal Processes	13	8	BSELP04	BSELP03	S1

4	Environmental Management	14	8	BSEM004	NONE	Y4
5	Environmental Toxicology	7	8	BSET004	BSOHSO3	S2
6	Ethics and Professional Practice	7	8	BSEPP04	NONE	Y4
7	Food Management	15	8	BSFM004	BSFMS03	Y4
8	Health Information Management	12	8	BSHIM04	NONE	Y4
9	Occupational Health and Safety (Management Systems)	14	8	BSOHS04	BSOHS03	Y4
10	Research Project	20,1	8	BSRP004	BSRM003	Y4
11	Bachelor of Science Work Integrated Learning (WIL)	12,8	8	BSWIL04	NONE	Y4

5.2.8 **Work Integrated Learning (WIL)**

A total of 60.1 credits constitute work integrated learning component of the qualification. These credits are spread across the four years of study and are attached to certain modules as shown reflected in the table below. Detailed assessment criteria for each module will be given to students at the commencement of the academic activities.

Level 1 - NQF 5		**Level 2 - NQF 6**	
Modules with WIL	**WIL Credits**	**Modules**	**WIL Credits**
Introduction to Environmental Health	2.4	Environmental Health Management and Administration	1.6
Sociology and Anthropology	0.8	Environmental Health Promotion	2.4
Sustainable Development (Biodiversity)	0.8	Epidemiology	2.4
		Food and Meat Safety	16.9
		Occupational Health and Safety (Physical Stressors)	1.6
		Planning for the Built Environment	1.6
		Vector Control	1.6
		Water Quality Management	4
Total Level 1- Credits	**4**	**Total Level 2 - Credits**	**32.1**
Level 3 - NQF 7		**Level 4 - NQF 8**	
Modules with WIL	**WIL Credits**	**Modules with WIL**	**WIL Credits**
Air Quality Management	0.8	Disaster Management	0.8
Environmental Health Management and Administration	0.8	Environmental Health Management and Administration	0.8
Epidemiology	2.4	Environmental Management	0.8
Food and Meat Safety	4	Environmental Toxicology	2.4
Occupational Health and Safety (Chemical Stressors)	1.6	Food Management	0.8
Waste Management	1.6	Health Information Management	1.6
		Occupational Health and Safety (Management Systems)	1.6
		Research Project	4
Total Level 3 - Credits	**11.2**	**Total Level 4 - Credits**	**12.8**
Total WIL Credits: 60.1			

5.2.9 **Progression**

Progression between years of study is based on successfully completing related pre-requisite modules. BSc in Environmental Health programme has a total of 43 modules including Work Integrated Learning (WIL) over a four-year period of study. A student may progress to the next year of study only when the following conditions are met:

a. **Progressing from Year 1 to Year 2**: A student should pass a minimum of 7 Year 1 modules to be allowed to enter Year 2 of study.

b. **Progressing from Year 2 to Year 3:** A student should pass all 12 Year 1 modules and a minimum of 5 Year 2 modules (totalling 17 modules) to be allowed to register for Year 3 of study. Food and Meat Safety II (BSFMS02) is a pre-requisite for all Year 3 modules. *[NB!!! Due to the practical industry based training component of Food and Meat Safety, a student registered for this module is expected to be only registered for Year 2 modules].*

c. **Progressing from Year 3 to Year 4:** A student who passed 27 modules comprising of all Year 1 modules, all Year 2 modules and 5 Year 3 modules will be allowed to register for only 50% modules of Year 4 of study.

   [NB!!! Due to the practical industry based training component of Environmental Management IV module, a student registered for this module is expected to be only registered for Year 4 modules].

d. **Qualifying to Graduate:** To complete and graduate for BSc in Environmental Health qualification, a student must have passed all 43 modules and met all university qualification and professional requirements.

NB!! A student that is repeating a first semester pre-requisite module for an annual module will not be allowed to register for the affected annual module in the middle of the year but will do so in the following year.

5.2.10 **Assessments**

Details of each module assessment will be provided at the beginning of the modules.

6. DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY

6.1. Qualifications

Qualifications	SAQA ID
Diploma in Information Technology	96862

This 3-year undergraduate diploma qualification is also offered as a 4-year extended curriculum programme (ECP) as described in sections 6.2.1 to 6.2.9 below.

6.1.1 Diploma in Information Technology

Elective options: Students are required to select an area of specialisation at the commencement of their second year of study. The currently available options are: (1) Software Development, (2) Communication Networks

HEQSF Qualification Type	63	SAQA Qualification ID	96862
CESM Code	06	(Computer and Information Sciences)	

6.1.2 NQF Level: 6 — SAQA Credits: 360

6.1.3. Rationale for qualification:

This qualification has been re-aligned to the new HEQSF and takes into account the latest ICT industry requirements. The qualification has also been formulated to reflect the latest workplace-based trends within the ICT industry, to ensure that qualifying learners will have accessibility to employment within the industry. The inclusion of a work integrated learning component as part of a credit-bearing module at NQF-6 is a unique concept within the University of Technology ICT sector in SA. This, together with the project-based and problem-solving approach embedded in the qualification, will have the defined purpose of capacitating the student with workplace-applicable competencies. The qualification was established through extensive research, international comparisons, and national discussions between representatives of the ICT industry and academic institutions.

The qualification prepares students for entry-level positions in the ICT or related industries in either the software development or the communication networks sub-domains. Students are provided with a general all-round working knowledge of the ICT industry and are required to choose electives at second- and third-year levels to follow a specified career path. The skills shortage within the *software development* and the *communication networks* fields, particularly in KZN, led to MUT offering these two specialization streams. The objective of the qualification is to satisfy the industry needs, locally, regionally, and nationally for ICT with specific reference to the areas of Software Development and Communication Networks.

6.1.4. Statement of purpose

The purpose of the Diploma in Information Technology is to provide a career-focused professional qualification featuring industry-referenced knowledge, skills, and attitudes.
A learner will be knowledgeable and competent in the discourse and practice of the Information Technology (IT) discipline, will have specialist knowledge of a particular sub-discipline of IT (depending on chosen electives), and will be subjected to a range of professional and personal development initiatives relevant to the IT industry.
Accordingly, the main purpose of the qualification may be stated as follow: a qualifying learner at this level is competent in the development of IT systems in a distributed computing environment, and depending on the chosen electives, will be competent in:

- *Software Development:* Designing and producing software products and systems to meet specified needs so that they work reliably and their production and maintenance is cost effective; or

- *Communications Networks*: Designing, developing, implementing and managing of networks by integrating knowledge of modern network topologies and protocols to create an appropriate and adequate environment of communication and information sharing.

6.1.5**. Qualification Rules**:

All first intake learners are registered for the same set of four first year subjects. Learners are then required to select a specialization area at the commencement of the second year of study. Specific rules and regulations govern promotion into higher levels of study, including a range of prerequisites for certain subjects – see curriculum compilation below. The qualification will be awarded to a learner who has passed all 12 subjects listed in the curriculum compilation section.

6.1.6**. Exit Level Outcomes**

The qualifying learner who successfully completes this programme will be able to:

[1] apply modern analysis and design techniques and methodologies in the development of IT software systems to industry related Information Technology problems;

[2] apply user interface design principles, and effectively design database structures to support IT business systems;

[3] apply the appropriate software programming language and development environments to implement designed IT solutions in a distributed IT environment;

[4] effectively analyse Business, to be able to provide solutions for specific problems;

[5] apply management techniques to utilise IT resources (manpower and other) effectively; and

[6] demonstrate the effective utilisation of business and management skills to bridge the gap between the IT discipline and the business functional areas in industry.

6.1.7 **Admission Requirements**:

The Department uses a ranking system based on Grade 12 results and/or results of an entrance test. The **minimum** requirements to be considered for entry into the programme is as follows:

[1] National Senior Certificate (Diploma or higher) with the following minimum scores:

English First Additional Language	(3) OR
English Home Language	(3) AND
Mathematics	(3) OR
Mathematical Literacy	(5)

A minimum of 24 points in the best six subjects excluding Life Orientation, and including English and Mathematics / Mathematical Literacy is required.

[2] Senior certificate or equivalent with a minimum of 27 points in the six best performed subjects and a pass in Mathematics and English.

[3] A level 4 national certificate (vocational), with the following minimum requirements:
1. At least 50% in three fundamental subjects including English;
2. At least 60% in three compulsory vocational subjects.

The above requirements DO NOT guarantee a seat for the programme. Final selection and placement of applicants may be based on an aptitude test, and /or other selection and placement criteria determined, from time to time, by the department depending on demand and available resources. A limited number of students will be offered a seat based on a ranking system and/or passing Grade 12 Physical Science.

6.1.8 **Duration of Study**:

3-years full-time

6.1.9 **Curriculum Compilation**:

Code	Subject	Year	NQF level	SAQA Credit	Assessment Method	Pre-requisite(s)
Generic First Year:						
INFS010 / ISYS100	Information Systems I	Y1	5	30	EX	
DEVS010 / DSOF100	Development Software I	Y1	5	30	EX	
TELP010 / TPRO100	Technical Programming I	Y1	5	30	EX	
SYST010 / SSOF100	System Software I	Y1	5	30	EX	
Elective Group A: Software Development: [INSDIP]						
INFS010 / ISYS200	Information Systems II	Y2	6	30	EX	INFS010 / ISYS100
INTS010 / ITSL200	Information Technology Skills I	Y2	5	30	EX	
DEVS020 / DSOF200	Development Software II	Y2	6	30	EX	DEVS010 / DSOF100 INFS010 / ISYS100
TELP020 / TPRO200	Technical Programming II	Y2	6	30	EX	TELP010 / TPRO100
INFS030 / ISYS300	Information Systems III	Y3	6	30	CA	INFS020 / ISYS200
DEVS030 / DSOF300	Development Software III	Y3	6	30	CA	DEVS020 / DSOF200
INPR020 / ITNP300	Internet Programming II	Y3	6	30	CA	INFS020 / ISYS200
IEXP030 / IDSE300	Industry Exposure III	Y3	6	30	CA	DEVS020 / DSOF200 / INFS020 / ISYS200 / INTS010 / ITSL200 / TELP020 / TPRO200
Elective Group B: Communication Networks: [INCDIP]						
CNET020 / CNET200	Communication Networks II	Y2	6	30	EX	SYST010 / SSOF100
INTS010 / IMTS200	Information Technology Skills I	Y2	5	30	EX	
DEST020 / DTRS200	Distributed Systems II	Y2	6	30	EX	INFS010 / ISYS100
ITEL020 / ITCS200	IT Electronics II	Y2	6	30	EX	DEVS010 / DSOF100
CNET030 / CNET300	Communication Networks III	Y3	6	30	CA	CNET020 / CNET200
DEST030 / DTRS300	Distributed Systems III	Y3	6	30	CA	DEST020 / DTRS200
ITEL030 / ITCS300	IT Electronics III	Y3	6	30	CA	ITEL020 / ITCS200
IEXP030 / IEXP300	Industry Exposure III	Y3	6	30	CA	CNET020/ CNET200 / DEST020 / DTRS200 ITEL020 / ITCS200 / INTS010 / IMTS200 TELP010 / TPRO100

EX = Examinations based **CA = Continuous Assessment**

6.1.10 **Prerequisites, Progression Rules and Major Subjects**

The prerequisites listed for each subject in the curriculum compilation table indicates those subjects which the student must pass before being allowed to register for the corresponding subject, for example, to register for Development Software 2, the student must have passed Information Systems 1 *and* Development Software 1.

Additionally, students may only progress from one year of study to the next if the following progression rules are satisfied:

Year 1 to Year 2: In order to register for any second-year subject, the student must have passed at least 50% of the subjects at year 1, including at least one major. The majors are Information Systems 1 and Development Software 1. This applies to all students irrespective of their choice of stream.
Year 2 to year 3: In order to progress from year 2 to year 3, the student must pass all year 1 subjects and at least 50% of year 2 subjects including at least one major. Majors for Software Development stream are Information Systems 2 and Development Software 2, while majors for Communication Networks stream are Distributed Systems 2, Communication Networks 2 and IT Electronics 2.

6.2.1 Diploma in Information Technology (Extended Curriculum Programme)

Elective options: (1) Software Development, (2) Communication Networks
HEQSF Qualification Type 63 SAQA Qualification ID 96862
CESM Code 06 (Computer and Information Sciences)

As part of the department's access programme, the 3-year IT Diploma qualification is also offered as an Extended Curriculum Programme (ECP) which includes an additional year of study during which students are prepared for the diploma programme. This programme is offered to a limited number of prospective students who do not meet the cut-off criteria for entry into the diploma but demonstrate an aptitude for study in the ICT field. This section explains how the ECP is implemented.

6.2.2 **NQF Level**	**SAQA Credits**
Level: 6	Minimum 480

6.2.3. Rationale for qualification:

In line with its mission of expanding access to IT qualifications, the Department also offers an extended curriculum programme (4-years minimum duration) intended for those students who are ranked just outside of the cut-off point for the mainstream programme. In their first year of study, students take introductory courses intended to prepare them for study towards the Diploma. After successfully completing all four introductory subjects, students proceed into the first year of the diploma programme. Students who do not pass all subjects may be allowed to take a limited number of diploma subjects in their second year of study, provided special permission is granted by the department and provided that the prerequisites indicated in the curriculum compilation table below are met. The rationale for the mainstream diploma programme has relevance to this qualification as years 2, 3, 4 of the access programme correspond to years 1, 2, 3 of the mainstream programme.

6.2.4. Statement of purpose:

This programme is intended for students who meet the minimum entry criteria, but may not be sufficiently prepared for entry into the 3-year diploma programme. The primary objective of this programme is to expand access to IT qualifications to those students who have demonstrated the aptitude but have not been exposed to opportunities to further prepare them for study in the ICT field. After the first year of study in this programme, the purpose aligns to the mainstream diploma programme.

6.2.5. Qualification Rules:

Specific rules and regulations govern promotion into higher levels of study, including a range of prerequisites for certain subjects –curriculum compilation below. The qualification will be awarded to a learner who has passed all 16 subjects listed in the curriculum compilation section.

6.2.6 Exit Level Outcomes

A qualifying learner who successfully completes the first year of the ECP will be able to:

[1] complete basic computer tasks, understand what the Internet is and how to use it safely, and build basic skills to create reports using common application programs;
[2] access, process and manage information, document designed solutions and write basic reports in English, and will demonstrate an understanding of the ethical issues involved in using ICT;
[3] apply basic problem solving techniques and programming concepts to design and implement computer solutions to basic real-world problems; and
[4] demonstrate the a level of academic literacy and logical skills required for undergraduate study in the ICT field.
After the first year of study, this programme aligns to the mainstream diploma programme and the exit-level outcomes described in section 6.1.6 accordingly applies.

6.2.7. **Admission Requirements**:
The Department uses a ranking system based on Grade 12 results and/or results of an entrance test. The **minimum** requirements to be considered for entry into the programme is as follows:

[1] National Senior Certificate (Diploma or higher) with the following minimum scores:

English First Additional Language	(3) OR
English Home Language	(3) AND
Mathematics	(2) OR
Mathematical Literacy	(3)

A minimum of 23 points in the best six subjects excluding Life Orientation, and including English and
Mathematics / Mathematical Literacy is required.

[2] Senior certificate or equivalent with a minimum of 25 points in the six best performed subjects and a pass in Mathematics and English.

[3] A level 4 national certificate (vocational), with the following minimum requirements:
1. At least 50% in three fundamental subjects including English;
2. At least 60% in three compulsory vocational subjects.

Final selection and placement of applicants may be based on an aptitude test or making use of a ranking system. The above requirements do NOT guarantee a seat for the programme – a limited number of students will be offered a seat based on a ranking system.

6.2.8. **Duration of Study**:
4-years full-time

6.2.9. **Curriculum Compilation:**

Code	Subject	Year	NQF level	SAQA Credit	Assessment Method	Pre-requisite(s)
Year 1						
COMPF01 / COFU000	Computing Fundamentals	Y1	5	30	EX	
INTRP01 / IPSP000	Introduction to Problem Solving and Programming Concepts	Y1	5	30	EX	
COMPM01 / COMA000	Computer Maths	Y1	5	30	EX	

ENGLS01 / ENLS000	English Language Skills	Y1	5	30	EX	
Year 2						
INFS118 / IFSY100	Information Systems I	Y2	5	30	EX	COMPF01 / COFU000
DEVS118 / DVSF100	Development Software I	Y2	5	30	EX	INTRP01 / IPSP000
TELP118 /TLPR100	Technical Programming I	Y2	5	30	EX	INTRP01 / IPSP000
SYST118 / SYST100	System Software I	Y2	5	30	EX	ENGLS01 / ENLS000
Year 3 and 4 - Elective Group A: Software Development: [INSECP]						
INFS128 / IFSY200	Information Systems II	Y3	6	30	EX	INFS118 / IFSY100
INTS118 /IFTS200	Information Technology Skills I	Y3	5	30	EX	
DEVS128 / DVSF200	Development Software II	Y3	6	30	EX	DEVS118 / DVSF100 / INFS118 / IFSY100
TELP128 / TLPR200	Technical Programming II	Y3	6	30	EX	TELP118 / TLPR100
INFS138 / IFSY300	Information Systems III	Y4	6	30	CA	INFS128 / IFSY200
DEVS138 / DVSF300	Development Software III	Y4	6	30	CA	DEVS128 / DVSF200
INPR128 / ITPR300	Internet Programming II	Y4	6	30	CA	INFS128 / IFSY200
IEXP138 / INXP300	Industry Exposure III	Y4	6	30	CA	DEVS128 / DVSF200 / INFS128 / IFSY100 / INTS118 / IFTS200 / TELP128 / TLPR200
Year 3 and 4 - Elective Group B: Communication Networks: [INCECP]						
CNET128 / CONE200	Communication Networks II	Y3	6	30	EX	SYST118 / SYST100
INTS128 / ITSK200	Information Technology Skills I	Y3	5	30	EX	
DEST128 / DISY200	Distributed Systems II	Y3	6	30	EX	INFS118 / IFSY100
ITEL128 / ITEL200	IT Electronics II	Y3	6	30	EX	DEVS118 / DVSF100
CNET138 / CONE300	Communication Networks III	Y4	6	30	CA	CNET128 / CONE200
DEST138 / DISY300	Distributed Systems III	Y4	6	30	CA	DEST128 / DISY200
ITEL138 / ITEL300	IT Electronics III	Y4	6	30	CA	ITEL128 / ITEL300
IEXP138 / INEX300	Industry Exposure III	Y4	6	30	CA	CNET128 / CONE200 / DEST128 / DISY200 / ITEL128 / ITEL200 / INTS118 / ITSK200 TELP118 / TLPR100

EX = Examinations based **CA = Continuous Assessment**

6.2.10 Prerequisites, Progression Rules and Major Subjects

The prerequisites listed for each subject in the curriculum compilation table indicates those subjects which the student must pass before being allowed to register for the corresponding subject, for example, to register for Development Software 2, the student must have passed Information Systems 1 *and* Development Software 1.

Additionally, students may only progress from one level to the next if the following progression rules are satisfied:

Year 1 to year 2: In order to register for any year 2 subject, the student must have passed at least 50% of the subjects at year 1, including both Computing Fundamentals and Introduction to Programming.

Year 2 to Year 3: In order to register for any third-year subject, the student must have passed at least 50% of the subjects at year 2, including at least one major subject. The majors are Information Systems 1 and Development Software 1. This applies to all students irrespective of their choice of stream at year 3.

Year 3 to year 4: In order to progress from year 3 to year 4, the student must pass all year 1 subjects, all year 2 subjects *and* at least 50% of year 3 subjects including at least one major. Majors for Software Development stream are Information Systems 2 and Development Software 2, while majors for Communication Networks stream are Distributed Systems 2, Communication Networks 2 and IT Electronics 2.

6.3 **Teaching, Learning and Assessment**:

All subjects are embedded within problem-solving contexts and make use of real-world examples and applications. Students are exposed to the latest cutting-edge technologies and are presented with opportunities of further developing their skills and knowledge base in other areas such as presentation skills, communication skills, legal and ethical aspects, project management, research techniques, and so on. The department uses a variety of teaching and learning strategies, including but not limited to lectures, tutorials, lab sessions, e-learning platforms, assignments, case studies, group and individual assignments, and summative and formative assessments. Attendance at all lectures is compulsory and therefore monitored. Students experiencing difficulties with academic subject material are encouraged to seek assistance or consult with their lecturers, preferably in small groups during published consultation times.

Computing Resources: While every attempt is made to ensure that students have access to computer resources during normal lecture times, for additional and supplementary learning outside of formal lecture times, students are required to secure their own access to computer resources and access to the Internet outside campus, as this is a necessary requirement for success in this programme.

Examination-based subjects: a student will only be eligible to write the examination in a subject if she/he obtains a course mark of 40% or more. See the MUT general handbook for rules and regulations governing examinations and academic exclusions.

Pass Requirements: To obtain a pass in a subject, candidates must obtain a final mark of 50%. The final mark consists of 40% of the course mark and 60% of the examination mark. However, this could differ for some subjects. Subject outlines contain more detail with respect to individual subject assessment requirements.

Continuous Assessment: All final year subjects use the *continuous assessment mode* and therefore do not have an examination, supplementary exam or special examination associated with them – see individual subject outlines for rules governing assessments in each subject.

6.4 **Work Integrated Learning:**

Students are required to spend at least 4-6 months in industry as part of a credit-bearing module required for the awarding of the qualification. The Work Integrated Learning (work placement) is an essential component of the qualification in order to produce graduates who are appropriately prepared for the work environment. It is an educational approach that aligns and integrates academic knowledge with workplace knowledge for the benefit of the students and employer. The WIL component in the diploma is intended to provide students with real world exposure of the working environment and has been designed in a manner that facilitates the holistic development of potential employees. Students are prepared for this aspect of the curriculum during the first semester of their final year of study, and are placed in industry during the second semester. WIL is embedded in the subject Industry Exposure 3. Only students who have completed all first- and second-year subjects and who have a reasonable chance of passing all final year modules will be considered for work placement in industry.

6.5 **Curriculum Content: Alphabetical Course Descriptions**

COMMUNICATION NETWORKS 2 **CNET200 | CONE200**

Connecting, configuring and troubleshooting networks

The purpose of Communication Network 2 is to expose the student to networking technologies and techniques. It further exposes the student to the different protocols used to facilitate communication in a network. Advance routing protocols i.e. EIGRP and OSPF, wireless and wired configuration, testing and implementation form the core elements of the course.

COMMUNICATION NETWORKS 3 **CNET300 | CONE300**

Networking technologies and devices used to efficiently and securely connect distributed business sites.

The purpose of Communication Networks III is to describe the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access. It also introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation.

COMPUTER MATHEMATICS I **OMA000**

Introduction to basic mathematics for ICT students

The purpose of Computer Mathematics 1 is to develop students' knowledge and skills in working with number systems and to perform basic mathematical calculations. The course includes tools and techniques used to summarize and analyze data, and to Identify and solve problems related to real life.

COMPUTING FUNDAMENTALS **COFU000**

Introduction to Digital Literacy and key ICT concepts

The purpose of Computing Fundamentals is to enable the student to complete basic computer tasks, access, process and manage information, understand what the Internet is and how to use it safely, and to build basic skills to create reports using common application programs. Students are also exposed to key concepts required for further undergraduate study in the ICT field.

DEVELOPMENT SOFTWARE 1 **DSOF100 | DVSF100**

Problem solving and programming concepts

The purpose of Development Software 1 is to develop the students' problem-solving skills within a programming context. Students are exposed to various methodologies and tools used to develop computer solutions to real-world problems. In particular, students use pseudocode and flowcharts to design the required solutions to problems from the business and scientific world and use JavaScript to implement a limited set of the designed solutions.

DEVELOPMENT SOFTWARE 2 **DSOF200 | DVSF200**

Systems developments using C#. Windows applications, web-based applications, client-server applications and database connectivity.

The purpose of Development Software 2 is to expose the student to developing real-world minor projects using object oriented techniques and advanced graphical user interface principles. Solutions are developed in C# using the .NET framework in a windows environment and students are also exposed to ADO.NET technologies. Students design and implement web-based applications in a client-server environment using ASP.NET. Database connectivity is required for most developed solutions.

DEVELOPMENT SOFTWARE 3 **DSOF300 | DVSF300**

System Development Team Project, and Advance Software Development

This course consist of two modules:
System Development Project :
Students work in groups to design and implement a solution to a real-world problem, using the tools and techniques learnt during all other courses in the diploma programme. In particular, students are required to follow a set methodology and

deliver a working version of the system, including the necessary documentation related to the systems development process.
Advanced Topics: Advanced Software Development and Technologies
The purpose of this module is to expose the student to advanced concepts in programming that will simulate a real world environment. Students are exposed a broad range of topics including, but not limited to MVC application development, Mobile application development, web based application and LINQ to SQL for databases.

DISTRIBUTED SYSTEMS 2 **DTRS200 | DISY200**

Server installation, networking, configuration and administration, on both a Windows and UNIX/LINUX platforms.

This course consists of two inter-related aspects:
Windows Server 2008
Students are exposed to how Microsoft Window Server 2008 and network management concepts and techniques are applied in a real-world organization, and are accordingly skilled in planning, installation, configuring, security networking, monitoring and troubleshooting concepts.
SUSE Linux Enterprise Server 11
Students' capabilities in performing the following SUSE Linux Enterprise Server 11 Administrative tasks, are developed during this part of the course:

- Use the Linux Desktop and the command Line Interface
- Administer SUSE Linux Enterprise Server 11 with YaST
- Administer SLES 11 with Command Line Interface

DISTRIBUTED SYSTEMS 3 **DTRS300 | DISY300**

Distributed systems principles and design paradigms.

The goal of this course is for students to gain an understanding of the principles and techniques behind the design of distributed systems, such as locking, concurrency, scheduling, and communication across the network. The course includes several multi-week projects focused on significant design and implementation techniques for creating functional, usable, and high-performance distributed systems.

ENGLISH LANGUAGE SKILLS I **ENLS000**

English language skills and academic literacy

The course is designed to assist students in bridging the gap between secondary school and university by supporting them with necessary academic skills critical for learning and success at university level. Reading and writing skills and knowledge of plagiarism issues, referencing skills, and examination skills form the basis for the course.

INDUSTRY EXPOSURE 3 **IDSE300 | IEXP300 | INEX300 | INXP300**

Work Integrated Learning, Including work-placement

Work-integrated learning is a powerful vehicle for scheduling and designing educational programs so that students receive built-in, on-the-job experience relating to their studies. Accordingly, this course aims at preparing students for the world of work by empowering them with both soft and technical skills required in industry. In this course students are given the opportunity to effectively integrate the theory of the classroom with the practice and the responsibility of the workplace. This course is divided into two parts: The first part takes part in the classroom and is aimed at preparing students with soft skills required in industry. The second phase of the course takes place in the workplace.

INFORMATION SYSTEMS 1 **ISYS100 | IFSY100**

Digital literacy, Networking and Internet concepts, and an introduction to databases and the SDLC.

The purpose of Information Systems 1 is to expose the student to computer usage and maintenance. The course provides students with the fundamental knowledge necessary to continue to the next level of study in Information Systems. It introduces the role of the systems analyst—the nature of the work, the knowledge and skills that are important, and the types of systems and projects that analysts work on, and the System Development Life Cycle (SDLC) approaches. The course is delivered through a combination of theory and practical lectures and provides students with opportunities of gaining valuable hands-on experience.

INFORMATION SYSTEMS 2 **ISYS200 | IFSY200**

Systems analysis and design, systems development methodologies and database design techniques.

This course is focused on Systems Analysis and Design and provides the student with the knowledge and skills required to undertake a systems analysis investigation via a recognized methodology. The course includes intermediate database design and implementation using SQL Server and other important concepts such as normalization principles, Entity Relationship diagrams (ERD) and other systems development tools and techniques used in industry, are explored.

INFORMATION SYSTEMS 3 **ISYS300 | IFSY300**

Advanced Database concepts including distributed databases, database administration and database connectivity

The purpose of Information Systems 3 is to provide students with in-depth knowledge in advanced database concepts and current key database technologies to ensure that they are up to date with current technologies used in industry. The course also prepares students to function effectively and efficiently in the database environment. Students are exposed various database environments, including cloud computing. The introduction and implementation of PL/SQL using ORACLE as a platform ensures that students are able to code procedures, functions and triggers which enhance the performance of a DBMS.

INFORMATION TECHNOLOGY SKILLS 1 **ITSL200 | IMTS200 | IFTS200 | ITSK200**

Entrepreneurship, Interpersonal and Communication Skills and Project Management.

This course is sub-divided into 3 distinct, but inter-related modules, viz., Interpersonal and Communication Skills, Entrepreneurship Skills and Project Management. Each of the modules are aimed at providing students with opportunities for further developing the knowledge, skills and attitudes required to function effectively in the ICT industry. These include, but are not limited to: Communicate effectively and professionally in a business environment; Apply the basic principles of business management and entrepreneurship to establish and/or manage a business; Apply self-reflective strategies to improve professional interactions and ICT practice.

INTERNET PROGRAMMING 2 **ITNP300 | ITPR300**

Client-side & Server-side Technologies, including website development tools

The purpose of Internet Programming 2 is to expose the student to client-side and server-side programming, using a number of web development tools and technologies within a commercially-oriented problem-solving context. In particular, HTML, CSS, JavaScript, PHP and MySQL form the core elements of the course. Students are also exposed to development tools used to design and implement professional websites.

INTRODUCTION TO PROBLEM SOLVING&PROGRAMMING I **IPSP000**

Problem solving techniques and methods, and an introduction to programming concepts

The purpose of this course is to teach students problem solving techniques and methods, and to provide a solid background of the foundational concepts in computer programming. Important concepts such as control structures of sequence, selection and looping routines, Boolean logic and the notion that the student should plan something before they build it are emphasized in this course. Visual C# is used as the implementation language for the students' designed solutions.

IT ELECTRONICS 2 **ITCS200 | ITEL200**

Introduction to digital systems and combinational circuits.

The course covers introductory digital systems concepts, number systems, operations and codes, logic gates, Boolean algebra and logic simplification, combinational logic circuit analysis and functions of combinational logic. This course include assignments which will enable students to do group work and mini-projects using a composite knowledge base they acquired in both theoretical and practical classes.

IT ELECTRONICS 3 **ITCS300 | ITEL300**

Advanced Digital Systems, Sequential Logic Techniques, and Microcontrollers.

There is a tremendous growth in digital technology in the fields of communication, computer systems, automation, process control, radio and microwave and in other numerous disciplines. This course accordingly, is a continuation of the second-level course and covers the application of logic gates, flip flops, sequential circuits, system interfacing and an introduction to programmable devices.

SYSTEM SOFTWARE 1 **SSOF100 | SYST100**

IT Essentials and Introduction to Networks

The purpose of Systems Software 1 is to expose students to the fundamentals of computer technology. The course introduces the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations to provide a foundation for other networking courses. Students also perform basic configurations for routers and switches and implement IP addressing schema using Packet Tracer.

TECHNICAL PROGRAMMING 1 **TPRO100 | TLPR100**

Introductory-to-intermediate programming in Java

This course is focused on the Java Programming language as a platform to develop computer solutions to real-world problems, mainly in the business environment. Both the procedural and the object oriented paradigms of developing computer solutions are explored and students are provided with a solid foundation for further programming courses. The course assumes no prior programming experience and a combination of theory and practical lectures are used to ensure effective teaching and learning of the principles of problem solving and computer programming.

TECHNICAL PROGRAMMING 2 **PRO200 | TLPR200**

Advanced Java Programming, using the object oriented programming paradigm.

The purpose of Technical Programming 2 is to expose students to advanced Java programming, where students acquire knowledge of and implement Object Oriented concepts such as classes, advanced inheritance concepts including abstract classes and advanced interface design, exception handling, and swing components. They develop Java apps using an editor such as JCreator and/ or JGrasp. Students also learn to develop Java forms, learning to code the form from scratch. They are also exposed to Netbeans, where they develop Java forms more rapidly using Netbeans drag and drop tools. In addition, students learn to develop a Netbeans Database application, where the Java Derby database is created, queried and manipulated.

6.6.1 **Advanced Diploma in Information and Communication Technology in Applications Development**

The department offers this undergraduate advanced diploma qualification on both a full-time and part-time basis, depending inter-alia on demand and available resources. The modules offered per semester are determined on a two-year cycle and this section refers to the module offerings for the period 2022-2023.

6.6.2 **NQF Level: 7** **SAQA ID: 117974** **SAQA Credits: 120**

6.6.3. **Rationale for qualification:**

This qualification is a new Advanced Diploma in Information and Communication Technology (ICT), which has been formulated according to the new HEQSF(2013). The qualification incorporates the latest ICT industry requirements and has been developed in a manner aimed to ensure that qualifying learners will be employable within the ICT industry or are able to operate in other industries where ICT is a key component. This qualification is an advanced undergraduate specialisation qualification that enhances readiness for further research-based study in ICT and related fields at postgraduate levels, as well as providing for employment in the industry.

The design of the qualification caters for the ICT-industry needs for life-long learning, continuing professional development and specialisation at higher levels. The qualification also serves as a platform for entry into postgraduate studies thereby contributing to the national development goals of increasing the number of post graduates in South Africa – increasing access to postgraduate qualifications for previously disadvantaged communities is also an express aim of MUT.

This qualification contributes to MUT's vision of becoming a pre-eminent and distinguished university of technology as no other HEI in KwaZulu-Natal currently offers this qualification. It is aligned to MUT's mission of providing advanced technology-based programmes and contributes to creating an equitable and prosperous Southern Africa in which individuals can achieve their full potential by opening access paths to further studies and preparing learners for advanced entry into the ICT industry.

6.6.4. **Statement of purpose**

This programme provides for the continuing professional development of ICT practitioners through the inculcation of a deep and systematic understanding of current thinking, practice, theory, and methodology in the Applications Development domain. The qualification also prepares students for postgraduate study through the deepening of their knowledge and understanding of theories, methodologies, and practices in ICT, as well as the development of their ability to formulate, undertake and resolve more complex theoretical and practice-related problems and tasks through the selection and use of appropriate applications development methods and techniques. A qualifying learner will have specialized knowledge of the ICT industry in Applications Development and will be able to manage a software/applications development or other ICT-related environment.

6.6.5. **Qualification Rules:**

Candidates are awarded the qualification if they satisfy the requirement of having passed 10 modules as follows:

- All 3 Fundamental Modules, AND
- All 5 Core modules, AND
- At least two of the Elective Modules (as given by the department)

The department determines which modules are offered in a particular semester based on available resources and current trends in the ICT industry – i.e., module offerings are reviewed annually, but finalized on a two-year cycle. The curriculum structure contained in this handbook applies to the period 2022 to 2023. A student who fails a module may only register for the module at the next opportunity as indicated in the section on curriculum compilation.

6.6.6. **Exit Level Outcomes**

The qualifying learner who successfully completes this programme will be able to:

[1] Apply research techniques to propose solutions to an identified IT or business-related problem;
[2] Apply information and project management principles to IT or business related environments;
[3] Effectively administer and/or assist in the management and control of an IT environment by applying IT management and governance principles;
[4] Formulate, undertake and resolve complex theoretical and practice-related problems and tasks through the selection and use of appropriate applications development technologies, methods and techniques.

6.6.7 **Minimum Admission Requirements:**

Access to the qualification may be obtained via the following routes:
A 360-Credit Diploma or National Diploma in Information and Communication Technology (ICT) or comparable qualification at Level 6 in the field of study, OR
A Bachelor's Degree in a related Information Technology specialisation area; OR
A completed IT/ICT qualification evaluated to NQF level 6 by SAQA may also be considered for entry into this qualification; OR
Entry may also be gained through the Institution's RPL process, for which the procedures are contained in the MUT RPL policy.

While the above minimum admission requirements give candidates access to the qualification, it does not guarantee a seat the programme. Selection is based on academic merit and the extent to which the candidate meets the entry level skills, knowledge, and competencies of the qualification. Seats are allocated in the context of "access for success", in which a limited number of seats may be reserved for candidates who wish to access the qualification through the RPL route. The programme team may implement selection measures to ensure a fair representation of persons with disabilities and an appropriate balance between the gender groups according to the current requirements of the ICT industry and the institutional enrollment plans.

6.6.8 **Minimum Duration of Study:**

Full-time: 1 year
Part-time: 2 years

6.6.9 **Curriculum Compilation:**

Year	Module Name	Code	NQF	Credit	Assessment Method	Sem	Pre-requisite(s)
1	ICT Management 4	ICTM400	7	12	EX	S1	
1	Applications Development 4	APDE400	7	12	EX	S1	
1	Research Techniques 4	RETE400	7	12	EX	S1	
1	Systems Development Methodologies 4	SDME400	7	12	EX	S1	
1	Computer Security 4	COSE400	7	12	EX	S1	
1	Information and Project Management 4	IPMA400	7	12	EX	S2	
1	Advanced Programming 4	ADPR400	7	12	EX	S2	
1	Advanced Databases 4	ADDB400	7	12	EX	S2	
1	Systems Development Project 4	SDPR400	7	12	CA	S2	SDME400
1	Software Testing 4	SOTE400	7	12	EX	S2	

EX = Examinations based **CA = Continuous Assessment**

6.7 Teaching, Learning and Assessment:

All subjects are embedded within problem-solving contexts and make use of real-world examples and applications. Students are exposed to the latest cutting-edge technologies and are presented with opportunities of further developing their skills and knowledge base in other areas such as presentation skills, communication skills, legal and ethical aspects, project management, research techniques, and so on. The department uses a variety of teaching and learning strategies, including but not limited to lectures, tutorials, lab sessions, e-learning platforms, assignments, case studies, group and individual assignments, and summative and formative assessments. Attendance at all lectures is compulsory and therefore monitored. Students experiencing difficulties with academic subject material are encouraged to seek assistance or consult with their lecturers, preferably in small groups during published consultation times.

Computing Resources: While every attempt is made to ensure that students have access to computer resources for teaching, learning and assement during the academic term, , students are required to secure their own access to computer resources and Internet access outside campus, as this is a necessary requirement for success in this programme.

Examination-based subjects: a student will only be eligible to write the examination in a subject if she/he obtains a course mark of 40% or more. See the MUT general handbook for rules and regulations governing examinations and academic exclusions.

Pass Requirements: To obtain a pass in a subject, candidates must obtain a final mark of 50%. The final mark consists of 40% of the course mark and 60% of the examination mark. However, this may differ for some subjects. Subject outlines contain more detail with respect to individual subject assessment requirements.

6.8 Curriculum Content: Alphabetical Course Descriptions

ADVANCED DATABASES 4 **ADDB400**

The purpose of advance databases 4 is to expose the student to new and emerging technologies in the analysis, design, implementation and administration of advanced databases. Advanced database concepts, tools and techniques are explored in a commercially available and/or open source database system, with due regard to the security, integrity and efficiency of the database/knowledge base system.

ADVANCED PROGRAMMING 4 **ADPR400**

The purpose of Advanced Programming 4 is to explore advanced programming constructs in the implementation of complex data structures, and to use appropriate interface principles, database principles, and development techniques in the design and implementation of IT solutions to complex problems

APPLICATION DEVELOPMENT 4 **APDE400**

The purpose of Applications Development 4 is to **explore** web development and server-side integration, covering everything from application architecture and data modeling to creating amazing user interfaces within a low-code development platform. Aspects of mobile development, including how to think “mobile first”, design an engaging and high-performing UX, support offline users, and incorporate sensors and device capabilities are also covered in this course. Students are also exposed to techniques aimed at securing their applications and integrating with Web services.

COMPUTER SECURITY 4 **COSE400**

The purpose of Computer Security 4 is to provide the student with an overview of the field of information security and assurance. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures. Coverage will include inspection and protection of information assets, detection of and reaction to threats to information assets, and examination of pre- and post-incident procedures, technical and managerial responses, and an overview of the information security planning and staffing functions.

ICT MANAGEMENT 4 **ICTM400**

The purpose of ICT Management 4 is to expose students to aspects pertaining to how modern organizations work with emphasis on management of resources using ICT governance models and best practices.

INFORMATION AND PROJECT MANAGEMENT **IPMA400**

The purpose of Information and Project Management 4 is to equip students with the necessary theory and practical skills in the management of ICT projects using an appropriate project management framework, and to empower students to managing Information in the new Knowledge Economy.

RESEARCH TECHNIQUES 4 **RETE400**

Research Techniques 4 introduces the student to basic research concepts and their application in the ICT industry. Appropriate research paradigms and associated methods are introduced and their applicability in varying contexts are analyzed in proposing solutions to identified IT-related problems.

SOFTWARE TESTING 4 **SOTE400**

Software Testing 4 is a compulsory 12 credit module on NQF level 7. The purpose of this module is to provide a balance of theory and practical application on the technical issues with respect to designing and creating tests for Object Oriented Software, Web Applications, Graphical User Interfaces, Real Time and Embedded Software.

SYSTEM DEVELOPMENT METHODOLOGIES 4 **SDME400**

The purpose of Systems Development Methodologies 4 is to expose students to advanced software engineering techniques, methodologies and tools used in the development of IT systems.

SYSTEM DEVELOPMENT PROJECT 4 **SDPR400**

This Systems Development Project 4 module is a 12-credit compulsory module on NQF level 7 which requires students to use the knowledge, skills and application development experience gained in other modules of the qualification to design, implement and deploy an IT solution to a complex real world problem. The methodology used for teaching, learning and assessment in this module uses an integrated approach and requires the student to demonstrate competence in the various stages of the applications development process by producing the relevant artefacts at each stage.

7. DEPARTMENT OF NATURE CONSERVATION

7.1 Diploma in Nature Conservation (SAQA Qualification ID: 96864)

7.1.1 Admission requirements

Selection criteria for admission to the Diploma: Nature Conservation are based on both academic prowess and field experience. Co-ordinator: Ms S. Nkosi (Sithembile@mut.ac.za)

i) National Senior Certificate with minimum rating codes:
Life Sciences (4)
English Home Language (4)
or English First Additional Language (4)

In addition, an achievement rating of 3 or better will be required in additional two NSC 20 credit subjects. Furthermore, in addition to (i) above, a total of 28 points and above will be considered.

ii) Senior Certificate (or equivalent), with a minimum
English D (HG)
Biology D (HG)

iii) A pass mark in Mathematics, Physical Science, or History/Geography will be a recommendation.

iv) In addition, a student's completed application form must be accompanied by a curriculum vitae detailing interests, hobbies, field experience and references indicating the candidate's enthusiasm and suitability for the course.

7.1.2 Duration of study

The duration of the course is a minimum of three years, beginning with at least four semesters (two years) of attendance at the University, followed by a further two semesters (one year) of appropriate work integrated learning with a recognised conservation or associated body.

7.1.3 Curriculum compilation

Diploma: Nature Conservation								
Code	Subjects	*C/O	Semester /Year	Assessment Method	NQF Level	Pre-requisites	Co-requisites	Credits
Semester 1								
ANST101	Animal Studies I	C	S1	Integrated	5		None	18
COUS101	Computer Usage	C	S1	Integrated	5		None	18
ECOM101	English Communication Skills I	C	S1	Integrated	5		None	18
COEC101	Conservation Ecology I	C	S1	Integrated	5		None	18
PSTU101	Plant Studies I	C	S1	Integrated	5		None	18
Semester 2								
CONA102	Conservation Administration I	C	S2	Integrated	5		None	18
ANST102	Animal Studies II	C	S2	Integrated	5	ANST101	None	18
COEC102	Conservation Ecology II	C	S2	Integrated	5	COEC101	None	18
REMA102	Resource Management I	C	S2	Integrated	5		None	18
PSTU102	Plant Studies II	C	S2	Integrated	5	PSTU101	None	18
Semester 3								
CONC201	Conservation Communication I	C	S3	Integrated	5	ECOM101	None	18
REMA201	Resource Management II	C	S3	Integrated	5	REMA102	None	18

ANST201	Animal Studies III	C	S3	Integrated	6	ANST102	None	18
COEC201	Conservation Ecology III	C	S3	Integrated	6	COEC102	None	18
CDEV201	Conservation Development I	C	S3	Integrated	5		None	18
Semester 4								
PLNT202	Plant Studies III	C	S4	Integrated	6	PSTU102	None	20
REMA202	Resource Management III	C	S4	Integrated	6	REMA201	None	20
SOIL202	Soil Science I	C	S4	Integrated	5		None	20
CONC202	Conservation Communication II	C	S4	Integrated	6	CONC201	None	20
PO	Work Readiness	C	S4	Integrated			None	0
Semester 5								
ACON301	Nature Conservation Application I	C	S5	Integrated	6		None	
Semester 6								
ACON302	Nature Conservation Application II	C	S6	Integrated	6	ACON301	None	
***C= Compulsory; O= Optional**								

7.1.4 **Purpose and rationale for the qualification**

7.1.4.1 **Purpose**:

The purpose of this qualification is to supply the nature conservation industry with competent Nature Conservators and Resource Managers who are able to manage a conservation team efficiently.

Learners achieving this qualification will be competent to manage natural resources sustainably, interpret the environment, enforce the appropriate legislation and demonstrate basic knowledge of research.

7.1.4.2 **Rationale**:

To cater for the manpower needs of the various conservation organisations, and to provide for self-employment opportunities by providing students with both a theoretical and practical background in the various fields of expertise. This background will enhance the student's competence as a Conservator and improve the productive worth to potential employers, to the natural environment and to the country.

This is a functional and well recognised qualification, which is a prerequisite for appointment and promotion as a Nature Conservator.

7.1.5 **Exit level outcomes**

a. Demonstrate and apply knowledge of the Natural Environment.
b. Demonstrate and apply knowledge of human influence on ecosystems.
c. Demonstrate and apply knowledge of environmental conservation.
d. Demonstrate and apply knowledge of environmental planning and management.
e. Demonstrate and apply knowledge of soil conservation.
f. Demonstrate and apply knowledge of reclamation practices.
g. Identify appropriate vegetation.
h. Monitor veld.
i. Evaluate veld.
j. Manage appropriate vegetation.
k. Manage animals.
l. Select a game farm.
m. Determine appropriate game species and numbers.
n. Provide water for game.
o. Provide supplementary feed for game.

p. Perform appropriate cropping and handling of game.
q. Capture and transport game.
r. Manage predators.
s. Manage veld.
t. Compile appropriate feeding studies.
u. Manage appropriate infrastructure.
v. Apply appropriate legislation.

7.1.6 **Associated Assessment Criteria**

Associated Assessment Criteria for Exit Level Outcome a:

- Appropriate current terminology is understood and applied.
- Knowledge of general ecology is understood and applied.
- Knowledge of climate is understood and applied.
- Knowledge of geology is understood and applied.
- Knowledge of geomorphology and soils is understood and applied.
- Knowledge of hydrology is understood and applied.
- Knowledge of plants is understood and applied.
- Knowledge of animals is understood and applied.
- Knowledge of sensitive ecosystems is understood and applied.
- Knowledge of the human environment is understood and applied.

Associated Assessment Criteria for Exit Level Outcome b:

- Appropriate current terminology is understood and applied.
- Knowledge of the relationship between human utilisation of land and geology is demonstrated and applied.
- Knowledge of the relationship between human utilisation of land and geomorphology and soils is demonstrated and applied.
- Knowledge of human influences on the water cycle is demonstrated and applied.
- Knowledge of human influences on plant communities is demonstrated and applied.
- Knowledge of animal reactions under environmental pressure is demonstrated and applied.
- Knowledge of human influences on ecosystems is demonstrated and applied

Associated Assessment Criteria for Exit Level Outcome c:

- Appropriate current terminology is understood and applied.
- Knowledge of environmental conservation is demonstrated and applied.
- Knowledge of resources is demonstrated and applied.
- Knowledge of environmental degradation is demonstrated and applied.

Associated Assessment Criteria for Exit Level Outcome d:

- Knowledge of sustainable development id demonstrated and applied.
- Appropriate current terminology is understood and applied.
- Knowledge of national and international lobbies/actions is demonstrated and applied.
- Knowledge of environmental auditing and evaluation systems is demonstrated and applied.

Associated Assessment Criteria for Exit Level Outcome e:

- Appropriate current terminology is understood and applied.
- Knowledge of soil conservation is demonstrated and applied.
- Knowledge of soil erosion is demonstrated and applied.

- Knowledge of soil conservation practices is demonstrated and applied.

Associated Assessment Criteria for Exit Level Outcome f:

- Appropriate current terminology is understood and applied.
- Knowledge of disturbed and derelict areas is demonstrated and applied.
- Knowledge of the treatment of derelict sites is demonstrated and applied.
- Knowledge of reclamation site management is demonstrated and applied.
- Knowledge of costs and cost estimation is demonstrated and applied.
- Knowledge of alternative land uses is demonstrated and applied.

Associated Assessment Criteria for Exit Level Outcome g:

- Appropriate current terminology is understood and applied.
- Knowledge of veld conservation and deterioration is demonstrated and applied.
- Knowledge of vegetation diversity in South Africa is demonstrated and applied.
- Vegetation is divided into different levels accurately.
- Knowledge of development and defoliation reaction of grasses and woody plants is demonstrated and applied.
- Knowledge of plant - animal interaction is demonstrated and applied.
- Knowledge of plant ingredients id demonstrated and applied.
- Grasses, trees and shrubs are identified accurately.

Associated Assessment Criteria for Exit Level Outcome h:

- Appropriate current terminology is understood and applied.
- Knowledge of the nature and extent of veld monitoring is demonstrated and applied.
- Comparison between veld monitoring and veld evaluation is made accurately.
- Knowledge of veld monitoring methods is demonstrated and applied.
- Appropriate veld monitoring methods are selected.
- Appropriate equipment is operated effectively.
- Veld monitoring is effective.

Associated Assessment Criteria for Exit Level Outcome i:

- Appropriate current terminology is understood and applied.
- Knowledge of vegetation characteristics is demonstrated and applied.
- Knowledge of nature and extent of veld evaluation is demonstrated and applied.
- Knowledge of increaser - decreaser veld evaluation is demonstrated and applied.
- Knowledge of new developments is demonstrated and applied.
- Veld evaluation is accurate.

Associated Assessment Criteria for Exit Level Outcome j:

- Appropriate current terminology is understood and applied.
- Knowledge of fire as a vegetation management tool is demonstrated and applied.
- Knowledge of control methods of problem plants is demonstrated and applied.
- Appropriate plants are identified accurately.
- Appropriate plants are collected effectively.
- Appropriate control method is selected and implemented effectively.
- Appropriate equipment is operated effectively.
- Knowledge of endangered plant communities is demonstrated and applied.

- Endangered plant communities are managed effectively.

Associated Assessment Criteria for Exit Level Outcome k:

- Appropriate current terminology is understood and applied.
- Knowledge of habitat selection is demonstrated and applied.
- Knowledge of social behaviour is demonstrated and applied.
- Knowledge of feeding behaviour is demonstrated and applied.
- Knowledge of adaptations is demonstrated and applied.
- Knowledge of zoogeography of vertebrates is demonstrated and applied.
- Knowledge of population genetics is demonstrated and applied.
- Appropriate animals are captured effectively.
- Appropriate animals are transported effectively.
- Appropriate animals are released effectively.
- Water requirements are met.
- Breeding programme is established and implemented effectively.
- Appropriate equipment is operated effectively.
- Animals are managed effectively.

Associated Assessment Criteria for Exit Level Outcome l:

- Appropriate current terminology is understood and applied.
- Knowledge of the game industry is demonstrated and applied.
- Financial implications are considered.
- Objectives are established effectively.
- Utilisation alternatives are considered.
- Game farm is selected effectively.

Associated Assessment Criteria for Exit Level Outcome m:

- Appropriate current terminology is understood and applied.
- Knowledge of appropriate habitat requirements and characteristics is demonstrated and applied.
- Knowledge of primary food and feeding characteristics is demonstrated and applied
- Carrying capacity is understood.
- Stocking rate is determined accurately.
- Knowledge of appropriate feeders is demonstrated and applied.
- Knowledge of browsers is demonstrated and applied.
- Knowledge of large stock units is demonstrated and applied
- Knowledge of population dynamics is demonstrated and applied.
- Appropriate game species and numbers are selected effectively.

Associated Assessment Criteria for Exit Level Outcome n:

- Factors influencing types of watering points are considered
- Knowledge of the conditions and requirements for ideal watering points is demonstrated and applied.
- Advantages and disadvantages of water point types are considered.
- Water needs of appropriate game are considered.
- Appropriate equipment is operated effectively.

- Water needs of appropriate game are met.

Associated Assessment Criteria for Exit Level Outcome o:

- Knowledge of digestibility is demonstrated and applied.
- Knowledge of feed intake is demonstrated an applied.
- Knowledge of chemical composition is demonstrated and applied.
- Knowledge of acceptability is demonstrated and applied.
- Knowledge of availability is demonstrated and applied.
- Knowledge of licks is demonstrated and applied.
- Appropriate equipment is operated effectively.
- Supplementary feed is provided effectively.

Associated Assessment Criteria for Exit Level Outcome p:

- Knowledge of an ideal cropping system is demonstrated and applied.
- Appropriate objectives are established.
- Appropriate time/season is selected accurately.
- Appropriate cropping method is selected.
- Guidelines are followed effectively.
- Appropriate equipment is operated effectively.
- Cropping is effective.
- Handling of carcasses is effective.

Associated Assessment Criteria for Exit Level Outcome q:

- Appropriate current terminology is understood and applied.
- Appropriate method is selected effectively.
- Immobilisation is effective.
- Mechanical capturing is effective.
- Appropriate equipment is operated effectively.
- Game is transported effectively.
- Knowledge of game auctions is demonstrated and applied.

Associated Assessment Criteria for Exit Level Outcome r:

- Appropriate current terminology is understood and applied.
- Knowledge of predator prey interactions is demonstrated and applied.
- Impact of predators is understood.
- Knowledge of appropriate management practices is demonstrated and applied.
- Guidelines to reduce the impact of predators on domestic stock are followed effectively.
- Predators are managed effectively.

Associated Assessment Criteria for Exit Level Outcome s:

- Appropriate current terminology is understood and applied.
- Objectives are established effectively.
- Knowledge of the relationship between veld, soil and water is demonstrated and applied.
- Importance of veld is understood.
- Appropriate equipment is operated effectively.
- Veld is managed effectively.

Associated Assessment Criteria for Exit Level Outcome t:

- Appropriate current terminology is understood and applied.
- Knowledge of factors influencing food selection is demonstrated and applied.
- Questions to study food selection are applied effectively
- Appropriate equipment is operated effectively.
- Feeding study is accurate.

Associated Assessment Criteria for Exit Level Outcome u:

- Game fences are erected and maintained effectively.
- Roads are selected and placed effectively.
- Roads are constructed and maintained effectively.
- Buildings are selected and placed effectively.
- Buildings are constructed and maintained effectively.
- Vehicles are selected, operated and maintained effectively.
- Firebreaks are used effectively.

Associated Assessment Criteria for Exit Level Outcome v:

- Knowledge of appropriate legislation is demonstrated and applied.

7.1.7 **Integrated Assessment:**

Assessment is continuous and done on the following basis:

a) Formative Assessment:
* Assignments.
* Written tests.
* Practical tests.
* Mini projects.
* Research project.
* Reports.
* Oral evaluation.
* Presentations.

b) Summative Assessment:
* Written examinations.
* Practical examinations.
* A portfolio of work is compiled and assessed.
* Portfolio records are kept as per requirements.

c) Work Integrated Learning:
* Assessed against Key Performance Areas by.
* Mentor evaluations.
* Project submissions.
* Personal portfolios.

7.1.8 **Examination regulations**

Refer to the General Handbook Rule: 22.

7.1.9 **Pass requirements**

A student is given a course mark for tests written, practicals completed and/or assignments submitted throughout the semester. All students must attain a minimum course mark of 40% to gain examination entry in that subject.

A student who has gained examination entry requires a subminimum of 40% in the examination to be eligible to pass that subject. The final mark for a subject is made up 40% by the course mark, and 60% by the examination mark. A final mark of at least 50% is required to pass that subject.

In order to be promoted to the next level of the course, a student may fail no more than two subjects or have no more than one lower-level subject outstanding. In addition, a student may not register for a higher level subject if the prerequisites as laid down in the curriculum have not been fully complied with.

No student may register more than twice for a subject, and a student is allowed a maximum of five continuous years of study to complete the requirements for the Diploma.

7.1.10 **Practical**

The attendance of all practical classes and all organised field trips is compulsory. Students failing to attend practical classes and/or field trips will not gain examination entry for that subject, irrespective of marks attained.

7.1.11 **Work integrated learning (WIL):** Co-ordinator: Prof. K. K. Naidoo (kuben@mut.ac.za**)**
All students are required to complete two semesters of work integrated learning with a recognised conservation organisation. Whilst every effort will be made to assist students in securing placement for work integrated learning the University does not guarantee such placement.

No student requiring more than one subject to complete the theoretical portion of his/her Diploma may register for work integrated learning and provided he/she attends or has previously attended the lectures for that subject. On registration a student will be issued with a work integrated learning manual outlining the tasks and assignments that must be completed in the two semesters of training.

Students who have not completed the requirements for the first semester of work integrated learning are required to re-register for that semester and may not register for the second semester of work integrated learning. Students may register a maximum of twice for each of the semesters of work integrated learning.

7.1.12 **Indemnity clause**

Mangosuthu University of Technology is not liable to the learner or any third party for any demands, loss of life or amenities caused in whatever manner to the learner at the workplace where the work integrated learning takes place. Despite the aforementioned, it is the responsibility of the learner to inform Mangosuthu University of Technology in writing of an unsafe or unhealthy condition in the workplace where the student is receiving the training.

7.2 Advanced Diploma in Nature Conservation (SAQA Qualification ID 93617)

7.2.1 Admission requirements

Diploma or National Diploma: Nature Conservation or an equivalent 3 year qualification in the same or similar field, with a 60% aggregate in final level major subjects. Co-ordinator: Dr. DS Nadasan (Nadasan@mut.ac.za)

Candidates who do not have these qualifications, but who are of the opinion that they possess sufficient formal, informal and non-formal training and/or have developed sufficient skills in the area of expertise required may apply for admission in terms of the University's Recognition of Prior Learning Policy (RPL).

7.2.2 Duration of study

The duration of the course is a minimum of two semesters (one year), with a compulsory attendance of two weeks per semester at set times during each year, online e-Learning and video-conferencing, and a series of projects requiring self-study and the timeous submission of scientifically written reports. These reports may be discussed at compulsory seminars to be held at a predetermined date in each year.

7.2.3 Curriculum compilation

Advanced Diploma in Nature Conservation								
Code	Subjects	*C/O	Semester /Year	Assessment Method	NQF Level	Pre-requisites	Co-requisites	Credits
Semester 1								
ADRM041	Research Methodology IV	C	S1	Integrated	7	None	None	20
ADPS041	Plant Studies IV	C	S1	Integrated	7	None	None	20
Any ONE of the following:								
ADPM011	Principles of Management I	O	S1	Integrated	7	None	None	20
ADEE011	Environmental Education I	O	S1	Integrated	7	None	None	20
Semester 2								
ADCM011	Conservation Management I	C	S2	Integrated	7	None	None	20
ADRMA41	Resource Management IV	C	S2	Integrated	7	None	None	20
Any ONE of the following								
ADFM011	Financial Management I	O	S2	Integrated	7	None	None	20
ADFMA11	Freshwater Management I	O	S2	Integrated	7	None	None	20
ADMM011	Coastal and Marine Management I	O	S2	Integrated	7	None	None	20
***C= Compulsory; O= Optional**								

7.2.4 Purpose and rationale for the qualification

7.2.4.1 Purpose

The purpose of this qualification is to supply the nature conservation industry with competent nature conservators and resource managers who are able to manage a conservation team efficiently. Learners achieving this qualification will be competent to perform advanced management of natural resources and biological diversity.

7.2.4.2 Rationale:

The global community is faced with the depletion of natural resources. There is a significant need for measures to be put in place to deal with such problems. Individuals with knowledge of how to conserve nature for a sustainable future are in demand. These individuals will also impact positively through taking a leading role in research that will have the potential to inform future decisions in relation to nature conservation. The qualification objective is to

develop a career path for qualified Nature Conservators by developing their skills in management fields aimed specifically at management within Protected Areas, and developing research skills to prepare them for Postgraduate study.

7.2.5. **Exit level outcomes**

a. Perform advanced natural resource and conservation management.
b. Demonstrate knowledge on biodiversity.
c. Use general knowledge in the field of conservation that benefits all involved and the environment.
d. Demonstrate knowledge of conducting substantial research to inform the practice within the field.
e. Apply plant and animal studies important in nature conservation environment.
f. Communicate effectively with supervisors, peers, subordinates and other nature conservation professionals.

7.2.6 **Associated Assessment Criteria**

Associated Assessment Criteria for Exit Level Outcome a:

- Appropriate current terminology is understood and applied.
- Knowledge of the major national and international conventions and treaties pertinent to natural resources and conservation management is demonstrates and applied.
- Range of Conventions and Treaties must include:
  > The Convention on Trade in Endangered Species of Wild Fauna and Flora.
  > The Antarctic Treaty.
  > The Montreal Protocol for the Protection of the Ozone Layer.
  > The Ramsar Convention on Wetlands of International Importance especially as Waterfowl habitat.
  > The Convention on Biological Diversity.
  > The International Convention for the Regulation of Whaling.
  > The World Heritage Convention.
- Knowledge of the persons/bodies responsible for the negotiation, implementation and policing of the appropriate conventions is demonstrated.

Associated Assessment Criteria for Exit Level Outcome b:

- Knowledge of the species within a biological unit is demonstrated.
- Understanding of the dynamic nature of biological diversity at all levels of biological, phylogenetic and evolutionary organisation is demonstrated.
- Knowledge of global diversity losses is demonstrated.
- Knowledge of the genetics applicable to intra-species diversity is demonstrated and applied.
- Knowledge of ethical and economic values including indirect value is demonstrated and applied.
- Natural area assessment of a given region is demonstrated and applied.

Associated Assessment Criteria for Exit Level Outcome c:

- Wilderness management and methods and strategies for care of rare and endangered species are effectively applied within a specified area.
- The importance of ecotourism in the economy is explained and marketing products and production possibilities are identified.
- Integrated environmental management methods are selected, evaluated and applied.

- An urban conservation management plan is drawn up, explained and applied in a given area.
- Knowledge of the restoration process is demonstrated and applied.
- The principles of freshwater ecology in the management of local water resources are understood and applied.
- The principles of aquaculture for the marine and coastal ecology are understood and applied within a selected area.

Associated Assessment Criteria for Exit Level Outcome d:

- The term research is defined and discussed in relation to a nature conservation project.
- Current research publications are consulted and analysed to produce a credible researched paper.
- Typical problems relating to nature conservation and/or technological research are described.
- Papers for presentation at scientific and technological seminars are written and delivered.
- Appropriate research methodology is applied.
- Data and conclusions are effectively interpreted and presented.

Associated Assessment Criteria for Exit Level Outcome e:

- An appropriate bush control method is selected and implemented effectively within a specified area.
- The carrying capacity of the selected area is determined and accurately interpreted.
- Appropriate soil conservation measures for the given area are selected, implemented and effectively managed.
- Knowledge of the ecology and population dynamics of animals within a specified area is demonstrated and applied.
- Knowledge of the anatomy and physiology of the digestive systems of the animals found within the given area is demonstrated.
- The principles of genetics as part of a game management plan are effectively applied in animal breeding within a given area.
- Appropriate legislation is applied within the conservation programme at all times.

Associated Assessment Criteria for Exit Level Outcome f:

- Current conservation terminology is utilised in all record keeping and correspondence.
- Integrated writing and analytical reading skills are demonstrated in the interpretation and appropriate application of a wide range of data.
- Interpersonal skills are demonstrated through effective communication with supervisor, peers and subordinates.
- Conflict resolution skills through negotiations are demonstrated.
- A variety of routine and non-routine responsibilities are handled effectively, such as the efficient management of correspondence and a filing system.

7.2.7 **Integrated Assessment**

Assessments are continuous and done on the following basis:

a) Formative assessment:
Formative assessment is carried out at regular intervals throughout the period of learning and may take the form of:

- Assignments.
- Written tests.

- Practical tests.
- Mini projects.
- Research proposal.
- Research project progress reports.
- Reports.
- Oral evaluation.
- Presentations.

b) Summative assessment:
Summative assessment is carried out at the end of the period of learning and may take the form of:

- Written examinations.
- A research project report.
- Practical examinations.
- The presentation a portfolio of work is compiled and submitted for assessment.

7.2.8 **Examination regulations**

Refer to the General Handbook Rule: 22.

7.2.9 **Pass requirements**

A student is given a mark for tests written, practicals completed and/or assignments submitted throughout the year. All students must attain a minimum mark of 40% for all of the above for the given subjects which will constitute the course mark for entry into an examination.

A student requires a subminimum of 40% in the examination to be eligible to pass that subject.
The final mark for a subject is made up 40% by such tests, practicals and/or assignments and 60% by the examination mark. A final mark of at least 50% is required to pass that subject.

7.2.10 **Practical**

The attendance of all practical classes and all organised field trips is compulsory. Students failing to attend practical classes and/or field trips will not gain examination entry for that subject, irrespective of marks attained.

7.3 Post Graduate Diploma in Nature Conservation (SAQA Qualification ID: 93614)

7.3.1 Admission requirements

Advanced Diploma in Nature Conservation, Bachelor of Technology: Nature Conservation or an equivalent 3 year qualification in the same or similar field, with a 60% aggregate in final level major subjects. Co-ordinator: Dr. T Mutanda (mutanda.taurai@mut.ac.za)

7.3.2 Duration of study

The duration of the course is a minimum of two semesters (one year), with a compulsory attendance of two weeks per semester at set times during each year, online e-Learning and video-conferencing, and a series of projects requiring self-study and the timeous submission of scientifically written reports. These reports may be discussed at compulsory seminars to be held at a predetermined date in each year.

7.3.3 Curriculum compilation

Post Graduate Diploma in Nature Conservation								
Code	Subjects	*C/O	Semester /Year	Assessment Method	NQF Level	Pre-requisites	Co-requisites	Credits
Semester 1								
RESP411	Research Proposal	C	S1	Continuous	8	None	None	20
RMNG501	Resource Management V	C	S1	Integrated	8	None	None	20
COEC501	Conservation Ecology V	C	S1	Integrated	8	None	None	20
Semester 2								
RPROJ41	Research Project	C	S2	Continuous	8	None	None	20
RMNG601	Resource Management VI	C	S2	Integrated	8	None	None	20
Any ONE of the following								
ENEX401	Environmental Extension	O	S2	Integrated	8	None	None	20
SDPA401	Sustainable Development	O	S2	Integrated	8	None	None	20
***C= Compulsory; O= Optional**								

7.3.4 Purpose and rationale for the qualification

7.3.4.1 Purpose

The purpose of this qualification is to supply the nature conservation industry with competent Nature Conservators and Resource Managers who are able to manage a conservation team efficiently. Learners achieving this qualification will be competent to manage natural resources sustainably, interpret the environment, enforce the appropriate legislation and demonstrate basic knowledge of research.

7.3.4.2 Rationale:

The Qualification objective is to develop a post graduate career path for diplomates and qualified Nature Conservators by developing their skills in management fields aimed specifically at management within Protected Areas and developing research skills to prepare them for further post graduate study.

7.3.5. Exit level outcomes

a) Apply educational knowledge, skills, principles and methods to manage ecosystems as Nature Conservationists or managers of terrestrial, freshwater or marine and coastal ecosystems
b) Demonstrate an understanding of the need for and management of sustainable development in Protected Areas.

c) Demonstrate knowledge of the latest developments in the field of environmental extension and proficient in the use of the latest tools and techniques.
d) Present a research proposal.
e) Design, execute, analyse and report on research in the context of natural resource management and conservation.
f) Communicate effectively with supervisors, peers, subordinates and other nature conservation professionals.

7.3.6 **Associated assessment criteria**

Associated Assessment Criteria for Exit Level Outcome a:

- Scientific method to collecting information required for managing living natural resources are applied.
- Techniques of protecting and restoring ecosystems and species are employed.
- The concept of flux in nature and its applicability in protected area management is explained.
- The importance of including people in protected area management is highlighted.
- Change in protected areas is monitored.

Associated Assessment Criteria for Exit Level Outcome b:

- The concept of sustainable development is explained.
- Biodiversity prospecting and its control and management in Protected Areas is critically analysed.
- Mechanisms for the valuation of Protected Areas is understood and applied.
- An understanding that the concept of a biosphere reserve as an important sustainable development initiative is demonstrated.
- The role of ecotourism in sustainable development of Protected Areas is analysed.

Associated Assessment Criteria for Exit Level Outcome c:

- Principles and practices of extension management are applied.
- Environmental extension is analysed.
- Elements of communication in extension are applied.
- Environmental extension programme is planned and evaluated.

Associated Assessment Criteria for Exit Level Outcome d:

- A chosen field/area of research is identified.
- A survey of previous research on the field/area is completed.
- A survey of relevant literature conducted.
- A list relevant reference is cited.
- A provisional title for the research project is supplied.
- The context of research approach is identified.
- Research methodology to be used is described.
- Research goals and objectives are formulated.
- The research procedure is summarised and a written proposal is submitted.

Associated Assessment Criteria for Exit Level Outcome e:

- The term research is defined and discussed.
- Research is related to nature conservation.
- The characteristics of research are discussed.
- Knowledge of the tools of research is demonstrated.

- Knowledge of the preparation of research is applied.
- Knowledge of the special approaches towards nature conservation research is demonstrated.
- Awareness of typical problems relating to nature conservation and/or technological research is demonstrated.
- General knowledge of the writing of scientific and technological seminars is demonstrated.
- Knowledge of research methodology is demonstrated.
- Knowledge of biometrical calculations is applied.

Associated Assessment Criteria for Exit Level Outcome f:

- Confidence in speaking is demonstrated.
- Fluency in current conservation terminology is demonstrated.
- Integrated writing skills are demonstrated.
- Analytical reading skills are demonstrated.
- Interpersonal skills are demonstrated.
- Task, activity and report books are used and managed effectively.
- Record keeping is effective.
- Processing of analytical observations is accurate.
- Interpretation and appropriate application of a wide range of data is demonstrated.
- Filing system is managed effectively.
- Correspondence is handled effectively.
- Telephone techniques are used effectively.
- Appropriate and effective body language is displayed.
- Communication with supervisor, peers and subordinates is effective.
- Conflict resolution skills are demonstrated.
- Dynamics of negotiations are understood and demonstrated.
- Knowledge of intercultural communication is applied.
- Moral standards are adhered to.
- Mutual respect for supervisor, peers and subordinates is demonstrated.
- A variety of routine and non-routine responsibilities are handled effectively.

7.3.7 **Integrated Assessment:**

Assessment is continuous and done on the following basis:

a) Formative assessment:

- Assignments.
- Written tests.
- Practical tests.
- Mini projects.
- Research proposal.
- Research project progress reports.
- Reports.
- Oral evaluation.
- Presentations.

b) Summative assessment:

- Written examinations.
- Research project report.

- Practical examinations.
- A portfolio of work is compiled and assessed.

7.3.8 Examination regulations

Refer to the General Handbook Rule: 22.

7.3.9 Pass requirements

A student is given a mark for tests written, practicals completed and/or assignments submitted throughout the year. All students must attain a minimum mark of 40% for all of the above for the given subjects.

A student requires a subminimum of 40% in the examination to be eligible to pass that subject.
The final mark for a subject is made up 40% by such tests, practicals and/or assignments and 60% by the examination mark. A final mark of at least 50% is required to pass that subject.

Subjects Research Proposal and Research Project are assessed by continuous evaluation and marks are made up by progress reports and the submission of a research proposal and a minor dissertation respectively.

7.3.10 Practical

The attendance of all practical classes and all organised field trips is compulsory. Students failing to attend practical classes and/or field trips will not gain examination entry for that subject, irrespective of marks attained.

7.4. Master of Nature Conservation (SAQA Qualification ID: 98830)

7.4.1. Admission requirements

The selection criterion for admission to the Master of Nature Conservation is based on both academic prowess and field experience. Students wishing to be admitted to this qualification are required to be in possession of a Post Graduate Diploma in Nature Conservation, or a Bachelor of Science Honours in Biological Sciences or an equivalent four-year qualification in the same or similar field. In addition, the student must have attained an aggregate of 60% in their final level major subjects.

Anyone wishing to apply to study this programme must submit the title of the proposed mini-dissertation, plus the research proposal to the Head of Department: Nature Conservation before the end of October of each year. Contact details for the (Acting) Head of Department are: **Prof. K K Naidoo, P O Box 12363, Jacobs, 4026; kuben@mut.ac.za or 031-9077626.**

The Departmental postgraduate committee will evaluate each application on academic merit and ascertain whether a suitable supervisor is available, and whether suitable resources are available either within the University or could be arranged elsewhere.

All recommended applications will serve before the Research Ethics Committee in January and be recommended for approval by the Faculty of Natural Sciences Research Committee which meets later in January. All admissions approved by the Faculty Research Committee will register for the programme in early February.

7.4.2. Duration of study

The duration of the course is a minimum of two semesters (one year), with a compulsory attendance of two weeks per semester at set times during each year, online e-Learning and video-conferencing, and a series of projects requiring self-study and the timeous submission of scientifically written reports. In addition, a research project must be undertaken and a mini-dissertation submitted. These assessments may be discussed at compulsory seminars to be held at a predetermined date in each year.

7.4.3 Curriculum compilation

Master of Nature Conservation								
Code	Subjects	*C/O	Semester /Year	Assessment Method	NQF Level	Pre-requisites	Co-requisites	Credits
Semester 1								
GISA091	Geographic Information Systems Applications for Natural Resources	C	S1	Continuous Evaluation	9	None	None	20
NCPP091	Nature Conservation Planning, Policy and Law	C	S1	Tests, assignments, practicals, exam	9	None	None	20
Any ONE of the following								
ENRE091	Environmental and Resource Economics	O	S1	Tests, assignments, practicals, exam	9	None	None	20
ECST091	Ecological Sampling Techniques	O	S1	Tests, assignments,	9	None	None	20

				practicals, exam				
Semester 2								
EMNR091	Ecology and Management of Natural Resources	C	S2	Tests, assignments, practicals, exam	9	None	None	20
SMEC091	Strategic Management for Environmental Conservation	C	S2	Tests, assignments, practicals, exam	9	None	None	20
Any ONE of the following in the respective Semester								
BDAM091	Biodiversity Analysis and Management	O	S2	Tests, assignments, practicals, exam	9	None	None	20
CCPP091	Climate Change Policy and Planning	O	S2	Tests, assignments, practicals, exam	9	None	None	20
Annual module								
RESD091	Research Dissertation	C	Annual	Continuous	9	None	None	60
***C= Compulsory; O= Optional**								

7.4.4 **Purpose and rationale for the qualification**

7.4.4.1 Purpose

The purpose of this qualification is to develop the knowledge and skills in strategic management and relevant research of Nature Conservators.

Learners will be able to:

- Understand the importance of planning, policy and legislation in the conservation of natural resources.
- Apply knowledge of ecology in natural resource management.
- Understand climate change and the approaches being used to address climate change and its impacts
- Identify, plan, conduct interpret and present an applied research project.

7.4.4.2 Rationale:

The purpose of this qualification is to develop the knowledge and skills in strategic management and relevant research of Nature Conservators.

The Professional Masters in Nature Conservation will equip learners with the academic ability to apply scientific methods in supervised research and/or problem solving and the communication and/or effective implementation of investigative research findings. It focuses on strategic level management, advanced research methods and significant relevant research. The qualification is aimed at generating new knowledge within the industry and developing a career path for graduates.

7.4.5 **Exit level outcomes**

a) Understand the importance of planning, policy and legislation in the conservation of natural resources.
b) Apply knowledge of ecology in natural resource management.
c) Understand the importance of economics in natural resource management.

d) Understand climate change and the approaches being used to address climate change and its impacts
e) Identify, plan, conduct interpret and present an applied research project.

7.4.6 **Associated assessment criteria**

Associated Assessment Criteria for Exit Level Outcome a:

- Knowledge of the legislative framework of management of biodiversity in South Africa is acquired.
- The concept of systemic conservation planning is understood and applied.
- The core components of protected area management are incorporated into management plans and policies.
- An understanding of the role played by International Conventions and the National Biodiversity Strategy and Action Plan in planning the conservation of natural resources is demonstrated.

Associated Assessment Criteria for Exit Level Outcome b:

- An advanced knowledge of the Science of Ecology is displayed applied.
- The importance of the integration of ecological principles with natural resource management is explained.
- An advanced knowledge of the management of natural resources is displayed and applied.

Associated Assessment Criteria for Exit Level Outcome c:

- Economic concepts behind natural resource management and policy are discussed.
- Basic techniques of non-market valuation are critically analysed and applied in a variety of resource management contexts.
- The concept of economics of ecosystem goods and services and its growing importance in resource management decisions is analysed.

Associated Assessment Criteria for Exit Level Outcome d:

- The complexity of climate change and its impacts from a policy and planning perspective is discussed.
- Approaches taken by individual governments and inter-governmental institutions in the field of climate change are critically analysed.
- The diverse drivers of climate change policy at the national level are appreciated.
- The design, potential and limitations of policies in the spheres of climate change mitigation and adaptation are analysed.

Associated Assessment Criteria for Exit Level Outcome e:

- Information relevant to a field of enquiry in natural resource management is gathered.
- Mastery of the skills needed to critically assess scientific literature is displayed.
- An ability to identify, assess and manage the ethical implications of a research project within the regulatory framework of the field of natural resource management is reflected.
- Scientific results are organised and presented orally and in writing in a professional manner.

7.4.7 **Integrated Assessment:**

Assessment is continuous and done on the following basis:

a) Formative assessment:

- Assignments.
- Written tests.
- Practical tests.
- Mini projects.
- Research project.
- Reports.
- Oral evaluation.
- Presentations.

b) Summative assessment:

- Written examinations.
- Practical examinations.
- A portfolio of work is compiled and assessed.
- Portfolio records are kept as per requirements.

c) Portfolio assessment:
Seminars, based on current research, will be completed and presented on at least three different production areas.

Formative assessment for the research component will be in the form of progress reports to the study leader and the panel.

Summative assessment will be in the form of a mini-dissertation.

7.4.8 **Examination regulations**
Refer to the General Handbook Rule: 22.

7.4.9 **Pass requirements**
A student is given a mark for tests written, practicals completed and/or assignments submitted throughout the year and for the mini-dissertation at the end of the year. All students must attain a minimum mark of 40% for all of the above for the given subjects.

A student requires a subminimum of 40% in the examination in order to be eligible to pass that subject.

The final mark for a subject is made up 40% by such tests, practicals and/or assignments and 60% by the examination mark. A final mark of at least 50% is required to pass that subject.

The subject RESD901 is assessed by continuous evaluation and marks are made up by progress reports and the submission of a mini-dissertation approved by the supervisor and Head of Department for external examination.

7.4.10 **Fields of Research expertise in the Department:**
Students wishing to pursue a Master of Nature Conservation qualification can select a research topic from A, B or C outlined below**.**

A. The Centre for Algal Biotechnology: Director: Prof. A. Anandraj

The Centre for Algal Biotechnology (CAB) is a research facility within the Department of Nature Conservation. CAB collaborates both nationally, internationally and with industry.

CAB Research Areas:

- Renewable Energy: Biodiesel, Biohydrogen, Jet Fuel
- Photobiology: Photosynthesis, Modulated Fluorescence, Photosystem I and II
- Primary Production: Phytoplankton and Microphytobenthos
- Genetics and Molecular tools
- Algal cultivation techniques
- Ecophysiology of microalgae
- Value-added products from microalgae

B. Medicinal Plant Research: Lead Researcher: Prof. RM Coopoosamy
Co-researcher: Prof. KK Naidoo

Medicinal Plant Research (MPR) is one of the niche areas of research at the University with a high number of publications and postgraduate (Postgraduate Diploma, Hons, Masters and PhD) graduates.

MPR Research Areas:

- Medicinal Plants involved in various skin conditions
- Cosmeceutical research
- Pharmacological applications/ Phytomedicine Research
- Alternative therapeutic research
- Indigenous plants for treatment of blood, digestive, and other ailments
- Structural elucidation of pure and novel products
- Essential oil research
- Plants involved in Cancer research

C. Other areas:

i. Ethnobotany
ii. Indigenous Knowledge Systems
iii. Vermi-compost and Agricultural productivity
iv. Conservation Management
v. Conservation Education
vi. Coastal and Marine
vii. Wildlife Management
viii. Invasive Biology
ix. Rehabilitation and Restoration
x. Water Conservation
xi. Biodiversity (Animals and Plants)
xii. Eco-physiology
xiii. Sustainability and sustainable development
xiv. Phytoremediation
xv. GIS
xvi. Eco-Tourism

Alternatively, candidates can provide their own topic that will be linked to a supervisor in the Department.

7.4.11 Practical

The attendance of all practical classes and all organised field trips is compulsory. Students failing to attend practical classes and/or field trips will not gain examination entry for that subject, irrespective of marks attained.

7.5. Bachelor of Applied Science in Nature Conservation (SAQA Qualification ID:111264)

7.5.1 Admission requirements

Students wishing to be admitted to this qualification are required to be in possession of a National Senior Certificate with a degree endorsement and with a substantial achievement (level 5) in both Life Sciences and English (either Home Language or First Additional Language) and a pass mark in Mathematics.

In addition to the above, a minimum of 32 points in the matriculation examination must be obtained.

7.5.2 Duration of study

The duration of the course is a minimum of three years consisting of six semesters.

7.5.3 Curriculum compilation

Bachelor of Applied Science							
Code	Subject	*C/O	Semester /Year	Assessment Method	NQF Level	Pre-requisites	Credits
Semester 1							
ENCO011	Environmental Communication I	C	S1	Integrated	5		12
STAM011	Statistical Methods I	C	S1	Integrated	5		12
INEC011	Introductory Ecology I	C	S1	Integrated	5		15
BIOD011	Biodiversity I	C	S1	Integrated	5		12
EUCO011	End User Computing I	C	S1	Integrated	5		12
Semester 2							
ENCO021	Environmental Communication II	C	S2	Integrated	6	ENCO011	12
TEEC011	Terrestrial Ecology I	C	S2	Integrated	6		12
CMEC011	Coastal and Marine Ecology I	C	S2	Integrated	6		12
FWEC011	Freshwater Ecology I	C	S2	Integrated	6		12
EUCO021	End User Computing II	C	S2	Integrated	6	EUCO011	15
Semester 3							
TERA021	Terrestrial Animals II	C	S3	Integrated	6	TEEC011	15
TERP021	Terrestrial Plants II	C	S3	Integrated	6	TEEC011	15
CMOR021	Coastal and Marine Organisms II	C	S3	Integrated	6	CMEC011	15
FWOR021	Freshwater Organisms II	C	S3	Integrated	6	FWEC011	15
Semester 4							
CADM011	Conservation Administration I CADM011	C	S4	Integrated	5		15
ENCO031	Environmental Communication III ENCO031	C	S4	Integrated	7	ENCO021	15
SLSC011	Soil Science I SLSC011	C	S4	Integrated	6		15
WLET031	Wildlife Ethology III	C	S4	Integrated	7	TERA021	15
Semester 5							
WLMN031	Wildlife Management III WLMN031	C	S5	Integrated	7	TERA021	15
VEGM031	Vegetation Management III VEGM031	C	S5	Integrated	7	TERP021	15

FWMA031	Freshwater Management III FWMA031	C	S5	Integrated	7	FWOR021	15
CMMA031	Coastal and Marine Management III	C	S5	Integrated	7	CMOR021	15
Semester 6							
WLMN041	Wildlife Management IV	C	S6	Integrated	7	WLMN031	15
PRMA041	Protected Area Management IV	C	S6	Integrated	7	VEGM031	15
ENTR011	Entrepreneurship I	C	S6	Integrated	5		15
PRMA011	Project Management I	C	S6	Integrated	5		15

Fundamental modules are Statistical Methods I, End User Computing I and II, Conservation Administration I, Entrepreneurship I and Project Management I. The rest of the curriculum is made up of Core modules, as there are no Elective modules in the curriculum.

7.5.4 **Purpose and rationale for the qualification**

7.5.4.1 Purpose:

The purpose of this qualification is to supply the nature conservation industry with competent nature conservation scientists to identify, investigate and evaluate biodiversity issues.

7.5.4.2 Rationale:

The institution has developed a centre of excellence within the nature conservation industry and caters very strongly for supplying Nature Conservators (the technological staff) within the industry. However, employment within the industry also caters for Nature Conservation Scientists with a minimum employment criterion of a Bachelor's Degree. Currently this niche is catered for by traditional Universities with a general biological sciences Degree. The institution believes that it can provide a service to the industry with a focused Applied Science Degree, leading to an Honour's equivalent and then research Master's and Doctorate. This would be run in parallel with the current suite of Diplomas and the Master's programme.

7.5.4 **Exit level outcomes**

a) Perform advanced natural resource and conservation management.
b) Communicate effectively with supervisors, peers, subordinates, other nature conservation professionals and the general public.
c) Demonstrate effective Information and Communication Technology (ICT) skills.

7.5.5 **Associated assessment criteria**

Associated Assessment Criteria for Exit Level Outcome a:

- Demonstrate and apply knowledge of conservation of freshwater species.
- Apply and understand the principles of aquaculture.
- Apply and demonstrate knowledge of farming with freshwater species.
- Demonstrate and apply knowledge of monitoring methods.
- Effectively implement appropriate monitoring method.
- Apply appropriate legislation.
- Understand and apply the principles of aquaculture.
- Demonstrate and apply knowledge of farming with marine species.
- Demonstrate and apply knowledge of monitoring methods.
- Select and effectively implement appropriate monitoring method.
- Demonstrate and apply knowledge of Protected Area size and shape.

- Demonstrate and apply knowledge of heterogeneity and ecological dynamics within the Protected Area.
- Consider landscape elements, both natural and modified, that will influence the success of the Protected Area.
- Accommodate human activities effectively.
- Understand and apply the principles of monitoring programmes.
- Demonstrate and apply knowledge of monitoring methods.
- Select and implement effective appropriate monitoring method.
- Understand and apply the principles of veld evaluation.
- Select and implement effective appropriate evaluation
- Determine and accurately interpret carrying capacity.
- Determine and accurately interpret browsing capacity.
- Demonstrate and apply knowledge of bush control methods.
- Select and effectively implement appropriate bush control method.
- Understand and apply the principles of veld restoration, principles of radical veld improvement and principles of veld replacement.
- Select, implement and effectively manage appropriate soil conservation measures.
- Effectively manage problem plants.
- Demonstrate and apply knowledge of different types of wildlife management.
- Understand the principles of wildlife management.
- Demonstrate and apply knowledge of the ecology and population dynamics of animals.
- Demonstrate and apply knowledge of animals as individuals.
- Demonstrate and apply knowledge of animal distribution and knowledge of the principles of competition within species.
- Demonstrate and apply knowledge of appropriate aspects of population dynamics.
- Demonstrate and apply knowledge of animal nutrition and feeding.
- Demonstrate and apply knowledge of appropriate water needs and utilisation.
- Demonstrate and apply knowledge of the anatomy and physiology of the digestive systems of appropriate animals.
- Demonstrate and apply knowledge of natural nutrition and knowledge of additional feeding.
- Demonstrate and apply knowledge of the management of nutrition and additional feeding.
- Demonstrate and apply knowledge of behavioural ecology and knowledge of the ecology of predation.
- Demonstrate and apply knowledge of the ecology of game diseases.
- Understand the principles of genetics and principles of animal breeding.
- Effectively apply the principles of genetics to conservation.
- Demonstrate and apply knowledge of methods of game species selection.
- Select appropriate method.
- Demonstrate and apply knowledge of types and methods of game utilisation.
- Select appropriate type of utilisation.
- Demonstrate and apply knowledge of appropriate wildlife census techniques.
- Understand the management implications of wildlife censussing.
- Understand, demonstrate and apply methods of estimating wildlife condition.
- Demonstrate and apply knowledge of methods of age and sex determination in wildlife species.
- Accurately determine maximum sustained yield.
- Demonstrate and apply knowledge of ecotourism.
- Understand principles of game management plans.
- Effectively compile game management plan.

- Effectively implement game management plan.

Associated Assessment Criteria for Exit Level Outcome b:

- Demonstrate confidence in speaking.
- Demonstrate fluency in current conservation terminology.
- Demonstrate fluency in presentation, integrated writing skills, analytical reading and interpersonal skills.
- Use and effectively manage task, activity and report books.
- Effective record keeping and manage filing system.
- Accurate processing of analytical observations.
- Demonstrate interpretation and appropriate application of a wide range of data.
- Effectively used telephone techniques and handle correspondence.
- Display appropriate and effective body language.
- Effective communication with supervisor peers and subordinates.
- Demonstrate conflict resolution skills.
- Understand and demonstrate dynamics of negotiations.
- Apply knowledge of intercultural communication.
- Adhere to moral standards.
- Demonstrate mutual respect for supervisor, peers and subordinates.
- Effectively handle a variety of routine and non-routine responsibilities.
- Demonstrate knowledge of environmental education goals, principles and methods and their appropriateness in different contexts.
- Demonstrate selection, planning and adapting a contextually-relevant environmental learning programme.
- Implement and evaluate environmental learning programme.
- Select, adapt and use existing environmental resource materials, and develop supplementary learning aids.
- Use broad networking to source information and support around a key environmental issue or risk.
- Research and analyse environmental issue in the light of principles of environmental justice and sustainability and recommend possible solutions.
- Apply fundamental knowledge of environmental ethics to a field of work or study.
- Design, organise and critically evaluate original environmental learning programme.
- Develop original learning support materials for an environmental learning programme.
- Propose and analyse a range of environmental issues and appropriate educational responses for different contexts.

Associated Assessment Criteria for Exit Level Outcome c:

- Perform tasks related to basic computer literacy skills.
- Critically assess the validity of Information and Communications Technology (ICT) solutions for problems posed by the Nature Conservation discipline.
- Use ICT that is appropriate to the Nature Conservation discipline.

7.5.6 **Examination regulations**

Refer to the General Handbook Rule: 22.

7.5.7 **Pass requirements**

A student is given a course mark for tests written, practicals completed and/or assignments submitted throughout the semester. All students must attain a minimum course mark of 40% to gain examination entry in that subject.

A student who has gained examination entry requires a subminimum of 40% in the examination to be eligible to pass that subject. The final mark for a subject is made up 40% by the course mark, and 60% by the examination mark. A final mark of at least 50% is required to pass that subject.

To be promoted to the next level of the course a student may fail no more than two subjects or have no more than one lower level subject outstanding. In addition, a student may not register for a higher level subject if the prerequisites, as laid down in the curriculum, have not been fully complied with.

No student may register more than twice for a subject, and a student is allowed a maximum of five continuous years of study to complete the requirements for the Degree.

7.5.8 **Practical**

The attendance of all practical classes and all organised field trips is compulsory. Students failing to attend practical classes and/or field trips will not gain examination entry for that subject, irrespective of marks attained.

INDEMNITY CLAUSE

Mangosuthu University of Technology is not liable to the learner or any third party for any demands, loss of life or amenities caused in whatever manner to the learner at the workplace where the work integrated learning takes place. Despite the aforementioned, it is the responsibility of the learner to inform Mangosuthu University of Technology in writing of an unsafe or unhealthy conditions in the workplace where the student is receiving the training.

Whilst every effort will be made to provide assistance to students in securing placement for work integrated learning the University does not guarantee such placement.

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2023

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PROSPECTUS

2023

All National Diploma programmes will be completely phased out at the end of 2023 academic year.
Registration towards National Diploma programmes will not be permitted beyond 2023 academic year.

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This faculty prospectus must be read in conjunction with the Mangosuthu University of Technology's General Rules contained in the current General Regulations handbook for students.

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1. DEPARTMENT OF ACCOUNTING AND LAW

Clarification of Abbreviations:

ECP	**E**xtended **C**urriculum **P**rogramme (4 year programme)
RP	**R**egular **P**rogramme (3 year Programme)
HG	**H**igher **G**rade (grading symbol for Senior Certificate matriculation subject)
SG	**S**tandard **G**rade (grading symbol for Senior Certificate matriculation subject)
AL	**A**chievement **L**evel (grading points for National Senior Certificate matriculation subject)
NCV	**N**ational **C**ertificate (**V**ocational)
FS	**F**undamental **S**ubject
CS	**C**ore **S**ubject
NQF	**N**ational **Q**ualifications **F**ramework
A	Accounting and Law

Clarification of Codes:

SC	**S**ubject **C**ode
Y	**Y**ear Level
S	**S**emester subject
A	**A**nnual subject
E	Type of Examination
P	Number of examination papers
T	Duration of examination papers in hours
CA	Continuous Assessment
NQFL	NQF **L**evel
NQFC	NQF **C**redits

Servicing Departments
**Unit within the Department of Accounting and Law

Communication*:

SC	Subject Name	FS	CS	YA	EPT	NQFL
ENGL100	English Communication Skills [**ACODIP**]	√		1A	A13	5
ECSK100	English Communication Skills [**CMADIP**]	√		1A	A13	5
ENCS100	English Communication Skills [**FINDIP**]	√		1A	A13	5
INTC000	Intro. to Communication [**ACOECP**]	√		1S1	S13	5
ENGK100	English Communication Skills [**ACOECP**]	√		2A	A13	5
INEC000	Intro. to English Communication Skills [**FINECP**]	√		1A	A13	5
ECMK100	English Communication Skills [**FINECP**]	√		1A	A13	5
LGCS100	English Communication Skills [**LOGDIP**]	√		1A	A13	5

Human Resources Management*:

SC	Subject Name	FS	CS	YA	EPT	NQFL
ESKL200	Entrepreneurial Skills [**ACODIP**]	√		2S1	S13	6
ENMA200	Enterprise Management [**CMADIP**]		√	2A	A13	6
ITES000	Intro. to Entrepreneurial Skills [**ACOECP**]	√		1S2	S13	5
ENTS200	Entrepreneurial Skills [**ACOECP**]	√		3S1	S13	6

Information Communication and Technology*:

SC	Subject Name	FS	CS	YA	EPT	NQFL
BINS100	Bus. Info. Systems [**ACODIP**]	√		1A	A13	5
BUIS100	Bus. Info. Systems [**CMADIP**]	√		1A	A13	5
ENCO100	End-User Computing [**FINDIP**]	√		1A	A13	5
BINF100	Bus. Info. Systems [**ACOECP**]	√		2A	A13	5
ENUS100	End-User Computing [**FINECP**]	√		2A	A13	5
LGEU100	End-User Computing [**LOGDIP**]	√		1A	A13	5

Law**:

SC	Subject Name	FS	CS	YA	EPT	NQFL
CLLA100	Commercial. Law for Accountants 1 [**ACODIP**]		√	1A	A13	5
CLAA100	Commercial Law for Accountants 1 [**CMADIP**]		√	1A	A13	5
LABL300	Labour Law [**HRMDIP**]		√	3A	A13	6
MLAW200	Mercantile Law 1 [**MARKDIP**]		√	2A	A13	5
LEPR100	Legal Practice 1 (**OMTDIP**)		√	1A	A13	5
COLA100	Commercial Law (**FINDIP**)	√		1S1	S13	5
LGLA101	Commercial Law [**LOGDIP**]	√		1S1	S13	5
COML200	Commercial Law for Accountants 2 (**ACODIP**)		√	2A	A13	6
CLAA200	Commercial Law for Accountants 2 (**CMADIP**)		√	2A	A13	6
LEPR200	Legal Practice 2 (**OMTDIP**)		√	2A	A13	6
ITLA000	Intro. to Legal Aspects [**ACOECP**]	√		1S2	S13	5
CLAW100	Commercial Law for Accountants 1 [**ACOECP**]		√	2A	A13	5
CLFA200	Commercial Law for Accountants 2 [**ACOECP**]		√	3A	A13	6
ICOL 000	Intro. to Commercial Law [**FINECP**]	√		1A	A13	5
CMLW100	Commercial Law **FINECP**]	√		1S1	S13	5
LIPL 040	Labour and Immaterial Property Law [**BTEOMT**]		√	1A	A13	7

Mathematical Sciences*:

SC	Subject Name	FS	CS	YA	EPT	NQFL
BUCA101	Business Calculations [**ACODIP**]	√		1S1	S13	5
BCAS100	Business Calculations & Statistics [**CMADIP**]	√		1A	A13	5
INQT000	Intro. to Quantitative Techniques [**FINECP**]	√		1A	A13	5
QTEC100	Quantitative Techniques 1 [**FINEECP**]	√		2S2	S23	5
QUTE100	Quantitative Techniques [**FINDIP**]	√		1S2	S13	5
ITBC000	Intro. to Business Calculations [**ACOECP**]	√		1S1	S13	5
BUSC100	Business Calculations [**ACOECP**]	√		2S1	S13	5
LGQT102	Quantitative Techniques [**LOGDIP**]	√		2S2	S13	5

Office Management and Technology*:

SC	Subject Name	FS	CS	YA	EPT	NQFL
ITLA000	Computer Skills & Application [**ACOECP**]	√		1A	A13	5
INCL000	Intro. to Computer Literacy [**FINECP**]	√		1A	A13	5

Public Administration and Economics*:

SC	Subject Name	FS	CS	YA	EPT	NQFL
ECNS100	Economics 1 [**ACODIP**]	√		1A	A13	5
ECON100	Economics 1 [**CMADIP**]	√		1A	A13	5
ECNO100	Economics 1 [**FINDIP**]		√	1A	A13	5
ENMS200	Economics 2 [**FINDIP**]		√	2A	A13	6
ECMS100	Economics 1 [**ACOECP**]	√		2A	A13	5

ECMS200	Economics 2 [**FINECP**]		√	3A	A13	6
LOGE100	Economics 1 [**LOGDIP**]	√		3A	A13	5
LOGM100	Local Government Management 1 [**LOGDIP**]		√	1A	A13	5
LOGM200	Local Government Management 2 [**LOGDIP**]		√	2A	A13	6
LOGM300	Local Government Management 3 [**LOGDIP**]		√	3A	A13	6
LOGF100	Local Government Finance 1 [**LOGDIP**]		√	3A	A13	5
LOGF200	Local Government Finance 2 [**LOGDIP**]		√	3A	A13	6
LOGF300	Local Government Finance 3 [**LOGDIP**]		√	3A	A13	6
RESE400	Research Methodology [**ADVCMA**]		√	1A	CA	7

Rules of the Department of Accounting and Law

Diplomas and Degree

A1: The following Diplomas and an Advanced Diplomas are offered in the Department and Law.

Diploma in Accounting:
Diploma in Accounting (4 years: ACOECP): NQF Level 6
SAQA ID: 90506
SAQA Credits: 404

Duration: 4 years

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
This qualification provides accountancy knowledge and skills to ensure competence in performing reporting functions, rendering taxation services and management advisory services on an accounting technician level and to convert this embedded knowledge, practically, into accounting software. Hence, the rationale and the purpose for this qualification is to provide a well-rounded, technically focused education that equips learners with the technical knowledge, proficiency and pervasive skills which will enable them to demonstrate initiative and responsibility; and which will enable the development of practical and operational focused qualities.

Statement of Purpose:
This 4-year programme is designed to provide structured support to students over a period of four years. Hence, it addresses the gaps and under-preparedness in students' educational and life experiences in areas such as mathematics, language, computer and entrepreneurial skills; thus enabling them to face the challenges identifiable with the regular programme: Diploma in Accounting.

Exit Level Outcomes:
Upon completion of the 4-year Diploma in Accounting, the qualifying learners will able to:

- Demonstrate a solid knowledge base across the core disciplines of accountancy, namely: financial accounting,

management accounting, taxation and auditing.
- Acquire knowledge of and demonstrate competence in all areas of Financial Accounting.
- Demonstrate knowledge and competence in all areas of Cost and Management Accounting.
- Demonstrate a sound understanding of the nature of law and an appreciation of the role of law within which an accountant operates.
- Demonstrate knowledge and understanding of Management Accounting Control Systems.
- Demonstrate knowledge and understanding of corporate strategy.

Diploma in Accounting (3 years: ACODIP): NQF Level 6
SAQA ID: 90506
SAQA Credits: 404

Duration: 3 years

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
This qualification provides accountancy knowledge and skills to ensure competence in performing reporting functions, rendering taxation services and management advisory services on an accounting technician level and to convert this embedded knowledge, practically, into accounting software. Hence, the rationale and purpose of this qualification is to provide a well-rounded, technically focused education that equips learners with the technical knowledge, proficiency and pervasive skills which will enable them to demonstrate initiative and responsibility; and which will enable the development of practical and operational focused qualities.

Statement of Purpose:
The purpose of this qualification is to provide a well-rounded, technically focused education that equips learners with the technical knowledge, proficiency and pervasive skills which will enable them to demonstrate initiative and responsibility; and which will enable the development of practical and operational focused qualities.

Exit Level Outcomes:
Upon completion of the 3-year Diploma in Accounting, the qualifying learners will able to:
- Demonstrate a solid knowledge base across the core disciplines of accountancy, namely: financial accounting, management accounting, taxation and auditing.
- Acquire knowledge of and demonstrate competence in all areas of Financial Accounting.
- Demonstrate knowledge and competence in all areas of Cost and Management Accounting.
- Demonstrate a sound understanding of the nature of law and an appreciation of the role of law within which an accountant operates.
- Demonstrate knowledge and understanding of Management Accounting Control Systems.
- Demonstrate knowledge and understanding of corporate strategy.

Cost and Management Accounting:
Diploma in Cost and Management Accounting (CMADIP): NQF Level 6
SAQA ID: 67694
SAQA Credits: 404

Duration: 3 years

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
This qualification allows learners access to the accounting profession and all economic sectors that require an accounting function and will increase skills in these sectors, hence provide a pool of well qualified people whose competence will be internationally recognized and who will be able to perform a number of functions within the economically active sectors of South Africa. Hence, on completion, learners will have the necessary financial skills to engage in self-employment of an entrepreneurial nature, thereby contributing to job creation and ultimately contributing to the reduction of unemployment in South Africa.

Statement of Purpose:
The purpose of this qualification is to provide the learner with the knowledge, skills and experience to become a Management Accountant. Consequently, the learner will benefit both in terms of individual development along a path of life-long learning (independence and self-reliance) and social transformation (critical and analytical thinking, questioning approach; and hence challenge the truth and value of received wisdom) through the formal acknowledgement of competencies, skills and knowledge through the attainment of a registered qualification thereby enhancing his/her employment prospects.

Exit Level Outcomes:
Upon completion of the 3-year Diploma in Accounting, the qualifying learners will able to:

- Explain the role of and purpose of Financial Management.
- Identify and evaluate sources of finance and calculate the cost of capital.
- Analyze the overall management of working capital and evaluate debtor and creditor management.
- Apply and evaluate standard costing.
- Prepare and evaluate plans, budgets and forecasts.
- Apply and evaluate the use of costing systems for planning and decision making.
- Prepare and evaluate plans, budgets and forecasts for a wide range of sectors.
- Evaluate costing and accounting systems for a wide range of sectors.
- Apply and evaluate techniques used in management decision making for a wide range of sectors.
- Apply and evaluate alternative methods of investment appraisal.
- Evaluate and recommend improvements to the control of organizational activities, resources and the management of quality.
- Participate in the management of projects

Advanced Diploma in Cost and Management Accounting (ADVCMA): NQF Level 7
SAQA ID: 101987
SAQA Credits: 120

Duration: 1 year (full-time)

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
This qualification allows learners to acquire knowledge, analytical skills and competencies required to operate effectively in any section of accountancy discipline and to perform management accounting functions in a manufacturing organization.

Statement of Purpose:
The purpose of this qualification is to produce graduates who are potential employees/employers who can provide current information, based on today's facts and tomorrow's probabilities, that is essential for the effective and efficient running of the fourth Industrial Revolution type of an organization.

Exit Level Outcomes:
Upon completion of the 1-year degree in Cost and Management Accounting, the qualifying learners will able to:

- Develop and evaluate effective long-term plans and strategies; and goals to meet the objectives of an organization.
- Develop and evaluate short-term operational plans; and control projects and resources by means of well-structured operational budgets.
- Record and analyze transactions and activities; and to compile resourceful management accounts.
- Provide and interpret financial and economic information for rationale decision-making.
- Source and control funds for an organization.

Advanced Diploma in Accounting (ADVACC): NQF Level 7
SAQA ID: 112683
SAQA Credits: 120

Duration: 1 year (full-time)

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
The qualification is built on the skills and knowledge acquired at the diploma in accounting level 6 and should provide advanced accountancy knowledge and skills to ensure competence in performing reporting functions, rendering taxation services, management advisory services and assurance on an accounting professional level and further integrate the required skills and knowledge into a computerized an accounting, taxation, management and auditing software programmes.

The qualification also aims to provide learners with the intermediate necessary knowledge, competence and skills to work in an accountancy environment and understand the world of work, be confident about their value and have a higher than average chance of being employed.

The qualification further seeks to equip learners with management accounting skills and knowledge thereby satisfying the national demand for public and private sector accounting technicians.

Statement of Purpose:
Equips learners with the intermediate knowledge, proficiency and pervasive skills which will enable them to demonstrate initiative and responsibility and which will enable the development of practical and operational focused qualities.

This Qualification is designed with the view to serve the requirements of the South African Institute of Chartered Accountants (SAICA), the Association of Accounting Technicians (SA), the South African Professional Accountants (SAIPA), the South African Institute of Tax Practitioners (SAIT), the South African Institute of Internal Auditors (SAIIA), the Association of Certified Chartered Accounts (ACCA) and the Chartered Institute of Management Accountants (CIMA), thus enabling learners to register with the above professional bodies for a professional qualification.

Exit Level Outcomes:
Upon completion of the Advanced Diploma in Accounting, the qualifying Learners will be able to:

- Demonstrate a solid knowledge base across the core disciplines of accountancy, namely, financial accounting, management accounting, taxation and auditing.
- Acquire knowledge of and demonstrate competence in all areas of Financial Accounting.
- Demonstrate knowledge and competence in all areas of Cost and Management Accounting.
- Acquire an understanding of Information Systems in business.
- Demonstrate a sound understanding of the nature of law and an appreciation of the role of law within which an accountant operates.
- Demonstrate knowledge and understanding of Management Accounting Control systems.
- Demonstrate knowledge and understanding of corporate strategy.

Public Finance and Accounting:
Diploma in Public Finance and Accounting (4 years: FINECP): NQF Level 6
SAQA ID: 49554
SAQA Credits: 380

Duration: 4 years

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None
Rationale for the Qualification:
The public officials in South Africa operate in a wide variety of roles within the public management structures; hence often work in diverse operating and service delivery circumstances. The sustainability of South Africa's democratic process and developmental governance are strongly linked to capacity building within the three spheres of government, i.e. National, Provincial and Local spheres of government. It is, therefore, imperative that public officials receive an up-to-date, relevant and respected public financial management and administration qualification that recognizes that the knowledge and skills which South Africa's public sector officials require have been satisfactorily obtained. Consequently, public officials need to have excellent awareness and understanding of the changing needs of today's public service delivery systems and to

identify very clearly the highly relevant expertise which these officials bring to their roles in the public sector.

Statement of Purpose:
The purpose of this qualification is to provide a structured programme for public officials that work with senior management officials so as to provide support to strategic leadership and management needed to transform all spheres of government. The need for well qualified, efficient and client-oriented public officials is therefore identified as a priority in all three spheres of government. Consequently, this qualification consists of exit learning outcomes covering accounting reporting, administration, auditing, budgeting, economics, information systems, business calculations and legislative framework for the public sector.

This 4-year programme is designed to provide structured support to students over a period of four years. Hence, it addresses the gaps and under-preparedness in students' educational and life experiences in areas such as mathematics, language, computer and entrepreneurial skills; thus enabling them to face the challenges identifiable with the regular programme: Diploma in Public Finance and Accounting.

Exit Level Outcomes:
Upon completion of the 4-year Diploma in Public Finance and Accounting, the qualifying learners will able to:

- Conduct and apply mathematical analyses relating to economics and finance.
- Apply economics principles to finance and management decisions.
- Apply communication principles in the coordination of selected public sector communication programmes.
- Apply accounting principles and procedures in the preparation of reports for decision making.
- Apply cist management information systems in the preparation of management reports.
- Apply selected Generally Recognized Accounting Practice statements to the periodic reporting process.
- Apply principles of computerized systems to manage data and reports relevant to the public sector.
- Apply operations research principles and tools in the management of project activities and resources.

Diploma in Public Finance and Accounting (3 years: FINDIP): NQF Level 6
SAQA ID: 49554
SAQA Credits: 380
Duration: 3 years

Teaching, Learning and Assessment:
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
The public officials in South Africa operate in a wide variety of roles within the public management structures; hence often work in diverse operating and service delivery circumstances. The sustainability of South Africa's democratic process and developmental governance are strongly linked to capacity building within the three spheres of government, i.e. National, Provincial and Local spheres of government. It is, therefore, imperative that public officials receive an up-to-date, relevant and respected public financial management and administration qualification that recognizes that the knowledge and skills which South Africa's public sector officials require have been satisfactorily obtained. Consequently, public officials need to have excellent awareness and understanding of the changing needs of today's public service delivery systems and to identify very clearly the highly relevant expertise which these officials bring to their roles in the public sector.

Statement of Purpose:
The purpose of this qualification is to provide a structured programme for public officials that work with senior management officials so as to provide support to strategic leadership and management needed to transform all spheres of government. The need for well qualified, efficient and client-oriented public officials is therefore identified as a priority in all three spheres of government. Consequently, this qualification consists of exit learning outcomes covering accounting reporting, administration, auditing, budgeting, economics, information systems, business calculations and legislative framework for the public sector.

Exit Level Outcomes:
Upon completion of the 4-year Diploma in Public Finance and Accounting, the qualifying learners will able to:

- Conduct and apply mathematical analyses relating to economics and finance.
- Apply economics principles to finance and management decisions.
- Apply communication principles in the coordination of selected public sector communication programmes.
- Apply accounting principles and procedures in the preparation of reports for decision making.
- Apply cist management information systems in the preparation of management reports.
- Apply selected Generally Recognized Accounting Practice statements to the periodic reporting process.
- Apply principles of computerized systems to manage data and reports relevant to the public sector.
- Apply operations research principles and tools in the management of project activities and resources.

Local Government Finance:
Diploma in Local Government Finance (3 years: LOGDIP): NQF Level 6
SAQA ID: 101557
SAQA Credits: 360

Duration: 3 years
The Student Guide contains details of teaching, learning and assessment issues.

Work-Integrated Learning (WIL):
None

Rationale for the Qualification:
The need for this qualification emanates from the fact that the public service should attract highly skilled people and cultivate a sense of professional common purpose and a commitment to developmental goals. To achieve this, South Africa needs a two-pronged approach to building a more professional public service from the top and the bottom. South Africa needs to increase the pool of skilled people by ensuring that the public service and local government become careers of choice for graduates who wish to contribute to the development of the country; and ensure that high-level personnel are recruited on the basis of their suitability for the job.

In terms of the National Development Plan (NDP 2030: 418), a separate strategy is needed to recruit high-calibre people into local government. Be this as it may, it is in the interest of all spheres of government to ensure sufficient capacity exists to implement core government priorities and responsibilities, particularly ensuring that everyone has access to high-quality basic services. It is observable, however, that skills shortages are most evident in local government, especially in rural municipalities. Municipalities require a flow of promising graduates if they are to manage their core functions; and the national government should prioritize this area, i.e. provision of local government academic programmes at Higher Education Institutions to produce high-quality graduate outputs for deployment at local government level.

Statement of Purpose:
The purpose of this qualification is to enable qualifying learners to apply strategic financial management competencies to ensure effective, efficient and economical utilization of public funds at local government level. Learners will, therefore, develop competencies to manage strategic planning and budgeting processes, financial management processes and internal controls, auditing and reporting processes. Consequently, qualifying learners will benefit through the enhancement of their personal competencies, knowledge and skills; thus being better equipped to complete tasks required in their employment contracts and by applicable legislation.

Exit Level Outcomes:
Upon completion of the 3 year Diploma in Local Government Finance, the qualifying learners will able to:

- Demonstrate knowledge and critical understanding of municipal finance issues in general; and their areas of focus in particular.
- Implement well-grounded and systematically developed principles in municipal financial management.
- Understand and engage with the broader field of municipal financial management.
- Provide support as a strategic management leader in the field of municipal financial management.
- Contribute to the other's understanding of current and emerging municipal finance issues.
- Demonstrate responsibility and adaptability as a professional in a municipality setting.
- Apply operations research principles and tools in the management of project activities and resources.

Diplomas

Admission

A2: (1) To be admitted to any of the above-mentioned under-graduate programmes, a candidate shall have obtained a valid National Senior Certificate, Senior Certificate, National Certificate (Vocational) or qualifies to be admitted in terms of the Recognition of Prior Learning (RPL) assessment.

(2) The Tables below show the minimum admission requirements for all the under-graduate programmes (except for RPL).

Minimum Admission requirements (**25 points**) for candidates with a National Senior Certificate

Programme	Accounting	English Home Language.	English First Additional Language	Mathematics	Mathematical Literacy	3 additional subjects @ minimum achievement level of 3, excl. Life Orientation
ECP	**4**	**4**	**5**	**3**	**6**	**3**
RP	**4**	**4**	**5**	**3**	**6**	**3**

Minimum Admission requirements (**25 points**) for candidates with a Senior Certificate
(Pass symbols convertible to Achievement Levels)

Programme	Accounting (HG)	Accounting (SG)	Mathematics HG	Mathematics (SG)	English (HG)	English (SG)
ECP	**(D):** 4	**(A):** 7	**(D):** 4	**(C):** 5	**(E):** 3	**(D):** 4
RP	**(D):** 4	**(A):** 7	**(D):** 4	**(C):** 5	**(E):** 3	**(D):** 4

Minimum Admission requirements for candidates with a National Certificate (Vocational):
Level 4 Fundamental subjects required pass percentages in each subject:

Programme	Mathematics	Mathematical Literacy	English First Additional Language	Life Orientation
ECP	**50%**	**60%**	**50%**	**50%**
RP	**50%**	**60%**	**50%**	**50%**

In **addition**, Level 4 Compulsory subjects required pass percentages in each subject:

Programme	Applied Accounting	Financial Management	Economic Environment
ECP	**60%**	**60%**	**60%**
RP	**60%**	**60%**	**60%**

Recognition of Prior Learning (RPL):
Candidates that are able to demonstrate high levels of competencies, through summative assessment processes attached to each of the above-mentioned under-graduate programmes, will receive recognition of prior learning (RPL); in recognition of competencies attained in the workplace setting for many years without having gained any formal qualification.

(3) A student who fails to maintain satisfactory academic progress in terms of General Rule: G.20 (1) & (2) shall be refused further admission to the Department except by special permission of Senate.

(4) The admission of a student previously registered in an equivalent Department at another University of Technology shall be subject to the same rules as if he previously had been in this Department.

(5) To be admitted to the Advanced Diploma in Cost and Management Accounting, a student shall be in possession of:

a) A National Diploma in Cost and Management Accounting, preferably not older than 3 years, with minimum pass of 60% in each of the following subjects: (1) Financial Accounting III, and Management Accounting III; or
b) A minimum of two years of relevant work experience in an accounting field.
c) A Diploma in Cost and Management Accounting with an average of 60% pass in level 3 subjects.

(6) To be admitted to the Advanced Diploma in Accounting, a student shall be in possession of:

a) A Diploma in Accounting, preferably not older than 3 years, with minimum pass of 60% in each of the following subjects: (1) Financial Accounting III, and Management Accounting III/Financial Management III; Taxation II and Auditing III; or
b) A minimum of two years of relevant work experience in an accounting field and RPL policies and procedures of the University shall be applied. A certificate of competency of RPL must be obtained from the University.

Curriculum: Diploma in Accounting (ACOECP)

A3 The subjects shall be as follows:

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
COSA000	Computer Skills and Application	None		12
ITFA000	Intro. to Fundamentals of Accounting	None		12
INTC000	Intro. to Communication	None		06
ITBC000	Intro. to Business Calculations	None		08
ITLA000	Intro. to Legal Aspects	None		06
	Total Credits			**44**

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
BINF100	Business Information Systems	Computer Skills and Application		12
CLAW100	Comm. Law for Accountants I	Intro. to Legal Aspects		18
FINT100	Financial Accounting I	Intro. to Fundamentals of Accounting		12
ENOM100	Economics I	None		24
ENGK100	English Communication Skills	Intro. to Communication		18
BUSC100	Business Calculations	Intro. to Business Calculations		04
	Total Credits			**88**

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
AUDI200	Auditing II	• Financial Accounting I • Business Info Systems I • Comm. Law for Accountants I	• Business Calculations 1	24
CFLA200	Comm. Law for Accountants II	• Comm. Law for Accountants I • English Communication Skills		24
CACT200	Cost Accounting II	• Economics I • Financial Accounting I	• Business Calculations 1	24
FIAC200	Financial Accounting II	• Financial Accounting I • Comm. Law for Accountants I	• Business Calculations 1	24

TAXA200	Taxation I	• Financial Accounting I • Comm. Law for Accountants I	• Business Calculations 1	24
ENTS200	Entrepreneurial Skills	• Business Info Systems I • Economics I	• Business Calculations 1	12
	Total Credits			**132**

FOURTH ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
AUDI300	Auditing III	• Financial Accounting II • Auditing II • Cost Accounting II • Commercial Law for Accountants II • Taxation I • Business Calculations I		32
FIAC300	Financial Accounting III	• Financial Accounting II • Auditing II • Cost Accounting II • Commercial Law for Accountants II • Taxation I • Business Calculations I		32
MAAC300	Management Accounting III	• Cost Accounting II • Auditing II • Taxation I • Financial Accounting II • Business Calculations I • Commercial Law for Accountants II		32
TAXA300	Taxation II	• Taxation I • Cost Accounting II • Commercial Law for Accountants II • Financial Accounting II • Business Calculations I		32
ERPR 315	Practical Accounting (Pastel Partner V17)	• Financial Accounting II • Auditing II • Business Info Systems I • Cost Accounting II • Taxation I • Business Calculations I • Commercial Law for Accountants II		06

ERPR 325	Practical Accounting (Pastel Partner Payroll)	• Financial Accounting II • Auditing II • Business Info Systems I • Cost Accounting II • Taxation I • Business Calculations I • Commercial Law for Accountants II		06
	Total Credits			**140**

Curriculum: Diploma in Accounting (ACODIP)

A4 The subjects shall be as follows:

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
BINS 100	Business Information Systems	None		24
CLLA100	Comm. Law for Accountants I	None		24
FACC100	Financial Accounting I	None		24
ECNS100	Economics I	None		24
ENGL100	English Communication Skills	None		24
BUCA101	Business Calculations I	None		12
	Total Credits			**132**

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
AUDT200	Auditing II	• Financial Accounting I • Business Info Systems I • Comm. Law for Accountants I	• Business Calculations 1	24
COML200	Comm. Law for Accountants II	• Comm. Law for Accountants I • English Communication Skills		24
COST200	Cost Accounting II	• Economics I • Financial Accounting I	• Business Calculations 1	24
FINC200	Financial Accounting II	• Financial Accounting I • Comm. Law for Accountants I	• Business Calculations 1	24

TAXT200	Taxation I	• Financial Accounting I • Comm. Law for Accountants I	• Business Calculations 1	24
ESKL200	Entrepreneurial Skills	• Business Info Systems I • Economics I	• Business Calculations 1	12
	Total Credits			**132**

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
AUDT300	Auditing III	• Financial Accounting II • Auditing II • Cost Accounting II • Commercial Law for Accountants II • Taxation I • Business Calculations I		32
FINC300	Financial Accounting III	• Financial Accounting II • Auditing II • Cost Accounting II • Commercial Law for Accountants II • Taxation I • Business Calculations I		32
MACC300	Management Accounting III	• Cost Accounting II • Auditing II • Taxation I • Financial Accounting II • Business Calculations I • Commercial Law for Accountants II		32
TAXT300	Taxation II	• Taxation I • Cost Accounting II • Commercial Law for Accountants II • Financial Accounting II • Business Calculations I		32
PRAC 315	Practical Accounting (Pastel Partner V17)	• Financial Accounting II • Auditing II • Business Info Systems I • Cost Accounting II • Taxation I • Business Calculations I • Commercial Law for Accountants II		06

PRAC 325	Practical Accounting (Pastel Partner Payroll)	• Financial Accounting II • Auditing II • Business Info Systems I • Cost Accounting II • Taxation I • Business Calculations I • Commercial Law for Accountants II		06
	Total Credits			**140**

Curriculum: Diploma in Cost and Management Accounting (CMADIP)

A5 The subjects shall be as follows:

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
BCAS100	Bus. Calculations and Statistics	None		24
BUIS100	Business Information Systems	None		24
CLAA100	Comm. Law for Accountants I	None		24
ECON100	Economics I	None		24
ECSK100	English Communication Skills	None		24
FICA100	Financial Accounting I	None		24
	Total Credits			**144**

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
CLAA200	Comm. Law for Accountants II	• Comm. Law for Accountants I • English Communication Skills		24
COCT200	Cost Accounting II	• Economics I • Financial Accounting I	• Business Calculations and Statistics	24

ENMA200	Enterprise Management	• Business Info Systems I • Economics I	• Business Calculations and Statistics	24
FICA200	Financial Accounting II	• Financial Accounting I • Comm. Law for Accountants I	• Business Calculations and Statistics	24
TXTN200	Taxation I	• Financial Accounting I • Comm. Law for Accountants I	• Business Calculations and Statistics	24
	Total Credits			**120**

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
FICA300	Financial Accounting III	• Financial Accounting II • Commercial Law for Accountants II • Cost Accounting II • Taxation I • Business Calculations and Statistics		32
FIMA300	Financial Management III	• Financial Accounting II • Business Calculations and Statistics • Cost Accounting II • Taxation I • Commercial Law for Accountants II		32
MANT300	Management Accounting III	• Cost Accounting II • Financial Accounting II • Taxation I • Business Calculations and Statistics • Commercial Law for Accountants II		32
TXTN300	Taxation II	• Taxation I • Cost Accounting II • Financial Accounting II • Business Calculations and Statistics • Commercial Law for Accountants II		32

CPRA315	Practical Accounting (Pastel Partner V17)	• Financial Accounting II • Business Info Systems I • Cost Accounting II • Taxation I • Commercial Law for Accountants II		06
CPRA325	Practical Accounting (Pastel Partner Payroll)	• Financial Accounting II • Business Info Systems I • Cost Accounting II • Taxation I • Commercial Law for Accountants II		06
	Total Credits			**140**

Curriculum: Diploma in Public Finance and Accounting (FINECP)

A6 The subjects shall be as follows:

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
INEC000	Intro. to English Communication Skills	None		07
INCL000	Intro. to Computer Literacy	None		10
ICOL000	Intro. to Commercial Law	None		10
INFA000	Intro. to Financial Accounting	None		10
INQT000	Intro. to Quantitative Techniques	None		10
	Total Credits			**47**

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
CMLW100	Commercial Law Module I	Intro. to Commercial Law		06
QTEC100	Quantitative Techniques Module I	Intro. to Quantitative Techniques		06
FNLA100	Financial Accounting I	Intro. to Financial Accounting		10
ENUS100	End-User Computing I	Intro. to Computer Literacy		10
ECMS100	Economics I	None		24
ECMK100	English Communication Skills	Intro. to English Communication Skills		17
	Total Credits			**73**

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
ATNG200	Auditing II	• Financial Accounting I • End-User Computing I • Commercial Law Module I	• Quantitative Techniques Module I	24
ECMS200	Economics II	• Economics I	• Quantitative Techniques Module I	24
FNLA200	Financial Accounting II	• Financial Accounting I • Commercial Law Module I	• Quantitative Techniques Module I	24
PUFA200	Public Finance and Accounting II	• Financial Accounting I	• Commercial Law Module I • Quantitative Techniques Module I	24
PBLM200	Public Management I	• Economics I • English Communication Skills • Financial Accounting I	• Quantitative Techniques Module I	24
	Total Credits			**120**

FOURTH ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
ATNG300	Auditing III	• Financial Accounting II • Auditing II • Public Finance and Accounting II • Quantitative Techniques Module I		32
FNLA300	Financial Accounting III	• Financial Accounting II • Public Finance and Accounting II • Auditing II • Quantitative Techniques Module I		32
PUFA300	Public Finance and Accounting III	• Public Finance and Accounting II • Financial Accounting II • Auditing II • • Quantitative Techniques Module I		32
MAIS300	Management Information Systems I	• End-User Computing I • Public Finance and Accounting II • Financial Accounting II • Auditing II		22

		• Quantitative Techniques Module I		
PRJM300	Project Management	• Quantitative Techniques Module I • Economics II		22
	Total Credits			**140**

Curriculum: Diploma in Public Finance and Accounting (FINDIP)

A7 The subjects shall be as follows:

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
ECNO100	Economics I	None		24
ENCS100	English Communication Skills	None		24
FINA100	Financial Accounting I	None		24
ENCO100	End-User Computing I	None		24
COLA100	Commercial Law Module I	None		12
QUTE100	Quantitative Techniques Module I	None		12
	Total Credits			**120**

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
ENMS200	Economics II	• Economics I	• Quantitative Techniques Module I	24
FINA200	Financial Accounting II	• Financial Accounting I • Commercial Law Module I	• Quantitative Techniques Module I	24
ADNG200	Auditing II	• Financial Accounting I • End-User Computing • Commercial Law Module I	• Quantitative Techniques Module I	24
PBFN200	Public Finance and Accounting II	• Financial Accounting I	• Commercial Law Module I • Quantitative Techniques Module I	24
PBMG200	Public Management I	• Economics I • English Communication Skills • Financial Accounting I	• Quantitative Techniques Module I	24
	Total Credits			**120**

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
FINA300	Financial Accounting III	• Financial Accounting II • Public Finance and Accounting II • Auditing II • Quantitative Techniques Module I		32
ADNG300	Auditing III	• Financial Accounting II • Auditing II • Public Finance and Accounting II • Quantitative Techniques Module I		32
PBFN300	Public Finance and Accounting III	• Public Finance and Accounting II • Financial Accounting II • Auditing II • Commercial Law Module I • Quantitative Techniques Module I		32
MISY300	Management Information Systems I	• Public Finance and Accounting II • Financial Accounting II • Auditing II • End-User Computing • Quantitative Techniques Module I		22
PRTM300	Project Management I	• Quantitative Techniques Module I • Economics II		22
	Total Credits			**140**

Curriculum: Diploma in Local Government Finance (LOGDIP)

A7 The subjects shall be as follows:

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
LGCS100	English Communication Skills	None		24
LGFA100	Financial Accounting I	None		24
LOGF100	Local Government Finance I	None		24
LOGM100	Local Government Management I	None		24
LGEU100	End-User Computing I	None		24
	Total Credits			**120**

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
LGFA200	Financial Accounting 2	• Financial Accounting I		24
LGAU200	Auditing 2	• Financial Accounting I • End-User Computing I • Local Government Finance I		24
LOGF200	Local Government Finance 2	• Local Government Finance I • Financial Accounting I		24
LOGM200	Local Government Management 2	• Local Government Management I • English Communication Skills		24
LGQT102	Quantitative Techniques Module 1	None		12
LGLA101	Commercial Law Module 1	None		12
	Total Credits			**120**

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisites	Co-Requisites	NQF Credits
LGFA300	Financial Accounting III	• Financial Accounting II • Auditing 2 • Local Government Finance 2	• Quantitative Techniques Module 1 • Commercial Law Module 1	24
LOGA300	Local Government Accounting III	• Local Government Finance II • Auditing 2	• Quantitative Techniques Module 1 • Commercial Law Module 1 • Financial Accounting II	24
LOGF300	Local Government Finance III	• Local Government Finance II • Auditing 2	• Quantitative Techniques Module 1 • Commercial Law Module 1 • Financial Accounting II	24
LOGM300	Local Government Management III	• Local Government Management II • English Communication Skills		24

LOGE100	Economics I	None		24
	Total Credits			**120**

Promotion Rules:

A8 The following promotion rules apply to the diplomas and advanced diplomas offered in the Department:

Minimum and maximum periods to complete a qualification:

A 3-year diploma qualification:

- Minimum period: 3 years for full-time and part-time students.
- Maximum period: 5 years for full-time students; and 7 years for part-time students.

A 4-year diploma qualification:

- Minimum period: 4 years for full-time students only; and
- Maximum period: 6 years for full-time students only.

A 1-year advanced diploma:

- Minimum period: 1 year for full-time and part-time students.
- Maximum period: 2 years for full-time students and 4 years for part-time students.

Students in the pipeline

- All final year students shall be allowed to register for final year subjects provided current prerequisites/co requisites are met.
- All other students shall be transferred to a current qualification and shall be subject to these rules.

Pre-requisite and Co-requisite subjects:

General Rule G.18 (g) (i) (ii), respectively, shall apply.

(a) **ACOECP**:

(i) To be promoted from the first to the second year of study, a student shall have passed at least **four** (4) subjects; including **Introduction to Fundamentals of Accounting**.

(ii) To be promoted from the second to the third year of study, the student shall have passed at least **three** (3) subjects, including **two** (2) major subjects.

(iii) To be promoted from the third to the fourth year of study, a student shall have completed at least **five (5) subjects, including all major subjects;** and

(iv) To complete a qualification, a student shall have passed **twenty-three** (23) subjects.

(b) **ACODIP**:

(i) To be promoted from the first year to second year of study, a student shall have passed at least **three** (3) subjects, including **two (2)** major subjects.

(ii) To be promoted from the second to the third year of study, a student shall have completed at least **five (5) subjects, including all major subjects; and**.

(iii) To complete a qualification, a student shall have passed **eighteen** (18) subjects.

(c) **FINECP**:

(i) To be promoted from the first to the second year of study, a student shall have passed at least **four** (4) subjects; including Introduction to Accounting.

(ii) To be promoted from the second to the third year of study, the student shall have passed at least **three**

(3) subjects, including **two** (2) major subjects.

(iii) To be promoted from the third to the fourth year of study, a student shall have completed at least **eleven** (11) subjects, including **two** (2) major subjects; and

(iv) To complete a qualification, a student shall have passed **twenty** (21) subjects.

(d) **FINDIP**:

(i) To be promoted from the first to the second year of study, a student shall have passed at least **three** (3) subjects; including **one** (1) major subject.

(ii) To be promoted from the second to the third year of study, a student shall have completed at least **nine** subjects (9), including t**wo** (2) major subjects.

(iii) To complete a qualification, a student shall have passed **sixteen** (16) subjects.

(e) **CMADIP**:

(i) To be promoted from the first to the second year of study, a student shall have passed at least **three** (3) subjects; including **one** (1) major subject.

(ii) To be promoted from the second to the third year of study, a student shall have completed at least **five (5) subjects, all must be major subjects;** and

(iii) To complete a qualification, a student shall have passed seventeen (17) subjects.

(d) **LOGDIP**:

(i) To be promoted from the first to the second year of study, a student shall have passed at least **three** (3) subjects; including t**wo** (2) major subjects.

(ii) To be promoted from the second to the third year of study, a student shall have completed at least **nine** (9) subjects; including **two** (2) major subjects; and

(iii)To complete a qualification, a student shall have passed sixteen (16) subjects.

Restrictions: Four-Year Programmes

A10 The following restrictions shall apply in respect of the four year programmes in Accounting and in Public Finance and Accounting.

- No student shall be allowed to register for **ANY** programme in the Department if a subject: Introduction to Fundamentals of Accounting (**ACOECP**) or Introduction to Accounting **(FINECP**) has been failed.

Major Subjects:

A11 The following subjects are major subjects:

Financial Accounting	Local Government Finance
Management Accounting	Local Government Management
Auditing	Public Finance and Accounting
Taxation	

Examination:

A12 1. A department may be permitted to offer a first-semester course during the second semester and a second-semester course during the first semester of a particular year.

2. Admission to the examination together with pass requirements as laid down in the provisions of the General Rules G.22.3 is applicable.

The Degree of Bachelor of Technology in Cost and Management Accounting (being phased out)

The courses shall be as follows:

Course Code	Course	Pre-Requisites	NQF Credits
FINA 418	Financial Management IV Module I	None	12
FIRE 418	Financial Reporting IV Module I	None	12
MANA 418	Management Accounting IV Module I	None	12
PROM 418	Systems and Project Management IV Module I	None	12
RESE 418	Research Methodology	None	12
BUSS 428	Business Strategy	None	12
FINA 428	Financial Management IV Module II	Financial Management IV Module I	12
FIRE 428	Financial Reporting IV Module II	Financial Reporting IV Module I	12
MANA 428	Management Accounting IV Module II	Management Accounting IV Module I	12
PROM 428	Systems and Project Management IV Module II	Systems and Project Management IV Module I	12

Curriculum: Advanced Diploma in Cost and Management Accounting (ADVCMA)

A14 The subjects shall be as follows:

Subject Code	Subject	NQF Credits
MANA400	Management Accounting IV	24
FIRE400	Financial Reporting IV	24
PROM400	Systems and Project Management IV	24
RESE400	Research Methodology IV	12
BUSS400	Business Strategy	12
FINA400	Financial Management IV	24

The Department has obtained accreditation from the Chartered Institute of Management Accountants (CIMA) for students that pass the Advanced Diploma in Cost and Management Accounting. Students will be awarded 4 exemptions from the CIMA Certificate in Business Accounting which are:

Subject Code	Subject
BA1	Fundamentals of Business Economics
BA2	Fundamentals of Management Accounting
BA3	Fundamentals of Financial Accounting
BA4	Fundamentals of Ethics, Corporate Governance and Business Law

Curriculum: Advanced Diploma Accounting (ADVACC)

A. The subjects shall be as follows:

Subject Code	Subject	NQF Credits
MACF400	Management Accounting and Finance 400	32
FACC400	Financial Accounting 400	32
TAXA400	Taxation 400	32
AUDI400	Auditing 400	32

Training Courses:

A15 The Department is an authorized Training Centre to offer Pastel Partner V17 and Pastel Partner Payroll and AT(SA)/SAICA private sector and public sector qualifications from NQF Level 3 to NQF Level 5.

Programme: ACOECP [ACOUNF]:

Computer Skills and Applications [COSA000]	Computer Skills [EFCS 118] + Computer Applications [EFCA 128]
Intro. to Fundamentals of Accounting [ITFA000]	[EFFA 118] + [EFFA 128]

SECOND ACADEMIC YEAR:

Subjects and Codes	Substitutes
Business Information Systems [BINF100]	[ERBS 218] + [ERBS 228]
Intro. to Fundamentals of Accounting [ITFA000]	[EFFA 118] + [EFFA 128]
Commercial Law for Accountants 1 [CLAW100]	[EFLA 128] + [ERCL 228]
Financial Accounting 1 [FINT100]	[ERFA 218] + [ERFA 228]
Economics 1 [ENOM100]	[EREC 218] +[EREC 228]

THIRD ACADEMIC YEAR:

Subjects and Codes	Substitutes
Auditing 2 [AUDI200]	[ERAU 318]+[ERAU328]
Commercial Law for Accountants 2 [CFLA200]	[ERCL 318] + [ERCL 328]
Cost Accounting 2 [ERCA 020]	[ERCA 318] +[ERCA 328]
Financial Accounting 2 [FIAC200]	[ERFA 218] + [ERFA 228]
Taxation 1 [TAXA200]	[EFTA 318] + [ERTA 328]
Entrepreneurial Skills [ENTS200]	[EFES 118] +[ERES 128]

FOURTH ACADEMIC YEAR:

Subjects and Codes	Substitutes
Financial Accounting 3 [FIAC300]	[ERFA 418] + [ERFA 428]
Management Accounting 3 [MAAC300]	[ERMA 418] + [ERMA 428]
Taxation 2 [TAXA300]	[ERTX 418] + [ERTX 428]

Programme: ACODIP [ACOUNT]:

FIRST ACADEMIC YEAR:

Subject and Codes	Substitutes and Codes

Business Information Systems [BINS100]	[BUSY 118] + [BUSY 218]
Commercial Law for Accountants [CLLA100]	[COML 128] + [COML 218]
Financial Accounting 1 [FACC100]	[FINA 118] + [FINA 128]
Economics 1 [ECNS100]	[ECON 118] + [ECON 128]

SECOND ACADEMIC YEAR:

Subject and Codes	Substitutes and Codes
Auditing 2 [AUDT200]	[AUDT 218] + [AUDT 228]
Commercial Law for Accountants 2[COML200]	COML 228
Cost Accounting 2 [COST200]	COST 228
Financial Accounting 2 [FINC200]	[FINA 218] + [FINA 228]
Taxation 1 [TAXT200]	TAXA 228

THIRD ACADEMIC YEAR:

Subject and Codes	Substitutes and Codes
Auditing 3 [AUDT300]	[AUDT 318] + [AUDT 328]
Financial Accounting 3 [FINC300]	[FINA 318] + [FINA 328]
Management Accounting 3 [MACC300]	[MANA 318] + [MANA 328]
Taxation 2 [TAXT300]	[TAXA 318] + [TAXA 328]

Programme: CMADIP [COSMAT]:

FIRST ACADEMIC YEAR:

Subjects and Codes	Substitutes
Business Calculations and Statistics [BCAS100]	Business Calculations [BUSC 118] + Business Statistics [BUST 318]
Business Information Systems [BUIS100]	[BUSY 118] + [BUSY 218]
Commercial Law for Accountants 1 [CLFA100]	[COML 128] + [COML 218]
Economics 1 [ECON100]	[ECON 118] + [ECON 128]
Financial Accounting 1 [FIAC100]	[FINA 11 8] + [FINA 128]

SECOND ACADEMIC YEAR:

Subjects and Codes	Substitutes
Commercial Law for Accountants 2 [CLAA200]	COML 228
Cost Accounting 2 [COCT200]	COST 228
Financial Accounting 2 [FICA200]	[FINA 218] + [FINA 228]
Taxation 1 [TXTN200]	TAXA 228

THIRD ACADEMIC YEAR:

Subjects and Codes	Substitutes
Financial Accounting 3 [FICA300]	[FINA 318] + [FINA 328]
Management Accounting 3 [MANT300]	[MANA 318] + [MANA 328]

Taxation 2 [TXTN300]	[TAXA 318] + [TAXA 328]

Programme: FINDIP [FINACD]:

FIRST ACADEMIC YEAR:

Subjects and Codes	Substitutes
Economics 1 [ENCO100]	[ECON 118] + [ECON 128]
English Communication Skills [ENCS100]	[ENGL 118] + [ENGL 128]
Financial Accounting 1 FINA100]	[FINA 118] + [FINA 128]
End-User Computing [ENCO100]	[EUCO 218] + [EUCO 228]

SECOND ACADEMIC YEAR:

Subjects and Codes	Substitutes
Financial Accounting 2 [FINA200]	[FINA 218] + [FINA 228]
Auditing 2 [ADNG200]	[AUDT 218] + [AUDT 228]
Public Finance and Accounting 2 [PBFN200]	[PUFA 218] + [PUFA 228]
Public Management 1 [PBMG200]	[PUMA 118] + [PUMA 128]

THIRD ACADEMIC YEAR:

Subjects and Codes	Substitutes
Financial Accounting 3 [FINA300]	[FINA 318] + [FINA 328]
Auditing 3 [ADNG300]	[AUDT 318] + [AUDT 328]
Public Finance and Accounting 3 [PBFN300]	[PUFA 318] + [PUFA 328]

Transfer from FET/TVET Colleges:

A17 Prospective candidates from FET/TVET colleges who have passed with a minimum of 50% in each of the subjects listed below will be granted exemptions in terms of the principle of the Recognition of Prior Learning:

FET/TVET Subject and Level	Diploma Exempted Subject
Financial Accounting: N4, N5 and N6	Financial Accounting I
Economics: N4 and N5	Economics I
Computerised Financial Systems: N4, N5 and N6	Business Info. Systems I

Professional Bodies associated with the qualifications:

A18 The following professional bodies, to which qualifying candidates may apply for affiliation, are associated with the qualifications offered in the Department:

Qualification	Professional Body
Diploma in Accounting	**SAIPA**: South African Institute of Professional Accountants **CIMA**: Chartered Institute of Management Accountants **ACCA**: Association of Chartered Certified Accountants
	SAIT: South African Institute of Tax Professionals
Diploma in Cost and Management Accounting	**SAIPA**: South African Institute of Professional Accountants **CIMA**: Chartered Institute of Management Accountants **SAIT**: South African Institute of Tax Professionals

Diploma in Public Finance and Accounting	**CIPFA**: The Chartered Institute of Public Finance and Accountancy **IMFO**: Institute of Municipal Finance Officers
	SAIGA: Southern African Institute of Government Auditors
	SAIBA: Southern African Institute for Business Accountants
Advanced Diploma in Cost and Management Accounting	**CFA**: Certified Financial Analyst **SAIPA**: South African Institute of Professional Accountants **CIMA**: Chartered Institute of Management Accountants
Advanced Diploma in Accounting	**CFA**: Certified Financial Analyst **SAICA:** South African Institute of Chartered Accountans **SAIPA**: South African Institute of Professional Accountants **CIMA**: Chartered Institute of Management Accountants

19 **Subject/Module Information**: Curriculum Content Overview.

Please note that a detailed curriculum content per subject/module is available from the **"Student Guide"** given to a student; and that such curriculum content is subject to **changes** as and when needs to which academic programmes respond change within the private and the public sector and in communities at large. The subjects/modules listed hereunder are in alphabetical order; and are of 3-hour examination duration except for BTECMA modules (4 hours) and Research Methodology (continuous assessment).

A	**Subject**	**Subject/Module Custodian**	**Credits**	**Curriculum Content**
	Auditing 2	Accounting and Law	24	• Introduction to Auditing, • SAICA code of professional conduct, • Statutory matters, • Corporate Governance, • General principles of Auditing, • An overview of the Audit process • Elements of the audit process Computer auditing, • Audit documentation, • Revenue and Receipts cycle, and • Acquisitions and Payment cycle.
	Auditing 3	Accounting and Law	32	• The Revenue and Receipts Cycle, • The acquisitions and Payments Cycle, • The payroll and Personnel Cycle, • The Inventory and Production Cycle, • The Finance Cycle, • Computer Assisted Audit Techniques (CAATs), • Audit Software, • Systems Orientated CAATs, • Data Orientated CAATs, • Computer Audit Networks and Related Concepts, • Databases, and • Electronic Messaging Systems.
	Auditing 4	Accounting and Law		• Introduction to the auditing environment • Concepts and terminology fundamental to the auditing profession

				• Fundamental principles and ethical conduct • Internal control • Roles and Functions of auditors • Planning of an audit engagement • Process of gathering audit evidence • Audit sampling • Information Technology – concepts • Information Technology – Systems Security • Computer Audit – Networks and Related Concepts • Systems Security over High Technology Resources • Electronic Messaging Systems • Electronic Funds Transfers • Computer-Assisted Auditing Techniques • Computer-Assisted Auditing Techniques (Controls) • Revenue Cycle (sales, credit control, dispatch, Billing, receivables, cash processes • Purchases Cycle • Inventory Cycle • Finance and Investment Cycle (Finance part) • Finance Cycle (Investment part) • Payroll and Personnel Cycle • Security of systems – Data Recovery Plans • Insurance • The audit function management • The supervision of audit engagement • Audit reporting
B	Business Calculations	Mathematical Sciences	12	• Descriptive Statistics, • Set theory, • Ratio, • Proportion, Rate, • Percentages, • Real numbers, • Inequalities, • Coordinate system, • Functions, • Linear Functions, • Linear inequalities, • Linear programming, • Linear cost equation, • Quadratic equations, • Quadratic functions, • Applications of Quadratic functions, • Exponential functions, • Logarithmic functions, and • Interest, Annuities and Derivatives.

	Bus. Cal and Statistics	Mathematical Sciences	24	• Set theory, • Ratio, • Proportion, • Rate, • Percentages, • Real numbers, • Inequalities, • Coordinate system, • Functions, • Linear Functions, • Linear inequalities, • Linear programming, • Linear cost equation, • Quadratic equations, • Quadratic functions, • Applications of Quadratic functions, • Exponential functions, • Logarithmic functions, • Interest, • Annuities and Derivatives, Descriptive Statistics, • Probability, • Probability distribution, • Sampling and sampling distribution, • Confidence interval estimation, • Time series analysis, • Hypothesis testing (single populations), and • Linear regression and correlation analysis.
	Business Info Systems	Info Comm. and Technology	24	• Word Processing, • Spreadsheets, • Presentations, and • Email and Internet
	Business Strategy	Accounting and Law	12	• Manage the financial aspects of business up to corporate level, • Determine and apply various advanced techniques whereby relevant information is reported to management in regard to control, planning, reporting of performance and the monitoring of efficiency and the optimal usage of resources, • Preparation analysis and interpretation of financial statements for regulated and other industries in compliance with statutory requirements, • Develop and apply documentation techniques and system development; implement an operations and management system, • Formulate the long-term objectives for the enterprise and identify the goals to supplement these objectives, and

				• Analysing, designing and implementing financial management techniques for decision making purposes.
	Business Strategy 400	Accounting and Law	12	• Explain the concept of strategy • Identify organization stakeholders and their influence on the organization • Evaluate and appraise international issues, competitive forces and data for environmental analysis • Identify and evaluate strengths, weaknesses, opportunities and threats of an organization • Prepare strategic scenario reports • Analyse, prepare and evaluate organisation's product and customer portfolio, growth and divestment strategies, response strategies to competitors actions • Evaluate appropriate control measures and the use of multidimensional models of performance measurement and the use of shareholder value analysis • Identify problems in strategic performance measurement.

C	Subject	Subject/Module Custodian	Credits	Curriculum Content
	Cost Accounting 2	Accounting and Law	24	• Cost concepts and behavior, • Material and Inventory Control, • Labour Costs, • Classification and analysis of overheads, • Cost Volume Profit analysis, • Profit Planning and the role of budgeting, • Flexible budgets and overhead analysis, • Contract costing, • Process costing, • Profit reporting under variable and absorption costing, • Joint and by-products , • Activity-Based Costing, and • Standard costing and variance analysis
	Commercial Law 1	Accounting and Law	12	• Demonstrate an understanding of the elements of the South African constitution which apply to public sector financial management, • The sources of South African law, • Classification of South African law, • The concept of legal personality, • Legislative regulations and legal principles which apply to contracts with particular focus on the Public Finance Management Act (1999),

				• Legislative regulations and legal principles which apply to contracts, with particular focus on the Public Finance Management Act (1999), • "*serious intention*" as a requirement for validity of a contract, • "*consensus*" as a requirement for validity of a contract, • "*contractual capacity*" as a requirement for validity of a contract, • "*lawfulness, possibility and formalities*" as requirements for validity of a contract, • Identify and interpret various terms and conditions which operate in contracts, • Identify various forms of contract breach and applicable remedies, and • The contract of employment, rights and obligations of the parties to the contract and ways in which the contract may be terminated.
	Commercial Law for Accountants 1	Accounting and Law	24	• An overview of the legal position in South Africa with reference to sources, classification and structure of the South African legal system, • Approach to and detailed knowledge of the law of contract in South Africa, • Different requirements for a valid contract, aspects relating to general contractual terms, breach of contract; and the termination of a contract, and • Contract of buying and selling, security and consumer protection.
	Commercial Law for Accountants 2	Accounting and Law	24	• Letting and Hiring, • Surety and other forms of Security, • Law of Agency, • Insolvency, • Contract of Employment (Selected Topics), • Partnerships, Companies & Other Structures, and • Types of Companies and Companies Act No. 71 of 2008.
	Computer Skills & Application	Office Management & Technology	12	Know how to switch on/off the computer. Know how to use the keyboard. Know how to use a mouse and do the following: • Text processing when designing office documents, • Data capturing, • Formatting, Entering and Editing • Copying text, saving and printing, • Punctuation spacing rules,

				• Use of manuscripts sings, main and sub-paragraphs with headings • Numbered paragraphs, • Business letters, • Memorandums, • Columns, • Tables, • Capturing data using Microsoft Excel, • Crating Charts in Excel, • Preparing presentations on Microsoft PowerPoint, and • Create a chart in a presentation.
E	Economics 1	Public Management	24	**Microeconomics**: • Scarcity, • Choice, • Opportunity Cost, • Demand/Supply Analysis, • Consumer Theory, • Cost Structures of Firms, • Market Structures, and • Labour Markets. **Macroeconomics**: • Measuring the performance of the Economy, • The public sector, • The Keynesian Model, • The Monetary Sector, • The Foreign Sector, • Inflation, • Economic Growth, and • Unemployment.
	Economics 2	Public Management	24	• Introduction to economics, • Important concepts, issues and relationships, • Demand, supply and prices, • Measurement and interpretation of elasticities, • The theory of consumer behaviour (demand): The utility approach, • The theory of demand: the indifference approach, • Consumer equilibrium and market demand, • Market equilibrium and product price: perfect competition, and • The theory of demand: the indifference approach.
	End-User Computing	Information Communication and Technology	24	• Word Processing, • Spreadsheets, • Presentations, and • Email and Internet
	English Comm. Skills	Communication	24	• Introduction to communication,

				• Communication Theory, • Organizational and inter-cultural communication • English Language grammar and Language in use • Writing • Listening • Reading • Telephone and e-Mail etiquette • Meetings • Report writing • Interviews
	Enterprise Management	Human Resource Management		• The strategic management process • Strategic direction – Vision, mission and values of the organisation. • Strategy, ethics and social responsibility • Internal environmental analysis • External environmental analysis • Change management
	Entrepreneurial Skills	Human Resource Management	12	• The nature and development of entrepreneurship
				• The entrepreneur • Creativity and innovation • Networking and support systems • Developing a new business plan • Buying a franchise • Locating the business • Resource requirements and legal related aspects • Business environments • Formulating a Vision, mission and values for the business • Business ethics • Network and support systems • Legal forms of businesses in SA.
F	Financial Accounting 1	Accounting and Law	24	• Conceptual framework, • Accounting Equation, • Inventory, Bank Reconciliation Statement, • Property, Plant & Equipment (Cost Model) • Share Capital, • Statement of Cash Flows, • Statement of changes in equity, • Partnerships, and • Presentation of Financial statements (Function Method).
	Financial Accounting 2	Accounting and Law	24	• Financial Reporting Framework • Presentation of Financial statements (Function method) • Property Plant & Equipment (Both Models) • Borrowing Costs • Government Grants • Leases, • Share Capital and Earnings Per Share,

				• Revenue from Contracts, • Provisions and Contingencies, and • Events after reporting period.
	Financial Accounting 3	Accounting and Law	32	• Revenue from contracts with customers, • Taxation: Normal and Deferred, • Accounting for Leases, • Investment Properties, • Accounting Policies, Estimates and Errors, • Statement of Cash Flows, and • Group Financial Statements.
	Financial Accounting 4	Accounting and Law		• The Conceptual Framework • Preparation and presentation of financial statements • Normal and deferred taxation • Property, Plant and Equipment • Intangible assets • Investment Property • Impairment of assets • Fundamentals of financial instruments • Revenue • Provisions, Contingencies and Post balance sheet events • Employee benefits • Leases • Agricultural accounting • Foreign exchange contracts • Introduction to business combinations • Consolidated financial statements
	Financial Management 3	Accounting and Law	32	• Overview of Financial Management • Financial statement analysis • Portfolio Management • Valuation techniques • Capital budgeting • Time value of Money • Risk and return • The Cost of Capital • Current asset management and short term financing • Working capital • Sources of finance and Capital structure • Mergers, Acquisitions and Corporate restructuring.
	Financial Management 4	Accounting and Law	24	**Semester 1**: • Introduction to Financial Management • Investment Appraisal Methods • Estimating Cash flows for Investment Appraisal • Appraising Investment Risk • Bond Valuation and Interest Rates • Analysis of Financial Statements **Semester 2**:

				• Risk and Return • Cost of Capital • Sources of Finance and Capital structure • Distribution policy • Working capital management • Mergers and Acquisitions
	Financial Management 400	Accounting and Law	24	• Introduction to Financial Management • Time Value of Money • Investment Appraisal Methods • Appraising Investment Risk • Bond Valuation and Interest Rates • Share valuation • Risk and Return • Cost of Capital • Sources of Finance and Capital structure • Distribution policy • Working capital management
	Financial Reporting 4	Accounting and Law	24	**Semester 1**: • The Reporting Environment • The Conceptual Framework • Presentation of Financial **Statements.** • Taxation: Advanced Deferred taxation • Financial Instruments • Foreign Exchange Contracts **Semester 2**: • Employee Benefits • Non-current Assets Held for Sale and Discontinued Operations • Earnings per Share • Impairment of assets • Group Accounting - Consolidations
	Financial Reporting 400	Accounting and Law	24	• Taxation: Advanced Deferred taxation • Revenue from Contracts with Customers – Advanced • Employee Benefits • Non-current Assets Held for Sale and Discontinued Operations • Financial Instruments • Foreign Exchange Contracts • Advanced Group Accounting • The Conceptual Framework and Presentation of Financial Statements**.**
I	Intro. Bus Calculations	Mathematical Sciences	8	• Numbers, • Operations with numbers, • Exponents, • Functions, • Coordinate system, • Graphs of linear functions, • Lines, • Solving linear equations,

				• Applications of linear functions, • Exponential functions, • Logarithmic functions, and • Progression and Set theory.
	Intro. to Communication	Communication	6	• Genre approach to teaching reading and writing • The writing process • Formal and informal language • Developing listening skills • Language in action • Parts of sentences • Punctuations • The present simple tense and present continuous • The past continuous • The future simple tense • Words and their meaning • Public speaking • Entering the world of work • Job interviews • Telephone skills and message taking • Communication with a company • Preparing for and holding meetings • Report writing.
	Intro. to English Communication Skills	Communication	7	• Genre approach to teaching reading and writing • The writing process • Formal and informal language • Developing listening skills • Language in action • Parts of sentences • Punctuations • The present simple tense and present continuous • The past continuous • The future simple tense • Words and their meaning • Public speaking • Entering the world of work • Job interviews • Telephone skills and message taking • Communication with a company • Preparing for and holding meetings • Report writing.
	Intro. to Comm. Law	Accounting and Law	10	• Demonstrate an understanding of the elements of the South African constitution which apply to public sector financial management. • The sources of South African law. • Classification of South African law. • The concept of legal personality

				• Legislative regulations and legal principles which apply to contracts, with particular focus on the PFMA. • "*serious intention*" as a requirement for validity of a contract. • "*consensus*" as a requirement for validity of a contract. • "*contractual capacity*" as a requirement for validity of a contract. • "*lawfulness, possibility and formalities*" as requirements for validity of a contract. • Identify and interpret various terms and conditions which operate in contracts. • Identify various forms of contract breach and applicable remedies. • The contract of employment, rights and obligations of the parties to the contract and ways in which the contract may be terminated. • Deal effectively with legal problems arising from the contract of lease. • Various forms of business enterprises.
	Intro. to Computer Literacy	Office Management and Technology	10	Know how to switch on/off the computer. Know how to use the keyboard. Know how to use a mouse and do the following: • Text processing when designing office documents • Data capturing • Formatting, Entering and Editing • Copying text, saving and printing • Punctuation and spacing rules • Use of manuscripts sings, main and subj-paragraphs with headings • Numbered paragraphs • Business letters • Memorandums • Columns • Tables • Capturing data using Microsoft Excel • Crating Charts in Excel • Preparing presentations on Microsoft PowerPoint • Create a chart in a presentation.
	Intro. to Entrepreneurial Skills	Human Resource Management	6	• The nature and development of entrepreneurship • The entrepreneur – *Background, characteristics and success factors, push and pull factors of entrepreneurship, challenges facing entrepreneurs etc.* • Creativity and innovation • Networking and support systems • Developing a new business plan • Buying a franchise • Locating the business

				• Resource requirements and legal related aspects
	Intro. to Financial Accounting	Accounting and Law	10	• Introduction to Accounting • Basic Accounting Equation • Depreciation • Preparation of Financial Statements • Year-end Adjustments • Asset Disposal • Trading Stock/ Profit Markup • Bank Reconciliation Statement • Cash Flow Statements • Analysis of Financial Statements(Ratio Analysis) • Non Profit Organizations
	Intro. to Fundamentals of Accounting	Accounting and Law	12	• Introduction to Accounting • Basic Accounting Equation • Depreciation • Preparation of Financial Statements • Year-end Adjustments • Asset Disposal • Trading Stock/ Profit Markup • Bank Reconciliation Statement • Cash Flow Statements • Analysis of Financial Statements(Ratio Analysis) • Non Profit Organizations
	Intro. to Legal Aspects	Accounting and Law	6	
	Intro. to Quantitative Techniques	Mathematical Sciences	10	• Financial mathematics, • Linear programming(using geometric approach), • Simplex method, • Mathematics models, • Collection of data, Organization of data, • Visualization of data, • Measures of central and non-central location, • Measures of dispersion, and • Linear regression and correlation analysis.

L	Subject	Subject/Module Custodian	Credits	Curriculum Content

	Local Government Accounting 3	Accounting and Law	24	• The application of the standards of Generally Recognized Accounting Practice (GRAP) applicable to Local Government in South Africa for the presentation of financial statements.
	Local Government Finance 1	Accounting and Law	24	• Legislation and local government structures, • Different role players in in financial management and various sources of revenue for local government, • Expenses at local government level,, and • Theories and practices governing aspects relating to the management of procurement in local government.
	Local Government Finance 2	Accounting and Law	24	• Accounting transactions related to revenue and expenditure, • Cash flow management, • External funding, • Financing of fixed assets, and • Final adjustments to prepare financial information for financial statements.
	Local Government Finance 3	Accounting and Law	24	• Local government budgets and budget techniques, and • Financial management and accountability.
	Local Government Management 1	Public Management	24	• A general overview of local government financing, including assessment rates, sources of revenue and budgeting
	Local Government Management 2	Public Management	24	• The actual and potential sources of revenue, advanced budgeting aspects, • Stores administration, and • Capital financing.
	Local Government Management 3	Public Management	24	• Policy analysis for planning and implementation.
M	Management Accounting 3	Accounting and Law	32	• Advanced Standard Costing • Activity Based Costing • Relevant Costing • Linear Programming • Capital Appraisal • Cash Budgeting • Cost Volume Profit analysis • Cost Estimation, and • Inventory Control.
	Management Accounting 418	Accounting and Law	12	• Pricing • Divisional Performance • Transfer Pricing, • Decision making under conditions of risk and uncertainty.
	Management Accounting 428	Accounting and Law	12	• Environmental Management Accounting; • Case studies X 6
	Management Accounting 400	Accounting and Law	24	• Pricing • Divisional performance • Transfer pricing

				• Risk and uncertainty • Advanced standard costing • Activity based costing • Advanced cash budgeting • Linear programming • Management control systems • Strategic management accounting
	Management Accounting and Finance 4	Accounting and Law	32	• Pricing • Divisional performance • Transfer pricing • Risk and uncertainty • Activity Based Costing (ABC) • Decision making • Linear programming (LP) • Standard costing • Decision making • Cash Budgeting • Costing methods • Cost volume profit analysis (CVP) • Present and future value of money • Valuations of securities • Working capital management • The Dividend decision • International finance • Capital structure and the cost of capital • Portfolio management and the Capital Asset Pricing Model • Investment and finance decisions
	Management Information Systems	Accounting and Law	22	• Information Systems: An Overview • Computers: The Machines behind Computing • Database Systems, Data Warehouses, and Data Marts • The Internet, Intranets, and Extranets • Data Communication: Delivering Information Anywhere and Anytime • E-Commerce • Personal, Legal, Ethical, and Organizational Issues of Information Systems
P	Practical Accounting	Accounting and Law	12	**Pastel Accounting**: • Installing Sage Pastel Partner • Working in the Demo Company • Creating a New Company • Using the Auto Setup • The Edit Menu-Customers • The Edit Menu-Suppliers • The Edit Menu-Inventory and General and General Ledger • Creating and Editing Accounts and Inventory Items • Processing • Second month of Trading • The View Menu

				• Sundry Optimisation. **Pastel Payroll**: • Introduction to Payroll • The Basic Conditions of Employment • The Skills Development Act No. 97 of 1998 • The Unemployment Insurance Fund Act • The Labour Relations Act • The Employment Equity Act • Processing of Payroll from A-Z • Overview of Income Tax • Income/earning transactions • Fringe Benefits • Deduction transactions • Tax Calculations • Getting started with Sage Pastel Payroll • Setting up your company • Setting up employees • Setting up pay slips • Processing your payroll • Batch transactions.
	Practical Accounting Integrated	Accounting and Law	12	**Pastel Accounting**: • Installing Sage Pastel Partner • Working in the Demo Company • Creating a New Company • Using the Auto Setup • The Edit Menu-Customers • The Edit Menu-Suppliers • The Edit Menu-Inventory and General and General Ledger • Creating and Editing Accounts and Inventory Items • Processing • Second month of Trading • The View Menu • Sundry Optimisation **Pastel Payroll**: • Introduction to Payroll • The Basic Conditions of Employment • The Skills Development Act No. 97 of 1998 • The Unemployment Insurance Fund Act • The Labour Relations Act • The Employment Equity Act • Processing of Payroll from A-Z • Overview of Income Tax • Income/earning transactions • Fringe Benefits

				• Deduction transactions • Tax Calculations • Getting started with Sage Pastel Payroll • Setting up your company • Setting up employees • Setting up pay slips • Processing your payroll • Batch transactions.
	Project Management	Accounting and Law	22	• Introduction to Project Management, • Project Lifecycle, • Project Time Management, • Project Scope Management, • Project Quality Management • Project Human Resource Management, • Project Communication Management, • Project Risks Management, • Project integration Management, • Project Cost Management, • Project Procurement Management, and • System Project Management & Principles.
	Project Management 400	Public Management	24	• Introduction: Terminology Analyses, Project Management Framework • PROJECT LIFE CYCLE • Project Feasibility Study • Project Selection • Organisational Influences on Project Management • Organisational Cultures and Styles • Organisational Structures • Continuation of the Frost Semester Work: Project Knowledge Areas • Project Integration Management • Project Scope Management • Project Risk Management • Project Quality Management • Project planning tools and techniques
	Public Finance and Accounting 2	Accounting and Law	24	Explain selected statutory provisions related to financial reporting: • Management of revenue, expenditure, assets and liabilities • Identify and apply different methods of accounting for costs in the public sector • Compile cost information for management control • Prepare cost performance reports using variance analyses techniques.
	Public Finance and Accounting 3	Accounting and Law	32	Explain and apply the conceptual framework underlying the standards of Generally Recognized Accounting Practice (GRAP): • Objectives of financial statements characteristics that determine the usefulness of financial statements

				• Identify, recognize and measure the fundamental and other bases for the preparation of financial statements • Analysis of historical changes in cash and cash equivalents of an entity by means of a cash flow statement • Criteria for selecting and changing accounting policies • Accounting treatment and disclosure of changes in accounting policies, accounting estimates and errors. Explain statutory provisions relating to financial reporting: • Reporting requirements for public sector entities in terms of Section 40 (b) and (c) of the Public Finance Management Act (1999); including the reporting requirements in terms of the annual Division of Revenue Act (DORA) and Treasury Regulations (2005), and • Reporting requirements for Public Entities in terms of Section 55 of the Public Finance Management Act (1999) and Treasury Regulations (2005).
	Public Management 1	Accounting and Law	24	• Introduction to Public Management, • New Public Management • South African Government system & Public Managers, • Management ethics, Approaches & Principles, • Public Management functions & Skills, • Principles & values of public managers, • Outcomes & progress on government activities and • Policy functions of public managers.
Q	Quantitative Techniques	Mathematical Sciences	12	• Probability, • Probability distribution, • Sampling and sampling distribution, • Confidence interval estimation, • Time series analysis, Hypothesis test(single populations), • Linear regression and correlation analysis.
R	Research Methodology	Communication	12	• Introduction to research • Topic formulation • Research aim, objectives and questions • Basic quantitative and qualitative • Data collection instruments • Data analysis • Ethics research

				• Proposal writing • Paraphrasing and summarizing skills • Critical reading and writing citing and referencing sources • Literature review.
	Research Methodology 400	Communication	12	• Introduction to research concepts/terms • Research process • Research ethics • Research Design • Secondary data search • Primary data collection • Discussion of findings • Reporting Survey Results and Presentation
S	Systems & Project Management 418	Public Management	24	Introduction: Terminology, Analyses and Project Management Framework: • What is a project? • What is Project Management? • Relationships: Project Management, Programme Management and Portfolio Management. • Portfolio Management • Programme Management • Project and Strategic Planning • Role of the Project Manager Project Management Knowledge Areas: Project Life Cycle and Organization: • Interpretation of the Four Phases of the Project Life Cycle • Overlap between the phases • Interpretation of the Project Life Cycle in terms of, inter alia, level of influence and the cost of changes, level of effort and overlap between the phases of the cycle. Project Feasibility Study: • Project stakeholder analysis • Defining client's needs • Project viability check • Project constraints. Project Selection Models: • Numeric models • Pay Back Period • Return on Investment • Net Present Value Organizational Influences on Project Management: • Organizational cultures and styles • Organizational structures.

	Systems & Project Management 428	Public Management	24	Project Knowledge Areas: • Project Integration Management • Project Scope Management • Project Risk Management • Project Time Management • Project Cost Management • Project Procurement Management • Project Communication Management • Project Quality Management.
T	Taxation 1	Accounting and Law	24	• Calculation of net tax payable, • Gross Income, • Fringe benefits, • Income exempt from tax, • General deduction formula, • Income and expenses of individuals, • Taxation of a non-resident, • Retirement benefits, • Prepaid taxes, • Introduction to Donations tax, • Introduction to Estate duty, Sole traders, • Farming income, • Capital gains for individuals.
	Taxation 2	Accounting and Law	32	• Taxable income of business enterprises, • Specific deductions and allowances, • Expenditure & allowances relating to capital assets, • Value-Added Tax, • Capital Gains Tax, • Taxation of Partnerships, • Taxation of companies & close Corporations, • Taxation of Farmers, • Turnover Tax, • Tax avoidance and evasion
	Taxation 4	Accounting and Law	32	• Gross Income • Gross Income • Residence and Source of Income • Residence and Source of Income • Income exempt from tax • Income exempt from tax • General deduction formula • General deduction formula • Assessment 1 • Capital Allowance and Recoupments • Capital Allowance and Recoupments • Fringe benefits • Fringe benefits • Employees Tax • Provisional Tax • Assessment 2 • Taxation of Partnerships • Taxations of Companies

				• Turnover Tax System • Capital Gains Tax • Capital Gains Tax • Capital Gains Tax • Value-Added Tax • Value-Added Tax • Value-Added Tax • Tax Avoidance • Tax Administration

2. DEPARTMENT OF HUMAN RESOURCE MANAGEMENT

2.1 Diploma in Human Resource Management

Qualifications	SAQA ID
Diploma in HRM	96861
ND: HRM	3204147
NQF Level: 6	SAQA Credits: 360

Rationale for the Qualification

This qualification is intended for students aspiring to a career in the Human Resource Management field. It is designed to provide an entry into a career in HRM. It will enable students to gain in-depth knowledge in the four role clusters of HRM discipline. The course content is closely aligned with the professional body (SABPP) standards developed by academia and industry.

It is offered at NQF level 6 and articulates vertically into a Degree or an Advanced Diploma in Human Resource Management.

Statement of Purpose

This Diploma is designed for people who operationalise some aspects of the core processes and practices at entry level across the four role clusters in Human Resource Management and Practices:

- Strategic planning for human resource management and practices.
- Acquisition, development and utilisation of people.
- Establishment and improvement of labour and employee relations.
- Compensation and administration related to human resources management and practices.

Holding this qualification could serve as a requirement for professional registration at associate level e.g. South Africa Board for People Practices (SABPP) and Institute of People Management (IPM).

Qualification Rules

This qualification comprises 14 compulsory modules exiting at NQF Level 6, totaling 360 Credits:

Exit Level Outcomes

- A learner who successfully completes this programme will be able to:
- Co-ordinate and contribute to the management of some aspects of all of the four role clusters related to Human Resources Management and Practices.
- Recruitment and induction of new employees.
- Contribute to the development of employees.
- Contribute to the establishment and improvement of labour and employee relations (including contributing to employee assistance and wellness programmes).
- Adhere to legislative requirements and organisational policies and procedures when coordinating some of the core processes related to Human Resources Management and Practices.
- Promote best human resources management practices in an organisation.
- Contribute to the monitoring of Health and Safety at the workplace.

- Identify strengths and areas for improvement in own learning through self-reflection and reflection on organisational Human Resources Management and Practices.

Admission requirements

National Senior Certificate with rating codes:

English Home Language or,	(3)
English First Additional Language and,	(4)
Mathematical Literacy or,	(3)
Mathematics or	(3)
Accounting and	(3)
Any other four subjects with a minimum of	(3)
Total minimum points required for selection	(25)

Senior Certificate

English HG and,	E
Accountancy HG or SG	E or D
Mathematics HG or SG	E or D
Total minimum points required for selection	E average (40%)

National Certificate Vocational (NCV) level	4
English and,	(50)
Mathematical literacy or,	(40)
Accounting or,	(40)
Mathematics and	(40)
Four other compulsory subjects	(50)

ALL ADMISSIONS ARE BASED ON A SELECTION PROCESS ONLY!!!

Duration of Study

3 years full-time

Evening classes are held in those subjects where there is sufficient demand.

Evening Classes are held for the same duration as Day classes

Curriculum Compilation and Pre-Requisites

Subjects, Curriculum Compilation and Pre-Requisites

Code	Subjects	*C/ O	Semester /Year	Assessment Method	NQF Level	Credit per modules	Pre-requisites	Co-requisites
ACPP100 OR QUAT100	Acc. for Pers. Pract. I Or Quant. Techniques 1	C	Y1 Y1	Exam Exam	5 5	24		 N/A
BUSM100	Bus. Management I	C	Y1	Exam	5	24		N/A
LENG100	Language: English I	C	Y1	Exam	5	24		N/A
EMRE100	Employee Relations I	C	Y1	Exam	5	24		N/A
HURM100	Human Res. Man. I	C	Y1	Exam	5	24		N/A
BUSM200	Bus. Management II	C	Y2	Exam	6	24	BUSM100	N/A
EDUC200	End-User Computing	C	Y2	Exam	6	24		
EMPR200	Employee Relations II	C	Y2	Exam	6	30	EMRE100	N/A
HURM200	Human Res. Man. II	C	Y2	Exam	6	24	HURM100	N/A
HURD200	Human Res. Develop I	C	Y2	Exam	6	24		N/A
BUSM300	Bus. Management III	C	Y3	Exam	6	30	BUSM200	N/A

HURM300	Human Res. Man. III	C	Y3	Exam	6	30	HURM200	N/A
HURD300	Human Res. Develop. II	C	Y3	Exam	6	30	HURD200	N/A
LABL300	Labour Law	C	Y3	Exam	6	24		N/A

Teaching, Learning and Assessment

Integrated Assessment:
All assessments will integrate knowledge, skills, attitude and applied competence of the discipline. The institutional assessment policy makes provision for assessment instruments ranging from written or oral tests, presentations on topical business issues, assignments, projects, case studies or simulation exercises to name a few.

For this qualification there will be three assessments which constitute a year mark. Learners will write two tests, and one group assessment. Lecturers are encouraged to use a variety of assessment instruments in order to cater for different learning abilities of learners. The weighting of each test is 35% and 30% for the group project.

Formative Assessment:
Three assessments constitute a year mark which contributes 40% towards the final mark.

Summative Assessment:
A candidate passes the subject if a final mark of at least 50% is obtained. The final mark comprises of a year mark and examination mark in the ratio of 40:60 respectively.

Curriculum Content

LEVEL I

MODULE NAME: ACCOUNTING FOR PERSONNEL PRACTITIONERS

MODULE OVERVIEW

- Provide the students with basic skills to interpret accounting information meaningfully and to apply it practically;
- To enable students to understand and apply planning, budgeting and control techniques;
- To enable students to understand how financial and other data are analysed in order to provide information for decision-making;
- introduce the concept of general accepted accounting procedures used in the business world; and
- To demonstrate functional knowledge of basic financial aspects relating to the human resource functions.

MODULE OUTCOMES

Student must be able to have:

- Demonstrate a comprehensive understanding of the basic framework of the accounting model to meet the needs of industry and the accounting professions;
- Apply the accounting rules in determining financial results;
- Compare the specificity of different accounts within the accounting policies;
- Develop and understand the nature and purpose of financial statements in relationship to decision making;
- Develop the ability to use the fundamental accounting equation to analyse the effect of business transactions on an organization's accounting records and financial statements;

- Develop the ability to use a basic accounting system to create (record, classify, and summarize) the data needed to solve a variety of business problems; and
- Prepare financial statement.

MODULE NAME: QUANTITATIVE TECHNIQUES 1

MODULE OVERVIEW

In this statistics module students learn about the methods of collecting, representing and analysing data so as to make informed decisions about collected data. It also empowers them with research skills or procedures when conducting hypothesis test. The probability, regression analysis and time series learnt in this module enable students to use the given data to make prediction and forecasts for the future.

MODULE OUTCOMES

Student will be able to:

- analyse the given data and identify the relevant formula to solve a given statistical problem.
- represent the given data graphically.
- apply the sampling methods and be aware of their advantages/disadvantages.
- interpret the strength and directions of the relationship between variables they may be comparing.
- apply the five measure steps when doing hypothesis test.

MODULE NAME: BUSINESS MANAGEMENT 1

MODULE OVERVIEW

Business management is a dynamic field of study that focuses on institutions that satisfy customers' needs. The purpose of Business Management is to introduce and provide students with insight of how a business organisation operates. It is intended to introduce students to the knowledge about the different functions of a business organisation and to equip them with skills and insight of how a business operates.

MODULE OUTCOMES:

At the end of the module students will be able to:

- Describe and apply management functions.
- Demonstrate an understanding of major economic systems, with emphasis on South African economy.
- Identify and discuss different types of business and their legal implications.
- Describe how a business organisation can respond to the influences of the environment.
- Explain the importance of marketing management on business operations.

MODULE NAME: HUMAN RESOURCE MANAGEMENT 1

MODULE OVERVIEW:

The purpose of the module is to provide the foundation for the understanding human resource (HR) and how to manage it, by exposing students to psychological aspects of human behaviour and the fundamental principles underlying the human management practice in South Africa**.**

MODULE OUTCOMES:

Student must be able to have:

- The dynamic factors in human management, the development of and an introduction to the human managers' role in a business.
- Acquired basic interpersonal and intrapersonal skills required to be a successful personnel manager.
- Gain an understanding of the introduction to the responsibilities and realities of a career in human management.
- Gain an insight of the introduction to the aspects that will be studied in depth in Human Resource Management II and III since all synopsis of all the functions of human resource management should have been covered.
- Develop a broad frame of reference regarding psychological aspects of individual behaviour and social processes including but not limited to:
    - Learning theories
    - Perception and personality
    - Organisation behaviour, conflict, stress and how to manage it
    - Teams and Groups dynamic, power, leadership

MODULE NAME: EMPLOYEE RELATIONS 1

MODULE OVERVIEW

- To provide the contextual overview of employee relations and its evolution in South Africa.
- To provide the legislative framework regulating the relations between employers and employee in the workplace.

MODULE OUTCOME

Student must be able to have:

- Provide a historical overview and context of ER and discuss the impact of ER on HR.
- Identify and discuss the labour relations perspectives and the macro environmental factors influencing employee relations in SA.
- Discuss the purpose and functions of key pieces of labour legislation.
- Describe labour legislation concerning Diversity Management and Employee Wellness.

MODULE NAME: LANGUAGE ENGLISH

MODULE OVERVIEW:

The purpose of the subject is to equip the student with the communication skills needed to be successful at the workplace. The course also prepares you to meet the communication challenges at the university and other social spaces.

MODULE OUTCOMES:

At the end of this course, the learner will be able to:

- Understand the role of effective communication in the work environment.
- Speak and listen effectively in a variety of social, business and professional contexts.
- Demonstrate the interpersonal communication skills required to make presentations, participate in interviews, small group discussions and meetings.
- Read and respond appropriately to letters, reports, faxes, e-mails and other business documents.
- Produce effective meeting documentation.

LEVEL 11

MODULE NAME: BUSINESS MANAGEMENT 11

MODULE OVERVIEW:

Operations management deals with the management of processes exploited to conceive, deliver, create and distribute goods and services to customers that are value adding. Operations management and managing the supply chain would improve decision-making at the strategic level. It is necessary to coordinate processes external to the organisation's immediate control such as suppliers and distributors. Businesses have to effectively manage their finances in order to become successful. No business firm can be started and operated without sufficient financing.

MODULE OUTCOMES:

Students must be able to:

- Explain and apply quality control procedures.
- Describe the production scheduling activities.
- Describe the inventory management system of a business.
- Describe the four layout patterns and when they should be used.
- Explain the financial aspects of a business.

MODULE NAME: HUMAN RESOURCE MANAGEMENT 11

MODULE OVERVIEW

Many organisations claim that their employees are their most valuable asset. It is for this reason, effective management of human resources is essential for every company. Human Resources help in structuring teams, it builds the organisations culture and it helps people with engagement and development. Human resource management creates a lot of difference in enhancing the productivity of the employees.

At the heart of every successful business lies the human resources team who drive all aspects of staff management. Human resources management offers students a broader suite of knowledge that will increase their skills and understanding of the workplace.

MODULE OUTCOMES

Students must be able to:

- Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes.
- Administer and contribute to the design and evaluation of the performance management program.
- Develop, implement, and evaluate employee orientation, training, and development programs.
- Facilitate and support effective employee and labour relations in both non-union and union environments.
- Research and support the development and communication of the organization's total compensation plan.
- Collaborate with others, in the development, implementation, and evaluation of organizational and health and safety policies and practices.

MODULE NAME: EMPLOYEE RELATIONS 11

MODULE OVERVIEW

A qualifying learner will be able to:

- Provides a framework for managing individual and collective disputes in the workplace.
- Provides an insight into collective bargaining and negotiation offering management and trade union techniques as well as tactics used during collective bargaining and negotiation.
- Analyse the significance of trade unions recognition agreements and its implications in the future.
- Recognise the role government takes in regulating the employment relationship and its basis for power in society (tripartite structure).
- Consider the impact of employment relations law and practices on organisational stakeholders.
- Provide a framework of conflict resolution, mediation and negotiation in the employment relationship.
- Implementation of employee relations policies, procedures and practises within organisations.

MODULE OUTCOMES

At the end of this module, students must be able to:-

- Discuss South African Trade unionism and dynamics in respect of membership growth and decline as well as the legal process leading to the recognition of trade unions in the workplace;
- Distinguish between recognition and substantive collective agreements and apply collective bargaining and negotiation techniques and tactics;
- Determine the requirement of substantive and procedural fairness in dispute resolution
- Analyse, interpret and manage conflicts within the workplace and analyse complaints and reports relating to referred disputes and select appropriate resolution process.

MODULE NAME: HUMAN RESOURCE DEVELOPMENT 1

MODULE OVERVIEW:

This module seeks to provide students with training and development of people, with a concise overview of the factors that influence the training and development of people within an enterprise as well the principles and processes that facilitate the management of training and development within a South African context.

MODULE OUTCOMES:

- At the end of this module, students must be able to:
- Critically evaluate education, training and development environment in South Africa
- Implement government initiatives in education, training and development including the National Qualifications
- Framework and the Skills Development Legislation
- Analyse the training and development needs
- Design and develop the training programme and course
- Prepare and present training and development
- Assess learning and evaluate training and development

MODULE NAME: END USER COMPUTING 1

MODULE OVERVIEW

The qualification provides a framework for students to develop skills that will enable them to become competent in computer skills. It introduces theoretical concepts of computer skills and requires the application thereof, to develop a range of skills that will enable students to be better-informed workers in their chosen industry. It is intended to empower students to acquire knowledge, skills, attitudes and values required to operate confidently in the End User Computing Environment.

MODULE OUTCOMES

A qualifying learner will be able to:

- Competently apply the knowledge, techniques & skills of End User Computing applications in the workplace.
- Understand the impact and use Information Communication & Technology (ICT) in an organisation and society.
- Improve Communication by combining communication skills with End User Computing skills.
- Improve the application of mathematical literacy in the workplace, by better utilising applicable End User Computing Applications.
- Demonstrate an understanding and the ability to use graphical user-interface (GUI) of computer application used in the workplace.

LEVEL 111

MODULE NAME: HUMAN RESOURCE MANAGEMENT 111

MODULE OVERVIEW:

Human resource since it is regarded as the most valuable assets in any organisation, so it is very imperative to gain an extensive knowledge as to how to manage such an asset, so that the organisation can be able to achieve its own goals and be competitive in the global village, through applying the best practised that are aligned with SABPP HR standards.

It is however of importance to always keep up to date with the latest development made through to the profession by engaging with the various stakeholders including HRUF, businesses and the community to ensure that what is offered is aligning with what the industry want, so that there graduates can be employable and or be job creator.

MODULE OUTCOMES:

Student must be able to have:

- Be able to provide a comprehensive understanding of organisational development and provides a framework for identifying the key pivotal areas which enhance organisational efficiency and effectiveness.
- Proficiency in measuring and controlling labour turnover and absenteeism, basic interpersonal and intrapersonal skills required to succeed as a personnel manager or practitioner.
- Be able to assess and interpret the role of resistance and commitment in relation to change, propose change strategies for enhancing organizational development, and facilitate change implementation.
- Gain insight into specific functions to understand other functions involve in human resource including but not limited to:

- Human resource information systems
- Career management and development
- Performance management
- Compensation and reward system
- Reputation and ethic management

MODULE NAME: HUMAN RESOURCE DEVELOPMENT 11

MODULE OVERVIEW

The Human Resource Development II course seeks to contextualise the organisation in the broader environment in which it exists through examining the organisation as part of a larger system. The aim of this course is to provide learners with an in-depth understanding of selected topics in Human Resource Development in an organisation.
Human Resource Development II explores the dimensions of Human Resources Development that build on the knowledge acquired in Human Resource Development I. In addition, some of the key contemporary issues facing Human Resources Development Practitioners are identified and discussed. The main thrust of the course applies to examining Human Resource Development as it pertains to employees within and outside organisations. The main objective in transferring this knowledge to the learner is to enable the learner to apply this knowledge within organisations.

MODULE OUTCOMES:

After studying this learning unit you as a learner should be able to have an understanding and applicability of:

A qualifying learner will be able to:

- Critically review the global skills development models and indicate how they have shaped the South African training and development system.
- Examine the historical evolution of the South African training and development system.
- Explain the training and development challenges in South Africa and how they impact on training and development initiatives at organisational level.
- Discuss the importance of uplifting peoples' skills in an organisational context.
- Explain the purpose of the South African skills development legislation.
- Evaluate the South African government initiatives to raise the skills profile in the labour market.
- Synthesise the importance of the National skills Development strategy in South Africa.
- Critically discuss the role of the different structures created by the skills development legislation and show how these impacts on training and development efforts in South African organisations.

MODULE NAME: LABOUR LAW

MODULE OVERVIEW

After having completed this subject learner should be able to demonstrate an understanding of the legal principles which govern the employment relationship.

MODULE OUTCOMES:

Successful completion of Labour Law (LABL110) means that the learner will be able to:

- Appreciate the common law contract of employment and the differences between an employee and an independent contractor;
- Explain and discuss the main objectives of the Labour Relations Act 66 of 1995 (the "LRA"), collective bargaining as well as strikes and lock-outs.
- Give an exposition of different types of dismissals, requirements for fair dismissal, remedies for unfair dismissal and the dispute resolution path for various types of dismissals.
- Identify employer conduct which amounts to an unfair labour practice as contemplated in section 186(2) of the LRA.
- Apply provisions of the Basic Conditions of Employment Act 75 of 1997 to scenario-type questions.
- Understand some important sections of the Occupational Health and Safety Act 85 of 1993.

MODULE NAME: BUSINESS MANAGEMENT 111

MODULE OVERVIEW:

Business Management 111 is aimed at equipping students with skills in strategic direction and environmental analysis, strategy formulation, purchasing and supply chain perspective, strategic marketing as well as entrepreneur skills. This will give students an insight and a holistic overview of how a business organisation operates and how it is managed.

MODULE OUTCOMES:

Students must be able to:

- Analyse business environments by identifying challenges and opportunities for business and applying applicable strategies to deliver value to stakeholders.
- Demonstrate analytical and problem-solving skills within various disciplines of business, ie, strategic management, strategic marketing and purchasing.
- Understand the differences between purchasing management, supply management, logistic management, supply chain management and the entire value chain management as concepts that have a great impact on how goods and services are sourced within organisations.
- Understand the concept of entrepreneurship and be able to apply a business model that is relevant to the nature of the business.
- Create and grow a new business venture as an alternative to seeking employment.

2.2 DEPARTMENT OF HUMAN RESOURCE MANAGEMENT

Advanced Diploma in Human Resource Management

Qualifications	**SAQA ID**
Adv. Dip: HRM	**94853**
NQF Level: 7	**SAQA Credits: 120**

Rationale for the Qualification

This qualification is designed to address skills gap in Human Resource Management and Training and Development cited as scarce and critical skills in the country. It is further designed to address the articulation route to higher qualifications for learners who complete a Diploma in Human Resource Management at NQF level 6. The Advanced Diploma in Human

Resource Management which is offered at Level 7 articulates horizontally into a Degree or vertically into a Postgraduate Diploma or Honours Degree at Level 8. It replaces the Bachelor of Technology Human Resource Management at NQF Level 7.

Statement of Purpose

The purpose of this qualification is to equip learners with the necessary competence to i) support and implement procedures and systems that promote best Human Resource Management (HRM) practices in the organisation, ii) identify skills requirements (workforce planning) of the organisation, iii) acquire an understanding of people dynamics and its impact in the workplace and on productivity and, iv) ensure compliance with Human Resource Management legislation and trends.

In addition, it is designed to allow qualifying learners an opportunity to acquire applied competence in the field of Human Resource Management required for registration with the professional body South African Board for People Practices (SABPP).

Qualification Rules

This qualification consists of 6 compulsory modules at NQF Level 7, totaling 120 Credits:

Exit Level Outcomes

A learner who successfully completes this programme will be able to:

1. Support and implement processes, procedures and systems.
   > Range: Strategic planning for HRM and practices, acquisition, development, utilisation of people, compensation and administration related to HRM.
2. Promote best HRM practices in the organisation.
3. Identify skills requirements (workforce planning) of the organisation.
4. Acquire understanding of people dynamics and its impact in the workplace and on productivity.
5. Ensure compliance with HR legislation and trends.

Admission requirements

An appropriate Diploma in Human Resource Management or equivalent applicable qualification of 360 credits at NQF level 6. An average pass mark of 60% or more from major subjects is the minimum requirement for admission in this programme. In instances where a student obtained less than 60%, a minimum of two years' experience in a Human Resource related field will be considered.

ALL ADMISSIONS ARE BASED ON A SELECTION PROCESS ONLY!!!

Duration of Study

Full-time: One year
Part-time: Two year

Curriculum Compilation and Pre-Requisites

Subjects, Curriculum Compilation and Pre-Requisites

Advanced Diploma: Human Resource Management (94853)							
Code	Subject	C/O	Semester /Year	Assessment Method	NQF Level	Credits per module	Pre-requisites

AHRD040	Adv. Human Resource Development IV	C	Y	Exam	7	24	N/A
ADLR040	Adv. Labour Relations IV	C	Y	Exam	7	24	N/A
ADSM040	Adv. Strategic Management IV	C	Y	Exam	7	24	N/A
AHRM040	Adv. Human Resource Management. IV	C	Y	Exam	7	24	N/A
INRM040	Introduction to Research Methodology	C	S	Exam	7	12	N/A
ORGB040	Organisational Behaviour	C	S	Exam	7	12	N/A
C = Compulsory; O = Optional and CA = Continuous assessment							

Teaching, Learning and Assessment

Integrated Assessment:
All assessments will integrate knowledge, skills, attitude and applied competence of the discipline. The institutional assessment policy makes provision for assessment instruments ranging from written or oral tests, presentations on topical business issues, assignments, projects, case studies or simulation exercises to name a few.

Formative Assessment:
For this qualification a minimum of two assessments constitute a year mark. Learners are expected to write at least one test and other type of group assessment. Lecturers are encouraged to use a variety of assessment instruments in order to cater for different learning abilities of learners. The weighting of the formative assessment is 50%.

Summative Assessment:
Learners are expected to compile one comprehensive individual project which assesses multiple learning outcomes. The weighting of the project is 50%.

A candidate passes the subject if a final mark of at least 50% is obtained. The final mark consists of the year mark and examination mark in the ratio of 50:50.

Work Integrated Learning

N/A

Curriculum Content

MODULE NAME: ADVANCED HUMAN RESOURCE MANAGEMENT IV

MODULE OVERVIEW:
AHRM IV is intended to ensure clear understanding of what being a HR practitioner entails, what is expected of HR managers/practitioners, what type of work they do and what skills, knowledge and attitudes needed to operate optimally. This is important for HRM students because, as HR practitioners and managers of the future, they are going to be part of the business world and must be able to deal effectively with the organisation's human capital and the various factors that bring about change in the workplace.

MODULE OUTCOMES:

Students must be able to:
- Formulate and align HR strategies with the organisation's overall strategy.

- Analyse human resource systems and human resource information systems in the context of organisational change.
- Apply advanced skills in evaluating HR practices and performance of individuals, groups and systems for a company.
- Acquire entrepreneurial skills to establish an HR consultancy.
- Evaluate HR practices of multi-national companies.

MODULE NAME: ADVANCED HUMAN RESOURCE DEVELOPMENT IV

MODULE OVERVIEW:

AHRD IV course seeks to contextualise human resource development in the broader environment of the organisation and the environment within which it operates. The aim of this course is to provide learners with an in-depth understanding of selected topics in Human Resource Development and its alignment to the national training and development goals and the HRD strategy of the country.

Advanced Human Resource Development IV builds on the knowledge acquired in Human Resource at Diploma level. In addition, some of the key contemporary issues facing Human Resources Development and Training and Development Practitioners are identified and discussed.

MODULE OUTCOMES

Student must be able to:

- Design a human resource development strategy for a company in line with employment equity and black economic empowerment criteria.
- develop and implement a quality management system for human resource development in an organisation.
- Formulate a mentoring and coaching implementation plan for an organisation.
- measure the financial return on investment (ROI) of a human resource development intervention to show the HRD value proposition for an organisation.

MODULE NAME: ADVANCED STRATEGIC MANAGEMENT IV

MODULE OVERVIEW:

ADSM IV is aimed at equipping students with skills in strategy-formulating, strategy-implementing, understanding the relevance of strengthening a company's resource complement and upgrading its competencies and competitive capabilities to match market realities and create a sustainable competitive advantage.

MODULE OUTCOMES:

Student must be able to:

- Demonstrate an ability to formulate a corporate strategy using all the required strategic planning tools.
- Demonstrate an ability to implement the strategy taking into consideration the internal resources and capabilities of the company.
- Demonstrate an ability to monitor and analyse strategic pitfalls and take sound business decisions.
- Identify and analyse the nature of strategic advantage, process and decision;
- Identify and analyse strategic issues confronting managers of the strategic process;

MODULE NAME: ADVANCED LABOUR RELATIONS IV

MODULE OVERVIEW:

ADLR IV focuses on the current developments of collective labour law whilst emphasising the roles played by the state, capital and labour in the context of South Africa. Collective labour law governs the relationships between employers, or groups of employers, on the one hand and employees on the other the hand who have decided to act collectively-generally through the establishment of trade unions. The right to act collectively has its roots in freedom of association.

MODULE OUTCOMES

Students must be able to:

- Understand the development of collective labour law globally in the South African context.
- Understand the legal framework and how expatriates are affected in multi-national organisations.
- Demonstrate an increased understanding of procedural requirements for a strike and lockout to be "protected", resulting in the employees being protected from being dismissed.
- Reflect critically on what avenues are available to employers when faced with a strike action.

MODULE NAME: ADVANCED ORGANISATIONAL BEHEHAVIOUR IV

MODULE OVERVIEW:

ORGB IV is a field of study devoted to understanding, explaining, and ultimately improving the attitudes and behaviour of individuals and groups in organizations. The purpose of Advanced Organisational Behaviour is to understand what being a HR practitioner entails, what are expected of HR managers/practitioners, what type of work they do and what skills, knowledge and attributes they need in order to do it. This is important because, as Human Resource practitioners and managers of the future, are going to be part of the business world and must be able to deal effectively with the organisation's resources and the various factors that bring about change in the workplace.

MODULE OUTCOMES

Students must be able to:

- Describe distinctive elements of organizational culture, social influence, interpersonal communication, and organizational change as applied in the work settings.
- Attain competent knowledge in a thematic area within the major.
- Demonstrate critical awareness of the influence of organizations in society in the context of at least one of the following: class and social stratification, gender, power, community and economic development, technology, alternative organizational forms, critical theory, an industry such as education, law or health care.

MODULE NAME: INTRODUCTION TO RESEARCH METHODOLOGY

MODULE OVERVIEW:

The primary purpose of basic research methodology is documentation discovery, interpretation or the research and development of methods and systems for the development of human knowledge. The aim is of this module is to help the students understand research processes and skills needed to conduct research projects.

MODULE OUTCOMES:

Student must be able to:

- Conduct research under supervision in the field relating to human resource management.
- Contextualise existing human resource management knowledge in the fields of business, commerce and management.
- Report research findings

2.3. DEPARTMENT OF HUMAN RESOURCE MANAGEMENT

Postgraduate Diploma in Human Resource Management

Qualifications	**SAQA ID**
PGDip: HRM	**101558**
NQF Level: **8**	**SAQA Credits**: **120**

Rationale for the Qualification

The aim of this qualification is to equip learners to address scarce and critical skills in the country. It is designed to allow qualifying learners an opportunity to acquire applied competence in the field of Human Resource Management required for registration with the professional body (South African Board for People Practices (SABPP). Its curriculum is based on the human resource standards designed by SABPP which will facilitate the registration of qualifying students as Chartered Human Resource Practitioners.

Furthermore, it is designed to align the Human Resource Management qualifications with the Higher Education Qualifications Sub-Framework (HEQSF). The qualification provides an articulation route to higher qualifications for learners who complete the Advanced Diploma in Human Resource Management at NQF level 7. The Postgraduate Diploma in Human Resource Management which is offered at Level 8 articulates horizontally into Honours Degree or vertically into a Master's Degree at Level 9.

Statement of Purpose

The Postgraduate Diploma in Human Resource Management is designed to provide learners with in-depth knowledge and skills in Human Resource Management which will enable them to independently gather analyse and apply the knowledge gained to solve complex Human Resource Management problems in the business environment.

Qualification Rules

This qualification comprises 5 compulsory modules at Level 8 totaling 120 Credits.

Exit Level Outcomes

A learner who successfully completes this programme will be able to:

- Contribute to the development and implementation of a Human Resource strategy for the organisation.
- Support and implement procedures and systems related to the human resource management clusters.
- Contribute towards the organisational strategic planning process.
- Conduct applied research and compile reports in the broad field of Human Resource Management.
- Understand the broad vision and understanding of the economy within which the business operates (macro-vision).

Admission requirements
An appropriate Bachelor's degree, BTech or Advanced Diploma in Human Resource Management or related field (CESM codes 40101 and 40801/2/3&5) with an average pass mark of 60% or more. In instances where a student obtained less than 60%, a minimum of two years' experience in a Human Resource related field will be considered.

ALL ADMISSIONS ARE BASED ON A SELECTION PROCESS ONLY!!!

Duration of Study
Full-time: One year
Part-time: Two years

Curriculum Compilation and Pre-Requisites

Subjects, Curriculum Compilation and Pre-Requisites

Postgraduate Diploma: Human Resource Management (101558)							
Code	Subject	C/O	Semester /Year	Assessment Method	NQF Level	Credits per module	Pre-requisites
PHRD181	Adv. Human Resource Development V	C	Y	Continuous assessment	8	24	N/A
PARL181	Adv. Labour Relations V	C	Y	Continuous assessment	8	24	N/A
PASM181	Adv. Strategic Management V	C	Y	Continuous assessment	8	24	N/A
PSHD181	Strategic Human Resource & Organisational development V	C	Y	Continuous assessment	8	24	N/A
PREM181	Research Methodology	C	Y	Continuous assessment	8	24	N/A
C= Compulsory; O= Optional							

Teaching, Learning and Assessment

Integrated Assessment:
All assessments will integrate knowledge, skills, attitude and applied competence of the discipline. The institutional assessment policy makes provision for assessment instruments ranging from written or oral tests, presentations on topical business issues, assignments, projects, case studies or simulation exercises to name a few.

Formative Assessment:
For this qualification a minimum of two assessments constitute a year mark. Learners are expected to write at least one test and other type of group assessment. Lecturers are encouraged to use a variety of assessment instruments in order to cater for different learning abilities of learners. The weighting of the formative assessment is 40%.

Summative Assessment:
Learners are expected to compile one comprehensive individual project which assesses multiple learning outcomes. The weighting of the project is 60%.

A candidate passes the subject if a final mark of at least 50% is obtained. The final mark consists of the formative and summative mark in the ratio of 40:60 respectively.

Course Content

MODULE NAME: ADVANCED STRATEGIC MANAGEMENT V

MODULE OVERVIEW

An organisation's strategy provides direction and guidance in terms of not only what the organisation should do but also what it should not do. Knowing what not to do can be as important as knowing what to do strategically. At best making the wrong strategic moves will prove a distraction and a waste of organisation's resources. At worst, it can bring about unintended long-term consequences that put the organisation's very survival at risk.

It is however important to continuously review the strategy because of the dynamic nature of the business environment within which an organisation operates. Regardless of whether the organisation's strategy changes gradually or swiftly, the important point is that the task of crafting strategy is not a one-time event but always a work in progress. This is the main lesson that the course is intended to teach students at this level.

MODULE OUTCOMES

Student must be able to have:

- An in-depth understanding and ability to compile / formulate a strategic plan of a large organisation.
- An understanding of the five-step process of crafting and executing a strategy, namely:
- Setting a strategic direction for the organisation;
- Developing strategic as well as financial objectives with which to measure progress;
- Crafting strategies to achieve targets;
- Implementation and execution of strategy; and
- Monitoring progress and making corrective adjustments needed.

MODULE NAME: ADVANCED LABOUR RELATIONS V

MODULE OVERVIEW

Advanced Labour Relations V is offered as a course in the Postgraduate Diploma in Human Resource Management and is aimed at empowering learners with comprehensive knowledge, applied competence and the ability to solve complex problems in individual and collective labour law for continued personal intellectual growth, gainful economic activity and valuable contributions to society.

Advanced Labour Relations V provides an understanding of the development of labour law globally and its applicability to the South African context in resolving organisational conflict. The acquisition of the appropriate collective bargaining and negotiation skills on completion of the course promotes the management of organisational-wide conflict and quality labour relations management.

MODULE OUTCOMES

Students must be able to:

- Develop a strategic plan to manage the labour relations function in an organisation;
- Apply South African labour legislation appropriately within an organisation;
- Demonstrate the requisite knowledge for the management of employee relations in an organisation;
- Negotiate in a specific situation within the context of the South African legislative and organisational policy framework;

- Demonstrate an understanding of the development of labour legislation globally and its applicability to South African context;
- Apply the requisite negotiation skills applicable to the specific situations within the context of the legislative and organisational policy framework; and
- Manage the achievement of the objectives of the organisation by linking the organisational and labour relations strategies.

MODULE NAME: ADVANCED HUMAN RESOURCE DEVELOPMENT V

MODULE OVERVIEW

This module enables students to manage appropriate HRD policies, processes, procedures and interventions in line with the organisational priorities, national imperatives, legislative framework, trends and developments in a broader global environment. The curriculum includes various HRD perspectives; theory; policy formulation; a framework for processes; quality assurance; leadership and management development.

The aims and objectives of this program include planning training programs based on identified performance gaps by enabling individuals to achieve short-term and long-term career goals. HRD supports succession planning by implementing leadership development programs. Human Resource Development programs also help organizations comply with the HRD legal framework.

MODULE OUTCOMES

Student must be able to:

- understand and apply the principles and concepts of organisational development at a strategic level and to enhance organisational performance at the employee, team and organisational levels;
- develop and manage appropriate HRD interventions in line with the organisational priorities, national imperatives, legislative framework, trends and developments in a broader global environment;
- gain comprehensive and specialised knowledge, critical reasoning ability in organisational development and real-world problems related to the field of OD in the South African organisational context;
- understand the formulation, implementation and control of strategic plans and be able to evaluate and develop a strategic HRD plan; and
- establish, manage and maintain a strategic HRD portfolio and strategy for an organisation and ensure compliance with the legislative prescripts related to HRD.

MODULE NAME: STRATEGIC HUMAN RESOURCE MANAGEMENT & ORGANISATIONAL DEVELOPMENT V

MODULE OVERVIEW:

This discipline covers the concepts and practices that guide and align Human Resource Management philosophy, tactical planning and practice with the strategic and long term goals of the organization, with a particular focus on human capital. It deals with the macro-concerns of the organization regarding structure, quality, culture, values, commitment, matching resources to future needs and other long-term issues.

Strategic HRM gives direction on how to build the foundation for strategic advantage by creating an effective organizational structure and design, culture, employee value proposition, systems thinking, an appropriate communication strategy and preparing an organization for a changing landscape, which includes downturns and mergers & acquisitions. Sustainability and corporate social responsibility come within the ambit of this discipline,

especially with reference to organizational values and their expression in business decision making.

Strategic HRM emphasizes organizational codes of ethics, managing the societal impact of business decisions, philanthropy and the role of the human resource professional in improving the quality of life of employees, their families and the community at large.

MODULE OUTCOMES

A student must be able to:

- Introduce students to organisational change and development theories and develop fundamental knowledge of organisational change as an area of management.
- Explore various models and analytical tools used by organisational change practitioners.
- Identify and critically evaluate a variety of organisational change interventions.
- Develop critical thinking and analytical skills in applying organisational change theory to various workplace situations.

MODULE NAME: RESEARCH METHODOLOGY

MODULE OVERVIEW

This course presents exposure for theoretical understanding of a wide range of research approaches in management sciences as well as prepares students for application of research processes for practical problem solutions in the business environment.

MODULE OUTCOMES

Student must be able to:

- Demonstrate an understanding of the principles underlying the design, process and analysis of a range of management research;
- Identify appropriate research methods for particular research settings and be able to relate different research methods to theoretical perspectives;
- Independently carryout research projects; and
- Report research findings

3. DEPARTMENT OF MARKETING

3.1 Diploma in Marketing (MAKDIP) SAQA ID 96863
NQF Level 6 SAQA Credits: 360

The rationale for the Qualification:

This qualification opens up students to various career paths in the corporate world. It equips students with competencies that enable them to understand basic functional levels across the business and their contribution to the organisation's mission and vision. The qualification aims to teach marketing/business skills which include the following:

- Marketing planning and implementation of marketing plans.
- Customer relationship management (CRM).
- Comprehension and analysis of the customer decision-making process (DMP) and how to manage it effectively.
- Market segmentation, targeting and brand/product positioning.
- How to optimise the concept of the marketing mix to deliver superior service quality and outperform competitors.

Statement of Purpose:

The purpose of this qualification to develop marketers from entry to middle management level. This is achieved through the delivery of up-to-date marketing content, but also by developing soft skills such as organisation, problem-solving, people-centredness, digital and information literacies. The qualification provides the entry point into the diverse field of marketing; hence it prepares future marketers for various industries.

Exit Level Outcomes:

On completion of this qualification, students must be able to:

- Demonstrate fundamental and practical knowledge of marketing as a field of study, particularly striking a balance between financial interests and status of an organisation and the customer interests.
- Practice and coordinate the fundamentals of selling.
- Appreciate the fundamentals of demand and supply in an economic situation.
- Appreciate the implications of relevant laws on marketing activities.
- Contribute to the strategic marketing planning process levels.
- Formulate a research problem, collect, analyse and interpret data as part of the marketing information systems (MIS).
- Integrate and deploy technology in various aspects of marketing.
- Plan, determine and implement an integrated marketing communications strategy.

Qualification Rules:

Students registering for the first time for this qualification must have satisfied entry requirements specified in admission requirements [see (a)(i – iv) below] and also available - at Central Applications Office (CAO) platform. Students who have been studying at other institutions of higher learning but seeking to finish their studies at MUT cannot be credited with more than seven (7) courses which are 50 per cent of the total curriculum of fourteen (14) courses.

Admission requirements: Diploma in Marketing

(i) National Senior Certificate with rating pass codes:

English Home Language	4
Or	
English First Additional Language	5
And	
Mathematics	4
Or	
Mathematical Literacy	5
Or	
Accounting	4
And	
Any other four subjects with a minimum pass of	3
The total minimum number of points required in	25

Life Orientation and subjects passed with a rating pass code of 1 or 2 will not be considered for selection.

(ii) Senior Certificate (Old curriculum with letter symbols)

English (Higher Grade)	C
Or	
English (Standard Grade)	B
Mathematics (Higher Grade)	E
Or Mathematics (Standard Grade)	D
Or Accounting (Higher Grade)	E
Or Accounting (Standard Grade)	D
And	
Any other additional subjects passed at different grades except Lower Grade	
The total minimum number of points required	D average (50%)

(iii) National Certificate Vocational (NCV) level 4

English	60%
And	
Mathematics	40%
Or	
Mathematical Literacy	50%
And	

Four other compulsory subjects with a minimum of 40%

(iv) National Certificate N4 (TVET Colleges)

Students who obtained minimum points between 16 and 19 from Matric and passed four subjects at N4 Level with a minimum of 50% will be considered for selection. All business subjects will be considered.
The satisfaction of other requirements for further selection may be required.

Duration of Study:

The qualification is meant to be completed in **three years as a minimum duration**. However, a struggling student may complete the qualification in **five years as a maximum duration**.

Teaching, Learning and Assessment:

A blended learning approach will be adopted throughout the courses that make up this qualification. Contact sessions (lectures) are timetabled. There are four assessments in total, as indicated below.

The assessments are structured as follows:

Assessment 1	Weighting: 20% of the assessment(s) score
Assessment 2	Weighting: 30% of the assessment(s) score
Assessment 3	Weighting: 50% of the assessment(s) score

NB: There could be many sub-assessments that make up the three-assessment listed above. The sum of weighted scores from the three broad assessments listed above will be your year mark (famously known as the DP)

Examination (*Assessment 4*): Students must accumulate a *minimum year mark of 40%* to qualify for the final examination.

The final mark will be weighted as follows: Year mark X 0.40 plus examination mark X 0.60

Curriculum Compilation and Pre-Requisites:

Name of the course	Course code	Year of study	Pre-requisite course	NQF Credits	NQF Level
Marketing 1	MARK100	1	N/A	24	5
Personal Selling 1	PERS100	1	N/A	24	5
Accounting for Marketers 1	ACMA100	1	N/A	24	5
Economics 1	ECMI100	1	N/A	24	5
English Communication Skills	ECOM100	1	N/A	24	5
Marketing II	MARK200	2	Marketing 1	24	6
Consumer Behaviour 1	CONB200	2	N/A	24	6
End-User computing 1	ERCP200	2	N/A	24	6
Mercantile Law 1	MLAW200	2	N/A	24	6
Quantitative Techniques 1	QTEC200	2	N/A	24	6
Marketing III	MARK300	3	Marketing II	30	6
Marketing research III	MRES300	3	N/A	30	6
Advertising & Sales Promotion 1	ASPR300	3	N/A	30	6
Sales Management III	SMAN300	3	Personal Selling	30	6

Work Integrated Learning: currently not a pre-requisite for graduation.

Curriculum Content:

Name of course	Brief course content
Marketing 1	The curriculum of this course includes: • Analysis of the foundation of marketing which will include marketing defined, the evolution of marketing, marketing strategy and elements of the marketing mix, marketing in the future. • Understanding environmental forces and marketing ethics such as analysis of the marketing environment, elements of the marketing environment and ethics and social responsibility in the marketing environment. • Reviewing strategic marketing planning and forecasting which will unpack strategic planning concepts, the strategic marketing planning process, sales forecasting and components of a marketing plan. • Evaluating the consumer market and consumer behaviour and the marketing mix by understanding consumer decision making, influences on consumer decisions.

	• Formulation of marketing research and analysis in the role of marketing information, the marketing research process, researching in international markets and the ethics of marketing research. • Evaluation of segmentation, targeting, and positioning by identifying market segments, selecting target segments, positioning and the repositioning process. • Analysing product concepts in digging deeper as to what is a product? • Product classification and elements of a product with special product issues. • Reviewing product management by managing the product mix, developing new products and predicting new-product success. • Understanding marketing channels and foundations of marketing channels, basic channel functions, types of marketing channels, channel strategy decisions and legal issues. • Description of promotional strategies and processes by understanding the role of promotion, the elements of promotion, the promotion and the communication process. • Understanding intercultural and international marketing, intercultural marketing, and international marketing, assessing social elements in international marketing and developing the level of international involvement and developing international marketing strategies. • Description of quality and customer service by understanding the new meaning of quality and customer service, quality and customer service in the marketing mix, marketing department's contribution to product quality and a plan for customer service.
Personal selling 1	The curriculum of this course includes: • Defining personal selling as an element of marketing. • Discussing the stages of the selling process. • Reviewing various sales closing techniques. • Setting sales goals, planning sales targets and allocating sales territories. • Discussing the customer and the buying process. • Discussing the ethical and legal issues in personal selling.
Accounting for Marketers 1	The curriculum of this course includes: • Introducing the concept of double entry bookkeeping. • Defining and drawing subsidiary books and ledger accounts. • Preparation of a trial balance, Profit and loss accounts/income statement and balance sheet and explaining their importance to the planning of business activities.
Economics 1	The curriculum of this course includes: • Introduce the fundamental principles of economics, the law of demand and supply, elasticities. • Explaining and interpreting the production possibilities frontiers (PPF). • Discussing the factors of production and the diminishing law of marginal returns. • Evaluating different market situations and business cycles. • Discussing different market structures. • Differentiating the different economic schools of thought.

	• Discussing the economic principle of unemployment.
English communication skills 1	The curriculum of this course includes: • Develop the students' abilities in English grammar, oral skills, reading, and study skills. • Improve students' accuracy and fluency in producing and understanding spoken and written English. • Assisting students to become more competent, efficient and perceptive throughout their academic journey as marketers through writing and speaking/presenting the marketing concepts. • Developing soft skills needed post university life, for example, writing business/application letters and curriculum vitae, and preparation for job interviews.
Marketing II	The curriculum of this course includes: • Analysis of the marketing environment. • Discussing possible marketing strategies, e.g., growth strategies, vertical and horizontal strategies. • Discussing marketing mix related strategies. • Examining the concepts of segmentation, targeting and positioning in the quest of building brands.
Consumer Behaviour 1	The curriculum of this course includes: • Examining the consumer decision-making process (DMP). • Exploring the concept of positioning in line with the DMP. • Exploring the concept of motivation and learning as aspects of consumer behaviour. • Discussing the factors influencing consumer behaviour and choice.
Mercantile Law 1	The curriculum of this course includes: • Introduction to the fundamentals of law. • Expound on the law of contract (only business-related contracts) that marketers need to be aware of in their day-to-day duties. • Examine the Consumer Protection Act, National Credit Act, Intellectual Property and the Competition Law. • Explain the creation of different forms of organisations and the applicable laws.
End-use Computing 1	The curriculum of this course includes: • Introduction to basic computing. • Evaluating different search engines used for marketing communications. • Creating emails and attaching different file formats. • Examining different cloud storage applications, and creating, storing and sharing files on the cloud. • Discussing ethical and security issues that comes with the use of internet and digital platforms, for example, cyberbullying, online etiquette, security alertness, etc. • Introduction to coding.

Quantitative Techniques 1	The curriculum of this course includes:
	• Defining statistics and its importance for business management.
	• Setting the statistical scene.
	• Introducing students to exploratory data analysis, that is;
	  o Summarising/presenting data using: summary tables and graphs, and
	  o Describing data through numeric descriptive statistics.
	• The foundation of statistical inference: probability and sampling.
	• Making statistical inferences.
	• Introduction to statistical models for forecasting and planning.

Marketing III	The curriculum of this course includes: • Examining the concepts of customer value creation, satisfaction and loyalty. • Expounding on environmental scanning and industry analysis. • Discussing organisational analysis and competitive advantage. • Introduction to services marketing. • The basic considerations for global marketing.
Marketing Research III	The curriculum of this course includes: • Defining what is research and its importance for marketers. • Introduce students to the marketing research process. • Explicitly discuss various research types (quantitative and qualitative) and designs. • Explore data sources and types, and data collection techniques. • Discussing the marketing information systems (MIS) and research as an instrumental aspect of MIS.
Advertising & Sales Promotion 1	The curriculum of this course includes: • Evaluation of organisations' marketing plans to advise on marketing communication plans and strategy. • Review and explanation of the relationship between the elements/stages of the Integrated Marketing Communications (IMC) plan. • Development and implementation of Integrated Marketing Communications campaign to communicate with the target audience(s) to achieve efficiency, effectiveness and ROI. • Analysis of the dictates of emerging trends in marketing communications – Digital marketing communications (the big data wave, mobile marketing and social media/content marketing). • Description and discussion of the organisational structures/approaches to marketing communications. • Formulation of promotional objectives and budgets and link them to media planning.
Sales Management III	The curriculum of this course includes: • Discuss the development, evolution of selling and the characteristics of modern selling. • Evaluating the nature and role of selling. • Explaining the place of selling in the greater marketing plan. • Setting of sales objectives and formulation of sales strategies.

	• Distinguishing between consumer and organisational buyers. • Salesforce management: recruiting, motivating, training and compensating salesforce. • Setting and allocation sales quotas. • Forecasting and planning for sales. • Introducing the dynamics of international selling and sales management.

Qualifications

Advanced Diploma in Marketing (ADVMAK) **SAQA ID: 94555**
NQF Level: 7 **SAQA Credits 120**

The rationale for the Qualification:

this qualification is a progression from the undergraduate Diploma in Marketing to bring students to a bachelor's degree level of study in order enable them to advance to the Post-graduate Diploma in Marketing which is equivalent to an honour's degree.

Statement of Purpose:

The functional purpose of this qualification is to equip marketers who are operating at junior and middle management with knowledge and skills to apply strategic marketing in making the necessary decisions for the business.

Qualification Rules:

students registering for the first time for this qualification must have satisfied entry requirements specified in admission requirements made available in the handbook. Students qualify by having completed the diploma in Marketing or an equivalent qualification. Recognition of prior learning is also considered when considering an application of a person who has work marketing experience plus a qualification which is not at the same NQF level with the Diploma in Marketing.

Exit Level Outcomes:

A graduate of the Advanced Diploma in Marketing must be able to:

- Formulate and apply business strategy in planning
- Scan the business environment and formulate a marketing strategy
- Craft and execute marketing strategies for all types of products
- Apply marketing principles and strategy in services marketing
- Plan and conduct marketing research for corporate business and marketing decision-making

Admission requirements: Advanced Diploma in Marketing

National Diploma in Marketing passed with an aggregate 60% or above. In instances where the prospective student obtained less than 60% aggregate pass, a minimum of two years working experience in a Marketing related field will be considered. Other admission requirements will be applied as detailed in the Recognition of Prior Learning policy.

The satisfaction of other requirements for further selection may be required.

Duration of study

1-year fulltime study
2 years part-time study

Please note: as from 2020, the Advanced Diploma became a one year full-time programme. Those intending to take up an option for two years must motivate for consideration.

Teaching, Learning and Assessment:

A blended learning approach will be adopted throughout the courses that make up this qualification. Contact sessions (lectures) are timetabled. There are four assessments in total, as indicated below.

The assessments are structured as follows:

Assessment 1	Weighting: 20% of the assessment(s) score
Assessment 2	Weighting: 30% of the assessment(s) score
Assessment 3	Weighting: 50% of the assessment(s) score

NB: There could be many sub-assessments that make up the three assessments listed above. The sum of weighted scores from the three broad assessments listed above will be your year mark (famously known as the DP) which carries 40% of the final mark.

Examination (*Assessment 4*): Students must accumulate a *minimum year mark of 40%* to qualify for the final examination which carries 60% of the final mark.

The final mark will be weighted as follows: Year mark X 0.40 plus examination mark X 0.60

Curriculum Compilation

Name of the course	Course code	Year of study	Pre-requisite course	NQF Credits	NQF Level
Advanced Marketing IV	ADMK040	1	N/A	24	7
Advanced Services Marketing IV	ASSM040	1	N/A	24	7
Advanced Promotion IV	ADPR040	1	N/A	24	7
Advanced Marketing Research IV	ADMR040	1	N/A	24	7
Advanced Business Strategy	ADBS040	1	N/A	24	7

Work Integrated Learning: Not applicable

Curriculum content

Name of the course	Brief course content
Advanced Marketing IV	The curriculum of this course includes: • Cultivating an appreciation of the nature of strategic planning, particularly the essence of mission and vision as the yardstick of planning. • Analysis of marketing opportunities and threats. • Explaining strategic concepts and theories/models. • Relating various elements of the marketing strategy. • Developing a strategic marketing plan to guide organisational activities. • Explaining of the importance of strategy implementation and audit.
Advanced Business Strategy IV	The curriculum of this course includes: • Recapping on strategy • Conducting industry analysis for strategy formulation. • Exploring organisational resources and capabilities for competitive strategy.

	• Further exploring strategy: Strategy development processes and organising and strategy. • Introducing stakeholder and corporate governance. • Evaluating the importance of organisational history and culture. • Recapping on corporate strategy and models. • Introduction to international/global strategic dynamics. • Evaluating strategies. • Introduction to leadership and change management.
Advanced Services Marketing IV	The curriculum of this course includes: • Introducing services marketing and highlighting how it is different from marketing of physical goods. • Discussing the foundations for services marketing and understanding consumer behaviour in service environments. • Aligning service design and standards. • Delivering and performing service. • Managing service promises through an extended Ps model. • Examining service and profitability.
Advanced Promotion IV	The curriculum of this course includes: • Analysis of a situation requiring a promotion event. • Conceptualisation and development of an event plan. • Evaluation of the effectiveness of an IMC program or event. • Evaluation of the role of IMC in brand Management. • Discussion of the role of IMC in buyer behaviour. • Discussion and distinguishing alternative marketing from traditional marketing. • Development of a media plan and strategy.
Advanced Marketing Research IV	The curriculum of this course includes: • Explaining the reasons why marketing research is essential to marketers and the organisation at large. • Discussing how marketing or business information is mined through research processes. • Defining research-related terminology. • Highlighting ethical issues to be observed in marketing research. • Conducting literature review. • Adhering to academic writing standards including Referencing/Citation. • Writing a research proposal that meets all research process standards and culminate into a full research project.

Qualifications

Postgraduate Diploma in Marketing (PGDMAK) **SAQA ID: 110929**
NQF Level: 8 **SAQA Credits 120**

The rationale for the Qualification:

This qualification will address the needs of marketers who aspire to function at corporate decision-making level in any business organisation. Marketing Leadership and Planning, Analysis and Strategic Decision, and Managing Corporate Reputation, are listed as the first, fourth and fifth critical skills required to operate in marketing at corporate level with regard to the curriculum of this qualification.

Furthermore, this qualification will:

- Enable learners to function in specialised fields of general and marketing management, thereby preparing them to develop into Chief Marketing Officers (CMOs) of organisations.
- Equip executives operating at corporate level to initiate and manage marketing projects methodically and successfully in order to accomplish corporate goals.

There are many people either employed at middle and strategic marketing levels without a formal marketing qualification. For example, the Marketing Association of South Africa (MASA, 2019), in response to this gap recalibrated their designations to Strategic, Tactical and Operational levels. The emphasis was on the strategic marketing skills which were deemed to be in short supply. Therefore, this qualification will complement other approaches such as that by MASA to close this gap for the industry in need of strategic marketing skills.

Statement of Purpose:

The purpose of the Postgraduate Diploma in Marketing is to provide learners with skills work or promoted into the middle and senior management within organisations. Therefore, this qualification will contribute to growing strategic marketing skills base for the industry at large. Also, the qualification will provide a gateway for those who would want to study further and join academia. Qualifying learners can effectively function at strategic level of any organisation and also give them leverage to lead global campaigns.

Qualification Rules:

Students registering for the first time for this qualification must have satisfied entry requirements specified in admission requirements made available in this handbook and the Regulations. Students qualify by having completed the Advanced Diploma in Marketing or an equivalent qualification.

Exit Level Outcomes:

A graduate of the Postgraduate Diploma in Marketing must be able to:

- Develop effective high-level strategic marketing plans in line with an organisation's corporate and business strategic intent.
- Plan, organise, direct and control an event or project to achieve the set marketing objectives or devise solutions to business problems.
- Evaluate and analyse the dynamics impacting on global marketing environment to be able to lead organisation's global marketing campaigns.
- Plan for sourcing and storage or raw materials, manufacturing and storage of the product, and distribution of the product to the shop floor.
- Undertake a marketing audit and develop strategic options to make strategic decisions.
- Apply marketing research skills to evaluate, investigate, explore, and determine marketing, market and business problems.

Admission requirements: Postgraduate Diploma in Marketing

An Advanced National Diploma in Marketing passed with an aggregate 65% or above. In instances where the prospective student obtained less than 65% aggregate pass, a minimum of two years working experience in a strategic marketing-related field may be considered. Other admission requirements will be applied as detailed in the Recognition of Prior Learning policy.

The satisfaction of other requirements for further selection may be required.

Duration of study: 1 year – fulltime study

Teaching, Learning and Assessment:

A blended learning approach will be adopted throughout the courses that make up this qualification. Contact sessions

(lectures) will be timetabled. There are four assessments in total for all the courses except for Research Methodology, which will employ continuous assessment (CA) as indicated in the course outline.

The assessments for the other courses are structured as follows:

Assessment 1	Weighting: 20% of the assessment(s) score
Assessment 2	Weighting: 30% of the assessment(s) score
Assessment 3	Weighting: 50% of the assessment(s) score

NB: To allow for the full coverage of the planned curricula for the courses, there could be many sub-assessments that make up the three assessments listed above. The sum of weighted scores from the three broad assessments listed above will be used as the year mark (famously known as the DP) which carries 40% of the final mark.

Examination (*Assessment 4*): Students must accumulate a *minimum year mark of 40% (DP)* to qualify for the examination which carries the 60% of the final mark.

The final mark will be weighted as follows: Year mark X 0.40 plus examination mark X 0.60

Curriculum Compilation

Name of the course	Course code	Year of study	Pre-requisite course	NQF Credits	NQF Level
Supply Chain Management	SCMT050	1	N/A	20	8
Marketing Leadership and Planning	MLAP050	1	N/A	16	8
Project Management in Marketing	PMMT050	1	N/A	16	8
Global Marketing	GMKT050	1	N/A	16	8
Research Methodology	RMST050	1	N/A	36	8
Analysis and Strategic Decision	MASD050	1	N/A	16	8

Work Integrated Learning: Not applicable

Curriculum content

Name of the course	Brief course content
Supply Chain Management	The curriculum of this course includes: • The principles of supply chain management and strategies. • Inventory management. • Total quality management (TQM) • Using technology (and internet) to optimise SCM. • Retailing and SCM.
Marketing Leadership and Planning	The curriculum of this course includes: • Principles of leadership and change management • Understanding strategy and organisation. • Developing and evaluation of marketing/corporate plans. • Determination of target markets. • Environmental scanning to formulate winning strategies to attain organisation's mission and vision. • Implementing, evaluation/monitoring and control of strategy.
Project Management in Marketing	The curriculum of this course includes: • Introduction to project management. • Principles of project management planning.

	• Work breakdown structure (WBS). • Project management tools and techniques. • Project resource (financial, human and equipment) management, monitoring and control. • Project risk and contract management. • Project communications.
Global Marketing	The curriculum of this course includes: • Differentiate between international and global marketing. • Delineate the scope and challenges of global marketing. • Understand the key characteristics of key markets in different regions of the world, identify and analyse opportunities (and threats) and develop marketing strategies for these diverse global markets. • Demonstrate ability to implement global marketing strategies (GMS) including the Integrated Marketing Communications (IMC) thereof. • Appreciate the ethical and corporate social responsibility expectations by global markets.
Research Methodology	The curriculum of this course includes: • Writing and submitting a convincing research proposal. • Conducting literature review. • Adhering to academic writing standards including Referencing/Citation. • Developing a research tool, collecting and analysing data. • Writing a mini dissertation that meets all research standards and expectations.
Analysis and Strategic Decision	The curriculum of this course includes: • Introduction to management information systems (MIS). • External and internal business environmental audit. • Assessing marketing opportunities for strategic fitness. • Impact analysis of strategic decisions.

4. DEPARTMENT OF OFFICE TECHNOLOGY: 2023

41. Diploma in Office Management and Technology

NQF Level: 6 **SAQA Credits: 360**
Qualification: ID 72303

Rationale for the Qualification
The Office Management and Technology programme provides an opportunity for the learner to acquire a range of administrative skills and business management, crucial to the successful functioning of any organization.

Statement of Purpose
This qualification provides students with background knowledge of the concepts underlying many of the administrative tasks that they may be required to perform. It also prepares students fully for any eventuality in their future administrative careers so that they will be able to perform their duties efficiently and with confidence. The qualification gives students a thorough business background so that they understand the business environment in which they will be working.

Qualification Rules
A student will not be admitted to the following level of a subject if he/she has not passed the previous level e.g. if a student fails Information Administration I, he/she will not be allowed to register for Information Administration II until Information Administration I has been passed.

A student cannot do Work Integrated Learning if he/she has outstanding subjects from the previous years.

To be promoted to the next level of the course, the student shall pass at least three subjects, one or two of which should be a major subject.

Exit Level Outcomes

- A learner who successfully completes this programme will be able to:
- Demonstrate fundamental business administration or management competencies in the Administration and Information Management environment.
- Demonstrate proficiency in the application of administrative; Information and Communication Technology principles.
- Apply appropriate communication principles and skills in a multi-disciplinary business environment.
- Demonstrate knowledge of key Human Resources Management concepts and practices in the context of an administrative environment.
- Apply basic legal principles in the context of Business and Information Management activities.
- Demonstrate basic entrepreneurship knowledge and skills.

a. **Admission**

(1) To be admitted to the above-mentioned programme, a candidate shall have obtained a valid National Senior Certificate, Senior Certificate, National Certificate (Vocational) or qualifies to be admitted in terms of the Recognition of Prior Learning (RPL) assessment.

(2) The table below shows the minimum requirements for the programme (except RPL)

Minimum Admission Requirements (25 points) for National Senior Certificate

English Home Language	English First Additional Language	Any other **5** additional subjects excl. Life Orientation
3	**4**	

Minimum Admission Requirements (25 points) for Senior Certificate

English Higher Grade	English Standard Grade
E	**D**

National Certificate Vocational (NCV) Level 4

Communication	Additional 5 Subjects: Mathematical Literacy Business Practice Office Data Processing Applied Accounting Personal Assistant
50%	**50%**

Recognition of Prior Learning (RPL)

Candidates that are able to demonstrate high levels of competencies, through summative assessment processes attached to the above-mentioned programme, will receive recognition of prior learning RPL; in recognition of competencies attained in the workplace setting for many years without having gained any formal qualification.

(3) A student who fails to maintain satisfactory academic progress in terms of General Rule: G.20 (1) and (2) shall be refused further admission to the department except by special permission of Senate.

(4) The admission of a student previously registered in an equivalent department at another University of Technology shall be subject to the same rules as if he/she previously had been in this department.

Please take note of the following:-

Admission will be based on merit and availability of spaces.
Meeting the minimum requirements does not, in any way, guarantee admission.

ALL ADMISSIONS ARE BASED ON A SELECTION PROCESS ONLY!!!

b. **Duration of Study**

3 years Full-time
4-8 years Part-time

c. **Curriculum Compilation and Pre-Requisites**

FIRST ACADEMIC YEAR

Subject Code	Subject	Pre-Requisite	SAQA Credits	NQF Level
CUNI100	Communication I	None	28	5
BUAD100	Business Administration I	None	28	5

INAD100	Information Administration I	None	28	5
HREM100	Human Resource Management I	None	28	5
LEGR100	Legal Practice I	None	28	5

SECOND ACADEMIC YEAR

Subject Code	Subject	Pre-Requisite	SAQA Credits	NQF Level
CUNI200	Communication II	Communication I	28	6
BUAD200	Business Administration II	Business Administration I	28	6
INAD200	Information Administration II	Information Administration I	28	6
HREM200	Human Resource Management II	Human Resource Management I	28	6
LEGR200	Legal Practice II	Legal Practice I	28	6

THIRD ACADEMIC YEAR

Subject Code	Subject	Pre-Requisite	SAQA Credits	NQF Level
BUAD300	Business Administration III	Business Administration II	28	6
INAD300	Information Administration III	Information Administration II	28	6
OFPR300	Office Management and Technology Practice III		24	6

The Curriculum for this Diploma comprises thirteen subjects of which Information Administration and Business Administration are the major subjects.

Promotion Rules

The following promotion rules shall apply to the diploma:

i) For a three-year diploma, to be promoted from first year to second year of study, the student shall pass at least three subjects, one (from the three) of which should be a major subject.

ii) To be promoted from second year to the third year of study, the student shall have completed the first year of study.

Major Subjects

Business Administration	Information Administration

d. Teaching, Learning and Assessment

Case studies, Presentations, Written Tests and Examination

e. Work Integrated Learning

A student can graduate only after he/she has completed a compulsory Work Integrated Learning component (WIL) for a period of 12 weeks. WIL is done at third year level.

f. Curriculum Content

Subject	Content
BUSINESS ADMINISTRATION I (BUAD100)	• Business Management Principles • Classification of the business and its environment • The different forms of a business

	• Buying and selling • Wages and salaries • Petty cash • Banking • Insurance • The management of information and related issues • The budget • How to conduct effective meetings

Subject	Content
BUSINESS ADMINISTRATION II (BUAD200)	• Information Management • Administrative Management • Administrator's duties and Self-Management • The Office • Customer Service

Subject	Content
BUSINESS ADMINISTRATION III (BUAD300)	• Problem Solving • South African Labour Legislation • Office Supervision – Principles and Concepts • Entrepreneurship • Introduction to Project Management • Ddiversity in the workplace • Business Ethics

	Practical
INFORMATION ADMINISTRATION I (INAD100) - PRACTICAL	• **BASIC MICROSOFT WORD** Keyboarding Application Speed Test: (35 words per minute) Formatting Documents Plain and Numbered Paragraphs Business Letter Memorandum Columns Tables • **BASIC MICROSOFT EXCEL** Simple Spreadsheets Formulae • **BASIC MICROSOFT POWERPOINT** Creating Slides

INFORMATION ADMINISTRATION (INAD100) **THEORY**	Inserting Slides Slide Design • **BASIC INTRODUCTION TO COMPUTERS** What is a Computer? Components of a computer Advantages & Disadvantages of using computer Networks & Internet Computer Software Categories of Computers Elements of an Information System Computer Usage Computer Applications in society • **SYSTEM AND UNIT COMPONENT** The system unit Processor Data representation Memory Removable flash memory USB ports Power supply Keeping your computer & mobile device clean • **UNDERSTANDING INPUT** Input & Input devices The Keyboard Pointing devices Mouse Touch screens & touch sensitive pads Input for smart phones Voice & Video input Scanner & Reading Devices • **UNDERSTANDING OUTPUT** What is output? Display devices Printers Speakers, Headphones and earbuds Other Output devices

Subject	Content
INFORMATION ADMINISTRATION II (INAD200) - PRACTICAL	• Ms Word • Ms Excel – spreadsheet • Ms PowerPoint – slide presentation • Internet - search for information on the web • Email
INFORMATION ADMINISTRATION II (INAD200) - THEORY	• Fundamentals of the World Wide Web and Internet • Software for Systems • Types of Storage • Types of Utility programs and operating system

	Content
INFORMATION ADMINISTRATION III (INAD300) - PRACTICAL	• Advanced Ms Word 2016 • Advanced Ms Excel 2016 • Advanced Ms PowerPoint 2016 • Intermediate Ms Access 2016 • Ms Publisher 2016 • Ms Outlook 2016 • Google Documents
INFORMATION ADMINISTRATION III (INAD300) - THEORY	• Fourth Industrial Revolution – 4th IR • Networks and Communications • Managing a Database • Manage Computing Securely, Safely and Ethically • Careers in Computers and Certification

Subject	Content
COMMUNICATION I (CUNI100)	**COMMUNICATION THEORY: CHAPTER: 1** • Models Of Communication • Communication Contexts • Communication Barriers • Verbal And Nonverbal communication **SPEAKING AND LISTENING: CHAPTER 5, 6 AND 7** • Interviews • Telephone Skills • Persuasive Speech **READING COMPREHENSION: CHAPTER 4** • Reading Styles (Scan, Skim & Comprehension) • Text Structure (Explanations, Descriptions, Comparisons And Contrasts & Cause And Effect)

	• Critical Reading • Visual Literacy (Diagrams, Maps, Pictures And Cartoons) • Language Usage (Sentence Construction, Tenses, And Concord) • Terminology/Vocabulary Building **WRITING SKILLS: CHAPTER 8-13** • Business Correspondence (Letters, Cvs And Forms) • Summary Writing • Paragraph Writing • Notice Writing • Report Writing **LANGUAGE USE: CHAPTER 15** • Tenses (Time) • Concord (Agreement) • Prepositions • Parts Of Speech

Subject	**Content**
COMMUNICATION II (CUIN200)	• Communication Theory (Revision Of Work Done In Communication 1 • Listening Skills (Revision Of Work Done In Communication 1) • Organisational Communication • Small Group Communication • Intercultural Communication • Reading And Note-Taking • Interviewing Procedure • Oral Communication • Meeting Procedure • Business Correspondence

Subject	**Content**
Legal Practice I (LEPR100)	• The Concept "Law" and the present SA Legal System • Sources and division of the present SA Law • Brief Overview of selected provisions of the 1996 Constitution • The Legal Profession & The Attorney's practice • Communication in a legal practice • SA Judiciary (including relevant Constitution provisions) • Civil Proceedings & Documents

	• Specific legal instrument • Succession & Admiration of Estate & relevant documentation • Conveyancing & Notarial Practice • Stamp Duty Act

Subject	Content
Legal Practice II (LEPR200)	• Real and personal Rights. Registration of real rights in land and brief outline of the system in South Africa • The Deeds Registry, it's personnel and functions • The Deeds Registries Act 47 of 1937 and the regulations. Deed office practice and registrar's circulars. • The conveyancer and the organisation of the conveyancing department • The subdivision of Land. Minor subdivision, Establishment of townships. • The transfer of real rights in land. The cause and requirement of registration and the effect of these Different methods of transfer. • Sale of land: Alienation of Land Act 68 of 1981. Deed of sale, Instalment sale of land. • A routine transfer. Analysis of deed of transfer and sequence of steps from Deed of Sale to delivery of newly registered Deed of Transfer. • Other types of transfers, Estate donation, partition and expropriation transfer. Transfer in terms of Section 31,33 and proviso to section 16 Deeds Registries Act • Certificate of Registered and Consolidated Title • Servitudes. Nature and various kinds of procedure for registration of servitudes. • Section Title Sectional Titles Act. • Mortgage Bonds

Subject	Content
HUMAN RESOURCES I (HREM100)	• Human Resources Management for the 21st Century • Health and Safety • Job Analysis and Organisational Designs • Workforce Planning • Recruitment and Selection • Induction and Staffing Decisions • Leadership • Cultural Diversity

Subject	Content
HUMAN RESOURCES II (HERM200)	• The field of organizational behaviour • Absenteeism in organizations • Perception and learning : understanding and adapting to the work environment • Individual difference: personality, skills and abilities • Coping with organizational life: emotions and stress • Work related attitudes: prejudice, job satisfaction, and organisational commitment • Motivation in organization • Group dynamics and work teams • Conflict management in organizations • Organizational culture

Subject	Content
OFFICE MANAGEMENT AND TECHNOLOGY (OMTP030)	• Work Integrated Learning As A Component Of Co-Operative Education • Preparation For Experiential Learning And Graduate Placement • The Workplace Experience • Keeping Up To Date With The Dynamics Of The Workplace • Career Planning

Advanced Diploma in Office Management and Technology (2023)

NQF Level: 7 **SAQA Credits**: 120
Qualification ID 97817
Rationale for the Qualification

- The growth of academic programmes, more especially post-graduate qualifications is one of the strategic priorities of MUT. This qualification contributes in this regard.
- The design of this programme is aligned with the structure of the revised HEQSF and thus providing qualifying students with a clear articulation route for further study
- The programme will equip students to meet the demands of post-graduate studies and equip them with research skills, which are vital skills required in the Higher Education Sector and Industry.
- This qualification will provide students with learning experiences that will equip them with applied competencies to function at an advanced level in the field of office management and technology
- The introduction of the proposed programme will contribute to the development of the required administrative skills for the South African economy.

Statement of Purpose
This post-graduate qualification provides professional specialization in office administration at the managerial level. Successful candidates will be able to manage information and communication technologies and systems pertaining to administrative operations. It develops the students' abilities to critically analyse problems associated with Business Administration, Information Administration, Labour Relations related issues and Advanced Project Management.

Qualification Rules
The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes:

- Demonstrate integrated knowledge of the **central areas** in the field of Office Management and Technology including an understanding of and the ability to apply and evaluate key terms, concepts, facts, principles, rules and theories in this field and related fields or disciplines

The term "central areas" includes but is not limited to: Management and Leadership; Management Information Systems; Information and Communication Technology; Financial Management, Customer Relations Management; Project Management, including events coordination; Logistics Management; Social Networking Applications (SNA) and; Social Knowledge Networks (SKN)

- Demonstrate the ability to identify, analyse, evaluate, critically reflect on and address complex problems, applying evidence-based solutions and theory driven arguments.

- Demonstrate the ability to access, process and manage information, the ability; the ability to develop appropriate processes for information gathering for a given context or use, as well as the ability to independently validate the sources of information and evaluate and manage the information
- Demonstrate an ability to develop and communicate own ideas and opinions in well-formed arguments using appropriate academic, professional or occupational discourse

- Demonstrate the ability to take decisions and act ethically and professionally and the ability to justify the decisions and actions drawing on appropriate ethical values and approaches within a support environment

- Apply basic research principles, methodologies and techniques

- Apply knowledge of self and team in order to develop a plan to enhance team performance

- Demonstrate understanding of the primary labour legislation that impacts on a business unit

a. **Admission Requirements**

Diploma: Office Management and Technology or equivalent qualification with an aggregate of 60% or above. In instances where the prospective student obtained less than 60% aggregate pass, a minimum of two years working experience in Office Management/Administration related field will be considered. Other admission requirements will be applied as detailed in the Recognition of Prior Learning Policy.

Preference for the part-time programme will be given to students who are already employed in the Office Management/Administration environment. Each application will be considered on its own merit.

b. **Duration of Programme**

One-year full-time study
Two years part-time study

c. **Curriculum Compilation and Pre-Requisites**

Code	Subject	NQF Level	Credits	Prerequisites
BUSA040	Business Administration IV	7	24	Business Administration III
INFO040	Information Administration IV	7	24	Information Administration III
LIPL040	Labour and Immaterial Property Law	7	24	
PRJM040	Adv. Project Management IV	7	24	
BREP040	Basic Research Principles	7	24	

d. **Teaching, Learning and Assessment**

Case studies, Presentations, Written Tests and Examination

e. **Course Content**

Subject	Content
BUSINESS ADMINISTRATION IV (BUSA040)	• **Strategic Management** Strategic Management Introduction to strategic management Analysis of the external and internal environment Strategy formulation Strategy implementation Strategic control • **Customer Service** The challenges of customer service Strategy for formulating a plan for success Coping with challenging customers in the office Customer retention and measurement of customer satisfaction Technology and customer service Excellence in customer service • **Financial Management** Introduction to financial management Essential concepts for financial management Financial statement of a firm Financial statements analysis Working capital and asset management Time value of money and capital budgeting/investment decisions Sources of finance, capital structure and financial leverage Cost of capital Risk, return and breakeven analysis (CVP analysis)

Subject	Content
INFORMATION ADMINISTRATION IV (INFO040)	Information Technology for Management IT support of organisational Performance Information Technologies: Concepts and Management Managerial and Decision Support Systems Knowledge Management Business Intelligence and Corporate Performance Management Data Management: Data, Data bases and Warehousing Networking: Discovery, Communication and Collaboration Implementing and Managing IT IT Strategy and Planning Information Technology Economics Acquiring IT Applications and Infrastructure Security Impact of Information Technology on Individuals, Organisations and Society The Web Revolution E-business and E-Commerce Mobile, Wireless and Pervasive computing Web Page Design and Management Adobe Acrobat 9.0 Organisational Applications: Transaction processing, Functional applications and Integration Enterprise Systems Inter-organisational and Global Information Systems Enterprise Social networking

Subject	Content
LABOUR AND IMMATERIAL PROPERTY LAW IV LIPL040)	Introduction to Labour Law/Employment Relations The contract of employment and its Termination Collective Bargaining Discipline and Dismissals Basic Conditions of Employment Unfair Labour Practice Dispute Resolution Strikes and Lockouts The Law of Trade Marks Copyright Law The Law of Registered Design The Law of Patent The interface intellectual Property rights and Human Rights

Subject	Content
ADVANCED PROJECT MANAGEMENT IV (PRJM040)	Planning a Project Creating a Project Schedule Project Risk Management Assigning Resources and Costs Sharing Project Information with relevant stakeholders Tracking Progress and Closing the Project

Subject	Content
BASIC RESEARCH PRINCIPLES (BREP040)	Research Orientation Types of Research Design Stating the problem and formulating hypothesis Literature review Sampling Data Collection and Analysis The Research proposal and report

5. DEPARTMENT OF PUBLIC ADMINISTRATION & ECONOMICS

5.1 Diploma in Public Management (PUBLAS)

Qualification **SAQA ID: 72290**
NQF Level: 6 **SAQA Credits: 360**

Rationale for the Qualification

The public sector is in a dire need to absorb young skilful human capital that will satisfy the requirement of outcome-based government in South Africa. This qualification provides students with an opportunity to equip themselves with necessary knowledge, skills and competences to contribute to an effective and efficient service delivery.

Statement of Purpose

The Diploma in Public Management targets interested candidates from school, TVET colleges and working officials preferably from the Public Sector. Through this qualification learners will acquire the necessary skills and competencies to carry out the expected administrative tasks and enhance the management abilities thereby contributing to improved service delivery. In so doing, officials in the public service must uphold high ethical standards since South Africa is part of a global market which responds to international standards. This will enhance principles of Good Governance and International Relations.

Qualification Rules

Learners will qualify on condition they have completed all modules which account for 360 credits. Final year learners are expected to undertake Work Integrated Learning at different public sector organisations for a minimum period of three (3) months.

Exit Level Outcomes

1. Demonstrate comprehensive management skills and competences required by the public sector.
2. Manage public resources such as finance, human capital, time, assets, and equipment according to relevant legislations and regulations to ensure accountability and responsibility.
3. Apply principles of outcome-based government characterized by effective and efficient service delivery.
4. Apply knowledge and insight of public human resource management systems and practices in the public sector context.
5. Demonstrate knowledge of the fundamental principles of supply chain management theory and practice in local and global government environment.
6. Interpret and implement public policy according to applicable legislative frameworks.
7. Manage programmes and projects effectively and efficiently within the principles of outcome-based government.
8. Demonstrate a sound understanding of management principles in a local government context.

Admission requirements

National Senior Certificate with ratings codes:

English Home Language	3
Or English First Additional Language	4
Total Minimum Points (excluding Life Orientation)	(25)

National Diploma in Public Administration/Public Management N6 (TVET)
Students who obtained an average of 60% at N6 level will be considered for selection.

Recognition of Prior Learning
Applicants who do not meet the minimum requirements may be granted Recognition of Prior Learning (RPL) in recognition of competencies attained in the public sector workplace. The application of the RPL programme will be guided by the RPL Policy of the University.

ALL ADMISSIONS ARE BASED ON THE SELECTION PROCESS ONLY

Duration of Study
The Diploma cannot be completed in less than three years and must be completed within six years of registration.

OFFERING TYPES
This programme is offered on a:
Full-time (Day) and
Full-time (Evening) basis.
Evening classes are meant to accommodate working students and are held for the same duration as Day classes.

DIPLOMA: PUBLIC MANAGEMENT (PUBLAS)

CURRICULUM

YEAR 1

SUBJECT NAME	SUBJECT CODE	(PRE-REQUISITES)	CREDITS
Public Management 1	PUMA 100	N/A	24
Public Resource Management 1	PURM 001	N/A	24
Economics 1	ECON 001	N/A	24
English Communication Studies	ECOS 001	N/A	24
Governance & Politics 1	GOPO 100	N/A	12
Public Law 1	PULA 100	N/A	12
SUB-TOTAL			**120**

YEAR 2

SUBJECT NAME	CORE / ELECTIVE	SUBJECT CODE	PRE-REQUISITES	CREDITS
Public Management 2	CORE	PUMA 200	PUMA 100	24
Economics 2	CORE	ECON 200	ECON 001	24
End User Computing 2	CORE	EUCO 200	N/A	24
Project Management 2	CORE	PROJ 200	N/A	12
Fundamentals of Research 2	CORE	FURE 002	N/A	12
Local Government Management 2	ELECTIVE	LGMA 200	PUMA 100	24
OR				
Public Human Resource Management 2	ELECTIVE	PUHR 200	PURM 001	24
OR				
Public Finance & Supply Chain Management 2	ELECTIVE	PSMA 020	PURM 001	24
SUB-TOTAL				**120**

YEAR 3

SUBJECT NAME	CORE / ELECTIVE	SUBJECT CODE	PRE-REQUISITES	CREDITS
Public Management 3	CORE	PUMA 300	PUMA 200	24
Monitoring & Evaluation 3	CORE	MONE 030	PROJ 200	12
Policy Studies 3	CORE	POST 300	N/A	12

Governmental Relations 3	CORE	GORE 300	N/A	24
Public Management Practice 3 /Work Integrated Learning 3 (Minimum of 3	CORE	PUMP 300		24
CHOOSE ONE OF THE ELECTIVES BELOW				
Public Financial Management 3 and Supply Chain Management 3	ELECTIVE	PUFM 300 SCMA 300	PFSC 200 PFSC 200	12 12
OR				
Local Government Management 3	ELECTIVE	LGMA 300	LGMA 200	24
OR				
Public Human Resource Management 3	ELECTIVE	PUHR 300	PUHR 200	24
SUB-TOTAL				**120**
TOTAL CREDITS				**360**

Teaching, Learning and Assessments

All assessments will integrate knowledge, skills, attitude, and applied competence of the discipline. The institutional assessment policy makes provision for assessment instruments ranging from written or oral tests, presentations on topical public sector issues, assignments, case studies, integrated projects or simulation exercises, portfolio of evidence and any other forms of assessments.

Formative Assessments

Three assessments constitute a year mark which contributes 40% of the final mark. A range of assessment methods will be use in assessing the learners including amongst others: Written or Oral tests, projects; Simulations, Tutorial Exercises, Assignments, and Case studies.

Summative Assessments

A candidate passes the subject if a final mark of at least 50% is obtained. The final mark consists of the year mark and examination mark in the ratio of 40:60, respectively.

Progression Procedure

Students with unsatisfactory academic performance will be refused admission to further their studies in this programme. Refer to General Regulations for students (Unsatisfactory Academic Performance under G20)

Work Integrated Learning

Learners must apply for Work Integrated Learning (WIL) upon the successful completion of the second year of study. They must register WIL in terms of the applicable policies and procedures of the University. Prior to attending Work Integrated Learning (WIL), a compulsory Work Readiness Training will be attended by learners prior to placements. A Portfolio of Evidence (PoE) will be submitted on completion of the placement period.

CURRICULUM: DIPLOMA IN PUBLIC MANAGEMENT (PUBLAS)

LEVEL 1	MODULE CODE	MODULE OVERVIEW
Public Management 1	PUMA100	▪ Introduction to Public Administration and Management o Contextualise administration and Public Administration o Contextualise the nature of Public Administration o Scope of Public Administration as science o Public Administration vis-à-vis Liberation, Privatisation and Globalisation ▪ Overview of the South African Constitutional Provision ▪ Spheres & Structures of Government ▪ Organisation of government o Separation of government authority o Unitary government o Federal government o Government functions ▪ Administrative and managerial functions o Planning o Organising o Staffing o Control o Leadership/ types of leadership ▪ Public Management Skills o Leadership o Decision-making o Delegations and Coordination o Managing Change o Conflict Resolution o Basic negotiation approaches and skills o Self-management skills ➢ Ethical conduct ➢ Time management ➢ Stress management ➢ Values and beliefs ➢ Emotional intelligence

		▪ Introduction to cooperative governance in the South African context o Constitutional Framework regarding multi-sphere system of Government o Integrated governance issues. o Coordinating structures o Categories and types of municipalities o Composition, membership, operation and dissolution of municipal councils o Purpose of local government o Committees and office-bearers ▪ Ethical foundations of Public Administration o Political supremacy o Public accountability o Tenants of democracy
Public Resource Management 1	PURM001	▪ Introduction to public resources management. ▪ The context of Public Resource Management ▪ Managing Human Resources o Planning in Public Human Resource Management o Introduction to Recruitment and Selection o Skills, Application and Techniques for Public Human Resource Management ▪ Managing Financial Resources o Public Financial Resources and Public Management Functions ▪ Managing Information Resources o Legislative Framework for Information Management in the Public Sector. ▪ Management of Natural Resources o Critical Issues in Natural Resources Management
Economics 1	ECON001	▪ Introduction to Economics o Economics as a science o Scarcity choice and opportunity cost o Economic problem ▪ The interdependence between major sectors, markets and flows in the mixed economy o Production, income and spending o Interdependence between households and firms o The government in the circular flow of production, income and spending o Foreign sector ▪ Introduction to South African economy o An overview of the development of the SA economy o Performance of the SA economy o Basic SA economic policies

		➢ Fiscal policy ➢ Monetary policy ▪ Introduction to Demand and Supply o The market concepts o Demand o Supply o Equilibrium o Elasticity ▪ Consumer choice: the utility approach o Indifference curve o Budget line o Consumer equilibrium o Marginal Utility and Individual Demand Curve ▪ Production and Cost o Production factors o Laws of Return o Revenue cost and profits ▪ Determining prices and output o Perfect Competition o Imperfect Competition ➢ Monopoly ➢ Monopsony ➢ Monopolistic Competition ➢ Oligopoly ▪ Economic growth and development o The definition and measurement of economic growth o The business cycles o Sources of economic growth o Economic growth in South Africa
English Communication Studies 1	ECOS001	▪ Communication theory o The communication Process o Reasons for communication o Verbal and non-verbal communication ▪ Fundamentals of Communication o Verbal and non-verbal communication o Vocal communication ➢ Pitch of the voice ➢ Pace of the speech ➢ Pauses and inserts ➢ Voice projection o Visual communication ▪ Communication Channels o Medium of information

		➢ Face-to-face ➢ Telephone ➢ Electronic mail ➢ Memos and letters ➢ Flyers, Bulletins and Reports ▪ Government Communication o Statutory Framework for government information and communication o Information: a prerequisite for a democracy o Public Right2know o Barriers to government communication o State and the media o Propaganda ▪ Public Information Services o Introduction to Public Information Services o Characteristics and value of data, information and knowledge ➢ Quality ➢ Timeliness ➢ Completeness ➢ Relevance o Information technology for effective governance ➢ The need for management information ➢ Development and management of information systems o E-government ➢ E-government and E-governance ➢ E-government and service delivery ➢ Functions of e-government o Ethics, values and principles in the public sector ▪ Meetings documentations and procedures o Purpose of meetings o Kinds of meetings o Procedural aspects o Approaches to meetings o Phases and structure of meetings ➢ Pre meeting phase • Agenda setting • Logistics ➢ Meeting phase • Chairing • Recording/taking minutes • Participation of attendees • Dealing with meeting conflict ➢ Post meeting phase

		▪ Preparation of minutes ▪ Report writing o Classification of reports o Language and style of report writing o Planning and compiling reports
Governance & Politics 1	GOPO 100	▪ Introduction to governance and politics in South Africa o Terminology analysis o State and government ➢ Theories of the state ➢ Characteristics of the state ▪ Political philosophy and political ideologies o Political philosophy ➢ Liberty ➢ Equality ➢ Justice o Political ideologies ▪ Political parties and elections ▪ State institutions supporting democracy ▪ Service delivery in South Africa
Public Law 1	PULA100	▪ Introduction to Public Law o The concepts of law o Private law o Public law o Constitutional law o Public law as part of Administrative law o Nature and scope of Administrative law o Sources of administrative law ▪ Justice Administrative Action o Promotion of administrative justice Act (PAJA) 3 of 2000 ➢ Application of the Act ➢ Administrative action affecting the public ➢ Reasons for administrative justice ➢ Judicial review of administrative justice o Pillars of administrative justice in South Africa o Lawful administrative action o Reasonable administrative action o Procedurally fair administrative action

LEVEL 2	MODULE CODE	MODULE OVERVIEW
Public Management 2	PUMA200	▪ Management ethics, approaches and principles o Guidelines and codes of conduct in the context of public management o Framework for evaluating unethical behaviour in a public dement o Levels of professionalism o Characteristics and contributions of phases of development management o Multidisciplinary and generic process approaches to public management ▪ Public management dynamics o Elements of public management functions o Public managers in policymaking ▪ Managing specialised applications in government o Management applications of policy-making analysis o Strategic management and organisation development o Management application areas of human resources, financial management, development management and project management ▪ Theories of Public Administration o Classical theories, schools, and approaches o Contemporary models and approaches. ▪ Theories of Governance o Interrelationship between governance and New Public Management (NPM) o Evolution of New Public Management o Global perception of governance o Relationship between governance and Sustainable Human Development o Significance/essence of governance in the development process ▪ Public Management: Issues, Challenges and Remedies o Issues and trends in the macro-environment o Challenges and issues within the micro or internal environment o Remedies for management challenge ▪ Ethical foundations of Good Governance o Ethical codes in the public sector o Meaning of good governance o Principles of good governance

		○ Characteristics of good governance
Economics 2	ECON200	▪ An introduction to macroeconomics ○ Economic cycle ○ Economic theories ➢ Classical theory ➢ Keynes's theory ▪ Government expenditure ○ Taxation and Total income ○ Capital Account ○ Balance of payment ○ Foreign sector ○ Investment function ▪ Measuring the performance of the economy ▪ Inflation and Unemployment ○ Types of unemployment ○ Solutions to unemployment ○ Causes of inflation ○ Measuring inflation rate ○ Influence of expectations on inflation ○ Monetarist view of inflation ○ Cost of inflation ○ Relationship between inflation and unemployment ▪ Aggregate demand and aggregate supply model ▪ Monetary economics ○ Money and banking ○ Demand and supply of money ○ Financial institutions ○ Financial markets ○ Markets and instruments ▪ Development Economics ○ Introduction to development economics ○ Development policy ○ Regional economics ▪ International Economics ○ International Trade ○ International payments ○ Protection policy ○ International Trade policy ○ International economics integration

End User Computing 2	EUCO 200	▪ Inter- and Intranet navigation and searches ▪ Intermediate word processing techniques ▪ Spreadsheets ▪ Presentation software ▪ Introduction to databases ▪ Utilisation of appropriate media
Project Management 2	PROJ200	▪ Introduction to Project Management o Terminology analysis o The necessity of project management o Project performance dimensions o Project management knowledge areas ▪ Project lifecycle o Conceptualizing Projects o Planning Projects o Executing Projects o Monitoring and Controlling Projects. ▪ Organizational Design and the Project Environment o Functional organisation o Matrix o Projectized organisational structure ▪ Project Scope Management. o Project Scope Management vs Project Life Cycle. o Scope Verification and Validation. o Scope Change and Control. ▪ Resource Planning. o Resource Estimating o Resource Availability, o Project Resource Smoothing, o How to increase Project Resources. ▪ Project Risk Management. o What is Project Risk? o Risk Management Plan. o Risk Management and the Project Life Cycle. o Risk Identification and Quantification o Developing the Risk Response. ▪ Project Communication Management. o Project Communication Plan o Project Meetings. o Hand Over Meetings o Project Reporting o Documentation Control. o Project Commissioning and Handover ▪ Project Team Management o Purpose of Project Teams o Benefits of Project Teams.

		○ Team Development Phases. ○ Levels of Team Building.
Fundamentals of Research 2	FURE002	▪ Introduction to research ○ Importance of research ○ Elements of research ○ Dimensions of research ○ Nature of research ○ Research terminology ○ Ethical requirements for researchers ▪ Types of research ○ Applied and Abstract research ▪ Sources of topics for scientific research ○ Sources of research topics or problems ○ Determining suitability of a research problem ▪ Demarcation of the research problem ○ Selecting a subject for the research ○ Problem Identification. ▪ Literature review ○ Steps in literature review ▪ Methods of collecting data ○ Research instruments ○ Primary and secondary data ▪ Research methodology/ approaches ○ Qualitative ○ Quantitative ▪ Data collection and sampling ○ sampling population and target audience ▪ Interpretations of findings ▪ Writing a research proposal ○ Defining a research proposal ○ Value of a proposal ○ Types of research proposals ○ Components of a research proposal ▪ Report Writing
Local Government Management 2	LGMA200	▪ Introduction to Local Government in South Africa ▪ History of Local Government in South Africa ▪ Legislative Framework of Local Government ▪ Local Economic Development ○ Concepts and theory of LED ○ LED planning process ○ LED strategies for municipalities ➢ Developing infrastructure ➢ Promoting tourism ➢ Marketing

		▪ Small Business Development o Promotion of SMME's o Financial support for the development and growth of SMME's o Business Management support o Youth entrepreneurial programmes ▪ Structural Composition of Municipalities ▪ Administrative and Managerial functions of Municipalities ▪ Citizen Participation in Local Government ▪ Municipal services and service delivery
Public Human Resource Management 2	PUHR 200	▪ Legislative and policy framework for human resource management o From human resource management to human capital management o Key role player in HR o Good governance in human capital management ▪ Human resource planning • Job analysis • Job description • Steps in HR planning process ▪ Recruitment and selection processes o Context of human capital acquisition o Recruitment policy and procedures o Recruiting methods o Evaluation of recruitment o Challenges of recruitment and placement in the public sector ▪ Selecting, appointing, and orientating public sector employees o Objectives of selection o Selection policy and procedures o Principles underlying selection processes ▪ Employee Induction ▪ Equal Opportunities and Affirmative Action and managing diversity o Origin and need for affirmative action o Approaches to affirmative action o Affirmative action and the merit principle o Employment equity o Diversity management ▪ Employee induction
Public Finance & Supply Chain Management 2	PFSC200	▪ Introduction and background to Public Financial Management o The political organisation of the public sector

		○ Public provision of goods and services, and key sources of government revenue ○ Allocation Problem, public opportunity cost and priorities. ▪ Institutional Policy and Legislative Framework governing Public Finance ○ Constitution of the Republic of South Africa ○ Public Finance Management Act, 1999 ○ Municipal Finance Management Act, 2003 ○ Treasury Regulations ○ Taxation Policy ▪ Role-players in Public Financial Management ○ Internal role-players ○ External role-players ▪ Taxation ○ Taxation principles ○ Objects of taxation ○ Types of taxes ▪ Planning and Budgeting Framework ○ Budget reform and management of public money through budgeting ○ Budget logic ○ Setting up the process/ budget cycle ○ Treasury Guidelines in Planning and budgeting ○ Accountability and responsibility ○ The fundamentals of financial management ▪ Budget execution ○ Budget execution cycle ○ Systems involved in budget execution ○ Managing budget execution risks ▪ Financial governance and political economy ○ Characteristics of good governance ○ Principles of good governance ○ Implementing good governance principles ○ Factors leading to poor governance ○ Achieving good governance in the public sector ○ Trends affecting Public Administration ▪ Introduction to Supply Chain Management ○ Understanding the concept of Supply Chain Management ○ Key terminologies associated with SCM ○ Evolutional developments of SCM ○ Implementation of effective SCM ○ Public procurement and SCM ▪ Supply Chain Management in the public sector

		○ Government SCM ○ Institutionalisation of SCM ○ SCM challenges in the South African public sector. ○ Enhancing the implementation of SCM in the public sector. ▪ Legislation governing Public SCM ○ Governance framework in the public sector ○ Legislative prescripts for SCM ○ Primary legislation affecting public sector SCM ○ Subordinate legislation, prescripts and norms supporting primary legislation ○ Complementary legislation ▪ Implementing Bid Committee systems ○ The Bid Committee systems ○ Bid Specification Committee for goods and services ○ Bid Evaluation Committee for goods and services ○ Quotations Committee ○ Bid Adjudication Committee for goods and services ○ Committee system for infrastructure procurement ○ Other institutional committees ○ General committee members

LEVEL 3	**MODULE CODE**	**MODULE OVERVIEW**
Public Management 3	PUMA300	▪ Public Administration and development management: theoretical conception, and practical paradigm ▪ Organizational theory and systems theory ▪ Governance for Sustainable Development ○ Governance and Sustainable Development ○ Underpinnings of good governance ○ Effective, responsive, and accountable state institutions ○ Openness and transparency – public access to information ○ Addressing corruption and curbing illicit financial flows ○ Justice and the Rule of Law ○ Participation in decision-making ○ Addressing governance priorities ○ Approaches to Integrating Governance ▪ Managing change in public service organizations ○ The processes of change in public services and public service organizations

		○ Organizational culture and managing change in public service organizations ○ Implementing change in public service organizations ▪ Managing innovation in public service organizations ○ Understanding and managing innovation in public services ○ Developing and supporting innovators in public service organizations ○ Managing the process of innovation in public services ▪ Governing in a Global Context ○ Organizational Responses to Globalization ○ Public Administration in the Age of Globalization ○ Implications of Transnational Organization Design for Public Administration and Management ▪ Ethics in Public Administration ○ Democratic basis of public ethics ○ Developing democratic principles ○ Legal Frameworks for ethical government ○ Constitutional and constitutionality-based policy and legislation ○ Future perspectives
Monitoring & Evaluation 3	MONE300	▪ Introduction to Monitoring and Evaluation ○ The Importance of M&E ○ The Result Based Management Pyramid ○ Principles underpinning Monitoring and Evaluation in S.A. ○ Planning for Monitoring and Evaluation. ○ Key Monitoring Variables. ○ Quality Improvement Monitoring Techniques ○ Practical Steps in Public Policy Monitoring and Evaluation. ○ Government Wide Monitoring and Evaluation System: Roles and Responsibilities. ▪ Policy Framework for Government Wide Monitoring and Evaluation System in South Africa. ○ Constitution of the Republic of South Africa. ○ Government Wide Monitoring and Evaluation system in South Africa ○ Public Financial Management Act 1999 ○ Municipal Finance Management Act, 2003 ▪ Integrating monitoring and evaluation in policy programme management • Programme/project formulation

		• Appraisal and approval • Implementation • Programme/project completion ▪ Planning and managing evaluation • Preparation • Formulating terms of reference • Organizing and managing the evaluation Introduction to report writing in M&E o Definition and purposes o Content and structure o Procedures for preparing and tabling
Policy Studies 3	POST300	▪ Introduction to Policy Studies. o Nature, role and history of public policy o Theories and models of analyzing public policy. o Public Policy in more and lesser developed states. ▪ Policy Formulation: o Environment of Public Policy o Institutional Arrangements for Policy Making. o Policy Problem Identification and Structuring ▪ Policy Agenda Setting, Policy Design, and Decision Making. ▪ Policy Implementation. o Introduction to Policy Implementation: Terms, Concepts and Frameworks. o The 7 C Protocol and Policy Implementation. o Stages of Policy Implementation. o Policy Implementation in Developing Nations. o Evidence Based Policy: Importance and Issues. o Policy Implementation Enablers o Institutional Arrangements for Policy Implementation.
Governmental Relations 3	GORE 300	▪ The Nature and content of Governmental Relations o Approaches to Intergovernmental Relations o The Democratic Approach o The Constitutional Approach/ Legal Approach o The Financial Approach o Normative-Operational Approach ▪ The influence of forms of government on Intergovernmental Relations o Unitary Form of Government o Federal Form of Government o The Unitary and Federal Debate in South Africa ▪ Models of Governmental Relations ▪ Intergovernmental Relations in Public Administration

		○ Policy and Policy Making as an Intergovernmental Relations Issue ○ Finance as an Intergovernmental Relations Issue ○ Human Resources as an Intergovernmental Relations Issue ▪ Constitutional framework on Intergovernmental Relations and Co-operative Government ○ Co-operative Government in relation to Intergovernmental Relations ○ Constitutional Framework on Co-operative Government ○ Constitutional Framework on Local Government ➢ Powers and Functions of Local Government ➢ Establishment of Municipalities ➢ Local Government and the Reconstruction and Development Programme ➢ White Paper on Local Government ▪ Intergovernmental Relations and Service Delivery ▪ Intergovernmental Fiscal Relations ○ Framework Document for Intergovernmental Fiscal Relations in South Africa ➢ Intergovernmental Fiscal Relations Act, 1997 (Act 97 of 1997 ➢ The Functions of the Budget Council ➢ Process for Revenue Sharing Among the Spheres of Government ➢ Division of Revenue Bill ○ National Council of Provinces (NCOP) ○ South African Local Government Association (SALGA) ➢ Framework for Restructuring of Municipal Service Provision ○ Financial Implications for Intergovernmental Relations ○ Financial and Fiscal Commission ▪ Settlement of Intergovernmental Disputes ▪ Extra governmental Relations ▪ Intergovernmental Relations Network ▪ Regional Integration
Public Financial Management 3	PUFM300	▪ Financial Planning and Budgeting ▪ Public accounting and reporting Standards ○ Mandate and functions ○ Establishment and operations

		○ Constitution of the Republic of South Africa ○ Public Finance Management Act, 1999 ○ Public Audit Act, 2004 ○ Treasury Regulations ▪ Accounting Standards ○ Fundamentals of Accounting ○ Financial Management Systems ➢ Chart of Accounts ➢ Cash vs Accrual Accounting ○ Generally Recognised Accounting Practice (GRAP) ○ Generally Accepted Accounting Practice (GAAP) ○ International Public Sector Accounting Standards (IPSAS) ▪ Costing and Budgeting ▪ Public Financial Management Performance ○ Accruals Accounting and Output Budgeting ○ Defining and measuring Non-Financial Items, Especially Outputs and Outcomes ○ Outputs and Input Budget ▪ Risk Management ○ Managing budget execution risks ▪ Internal Audit Process ○ Internal audit functions ○ Audit Planning ○ Audit Execution ○ Audit Reporting ▪ Audit Committees ○ Role of the Audit Committee ○ Mandate of the Audit Committee ○ External audit: Auditor-General ▪ Intergovernmental Fiscal Relations in South Africa ○ Intergovernmental Fiscal Relations ○ Framework Document for Intergovernmental Fiscal Relations in South Africa ○ Intergovernmental Fiscal Relations Act, 1997 (Act 97 of 1997 ➢ The Functions of the Budget Council ➢ Process for Revenue Sharing Among the Spheres of Government ➢ Division of Revenue Bill ➢ National Council of Provinces (NCOP) ○ South African Local Government Association (SALGA) ○ Financial and Fiscal Commission

		○ Framework for Restructuring of Municipal Service Provision ○ Financial Implications for Intergovernmental Relations ▪ Ethical Foundations of Public Financial Management ○ Ethical concepts ○ Public sector ethics ○ Fraud and corruption ○ Ethical failings in the public sector ○ Upholding public ethics standards in South Africa
Supply Chain Management 3	SCMA300	▪ Demand Management in the public service ○ Demand management in perspective ○ Demand management planning ○ Strategic planning in SCM ○ Operational planning in SCM ○ Demand analysis ○ Procurement planning ▪ Acquisition Management ○ Defining acquisition management ○ Acquisition methods ○ Delegation of authority in acquisition management ○ Technology requirements in acquisition requirements ○ Sourcing suppliers through quotations ○ Sources suppliers through competitive bidding ▪ Strategic sourcing and category management in the public sector ○ Understanding strategic sourcing and category management ○ Principles of strategic sourcing ○ Strategic sourcing framework ○ Strategic sourcing and category management methods and strategies. ▪ Logistics Management ○ The concept of logistics and place in the public sector ○ Distribution of goods ○ Warehouse and store management ○ Logistics administration ▪ Risk Management in the public sector SCM ○ Introduction to SCM risk management ○ SCM system risk management response plan ○ SCM risk management on a case to case basis ○ SCM risk assessment tool ○ Monitoring SCM risk management system

		○ Internal control and SCM risk management ○ Detective and preventive control activities ▪ Asset Disposal Management ○ Introduction to asset and asset management ○ Asset Disposal within the asset management system ○ Importance of Asset Disposal ○ Disposal management and principles ○ System of Asset Disposal Management ○ Asset Disposal Methods
Local Government Management 3	LGMA300	▪ Integrated development planning as an approach to sustainable development in municipalities. ○ Integrated development planning ○ Contextualising integrated development planning ▪ Local government and service delivery. ○ Nature and extent of typical municipal services. ○ The realities of service delivery. ○ Service delivery improvement strategies, programmes and recommendations. ▪ Municipal human resource management. ○ Clarification of key human resource terms. ○ HRM systems and processes ○ HR planning ○ HR provision, utilisation, and development- training and development performance management ○ Labour relations and grievance procedure- professionalism and codes of conduct. ▪ Municipal financial management ○ Legislative framework for Municipal finance management ○ Key role players and structures in municipal financial management. ○ Municipal budgets and cycle ▪ Municipal supply chain management ○ Process of supply chain management- establishment of municipal chain management units ○ Bidding process- assets management. ▪ Intergovernmental Fiscal Relations ○ Municipal Financial and Fiscal management ○ Financial Implications for Intergovernmental Relations ▪ Managing municipal performance ○ Defining performance and performance management

		○ Statutory and regulatory requirements related to performance management. ○ Performance management models, tools and techniques ▪ Local Government and Sustainable Development ○ Dominant views on sustainable development ○ Promoting sustainable development at grassroots ○ Achieving sustainable local government
Public Human Resource Management 3	PUHR300	▪ Human capital management for effective for service delivery/ the conceptualization of human capital management in the 21st century ▪ Compensating and caring for public sector employees ○ Compensating public sector employees ➢ Compensation policies ➢ Pay system design ➢ Incentive compensation ➢ Employee benefits ○ Conceptualising employee wellness ➢ Legal and strategic framework for employee health and wellness ➢ Managing HIV/AIDS in the public sector ➢ Holistic approach to wellness ➢ Dimensions of wellness ▪ Career Management ○ Career concepts ○ Career choices ○ Purpose of career management ○ Career anchors ○ Career patterns ○ Career plateaux ○ Effects of working couples and work-family conflict on career movements ▪ Performance Management ○ Performance framework ○ Objectives of performance management ○ Performance planning ○ Pillars of successful performance management system ○ Setting performance standards ○ Individual performance plan ○ Performance measurements and appraisals ○ Dispute resolutions ▪ Training and Development in the public sector ○ Skills development legislation ○ The importance of training in a public institution

		○ Training cycle ➢ Training needs analysis ➢ Training design ➢ Training models ➢ Training theories and methods Informational and experiential training methods ▪ Employee motivation in the public sector ○ Motivation in the public sector ○ Motivation theories ○ Role of motivation in teams ○ Factors contributing to demotivation ▪ Talent and Retention Management ○ Value of talent and retention management ○ Integrating talent management ○ Talent management process ○ Strategic talent management ○ Retention management ○ Strategies to retain employees ▪ Employee relations ○ Contextualising public sector employee relations in South Africa ○ Role players in public sector employee relations ○ Facets of public sector employee relations ○ Strikes and lockouts in the public sector
Public Management Practice (12 weeks to be undertaken at Level 3)	PUMP300	▪ P0 completed and assessed regarding relevant theoretical foundations and soft skills necessary for acceptance into various public entities ▪ Completion requires the required 12 weeks of work integrated learning within the administrative entities in Human Resource Management, Finance, and other relevant departments ▪ Portfolio of Evidence and Logbook ▪ to be completed and submitted for assessment.

ADVANCED DIPLOMA IN PUBLIC MANAGEMENT

SAQA ID: 111159
NQF Level : 7 SAQA Credits : 120

Rational for the Qualification
The public sector requires highly skilled workforce that will gratify the obligation of outcome-based government and development state. This qualification provides students with an opportunity to equip themselves with knowledge, skills, and competences to contribute to an advancement of governance in the public sector.

Statement of Purpose
The Advanced Diploma in Public Management targets interested candidates who successfully completed a Diploma/National diploma in Public Management or equivalent. Through this qualification, learners will acquire advanced skills and competencies to carry out the expected management, administrative tasks and enhance the strategic abilities thereby contributing to improved service delivery. In so doing, officials, officials in the public service must uphold high ethical standards since South Africa is part of a global market, which responds to international. This will enhance principles of Good Governance and International Relations.

Qualification Rules
Learners will qualify on condition that they have completed all modules, which account for 120 credits.

Exit Level Outcome:
- Provide a vision and set direction for the organization /unit and inspire others to deliver the organisational mandate.
- Provide effective institutional leadership by applying appropriate models, theories and leadership frameworks.
- Maintain and enhance confidence in the South African Public Service by applying effective organisational leadership skills.
- Apply strategic thinking in managing and leading Public Sector Organisation.
- Promote Honest Conduct in leading and managing the Public Sector Institution.

Admission requirements
Minimum requirement for admission is National Diploma or Diploma in Public Management or equivalent with an average pass mark of 60%. In instances where a student obtained less than 60%, a minimum of three years' experience in the public sector is considered.

ALL ADMISSIONS ARE BASED ON THE SELECTION PROCESS ONLY

Duration of Study
Full time one year
Part time two years

CURRICULUM

Module Name	NQF level of module	Credits	Core/ Elective	Year Level	Module Code
Introduction to Research 4	7	12	Core	4	ARES040
Advanced Management and Leadership 4	7	12	Core	4	ADML040
Advanced Public Policy Management 4	7	24	Core	4	ADPP040
Advanced Public Financial Management 4	7	24	Core	4	ADFM040
Advanced Monitoring and Evaluation 4	7	24	Core	4	ADME040
Advanced Public Human Resource Management 4	7	24	Core	4	ADHR040

Teaching, Learning and Assessment

All assessments will integrate knowledge, skills attitude and applied competence of the discipline. The institutional assessment policy makes provision for assessment instruments ranging from written or oral tests, presentations on topical public sector issues, assignments, integrated projects or simulation exercises, portfolio of evidence and any other assessments.

Formative assessments

Students writes three assessments per year, and all three contribute to a year mark, which contributes 40% of the final mark. A range of assessment methods will be used in assessing the learners including amongst others: Written tests, Class presentations, Integrated Projects, Simulations, Assignments and Case Studies.

Summative Assessments

The pass mark for all modules/subjects in the Advanced Diploma is 50%. The final mark consists of the year mark and examination mark in the ratio of 40:60 respectively. Subminimum rule applies to all modules.

Advanced Monitoring and Evaluation 4	**ADME040**	▪ Government-Wide Monitoring and Evaluation Systems ▪ Monitoring and Evaluation at institutional level ▪ Developing Performance Indicators to Manage Performance in government ▪ Monitoring and Evaluation Approaches ▪ Evaluation Tools and Techniques. ▪ Research and Monitoring and Evaluation of Policies and Programmes. o Key Considerations in conducting Monitoring and evaluation Research. o Monitoring and Evaluation Research Tools. o Government Wide Monitoring and Evaluation: Data Terrains

		○ Qualitative and Quantitative Data Collection Methodologies. ▪ Evaluation of M&E in the South African context.
Advanced Public Policy Management 4	**ADPP040**	• Agenda setting • Policy formulation • Evidence based policy making • Models for policy formulation • Policy adoption and implementation • 7 C for policy implementation • Policy analysis • Policy monitoring and evaluation
Advanced Management and Leadership 4	**ADML040**	• Management and leadership imperatives for service delivery • Management theories, leadership theories and leadership styles • Management principles • Public sector leadership traits • Strategic management • Change management • Performance management • Ethical and accountable leadership • Good governance and leadership
Introduction To Research Methodology 4	**ARES040**	• Introduction to research • Research process • Research methodology • Ethical consideration • Data collection, analysis interpretation • Research report writing
Advanced Financial Management 4	**ADFM 040**	▪ Public Sector Financial Strategic management ▪ Financial Planning in line with MTEF and MTSF ▪ Financial Requirements ▪ Financial Performance management ▪ Financial Risks Management. ▪ Financial Oversight and Accountability
Advanced Human Resource Management 4	**ADHM040**	▪ Legislative/Statutory Framework for Public Sector Human Resource Management ▪ Strategic human capital management ▪ Strategic Change Management in the Public Sector. ▪ Talent Management and Retention in the Public Sector ▪ Public Sector Employee Performance Management and Development System (EPMDS) ▪ Remuneration Management in Public Sector. ▪ Employee Health and Wellness ▪ Labour Relations ▪ Ethics in the public human resource management

INDEMNITY CLAUSE

Mangosuthu University of Technology is not liable to the student or any third party for any demands, loss of life or amenities caused in whatever manner to the learner at the workplace where the Work Integrated Learning takes place. Despite the aforementioned, it is the responsibility of the learner to inform Mangosuthu University of Technology in writing of an unsafe or unhealthy conditions in the workplace where the student is receiving the training.

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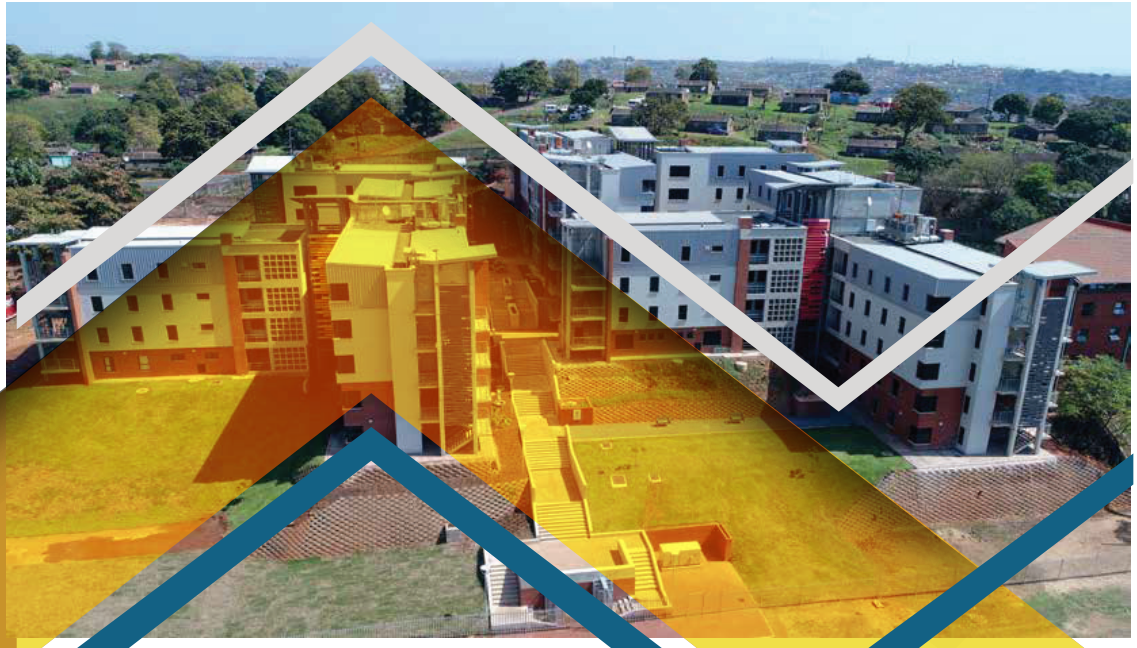

FACULTY OF ENGINEERING

2023

shape and own the future

FACULTY OF ENGINEERING PROSPECTUS

2023

All National Diploma programmes will be completely phased out at the end of 2023 academic year.

Registration towards National Diploma programmes will not be permitted beyond 2023 academic year.

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   Diploma in Engineering: Mechanical Extended Curriculum Programme
   Access Course

This faculty prospectus must be read in conjunction with the Mangosuthu University of Technology's General Rules contained in the current General Regulations handbook for Students.

Further information may be obtained from:

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Tel: +27(31) 9077111 / 9077181
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1. DEPARTMENT OF CHEMICAL ENGINEERING

Chemical Engineering is an area of study which prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of systems employing chemical processes, such as chemical reactors, kinetic systems, electrochemical systems, energy conservation processes, heat and mass transfer systems, and separation processes, and the applied analysis of chemical problems such as corrosion, particle abrasion, energy loss, pollution and fluid mechanics.
Successful completion of the programmes which are offered in this Department will lead to the award of the following qualifications:

Qualification	SAQA NLRD Number
Diploma in Chemical Engineering	96854
ND: Engineering: Chemical **(Phased out from 2018)**	72290
Advanced Diploma in Chemical Engineering	101988
BTech: Chemical Engineering (**Phased out from 2020)**	72279

1.1 Bridging Course: Chemical Engineering

Statement of Purpose
The purpose of this course is to enhance and bridge the candidates' existing skills, knowledge and attitude with the skills, knowledge and attitude required to gain entry to the study towards Diploma in Chemical Engineering

a. **Duration of the course**
Duration of the course is six months only.

PLEASE NOTE: This Course <u>May Not</u> Be Repeated.

b. **Admission Requirements**

i) National Senior Certificate (NSC) with rating codes:

English Home Language	3
English First Additional Language	3
Mathematics	3
Physical Science	3

Satisfactory achievement in their Home Language 4
A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement", at NQF Level 4

ii) Senior Certificate or equivalent qualification with a pass in

Mathematics	E(SG)/F(HG)
Physical Science	E(SG)/F(HG)
English	E(SG)/F(HG)

iii) An N3 qualification with a minimum of 50% passes in English, Mathematics and Physical Science.

iv) An appropriate GCE Certificate with five subjects including Mathematics, Science and English with Symbol A, B or C. Three of the five subjects must have been passed at the same examination sitting.

v) NCV level 4 with a minimum of 40% pass in English and Mathematics (Mathematical Literacy would not be considered) and a minimum of 50% pass in Physical Science.

ALL ADMISSIONS ARE BASED ON A SELECTION PROCESS ONLY!!!

Applicants who satisfy the minimum requirements will be subjected to a selection process. Applicants will be ranked based on their academic results and selected for admission accordingly. Mathematical Literacy will not be considered.

c. **Curriculum Compilation**
All the instructional offerings are compulsory.

ACCESS COURSE: CHEMICAL ENGINEERING			
Code	**Subjects**	**Semester offered**	**Assessment Method**
ACHEM11	Chemistry	1&2	Examination
APHYC11	Physics	1&2	Examination
AMACH11	Mathematics	1&2	Examination
ADRAW11	Drawing	1&2	Continuous assessment
ACOCH11	Communications	1&2	Examination
ALABC11	Lab Practice	1&2	Continuous assessment

d. **Learning, Teaching and Assessment**
- Students are expected to attend all practicals, lectures and tutorials offered in the course (as per time-table).
- All subjects are evaluated by means of compulsory tests, practicals and/or assignments and the end of semester examination. If a student misses a test or a practical due to illness, he/she may apply for an aegrotat test on prescribed form and attach a doctor's certificate. If this is not done, "0" mark would be entered for missed assessment.
- All students will be admitted to the end of semester examination.
- The final mark for a subject is calculated based on the performance in ALL compulsory assessments. To pass a subject, the student should obtain a final mark of no less than 50%.

PLEASE NOTE THAT THIS COURSE <u>MAY NOT</u> BE REPEATED.

All other rules for examinations apply as in the handbook of General Rules and Regulations for Students – Rule: G22.

e. **Promotion to Higher Level**
To qualify for admission into S1 Chemical Engineering, students should pass (obtain 50%) in all six subjects offered in this course.

f. **Course Content**

- **Chemistry (ACHEM11)**
The syllabus includes: units of measurements; matter, atomic theory; nomenclature; chemical reactions; stoichiometry, acids and bases and chemical energies.

- **Physics (APHYC11)**
The syllabus includes: units and dimensions; motion in a straight line; motion in free fall; projectile motion; momentum and elastic collision; Newton's laws of motion; work, energy and power.

- **Mathematics (AMACH11)**
  The syllabus includes: algebra; plane analytic geometry; equations; functions; perimeter, area and volume and trigonometry.

- **Drawing (ADRAW11)**
  The course content starts with the use of a pencil to print letters and figures as well as drawing freehand sketches. It then proceeds to the use of drawing instruments to draw geometrical constructions, orthographic projections, isometric drawings and sectional drawings.

- **Communications (ACOCH11)**
  The syllabus includes: oral communication; vocabulary building skills; language usage skills; basic reading skills, business correspondence.

- **Lab Practice (ALABC11)**
  The practicals include use of: mass and electronic top-loading balances; gas burner; instruments for measurement of volume and temperature; filtration and evaporation equipment; etc.

1.2 **Diploma in Chemical Engineering**

NQF Level : 6 **SAQA Credits** : 360

Rationale for the Qualification

Professional Chemical Engineering Technicians are characterized by the ability to apply proven, commonly understood techniques, procedures, practices and codes to solve well-defined engineering problems. They manage and supervise chemical engineering operations and activities. They work independently and responsibly within an allocated are or under guidance.

Professional Engineering Technicians must therefore have a working understanding of engineering sciences underlying the techniques used, together with financial, commercial legal, socio-economic, health, safety and environmental methodologies, procedures and best practices.

The process of professional development of a Professional Engineering Technician starts with the attainment of a qualification that meets this standard. After graduation a programme of training and experience is completed to attain the competencies for registration in the category Professional Engineering Technician.

Statement of Purpose

This qualification is primarily industry oriented. The knowledge emphasizes general principles and application or technology transfer. The qualification provides students with a sound knowledge base in a chemical engineering field and the ability to apply their knowledge and skills to particular career or professional contexts, while equipping them to undertake more specialized and intensive learning. Programme leading to this qualification has a strong professional or career focus and holders of this qualification are normally prepared to enter a specific niche in the labour market.

Specifically, the purpose of the Diploma in Chemical Engineering is to build the necessary knowledge, understanding, abilities and skills required for further learning towards becoming a competent practicing Professional Engineering Technician. This qualification provides:

1. Preparation for careers in engineering and related areas, for achieving technical leadership and to make a contribution to the economy and national development;
2. The educational requirement towards registration as a Professional Engineering Technician with the Engineering Council of South Africa (ECSA) as well as to allow the graduate to pursue careers in engineering and related fields;
3. A thorough grounding in mathematics, natural sciences, engineering sciences, engineering modelling, engineering design and the ability to enable applications in fields of emerging knowledge together with an appreciation for the world and society in which engineering is practiced;
4. For graduates with an appropriate level of achievement in the programme, the minimum entry requirement for admission to an Advanced Diploma, as specified in E-23-P, designed to support articulation to satisfy an engineering technologist education benchmark qualification

Qualification Rules
The learner will be awarded this qualification if he/she has successfully completed all modules (as outlined in section (c) below) and demonstrated competence (to the satisfaction of the assessors) in all Graduate Attributes as per E-02-PN ECSA standard outlined below.

ECSA Graduate Attributes

Graduate Attribute 1: Problem Solving
Identify, formulate, analyse and solve well-defined engineering problems

Graduate Attribute 2: Application of scientific and engineering knowledge
Apply knowledge of mathematics, natural sciences, engineering fundamentals and an engineering speciality to solve well-defined engineering problems.

Range Statement:
Mathematics, natural science and engineering sciences are applied in analysis and modelling of engineering situations, and for reasoning about and solving well-defined engineering problems.

Graduate Attribute 3: Engineering Design
Perform procedural design and synthesis of components, systems, engineering works, products or processes.

Range Statement:
Design problems used in exit-level assessment must conform to the definition of a well-defined engineering problem. A design problem should be used to provide evidence. The design knowledge base and components, systems, engineering works, products or processes to be designed are dependent on the sub-discipline or practice area

Graduate Attribute 4: Investigations, experiments and data analysis
Demonstrate competence to design and conduct investigations and experiments.

Range Statement:
The balance of investigation and experiment should be appropriate to the sub-discipline. Research methodology is to be applied in research or an investigation where the student engages with selected knowledge in the

research literature of the sub-discipline.

Note: An investigation differs from a design in that the objective is to produce knowledge and understanding of a phenomenon and a recommended course of action rather than specifying how an artefact could be produced.

Graduate Attribute 5: Engineering methods, skills and tools, including Information Technology
Demonstrate competence to use appropriate engineering methods, skills and tools, including those based on information technology.

Range Statement:
A range of methods, skills and tools appropriate to the disciplinary designation of the program including:

- Sub-discipline-specific tools, processes or procedures;
- Computer packages for computation, modelling, simulation, and information handling;
- Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork.

Graduate Attribute 6: Professional and Technical Communication
Demonstrate competence to communicate effectively, both orally and in writing, with engineering audiences and the community at large.

Range Statement:
Material to be communicated is in an academic or simulated professional context. Audiences range from engineering peers, academic personnel and related engineering peers, using appropriate academic or professional discourse. Written reports range from short (300 words) to long (a minimum of 2000 words excluding tables, diagrams and appendices), covering material at exit-level. Methods of providing information include the conventional methods of the sub-discipline, for example engineering drawings, as well as subject- specific methods.

Graduate Attribute 7: Sustainability and impact of engineering activity
Demonstrate critical awareness of the sustainability and impact of engineering activity on the social, industrial and physical environment.

Range Statement:
The combination of social, workplace (industrial) and physical environmental factors must be appropriate to the sub-discipline or other designation of the qualification. Comprehension of the role of engineering in society and identified issues in engineering practice in the sub-discipline: health, safety and environmental protection; risk assessment and management and the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

Graduate Attribute 8: Individual, team and multidisciplinary working.
Demonstrate competence to work effectively as an individual, in teams and in multidisciplinary environments.

Range Statement:
Multidisciplinary tasks require co-operation across at least one disciplinary boundary. Co-operating disciplines may be engineering disciplines with different fundamental bases other than that of the programme or may be outside engineering

Graduate Attribute 9: Independent learning ability

Demonstrate competence to engage in independent learning through well-developed learning skills.

Range Statement:

Operate in well-structured environment with some unfamiliar elements requiring personal responsibility and initiative, accurately self-evaluate and take responsibility for learning requirements; be aware of social and ethical implications of applying knowledge in particular contexts.

Graduate Attribute 10: Engineering professionalism

Demonstrate critical awareness of the need to act professionally and ethically and to exercise judgment and take responsibility within own limits of competence.

Range Statement:

Evidence includes case studies typical of engineering practice situations in which the graduate is likely to participate. Ethics and the professional responsibility of a technician and the contextual knowledge specified in the range statement of Graduate Attribute 7 is generally applicable here.

Graduate Attribute 11: Engineering management

Demonstrate knowledge and understanding of engineering management principles and economic decision-making.

Range Statement:

Basic techniques from economics, business management; project management applied to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments

Graduate Attribute 12: Workplace practices

Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.

Range Statement:

Tasks to demonstrate this outcome should be designed to connect academic learning with workplace practice and may be performed in one or more of the following types of work-integrated learning

i) Work-directed theoretical learning.
ii) Problem-based learning.
iii) Project-based learning.
iv) Work-based learning, and
v) Simulated learning.

Note: While attribute 12 is specific to workplace practices, other attributes may be demonstrated simultaneously

******Please note that GA 8 (as outlined in 2021 Prospectus) is now split into two GAs with separate assessments in line with updated E-02-PN ECSA standard effective from 2022 academic year.***

a. **Admission requirements**

i) National Senior Certificate with rating codes:

English Home Language	4
English First Additional Language	4
Mathematics	4
Physical Science	4

OR

ii) Senior Certificate or equivalent qualification with passes in

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

iii) Students who have successfully completed the Chemical Engineering Bridging Course are also considered.

iv) NCV level 4 with a minimum of 50% pass in English and Mathematics (Mathematical Literacy would not be considered) and a minimum of 60% pass in three compulsory vocational subjects: Physical Science, Process Technology and Process Chemistry or Process Control.

ALL ADMISSIONS ARE BASED ON A SELECTION PROCESS ONLY!!!

Applicants who satisfy the minimum requirements will be subjected to a selection process. Applicants will be ranked based on their academic results and selected for admission accordingly. Mathematical Literacy will not be considered.

b. **Duration of Study**

The minimum duration of study is three years, of which two years are spent in the University full time study, plus 1 year of appropriate Work Integrated Learning as a learner technician. *All instructional offerings indicated in the next section are compulsory.*

c. **Curriculum Compilation and Pre-Requisites**

Diploma in Chemical Engineering								
Code	**Subjects**	**Credits**	**Semester of study**	**Assessment Method**	**NQF Level**	**Pre-requisites**	**Co-requisites**	**GA assessed**
CHEM112	Engineering Chemistry I	12	1	Examination	5			
COMC112	English Communication Skills I	8	1	Examination	5			
MACH111	Mathematics I	12	1	Examination	5			
PHYS112	Physics I	12	1	Examination	5			
COSC111	Computer Skills I	12	1	Examination	5			
CHTE112	Introduction to Chem Eng Tech 1	8	1	Examination	5		CHEM112 PHYS112 & MACH111	
CHTE212	Chem Eng. Tech II	12	2	Examination	6	CHEM112, CHTE112, MACH111, PHYS112		
MACH211	Mathematics II	12	2	Examination	6	MACH111		
DRAC212	Chemical Engineering Drawing	8	2	Continuous Assessment	5			
CPIN221	Chemical Process Industries II	12	2	Examination	5			
ORCH222	Engineering Chemistry II (Module 1)	12	2	Examination	5	CHEM112		
CHYC222	Engineering Chemistry II (Module 2)	12	2	Examination	5	CHEM112, MACH111		
CHPL332	Chemical Plant III	12	3	Examination	6	CHTE212		
CHTE311	Chem Eng Tech III (Module 1)	12	3	Examination	6	CHTE212, CHYC222		GA 9

CHTE312	Chem Eng Tech III (Module 2)	12	3	Examination	6	CHTE212, CHYC222		
CEEP032	Chem Eng Laboratory Practicals III	8	3	Continuous Assessment	6		CHPL332	
THCE301	Thermodynamics: Chem Eng III	12	3	Examination	6	MACH211, CHTE212, CHYC222		
CPDP311	Chem Eng Design and Professional Practice (Principles)	14	3	Continuous Assessment	6	MACH211, CHTE212, CHYC222	CHTE311, ENPC031	GA 7 & GA 10
ENPC031	Engineering Practice and Communications	8	3	Continuous Assessment	5	COMC112, CHTE212, DRAC212, CPIN221, ORCH222, CHYC222, MACH211, COSC111	CPDP311	
CPDP321	Chem Eng Design and Professional Practice III	14	4	Continuous Assessment	6	CHTE311, CHTE312, CPDP311		GA 3, GA 5, GA 6, GA 11
CEEP042	Chem Eng Laboratory Practicals IV	8	4	Continuous Assessment	6	CHTE311, CHTE312		GA 4
PRCO331	Process Instrumentation and Control	12	4	Examination	6	MACH211, CHPL332		GA 1 & GA 2
THAP331	Thermodynamics (Applied) III	12	4	Examination	6	All S1 & S2 subjects		
ENST301	Engineering Statistics	12	4	Examination	6	All S1 & S2 subjects		
MASK212	Management Skills	8	4	Examination	5	All S1 & S2 subjects		
CEIS012	Chem Eng Practice I (P1)	40	5	Continuous assessment	6	ENPC031		
CEIS022	Chem Eng Practice II (P2)	44	6	Continuous assessment	6	CEIS012, CHPL332, CEEP032, THCE301, CHTE311, CHTE312, CPDP311		GA 8 & GA 12

*****Please note that GAs number and allocation to indicated subjects has changed effective from 2022 academic year to satisfy changes in ECSA E-02-PN standard.***

d. **Teaching, Learning and Assessment**

- All subjects offered are semester long.
- Students are expected to attend all practicals, lectures and tutorials offered in the course (as per time-table).
- All subjects are evaluated through combination of compulsory tests, assignments, project/practical reports, oral presentations and the end of semester examination as outlined in the learner guides. If a student misses a test or practical due to illness, he/she may apply for an aegrotat test on prescribed form and attach a doctor's certificate. If this is not done, "0" mark would be entered for missed assessment.
- A pass in the practical component of some of the courses is a prerequisite for a semester mark to be attained (specified in the subjects' learner guides).
- Demonstration of competency in graduate attributes may be required for examination admission and successful completion of the course in some subjects (specified in subjects' learner guides).

- All other rules are per General Rules and Regulations in Students handbook.

e. **Work Integrated Learning**

It is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who experience any problem when trying to register must contact their Heads of Department for advice.

Students who do not register their work integrated learning cannot be monitored nor evaluated and their training will NOT be recognised.

Students doing work integrated learning must obtain a manual containing the details of the training procedures from the Department of Chemical Engineering. Students are only legible for graduation after completion, submission and evaluation of all the necessary reports.

f. **Curriculum Content**

- **Engineering Chemistry I (CHEM112)**
  The syllabus includes: matter and energy; chemical equations and stoichiometry; solutions; acids, bases and salts; chemical reactions, chemical equilibrium; electrochemistry and redox reactions; introduction to inorganic and organic chemistry and appropriate laboratory practicals.

- **English Communication Skills I (COMC112)**
  The syllabus includes: academic writing skills, communication theory; meetings; public speaking & presentation skills; report writing skills.

- **Mathematics I (MACH111)**
  The syllabus includes: basic algebra and trigonometry; differential calculus with applications; integral calculus with applications; statistics, complex numbers and hyperbolic functions.

- **Physics I (PHYS112)**
  The syllabus includes: mechanics; heat; electricity and magnetism; FLUIDS and corresponding laboratory work.

- **Computer Skills I (COSC111)**
  The syllabus includes: hardware; software; data communications; computer applications; Windows; theory of computer and introduction to excel, word processing and spreadsheets.

- **Introduction to Chemical Engineering Technology 1 (CHTE112)**
  The syllabus includes: what do chemical engineering technicians do; chemical processes and fundamentals of material and energy balances.

- **Chemical Engineering Technology II (CHTE212)**
  The syllabus includes: fundamentals of material balances; single phase systems; multi-phase systems; energy balances and balances on reactive and non-reactive systems.

- **Mathematics II (MACH211)**
  The syllabus includes: further differential and integral calculus with applications; matrix algebra; linear

programming; differential equations.

- **Chemical Engineering Drawing (DRAC212)**
  The syllabus includes: isometric projection; conics and engineering curves including ellipse; development and intersection of surfaces; application of CHEMCAD and CADWorx plant professional tools for drawing flow diagrams, piping systems and chemical plant layout.

- **Chemical Process Industries II (CPIN221)**
  The syllabus includes: coal processing; petroleum refining; synthetic rubber; plastics; paper and pulp; sugar refining; agrochemicals; iron and steel and heavy chemicals.

- **Engineering Chemistry II - Module 1 (ORCH222)**
  The syllabus includes: aliphatic hydrocarbons; alkyl halides; alkenes; aromatic compounds; alcohols and ethers; aldehydes and ketones; polymers; carboxylic acids and derivatives; chemical bonding and group elements of the periodic table and corresponding laboratory work.

- **Engineering Chemistry II – Module 2 (CHYC222)**
  The syllabus includes: gases; liquids; chemical kinetics; chemical equilibrium; colloids; colligative properties of solutions; electrochemistry and corresponding laboratory work.

- **Chemical Plant III (CHPL332)**
  The syllabus includes: separation processes; size reduction; water treatment; cooling towers; conveying of gases and mixing of liquids.

- **Chemical Engineering Technology III - Module 1 (CHTE311)**
  Modules covers fundamental principles of incompressible fluid flow; compressible fluid flow; heat transfer; mass transfer and their applications.

- **Chemical Engineering Technology III - Module 2 (CHTE312)**
  Covers basic principles and concepts underpinning operations of units encountered in the chemical and allied industries as well as their sizing. The syllabus includes: drying; distillation; absorption; leaching and single stage evaporation.

- **Chemical Engineering Laboratory Practicals III (CEEP032)**
  It relates theory to practice and equips students with the necessary skills to handle projects in industry. The following practical sessions are undertaken: solid-liquid extraction; reciprocating pump test; centrifugal pump test; sedimentation; solids handling and cooling towers.

- **Thermodynamics: Chemical Engineering III (THCE301)**
  The syllabus includes: introduction; first law of thermodynamics; heat capacity; second and third laws of thermodynamics; real gases; thermodynamic relationships; properties of mixtures and absorption.

- **Chemical Engineering Design and Professional Practice (Principles) (CPDP311)**
  The syllabus includes: the design process; chemical process selection; environmental protection; chemical process safety; pumping of fluids; pumps and piping design procedures; process flow-sheeting; introduction to

HAZOP study and the design project.

- **Engineering Practice and Communications (ENPC031)**
  The syllabus includes: professional and technical writing skills; oral presentation skills, CV writing; interview skills; professional outlook and work readiness.

- **Chemical Engineering Design and Professional Practice III (CPDP321)**
  The syllabus includes: optimum design and design strategy; chemical process safety; process equipment design; agitation and mixing of fluids; process equipment cost estimation; HAZOP study and engineering ethics.

- **Chemical Engineering Laboratory Practicals IV (CEEP042)**
  It relates theory to practice and equips students with the necessary skills to handle projects in the industry. The following practical sessions are undertaken: distillation; heat exchanger; absorption; heat convection; fluidized bed reactor; convective dryer and study of pressure drop due to friction.

- **Process Instrumentation and Control (PRCO331)**
  The syllabus includes: P&I diagram; instrumentation; sizing of control valves, simple and advanced control systems; alarms, safety trips, interlocks and hazard and operability studies: introduction to an integrated suite of intuitive chemical process engineering software (CHEMCAD).

- **Thermodynamics: Applied III (THAP331)**
  The syllabus includes: perfect gases; reversible non-flow processes; working fluid; second law of thermodynamics; heat engine cycle; steam plant, compressors, refrigeration, gas turbines and nozzles.

- **Management Skills (MASK212)**
  The syllabus includes: human relations in organisations; principles and practice of management; project management; work study and accuracy; industrial legislation; basic principles of the law contract; type of business; financial management; marketing and business decisions.

- **Engineering Statistics (ENST301)**
  The syllabus includes: descriptive statistics; basic probability concepts; statistical distributions; regression analysis and computer-aided statistical analysis of data (using Excel).
- **Chem Eng Practice I (CEIS012)**
  To promote integration of theoretical concepts learned in the academic environment with industrial practice. To develop other skills, that cannot be fully developed in a classroom or laboratory environment.

- **Chem Eng Practice II (CEIS022)**
  To promote integration of theoretical concepts learned in the academic environment with industrial practice. To develop other skills, that cannot be fully developed in a classroom or laboratory environment.

1.3 National Diploma: Engineering: Chemical

NQF Level: 6 **SAQA Credits**: 360

NB: The National Diploma: Engineering: Chemical has been phased out with effect from January 2018. Students who fail to obtain the necessary credits after two attempts or acquire the qualification within a period of twice of minimum prescribed time are required to migrate to the Diploma in Chemical Engineering programme. Credits for the subjects within which Graduate Attributes are assessed will not be granted and they need to be repeated regardless of previous achievements. The department has not been offering S1 and S2 levels of the National Diploma programme as from January 2019, and S3 and S4 subjects as from January 2022. Last date for completion of this qualification is December 2023.

Rationale for the Qualification

The Engineering profession contributes to the technological, socio-economic, built environment and environmental infrastructure of the country, facilitating socio-economic growth and sustainability. A National Diploma: Engineering: Chemical and Bachelor of Technology: Engineering: Chemical aim to meet the needs of the country in respect of engineering competence.

Chemical Engineering is an area of study which prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of systems employing chemical processes, such as chemical reactors, kinetic systems, electrochemical systems, energy conservation processes, heat and mass transfer systems, separation processes analysis of chemical problems such as corrosion, particle abrasion, energy loss, pollution and fluid mechanics.

Statement of Purpose

This qualification is intended for process or chemical engineering technicians working in the process related industries. Learners achieving this qualification have the competence to apply existing process technology to chemical engineering problems in chemical processes and plant operations. The target market for the qualification is primarily (but not limited to) the chemical and allied industry.

Qualification Rules

The learner will be awarded with this qualification if he/she has provided evidence (to the satisfaction of the assessors) that the outcomes of the programme specified below have been achieved.

Exit Level Outcomes

A learner who successfully completes this programme will be able to:

1. Identify, evaluate, formulate and solve process related technical and operational problems.
2. Design process equipment in order to modify existing sections of the plant.
3. Plan and implement the production of required products.
4. Plan and implement projects using project management tools and skills.
5. Communicate effectively both orally and in writing with variety of audiences using appropriate language structure, style and graphical support.
6. Have knowledge of the Safety, Health and Environmental (SHE) impacts of chemical processing activities in order to identify the impacts and measures used to control these impacts.
7. Use IT in the application of engineering methods, skills and tools.

Specified Outcomes:

The qualifying learner will have competence to:

1. Apply knowledge of mathematics, basic sciences and chemical engineering sciences to solution of engineering problems.
2. Identify and solve process bottleneck problems to maximize production throughput.

3. Monitor the process, in order to take corrective action timeously.
4. Modify the design of chemical plant units in order to optimise equipment for efficient and effective performance.
5. Produce technical and process drawings to communicate the design.
6. Design basic equipment according to process specification.
7. Rate equipment in order to compare design to actual performance.
8. Schedule production activities and manage resources.
9. Store, handle and transport materials and chemicals according to safety and environmental regulations and process conditions and operating budget.
10. Manage the operating budget.
11. Plan and manage projects.
12. Perform economic justification of projects.
13. Write technical reports effectively in order to convey the design problem, possible causes and a proposed solution.
14. Communicate information orally to specified audiences.
15. Apply environmental management principles regarding effluent treatment, air pollution, and solid waste disposal.
16. Execute Environmental Impact Assessment (EIA) studies.
17. Select and implement appropriate engineering tools.
18. Use computer applications as required by the discipline.

g. **Duration of Study**

The minimum duration of study is three years, of which two years are spent in the University full time study, plus 1 year of appropriate Work Integrated Learning as a learner technician. *All the instructional offerings are compulsory.*

h. **Curriculum Compilation and Pre-Requisites**

National Diploma: Engineering: Chemical							
Code	**Subjects**	**Credits**	**Semester of study**	**Assessment Method**	**NQF Level**	**Pre-requisites**	**Co-requisites**
~~CHEM211~~	~~Chemistry I~~	~~16~~	~~1~~	~~Examination~~	~~5~~		
~~COMC311~~	~~Communication Skills I~~	~~5~~	~~1~~	~~Examination~~	~~5~~		
~~DRAC211~~	~~Drawing: Chemical Eng I~~	~~13~~	~~1~~	~~Examination~~	~~5~~		
~~MATCH01~~	~~Mathematics I~~	~~10~~	~~1~~	~~Examination~~	~~5~~		
~~PHYS411~~	~~Physics I~~	~~16~~	~~1~~	~~Examination~~	~~5~~		
~~COSCH01~~	~~Computer Skills I~~	~~10~~	~~1~~	~~Examination~~	~~5~~		
~~CHTE111~~	~~Introduction to Chem Eng Tech 1~~	~~4~~	~~1~~	~~Examination~~	~~5~~		~~Chemistry I, Physics I & Mathematics I~~
~~CHTE122~~	~~Chem Eng. Tech II~~	~~8~~	~~2~~	~~Examination~~	~~5~~	~~Introduction to Chem. Eng. Tech I, Chemistry I, Physics I & Mathematics I~~	
~~MATCH02~~	~~Mathematics II~~	~~10~~	~~2~~	~~Examination~~	~~6~~	~~Mathematics I~~	
~~ENPH021~~	~~Engineering Physics II~~	~~8~~	~~2~~	~~Examination~~	~~5~~	~~Physics I, Mathematics I~~	
~~INOC321~~	~~Inorganic Chemistry II~~	~~10~~	~~2~~	~~Examination~~	~~5~~	~~Chemistry I~~	
~~ORCH221~~	~~Organic Chemistry II~~	~~10~~	~~2~~	~~Examination~~	~~5~~	~~Chemistry I~~	
~~CHYC221~~	~~Physical Chemistry II~~	~~10~~	~~2~~	~~Examination~~	~~5~~	~~Chemistry I, Mathematics I~~	

~~CHPL431~~	~~Chemical Plant III~~	~~16~~	~~3~~	~~Examination~~	~~6~~	~~Chem Eng Tech II~~	
~~CHTE301~~	~~Chem Eng Tech III (Module 1)~~	~~10~~	~~3~~	~~Examination~~	~~6~~	~~Chem Eng Tech II, Eng Physics II, Physical Chem II~~	
~~CHTE302~~	~~Chem Eng Tech III (Module 2)~~	~~10~~	~~3~~	~~Examination~~	~~6~~	~~Chem Eng Tech II, Eng Physics II, Physical Chem II~~	
~~CEEP031~~	~~Chem Eng Practicals III~~	~~4~~	~~3~~	~~Continuous Assessment~~	~~6~~		~~Chem Plant III~~
~~THCE031~~	~~Thermodynamics: Chem Eng III~~	~~10~~	~~3~~	~~Examination~~	~~6~~	~~Mathematics II, Chem Eng Tech II, Physical Chem II~~	
~~CPIN021~~	~~Chemical Process Industries II~~	~~10~~	~~3~~	~~Examination~~	~~5~~		
~~CPDP031~~	~~Chem Process Design Principles III~~	~~10~~	~~4~~	~~Examination~~	~~6~~	~~Chemical Plant III, Chem Eng Tech III (modules 1&2)~~	
~~CEEP041~~	~~Chem Eng Practicals IV~~	~~4~~	~~4~~	~~Continuous Assessment~~	~~6~~	~~Chem Eng Tech III (modules 1&2)~~	
~~PRCO031~~	~~Process Control III~~	~~10~~	~~4~~	~~Examination~~	~~6~~	~~Mathematics II, Chem Plant III~~	
~~THAP031~~	~~Thermodynamics: Applied III~~	~~10~~	~~4~~	~~Examination~~	~~6~~		
~~MASK211~~	~~Management Skills I~~	~~16~~	~~4~~	~~Examination~~	~~5~~		
CEIS011	Chem Eng Practice I (P1)	60	5	Continuous assessment	6	All level 2 subjects passed	
CEIS021	Chem Eng Practice II (P2)	60	6	Continuous assessment	6	All level 3 subjects passed	

Please note that only P1 and P2 will still be offered in 2023.

i. **Teaching, Learning and Assessment**

- All subjects offered are semester long.
- Students are expected to attend all practicals, lectures and tutorials offered in the course (as per time-table).
- All subjects are evaluated through combination of compulsory tests, assignments, project/practical reports, oral presentations and the end of semester examination as outlined in the learner guides. If a student misses a test or practical due to illness, he/she may apply for an aegrotat test on prescribed form and attach a doctor's certificate. If this is not done, "0" mark would be entered for missed assessment.
- A pass in the practical component of some of the courses is a prerequisite for a semester mark to be attained (specified in the subjects' learner guides).
- All other rules are per General Rules and Regulations in Students handbook.

j. **Work Integrated Learning**

It is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who experience any problem when trying to register must contact their Heads of Department for advice.

Students who do not register their work integrated learning cannot be monitored nor evaluated and their training will NOT be recognised.

Students doing work integrated learning must obtain a manual containing the details of the training procedures from the Department of Chemical Engineering. Students are only legible for graduation after completion, submission and evaluation of all the necessary reports.

k. **Curriculum Content**

- **Chemistry I (CHEM211)**
  The syllabus includes: matter and energy; chemical equations and stoichiometry; solutions; acids, bases and salts; chemical reactions; chemical equilibrium; electrochemistry and redox theory; introduction to inorganic and organic chemistry and related practicals.

- **Communication Skills (COMC311)**
  The syllabus includes: academic writing skills, communication theory; meetings; public speaking & presentation skills; report writing skills.
- **Drawing: Chemical Engineering I (DRAC211)**
  The syllabus includes: introduction; construction; projection; drawing aids; penetration and development of geometrical bodies; free hand sketches; isometric projection; sketches of plant and lay out and symmetric pipe drawing.

- **Mathematics I (MATCH01)**
  The syllabus includes: basic algebra and trigonometry; differential calculus with applications; integral calculus with applications; statistics, complex numbers and hyperbolic functions.

- **Physics 1 (PHYS411)**
  The syllabus includes: mechanics; heat; electricity and magnetism; nuclear physics and corresponding laboratory work.

- **Computer Skills 1 (COSCH01)**
  The syllabus includes: hardware; software; data communications; computer applications; Dos; Windows; theory of computer and introduction to Office XP, word processing and spreadsheets.

- **Introduction to Chemical Engineering Technology 1 (CHTE111)**
  The syllabus includes: what do chemical engineering technicians do; chemical processes and fundamentals of material and energy balances.

- **Chemical Engineering Technology II (CHTE122)**
  The syllabus includes: fundamentals of material balances; single phase systems; multi-phase systems; energy balances and balances on reactive and non-reactive systems.

- **Mathematics II (MATCH02)**
  The syllabus includes: further differential and integral calculus with applications; matrix algebra; linear programming; statistics and differential equations.

- **Engineering Physics II (ENPH021)**
  The syllabus includes: transfer of heat; electrical principles; nuclear reactions; hydrodynamics and hygrometry.

- **Inorganic Chemistry (INOC321)**
  The syllabus includes: introduction to chemical bonding and an advanced study of ionic bonding; chemical reactions in aqueous and non-aqueous solutions; redox chemistry; descriptive inorganic chemistry and corresponding laboratory work.

- **Organic Chemistry (ORCH211)**
  The syllabus includes: introduction; aliphatic hydrocarbons; benzene; alkyl and aryl halides; alkanols and alkoxyalkanes; phenols; alkanals and alkanones; carboxylic acids and derivatives; amines and corresponding laboratory work.

- **Physical Chemistry (CHYC221)**
  The syllabus includes: gases; liquids; chemical kinetics; chemical equilibrium; colloids; colligative properties of solutions; electrochemistry and corresponding laboratory work

- **Chemical Plant III (CHPL431)**
  The syllabus includes: handling and storage of solids; size reduction; mechanical separation; water treatment; material technology; corrosion; environment protection; pumps and piping; compressors; steam plants; combustion; mixing; valves and cooling towers.

- **Chemical Engineering Technology III - Module 1 (CHTE301)**
  The syllabus includes: incompressible fluid flow; compressible fluid flow; heat transfer; introduction to mass transfer and single stage evaporation.

- **Chemical Engineering Technology III - Module 2 (CHTE302)**
  To provide students with the basic principles of processes and concepts encountered in the chemical and allied industries. The syllabus includes: humidity; drying; distillation; absorption and leaching.

- **Chemical Engineering Practicals III (CEEP031)**
  It relates theory to practice and equips students with the necessary skills to handle projects in industry. The following practical sessions are undertaken: solid-liquid extraction; reciprocating pump test; centrifugal pump test; sedimentation; solids handling and cooling towers.

- **Thermodynamics: Chemical Engineering III (THCE031)**
  The syllabus includes: introduction; first law of thermodynamics; heat capacity; second and third laws of thermodynamics; real gases; thermodynamic relationships; properties of mixtures and absorption.

- **Chemical Process Industries II (CPIN021)**
  The syllabus includes: coal processing; petroleum refining; synthetic rubber; plastics; paper and pulp; sugar refining; agrochemicals; iron and steel and heavy chemicals.

- **Chemical Process Design Principles III (CPDP031)**
  The syllabus includes: the design process; environmental protection; chemical process safety; process creation; heuristics for process synthesis; process flow-sheeting; piping system design and instrumentation; construction details and design of process equipment and the design project.

- **Chemical Engineering Practicals IV (CEEP041)**
  It relates theory to practice and equips students with the necessary skills to handle projects in the industry. The following practical sessions are undertaken: distillation; heat exchanger; absorption; heat convection; fluidized bed reactor; convective dryer and study of pressure drop due to friction.

- **Process Control III (PRCO031)**
  The syllabus includes: P&I diagram; instrumentation; sizing of control valves, simple and advanced control systems; alarms, safety trips, interlocks and hazard and operability studies: introduction to an integrated suite of intuitive chemical process engineering software (CHEMCAD).

- **Thermodynamics: Applied III (THAP031)**
  The syllabus includes: perfect gases; reversible non-flow processes; working fluid; second law of thermodynamics; heat engine cycle; steam plant, compressors, refrigeration, gas turbines and nozzles.

- **Management Skills I (MASK211)**
  The syllabus includes: human relations in organisations; principles and practice of management; project management; work study and accuracy; industrial legislation; basic principles of the law contract; type of business; financial management; marketing and business decisions.

- **Chem Eng Practice I (CEIS011)**
  To promote integration of theoretical concepts learned in the academic environment with industrial practice. To develop other skills, that cannot be fully developed in a class room or laboratory environment.

- **Chem Eng Practice II (CEIS021)**
  To promote integration of theoretical concepts learned in the academic environment with industrial practice. To develop other skills, that cannot be fully developed in a classroom or laboratory environment.

1.4 Advanced Diploma in Chemical Engineering

NQF Level: 7 **SAQA Credits**: 142

Rationale for the Qualification

This qualification is aimed at Process or Chemical Engineering Technologists working in the process related industries. This qualification is primarily industry oriented.

The process of professional development in engineering has three principal phases: education, training and experience leading to registration and continual development during practice.

Statement of purpose

In this qualification the knowledge component emphasises general principles and application or technology transfer. The qualification provides students with a sound knowledge and skills in their professional life while equipping them to undertake more specialised and intensive learning.

The purpose of the qualification is to build the necessary knowledge, understanding, abilities and skills required for further learning towards becoming a competent practicing Engineering Technologist.

Professional Engineering Technologists are characterized by the ability to apply established and newly developed engineering technology to solve broadly-defined problems, develop components, systems, services and processes. They provide leadership in the application of technology in safety, health, engineering and commercially effective operations and have well-developed interpersonal skills. They work independently and responsibly, applying judgment to decisions arising in the application of technology and health and safety considerations to problems and associated risks. Professional Engineering Technologists have a specialised understanding of engineering sciences underlying a deep knowledge of specific technologies together with financial, commercial, legal, social and economic, health, safety and environmental matters.

Specifically, the purpose of this Advanced Diploma in Chemical Engineering qualification is to provide graduates with:

1. Preparation for careers in engineering and related areas, for achieving technical leadership and to make a contribution to the economy and national development;

2. The educational requirement towards registration as a Professional Engineering Technologist with the Engineering Council of South Africa as well as to allow the graduate to pursue careers in engineering and related fields;
3. A thorough grounding in mathematics, natural sciences, engineering sciences, engineering modelling, engineering design and the ability to enable applications in fields of emerging knowledge together with an appreciation for the world and society in which engineering is practiced;
4. For graduates with an appropriate level of achievement in the programme, the ability to proceed to study in Level 8 programmes e.g. Bachelor Degree, Honours Degree or Postgraduate Diploma in Engineering or other fields and then proceed to Masters Degrees studies.

Qualification Rules
The learner will be awarded this qualification if he/she has successfully completed all modules (as outlined in section (c) below) and demonstrated competence (to the satisfaction of the assessors) in all Graduate Attributes as per E-05-PT ECSA standard outlined below.

ECSA Graduate Attributes (GAs):

Graduate Attribute 1: Problem solving
Identify, formulate, analyse and solve broadly-defined engineering problems

Graduate Attribute 2: Application of scientific and engineering knowledge
Apply knowledge of mathematics, natural sciences, engineering fundamentals and an engineering speciality to solve broadly-defined engineering problems.

Range Statement: Mathematics, natural science and engineering sciences are applied in formal analysis and modelling of engineering situations, and for reasoning about and conceptualizing engineering problems.

Graduate Attribute 3: Engineering design
Perform creative, procedural and non-procedural design and synthesis of components, systems, engineering works, products or processes.

Range Statement: Design problems used in exit-level assessment must conform to the definition of a broadly-defined engineering problem.
i) A major design problem should be used to provide evidence.
ii) The selection of components, systems, engineering works, products or processes to be designed are dependent on the discipline or practice area

Graduate Attribute 4: Investigations, experiments and data analysis
Demonstrate competence to design and conduct investigations and experiments

Range Statement: The balance of investigation and experiment should be appropriate to the discipline. Research methodology is to be applied in research or an investigation where the student engages with selected knowledge in the research literature of the discipline.

***Note*:** An investigation differs from a design in that the objective is to produce knowledge and understanding of a phenomenon and a recommended course of action rather than specifying how an artefact could be produced.

Graduate Attribute 5: Engineering methods, skills and tools, including information technology.
Demonstrate competence to use appropriate engineering methods, skills and tools, including those based on information technology.

Range Statement: A range of methods, skills and tools appropriate to the disciplinary designation of the program including:

- Discipline-specific tools, processes or procedures;
- Computer packages for computation, modelling, simulation, and information handling;
- Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork.

Graduate Attribute 6: Professional and technical communication.
Demonstrate competence to communicate effectively, both orally and in writing, with engineering audiences the community at large.

Range Statement*:* Material to be communicated is in an academic or simulated professional context.

i) Audiences range from engineering peers, management and lay persons, using appropriate academic or professional discourse.
ii) Written reports range from short (300-1000 words plus tables diagrams) to long (10 000 to 15 000 words plus tables, diagrams and appendices), covering material at exit-level.
iii) Methods of providing information include the conventional methods of the discipline, for example engineering drawings, as well as subject- specific methods

Graduate Attribute 7: Sustainability and impact of engineering activity.
Demonstrate critical awareness of the sustainability and impact of engineering activity on the social, industrial and physical environment.

Range Statement: The combination of social, workplace (industrial) and physical environmental factors must be appropriate to the discipline or other designation of the qualification. Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: health, safety and environmental protection; risk assessment and management and the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

Graduate Attribute 8: Individual, team and multidisciplinary working.
Demonstrate competence to work effectively as an individual, in teams and in multidisciplinary environments.

Range Statement: Multidisciplinary tasks require co-operation across at least one disciplinary boundary. Co-operating disciplines may be engineering disciplines with different fundamental bases other than that of the programme or may be outside engineering.

Graduate Attribute 9: Independent learning ability.
Demonstrate competence to engage in independent learning through well-developed learning skills.

Range Statement: Operate independently in complex, ill-defined contexts requiring personal responsibility and initiative, accurately self-evaluate and take responsibility for learning requirements; be aware of social and ethical implications of applying knowledge in particular contexts.

Graduate Attribute 10: Engineering professionalism.
Demonstrate critical awareness of the need to act professionally and ethically and to exercise judgment and take responsibility within own limits of competence.

Range Statement: Evidence includes case studies typical of engineering practice situations in which the graduate

is likely to participate. Ethics and the professional responsibility of an engineer and the contextual knowledge specified in the range statement of Graduate Attribute 7 is generally applicable here.

Graduate Attribute 11: Engineering management.
Demonstrate knowledge and understanding of engineering management principles and economic decision-making.

Range Statement: Basic techniques from economics, business management; project management applied to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

******Please note that GA 8 (as outlined in 2021 Prospectus) is now split into two GAs with separate assessments in line with updated E-05-PT ECSA standard effective from 2022 academic year.***

a. **Entry Requirements**
The minimum requirement for admission into the qualification is either: an appropriate Diploma, NQF level 6 or a Bachelor's Degree in Chemical Engineering or related field.

b. **Duration of Programme**
The minimum formal study time is one year full time or two years part-time. *All the instructional offerings are compulsory.*

c. **Curriculum Compilation and Pre-Requisites**

ADVANCED DIPLOMA IN CHEMICAL ENGINEERING								
Code	**Subjects**	**Credits**	**Semester offered**	**Assessment Method**	**NQF Level**	**Pre-requisites**	**Co-requisites**	**GA assessment**
MATH471	Engineering Mathematics III	14	1 & 2	Examination	7			
CHTE471	Fluid Flow IV	14	1	Examination	7			
CHTE472	Heat & Mass Transfer IV	14	1	Examination	7			
CHTE473	Unit Operations IV	14	1	Examination	7			GA 1; GA 2
INST471	Instrumental Analysis	8	1	Continuous Assessment	7			
CPDE471	Chemical Engineering Design IV	28	Annual	Continuous Assessment	7		CHTE472 & CHTE473	GA 3; GA 7; GA 10; GA 11
PECI471	Production Management	14	2	Examination	7			
PRCO471	Chemical Process Control IV	14	2	Examination	7		MATH471	GA 5
RTEC471	Reactor Technology IV	14	2	Examination	7			GA 4; GA 8
RMCE471	Research Methodology	8	2	Continuous assessment	7			GA 6; GA 9

Please note, the intake of new students only takes place in the first semester.
***** Please also note that number of GAs and their allocation to indicated subjects has changed in line with updated E-05-PT ECSA standard with effect from 2022 academic year.***

d. **Teaching, Learning and Assessment**

- All subjects offered, except for the Chemical Engineering Design IV are semester long courses.
- Students are expected to attend all practicals, lectures and tutorials offered in the course (as per time-table), presentations
- All subjects are evaluated through combination of compulsory tests, assignments, project/practical reports, oral presentations and the end of semester examination as outlined in the learner guides.
- If a student misses an assessment due to illness, he/she may apply for an aegrotat test on prescribed form and attach a doctor's certificate. If this is not done, "0" mark would be entered for missed assessment.
- Demonstration of competency in graduate attributes may be required for examination admission and successful completion of the course in some subjects (specified in subjects' learner guides).
- All other rules are as per General Rules and Regulations for Students handbook.

e. **Course Content**

- **Engineering Mathematics III (MATH471)**

  The syllabus includes: Integration; first and second order ordinary differential equations; linear differential equations with constant coefficients; Laplace transforms and numerical methods.

- **Fluid Flow IV (CHTE471)**

  The syllabus includes: macroscopic mass, energy and momentum balances and elements of boundary layer theory; fluid flow through pipes, ducts, fittings and open channels; pumping of fluids, pumps in series and parallel; flow through porous media; compressible fluids flow; particle dynamics in settling; non-Newtonian fluids flow and mixing of fluids.

- **Heat and Mass Transfer IV (CHTE472)**

  The syllabus includes: boundary layer fundamentals; forced convection in laminar, turbulent and transitional flow; forced convection over exterior surface; heat transfer with change in phase; molecular diffusion in fluids and solids; prediction of diffusivities in fluids; diffusion through solid barrier; molecular diffusion in laminar flow; mass transfer in turbulent flow and diffusion between phases.

- **Unit Operations IV (CHTE473)**

  The syllabus includes: multiple-effect evaporation; crystallization; distillation; absorption; liquid-liquid extraction and computer-aided simulation of separation processes.

- **Instrumental Analysis (INST471)**

  The syllabus includes: Spectroscopic Techniques; Chromatographic Techniques; Electro-analytical Techniques and Hyphenated Techniques.

- **Chemical Engineering Design IV (CPDE471)**

  The syllabus includes: general design considerations, process design development, process and instrumentation diagrams development, software use in process design, cost estimation, design optimization and design strategy.

- **Production Management (PECI471)**

  The syllabus includes: organizational goals and society; planning; control; process and project management; financial management; people management and innovation management.

- **Chemical Process Control IV (PRCO471)**
  The syllabus includes: process control overview; mathematical modeling principles; linearization of non-linear equations, Laplace transformation of important functions; analysis of dynamic behaviour of chemical engineering processes using inverse Laplace transform; the feedback controllers and analytical expression for closed loop response and stability analysis of control systems.

- **Reactor Technology (RTEC471)**
  The syllabus includes: mole balances; the rate of reaction; the general mole balance equation; batch reactors (BR); continuous-flow reactors (CSTR, PFR, PBR); conversion and reactor sizing; rate law and stoichiometry; isothermal reactor design; collection and analysis of rate data;

- **Research Methodology (RMCE471)**
  The syllabus include: overview of research and its methodologies; literature search, review and citation practices; problem identification; design of experiments; analysis and interpretation of data; presentation of research findings; writing research proposals.

2. DEPARTMENT OF CIVIL ENGINEERING & SURVEYING

Note: The National Diploma programmes were phased out from January 2018 and replaced by the new Diploma programmes. In future, returning and pipeline students will have to migrate to the Diploma programmes.

2.1 Qualification Name : Diploma in Civil Engineering

SAQA ID Number : 96855
NQF Level : 6
SAQA Credits : 360
Duration : 3 years

Mission
The mission of the department of Civil Engineering and Surveying is to provide superior quality, technologically advanced instructional programmes and services in the field of civil engineering and surveying, which respond to local, regional and national industry for which we produce competent graduates.

Statement of Purpose
The purpose of the Diploma: Engineering: Civil is to prepare a civil engineering technician, who will satisfy the criteria for registration as a professional technician (by the Engineering Council of South Africa (ECSA), for articulated advanced study in civil engineering and/or to gain employment by function as a competent member of an engineering team in the execution of technical tasks, under supervision, by applying his/her knowledge, skills and techniques necessary for civil engineering practice.

Qualification Rules:
The qualification will be awarded to a learner who has provided evidence to the satisfaction of the assessors that the stated competence of the qualification, as detailed in the outcomes, has been achieved, either through education and training in a single provider's learning programme, or through experience that complies with the stated outcomes.

Exit Level Outcomes:

A person in possession of this qualification will be able to do the following:

- Identify, analyse and produce solutions to problems related to the civil engineering/ surveying environments as presented in classroom and laboratory examples and practicals; and as encountered in the real-life work context as part of experiential learning.
- Apply analytical and practical techniques and knowledge related to the specific disciplines of civil engineering/ surveying.
- Conduct civil engineering/ surveying operations and apply practical skills related to the specific real-life working environment as addressed through laboratory practicals, and specific skills training and projects done in industry during experiential training.
- Communicate in a professional manner using the language, concepts, models, techniques and equipment encountered in the engineering/ surveying working environment.
- Apply mathematical techniques and interpret results of mathematical calculations to assist in the solving of engineering/ surveying problems.
- Use basic scientific and technological principles in an engineering / surveying applied context.

- Analyse the overall functioning and purpose of a particular organisation.
- Organise and give directions to the work of self and others.
- Work as part of a team or independently as required by the work environment.
- Work ethically, safely and responsibly with due consideration for the environment and fellow human beings.

ECSA Graduate Attributes

The learner will be awarded this qualification if he/she has successfully completed all modules (as outlined in section (c) below) and demonstrated competence (to the satisfaction of the assessors) in all Graduate Attributes as per E-02-PN ECSA standard outlined below.

Graduate Attribute 1: Problem Solving
Identify, formulate, analyse and solve well-defined engineering problems.

Graduate Attribute 2: Application of scientific and engineering knowledge
Apply knowledge of mathematics, natural sciences, engineering fundamentals and an engineering specialty to solve well-defined engineering problems.

Range Statement:
Mathematics, natural science and engineering sciences are applied in analysis and modelling of engineering situations, and for reasoning about and solving well-defined engineering problems.

Graduate Attribute 3: Engineering Design
Perform procedural design and synthesis of components, systems, engineering works, products or processes.

Range Statement:
Design problems used in exit-level assessment must conform to the definition of a well-defined engineering problem. A design problem should be used to provide evidence. The design knowledge base and components, systems, engineering works, products or processes to be designed are dependent on the sub-discipline or practice area.

Graduate Attribute 4: Investigations, experiments and data analysis
Demonstrate competence to design and conduct investigations and experiments.

Range Statement:
The balance of investigation and experiment should be appropriate to the sub-discipline. Research methodology is to be applied in research or an investigation where the student engages with selected knowledge in the research literature of the sub-discipline.

Note: An investigation differs from a design in that the objective is to produce knowledge and understanding of a phenomenon.

Graduate Attribute 5: Engineering methods, skills and tools, including Information Technology
Demonstrate competence to use appropriate engineering methods, skills and tools, including those based on information technology.

Range Statement:
A range of methods, skills and tools appropriate to the disciplinary designation of the program including:

- Sub-discipline-specific tools, processes or procedures;
- Computer packages for computation, modelling, simulation, and information handling;
- Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork.

Graduate Attribute 6: Professional and Technical Communication
Demonstrate competence to communicate effectively, both orally and in writing, with engineering audiences and the community at large.

Range Statement:
Material to be communicated is in an academic or simulated professional context. Audiences range from engineering peers, academic personnel and related engineering peers, using appropriate academic or professional discourse. Written reports range from short (300 words) to long (a minimum of 2000 words excluding tables, diagrams and appendices), covering material at exit-level. Methods of providing information include the conventional methods of the sub-discipline, for example engineering drawings, as well as subject- specific methods.

Graduate Attribute 7: Sustainability and impact of engineering activity
Demonstrate critical awareness of the sustainability and impact of engineering activity on the social, industrial and physical environment.

Range Statement:
The combination of social, workplace (industrial) and physical environmental factors must be appropriate to the sub-discipline or other designation of the qualification. Comprehension of the role of engineering in society and identified issues in engineering practice in the sub-discipline: health, safety and environmental protection; risk assessment and management and the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

Graduate Attribute 8: Individual, team and multidisciplinary working
Demonstrate competence to work effectively as an individual, in teams and in multidisciplinary environments.

Range Statement:
Multidisciplinary tasks require co-operation across at least one disciplinary boundary. Co-operating disciplines may be engineering disciplines with different fundamental bases other than that of the programme or may be outside engineering.

Graduate Attribute 9: Independent learning ability
Demonstrate competence to engage in independent learning through well-developed learning skills.

Range Statement:
Operate in well-structured environment with some unfamiliar elements requiring personal responsibility and initiative, accurately self-evaluate and take responsibility for learning requirements; be aware of social and ethical implications of applying knowledge in particular contexts.

Graduate Attribute 10: Engineering professionalism
Demonstrate critical awareness of the need to act professionally and ethically and to exercise judgment and take responsibility within own limits of competence.

Range Statement:
Evidence includes case studies typical of engineering practice situations in which the graduate is likely to participate. Ethics and the professional responsibility of a technician and the contextual knowledge specified in the range statement of Graduate Attribute 7 is generally applicable here.

Graduate Attribute 11: Engineering management
Demonstrate knowledge and understanding of engineering management principles and economic decision-making.

Range Statement:
Basic techniques from economics, business management; project management applied to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Graduate Attribute 12: Workplace practices
Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.

Range Statement:
Tasks to demonstrate this outcome should be designed to connect academic learning with workplace practice and may be performed in one or more of the following types of work-integrated learning.

I. Work-directed theoretical learning
II. Problem-based learning
III. Project-based learning
IV. Work-based learning, and
V. Simulated learning.

2.1.1 Minimum Admission Requirements

i) National Senior Certificate with rating codes:

English Home Language	(4)
English First Additional Language	(4)
Mathematics	(4)
Physical Science	(4)

ii) A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement", at NQF Level 4

iii) Adequate achievement rating code 3: 40%-49% in the relevant subject in the Manufacturing, Engineering and Technology learning field will be an advantage.

iv) Pass all the Pre-Tech subjects with a minimum of 50%

v) National Senior Certificate / Standard 10 / Matric Certificate with a minimum:

Maths	D (HG)
Physical Science	D (HG)
English	E (SG)

vi) An appropriate N4 Certificate with minimum 50% pass in all subjects and a minimum of 50% for Maths at the N4 level and an E (SG) Symbol for English

vii) An appropriate GCE, GCSE, IGSCE or Cambridge School Certificate with at least five subjects (including Mathematics, Science and English) passed with an A, B or C symbol. Three of the five subjects must have been passed at the same examination sitting.

2.1.2 **Duration of Study**

Four semesters of attendance at the University together with two semesters of appropriate work integrated learning.

2.1.3 **Diploma**: **Subjects, Curriculum Compilation, Course Codes**

DIPLOMA IN CIVIL ENGINEERING. SAQA CODE 96855							
National Diploma	**Diploma**	**Subjects**	**Assessment Method**	**NQF Level**	**Pre-requisites**	**Co-requisites**	**SAQA Credits**
Semester 1							
APME111	AMCE101	Applied Mechanics for Civil Engineers	Exam	5			**12**
COSC101	COSK101	Computer Skills I	Exam	5			**12**
COST611	CMET101	Construction Methods I	Exam	5			**8**
DRAW011	CIED101	Civil Engineering Drawing 1	Continuous	5			**8**
MATCI01	MATH101	Mathematics I	Exam	5			**12**
SURV111	SUTP101	Surveying: Theory and Practical	Exam	5			**12**
Semester 2							
COMS411	COSK102	Communication Skills IA	Exam	5			8
COST511	CMAT102	Construction Materials I	Exam	5	Construction Methods I		12
DRAW021	CIED 102	Civil Engineering Drawing II	Continuous	5	Civil Engineering Drawing 1		8
MACI011	CEMA102	Civil Engineering Management	Exam	5			8
MATCI02	MATH102	Mathematics II	Exam	5	Mathematics I		12
THES121	THST102	Theory of Structures II	Exam	5	Applied Mechanics I and Mathematics I		12
	EPAC 102	Engineer practice and communication (Engineer in Society and Professional Ethics)	Exam	5			8
Semester 3							
GEEN021	GESM201	Geology and Soil Mechanics	Exam	6	Mathematics II, Theory of Structures II, Construction Materials I and Construction Methods I		12
RECO031	RECM201	Reinforced Concrete & Masonry Design III	Continuous	6	Theory of Structures II, Drawing II, Mathematics II and		12

					Construction Materials I		
TREN021	TENG201	Transportation Eng.	Exam	6	Civil Engineering Drawing II, Surveying T/P, Mathematics II and Construction Materials I		8
WAEN021	WENG 201	Water Engineering I	Exam	6	Theory of Structures II and Mathematics II		12
	ENVE201	Introduction to Environmental Engineering	Exam	6	Mathematics II and Civil Engineering Management		8
	CENS 201	Engineering Statistics	Exam	6	Mathematics II		12
DOCU031	DOCE201	Documentation for Civil Engineers	Continuous	6			8
Semester 4							
	CIED 202	Civil engineering design	Continuous	6	Completion of S3		16
GEEN031	GEOT 202	Geotechnical Eng.	Exam	6	Geology and Soil Mechanics		12
STAN031	STRU 202	Structural Analysis	Exam	6	Theory of Structures II and Mathematics II		12
STEE031	SSTM 202	Structural Steel & Timber Design III	Continuous	6	Theory of Structures II & Civil Eng., Drawing II		12
TREN031	EWPD 202	Earthworks and Pavement Design	Exam	6	Transportation Eng.		12
WAEN031	WENG 202	Water Engineering II	Exam	6	Water Engineering I		12
	CEPR000	Work readiness program					
In-service Training							
CEPR011	CIEP301	Civil Engineering Pract. I		5	Engineer practice and communication (Engineer in Society and Professional Ethics)		40

CEPR021	CENP302	Civil Engineering Pract. II		6	Civil Engineering Pract. I		40
							Total Credits 360

Note: The revised diploma above has been phased-in gradually and it will be fully phased-in by the 1st semester of 2023. Also, the following S3 and S4 old diploma modules below will be phased-out by the end 2023.

Semester 3						
GEEN021	GEEN201	Geotechnical Eng. II	6	Mathematics II, Theory of Structures II, Construction Materials I and Construction Methods I		10
MACI021	MACI201	Management (Civil) II	6	Management (Civil) I		10
RECO031	RCMD201	Reinforced Concrete & Masonry Design III	6	Theory of Structures II, Drawing II, Mathematics II and Construction Materials I	Structural Analysis II	10
STAN021	STAN201	Structural Analysis II	6	Theory of Structures II and Mathematics II		10
TREN021	TREN201	Transportation Eng. II	6	Drawing II, Surveying (Civil) II, Mathematics II and Construction Materials I		10
WAEN021	WAEN201	Water Engineering II	6	Theory of Structures II and Mathematics II		12
-	CEPR000	Work readiness program	-	-	-	-
Semester 4						
DOCU031	DOCU202	Documentation III	6			10
GEEN031	GEEN202	Geotechnical Eng. III	6	Geotechnical Engineering II		10
STAN031	STAN202	Structural Analysis III	6	Structural Analysis II		10
STEE031	SSTD202	Structural Steel & Timber Design III	6	Theory of Structures II & Drawing II	Structural Analysis III	10
TREN031	TREN202	Transportation Eng. III	6	Transportation II		10
WAEN031	WAEN202	Water Engineering III	6	Water Engineering II		12
In-service Training						

CEPR011	CIEP301	Civil Engineering Pract. I	5	Work readiness program		60
CEPR021	CIEP302	Civil Engineering Pract. II	6	Civil Engineering Pract. I		60

2.1.4 **Work Integrated Learning**

Two (2) semesters of appropriate Civil Engineering work integrated learning to be completed after S2.

It is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who experience any problem when trying to register must contact their Head of Department for advice.
Students who do not register their work integrated learning cannot be monitored and evaluated resulting in the training NOT being recognised.

2.1.5 **Restriction on Subjects**

A student can only continue with a subject of the same name at the next level if the same subject at the preceding level has been passed.

2.1.6 **Examination Regulations**

Refer to General Handbook Rule: 22

2.1.7 **Pass Requirements**

A candidate passes a subject if a final mark of at least 50% is obtained. The final mark consists of 40% of the year mark and 60% of the examination mark for examination subjects.

A candidate must obtain a sub-minimum of 40% in the examination to pass a course. Where the examination in a course consists of two or more papers, a sub-minimum of 40% must be obtained in each paper.

The student's performance in certain subjects is assessed by Continuous Evaluation, and no examinations are written. Details of this assessment method are included in the relevant subject Study Guides.

2.1.8 **Practicals/Laboratory**

Practical work is done in the following subjects and forms part of the assessment:
Surveying I & Surveying (Civil) II
Details of the assessment of the practicals are given in the relevant Study Guides.

Laboratory work is done in the following subjects:

Applied Mechanics for Civil Engineers	Geotechnical Engineering
Construction Materials I	Earthworks and Pavement Design
Civil Engineering Drawing II	Water Engineering II
Theory of Structures II	Reinforced Concrete and Masonry Design III
Structural Analysis III	Structural Steel and Timber Design III
Water Engineering I	
Geology and Soil Mechanics	

Details of the assessment of laboratory work are given in the relevant Study Guides.

Note: Students have to report to the relevant subject lecturer for all their practical classes within the first week of lectures. **This also applies to students who register late.**

2.2 **Qualification Name** **:** Diploma in Surveying

SAQA ID Number : 96867
NQF Level : 6
SAQA Credits **:** 360

Rationale for Qualification:

To be able to survey, collect and present spatial data in different forms, and set out and control positions of structures on the ground of basic engineering works.

Statement of Purpose:

The Diploma in Surveying qualifies the technician for employment with contractors, consultants, government departments and municipalities where he/ she could form part of the team headed usually by a professional engineer or professional surveyor. He/ She would be involved in the measurement for the production of maps, the setting out and monitoring of civil engineering structures and the relocation of property boundaries.

Qualification Rules:

The qualification will be awarded to a learner who has provided evidence to the satisfaction of the assessors that the stated competence of the qualification, as detailed in the outcomes, has been achieved, either through education and training in a single provider's learning programme, or through experience that complies with the stated outcomes.

Exit Level Outcomes:

A person in possession of this qualification will be able to do the following:

- Identify, analyse and produce solutions to problems related to the civil engineering/ surveying environments as presented in classroom and laboratory examples and practicals; and as encountered in the real-life work context as part of experiential learning.
- Apply analytical and practical techniques and knowledge related to the specific disciplines of civil engineering/ surveying.
- Conduct civil engineering/ surveying operations and apply practical skills related to the specific real-life working environment as addressed through laboratory practicals, and specific skills training and projects done in industry during experiential training.
- Communicate in a professional manner using the language, concepts, models, techniques and equipment encountered in the engineering/ surveying working environment.
- Apply mathematical techniques and interpret results of mathematical calculations to assist in the solving of engineering/ surveying problems.
- Use basic scientific and technological principles in an engineering/surveying applied context.
- Analyse the overall functioning and purpose of a particular organisation.
- Organise and give directions to the work of self and others.
- Work as part of a team or independently as required by the work environment.

- Work ethically, safely and responsibly with due consideration for the environment and fellow human beings.

2.2.1 **Admission Requirements:**

i) National Senior Certificate with rating codes:
English Home Language (4)
English First Additional Language (4)
Mathematics (4)
Physical Science (4)

ii) A minimum of 130 total credits; with a maximum of 60 credits with "Partial Achievement", at NQF Level 4

iii) Pass all Pre-Tech subjects with a minimum of 50%

iv) National Senior Certificate/Standard 10 / Matric Certificate with a minimum
Maths D (HG)
Physical Science D (HG)
English E (SG)

v) An appropriate N4 Certificate with minimum 50% passes in all subjects and a minimum of 50% for Maths at the N4 level and an E (SG) symbol for English

vi) An appropriate GCE, GCSE, IGCSE or Cambridge School Certificate with at least five subjects (including Mathematics, Science and English) passed at the same examination sitting.

2.2.2 **Duration of Study:**
Four semesters of attendance at the University together with two semesters of appropriate work integrated learning.

2.2.3 **Subjects, Curriculum Compilation, Course Codes**

National Diploma CISURC	Diploma CISEND	Subjects	NQF Level	Pre-requisites	Co-requisites	SAQA Credits
Semester 1						
COSSU01	COML101	Computer Skills I	5			12
COST611	CMET101	Construction Methods I	5			10
SURD011	DRNG101	Drawing I	5			10
MATSU01	MATE101	Mathematics I	5			12
SSUR111	SURY101	Surveying I	5			12
PHYB021	PHSC101	Physics I	5			10
					Sub-Total	*66*
Semester 2						
COMS411	COLL102	Communication Skills IA	5			5
GEOG111	GEOG102	Geography I	5			10
MATSU02	MATE102	Mathematics II	5	Mathematics I		12
PHOT121	PHOT102	Photogrammetry II	5	Surveying I, Mathematics I		12
SSUR221	SURY102	Surveying II	5	Drawing I		12
SURD121	SURD102	Survey Drawing II	5	Surveying I		10

National Diploma CISURC	Diploma CISEND	Subjects	NQF Level	Pre-requisites	Co-requisites	SAQA Credits
					Sub-Total	*61*
Semester 3						
COMS511	COLL201	Communication Skills IB	6	Communication Skills IA		2,5
CSUR031	COSU201	Control Surveying III	6	Surveying II		15
LEPR011	LEGP201	Legal Principles I	6			10
STAT311	STTT201	Statistics I	6	Mathematics II		12
PHOT341	PHOT201	Photogrammetry III	6	Photogrammetry II		12
MASU011	MCIV201	Management (Civil) I	6			10
					Sub-Total	*61,5*
Semester 4						
ADOE031	ADER202	Adjustment of Errors III	6	Statistics I, Mathematics II, Surveying II		12
CASU031	CASU202	Cadastral Surveying III	6	Survey Drawing II, Surveying II, Legal Principles I		12
COMS611	COLL202	Communication Skills IC	6	Communication Skills IB		2,5
COAP031	COAP202	Computer Applications III	6	Computer Skills I, Surveying II		12
SSUR331	SURY202	Surveying III	6	Surveying II		15
GINS031	GEIS202	Geographic Information Systems III	6		Computer Applications III	12
-	SUPR000	Work Readiness Program	-	-	-	-
					Sub-Total	*65,5*
In-Service Training						
SUPR011	SUPR301	Survey Practice I	5	Work Readiness Program Surveying II		120
SUPR021	SUPR302	Survey Practice II	5	Survey Practice I		120
					Sub-Total	*120*
					Total Credits	***374***

Curriculum Compilation: A student can only continue with a subject of the same name at the next level if the same subject at the preceding level has been passed.

2.2.7 **Practicals**

Practical work is done in the following subjects and forms part of the assessment:
Surveying I, Surveying II, Control Surveying III, Surveying III, Cadastral Surveying III, Geographic Information Systems III & Photogrammetry III.
Details of the assessment of the practicals are given in the relevant Study Guides.
All practicals are compulsory.

Note: Students have to report to the relevant subject lecturer for all their practical classes within the first week of lectures. **This also applies to students who register late.**

2.2.8 **Work Integrated Learning**

Work integrated learning consists of two semesters where the student is placed with an employer which will provide training of survey related work as specified in the Work Integrated Log Book. This experiential learning will be evaluated by Mangosuthu University, in consultation with the Employer, and the Diploma can only be awarded once the experiential learning has been completed satisfactorily.

The Department will set up periodical meetings with representatives of training providers and academic staff will visit students in training and their mentors at least once to discuss the progress students are making with experiential training. The emphasis during these visits will be on co-operation with the employers so that the student will gain maximum benefit from the experiential training component of the course.

Experiential training has to be verified by the training provider before the Diploma can be awarded. This means that the mentor must sign each page of the student's log book.

The University requires that verification of experiential training be carried out by a senior person within the organisation who is registered with PLATO in one of the following categories; Surveyor; Professional Surveyor (Engineering) or Professional Land Surveyor.

2.3 Access Courses: (Pre Tech) – Civil Engineering
(Pre-Tech) – Surveying

2.3.1 Admission Requirements

i) National Senior Certificate with rating codes:

English Home Language	(3)
English First Additional Language	(3)
Mathematics	(3)
Physical Science	(3)
Satisfactory achievement in Home Language	(4)

ii) A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement" at NQF Level 4

iii) Senior Certificate or equivalent qualification with a pass in

Mathematics	SG (D)
Physical Science	SG (D)

iii) N3 certificate and a minimum E (SG) symbol in English

2.3.2 Duration of Study

Study will be for a period of six months.

2.3.3 Subjects, Curriculum Compilation, Course Codes

Code	Subjects	*C/O	Assessment Method
Access Course: Civil Engineering			
ACOMC11	Communication	C	Exam
AMATC11	Mathematics	C	Exam
ADRAC11	Drawing	C	Continuous
APHYS11	Physics	C	Exam

ASURV11	Surveying	C	Continuous
AINC011	Introduction to Construction	C	Exam
Access Course: Surveying			
ACOMC11	Communication	C	Exam
AMATC11	Mathematics	C	Exam
ADRAS11	Survey Drawing	C	Continuous
APHYB11	Survey Physics	C	Exam
AGEOM11	Introduction to Geomatics	C	Continuous
ASCOMP1	Computation in Surveying	C	Continuous
C=Compulsory; O=Optional			

2.3.4 **Examination Regulations**
Refer to General Handbook Rule 22

2.3.5 **Pass Requirements**
Students should pass ALL subjects at 50%.

2.3.6 **Practicals**
Students are expected to attend all practicals offered in the course.
This course may not be repeated.

2.4 **Diploma in Civil Engineering** : (4-Year Programme - ECP)
NQF Level : 6
SAQA Credits : 360
Duration : 4 years

The minimum study period for the Diploma: Engineering Civil is usually three years. However, students are usually under-prepared and some complete the programme in 4, 5 or 6 years. A 4-year programme (also known as the Extended Curriculum programme) has been designed to provide structured support to students over a period of four years. A range of additional interventions are offered to students who are accepted to this programme. This programme has been a response to the well-known inequalities in the South African society and to cater for varying levels of student preparedness. It ensures that sufficient support is provided during the initial years of study while guaranteeing the same exit standards as the 3-year programme.

The 4-year programme addresses gaps and disparities in students' educational and life experience so that they can be better equipped to manage the diploma programme. It also provides students with broad educational and life skills, including Mathematics, language literacy and subject knowledge. While students are mostly tutored separately in small classes in the first year, they undertake their studies and lectures as integral members of the Diploma student group.

This programme in Civil Engineering is further unique and designed in such a way that after the first semester, students may transfer to similar programmes in Mechanical Engineering or Electrical Engineering without sacrificing time or quality of training.

Statement of Purpose
The purpose of the Diploma: Engineering: Civil is to prepare a civil engineering technician, who will satisfy the criteria for registration as a professional technician (by the

Engineering Council of South Africa (ECSA), for advanced study in civil engineering and/or to gain employment by function as a competent member of an engineering team in the execution of technical tasks, under supervision, by applying his/her knowledge, skills and techniques necessary for civil engineering practice.

2.4.1 Exit Level Outcomes

A person in possession of this qualification will be able to do the following:

- Identify, analyse and produce solutions to problems related to the civil engineering/ surveying environments as presented in classroom and laboratory examples and practicals; and as encountered in the real-life work context as part of experiential learning.
- Apply analytical and practical techniques and knowledge related to the specific disciplines of civil engineering/ surveying.
- Conduct civil engineering/ surveying operations and apply practical skills related to the specific real-life working environment as addressed through laboratory practicals, and specific skills training and projects done in industry during experiential training.
- Communicate in a professional manner using the language, concepts, models, techniques and equipment encountered in the engineering/ surveying working environment.
- Apply mathematical techniques and interpret results of mathematical calculations to assist in the solving of engineering/ surveying problems.
- Use basic scientific and technological principles in an engineering/surveying applied context.
- Analyse the overall functioning and purpose of a particular organisation.
- Organise and give directions to the work of self and others.
- Work as part of a team or independently as required by the work environment.
- Work ethically, safely and responsibly with due consideration for the environment and fellow human beings.

2.4.2 Minimum Admission Requirements

Admission for selection to the 4-year programme is granted to those applicants who meet the minimum admission requirements for the corresponding regular programme. Candidates shall have obtained a valid National Senior Certificate or Senior Certificate or NQF Level 4 with the following minimum rating codes:

Table 1: Minimum admission requirements for applicants with a National Senior Certificate

Programme	English Home Language or English Additional Language	Mathematics	Physical Science	Home Language
ECP	4 or 5	4	4	-
RP	4 or 5	4	4	-

In addition the minimum total points must be 20.

Table 2: Minimum admission requirements for applicants with a Senior Certificate

Programme	English	Mathematics	Physical Science	Technical Drawing
ECP	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)
RP	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)

In addition the minimum total points must be 20.

Table 3: Minimum admission requirements for applicants with NQF Level 4

Programme	Credits required
ECP	A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement", at NQF Level 4
RP	A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement", at NQF Level 4

ECP: Extended Curriculum Programme; **RP**: Regular Programme;
HG: Higher Grade; **SG:** Standard Grade;
NQF: National Qualifications Framework

Note:

Even if a candidate satisfies the stated admission requirements, he/she will not automatically be accepted. Admission is based on applicants passing an entrance test, on merit and the number of available spaces.

2.4.3 **Subjects, Curriculum Compilation, Course Codes**

National Diploma (ECP)	Diploma (ECP)	Subjects	*C/O	Semester /Year	NQF Level	Pre-requisites	Co-requisites	
BASC001	BASC000	Basic Science I	C		4			
COSL001	CLIT000	Computer Literacy I	C		4			
FLS118	LSSS000	Life Skills and Study Skills	C		4			
DRAW001	DWIN000	Drawing	C		4			
MAT001	MATH000	Mathematics	C		4			
COMS001	CKIL000	Communication Skills I	C		4			
ENCA001	ENGC000	Engineering Calculations	C		4	Mathematics		
ENSC001	ESCI000	Engineering Science I	C		4	Basic Science I		
COSL010	CAPL000	Computer Applications I	C		4	Computer Literacy I		
DRAW002	DRIG000	Drawing002	C		4	Drawing001 and Basic Science I		
APME118	APPC101	Applied Mechanics for Civil Engineers	C	S1	5	Engineering Science I		12
COSC118	CMSK101	Computer Skills I	C	S1	5	Computer Applications I		12

COST118	CSTM101	Construction Methods I	C	S1	5			8
DRAW118	CEDR101	Civil Engineering Drawing 1	C	S1	5	Drawing 001/002 and Basic Science I		8
MATCI18	MAMT 101	Mathematics I	C	S1	5	Mathematics		12
	STPR101	Surveying: Theory and Practical	C	S1	5			12
COMC118	CMMS102	Communication Skills IA	C	S2	5	Communication Skills		8
CONST18	CSTM102	Construction Materials I	C	S2	5			12
DRAW128	CEDR 102	Civil Engineering Drawing II	C	S2	5	Drawing I		8
MACI118	CENM 102	Civil Engineering Management	C	S2	5			8
MATCI28	MAMT 102	Mathematics II	C	S2	5	Mathematics I		12
THES128	TSTR 102	Theory of Structures II	C	S2	5	Applied Mechanics I		12
	ENPC 102	Engineer practice and communication (Engineer in Society and Professional Ethics)	C	S2	5			8
GEEN128	GSME 201	Geology and Soil Mechanics	C	S3	6	Mathematics II, Construction Materials I, Construction Methods I and Theory of Structures II		12
RECO138	RFCM 201	Reinforced Concrete & Masonry Design III	C	S3	6	Theory of Structures II, Drawing II and Mathematics II	Structural Analysis II	12
TREN128	TRPE 201	Transportation Eng.	C	S3	6	Drawing II, Surveying (Civil) II, Mathematics II and Construction Materials I		8
WAEN128	WATE 201	Water Engineering I	C	S3	6	Theory of Structures II and Mathematics II		12
-	ENVE128	Introduction to Environmental Engineering	C	S3	6	Mathematics II and Civil Engineering Management	-	8
	CENS 201	Engineering Statistics	C	S3	6	Mathematics II		12
	DOCE201	Documentation for Civil Engineers	C	3	6			8
	CEDE 202	Civil engineering design	C	S4	6	Completion of S3		16

GEEN138	GEEG 202	Geotechnical Eng.	C	S4	6	Geology and Soil Mechanics		12
STAN138	SANL202	Structural Analysis	C	S4	6	Theory of Structures II and Mathematics II		12
STEE138	STTD 202	Structural Steel & Timber Design III	C	S4	6	Theory of Structures II & Civil Eng., C E Drawing II		12
TREN138	EAPD 202	Earthworks and Pavement Design	C	S4	6	Transportation Eng.		12
WAEN138	WATE202	Water Engineering II	C	S4	6	Water Engineering I		12
	CEPR000	Work readiness program						
CEPR018	CIPR301	Civil Engineering Pract. I	C		5	Engineer practice and communication (Engineer in Society and Professional Ethics)		40
CEPR028	CIPR302	Civil Engineering Pract. II	C		6	Civil Engineering Practice I		40
	O=Optional; C=Compulsory							

Note: The revised diploma above has been phased-in gradually and it will be fully phased-in by the 1st semester of 2023. Also, the following S3 and S4 old diploma modules below will be phased-out by the end 2023.

GEEN128	GEOE201	Geotechnical Engineering II	C	S3	6	Mathematics II, Construction Materials I, Construction Methods I and Theory of Structures II	
MACI128	MANC201	Management (Civil) II	C	S3	6	Management (Civil) I	
RECO138	RECM201	Reinforced Concrete and Masonry Design III	C	S3	6	Theory of Structures II, Drawing II and Mathematics II	Structural Analysis II
STAN128	STRA201	Structural Analysis II	C	S3	6	Theory of Structures II, Mathematics II	
TREN128	TRAN201	Transportation Engineering II	C	S3	6	Drawing II, Surveying (Civil) II, Mathematics II and Construction Materials I	
WAEN128	WATE201	Water Engineering II	C	S3	6	Theory of Structures II and Mathematics II	
-	CEPR000	Work Readiness program	-	-	-	-	-
DOCU138	DOCM202	Documentation III	C	S4	6		
GEEN138	GEOE202	Geotechnical Engineering III	C	S4	6	Geotechnical Engineering II	
STAN138	STRA202	Structural Analysis III	C	S4	6	Structural Analysis II	

STEE138	STST202	Structural Steel and Timber Design III	C	S4	6	Theory of Structures II and Drawing II	Structural Analysis III
TREN138	TRAN202	Transportation Engineering III	C	S4	6	Transportation II	
WAEN138	WATE202	Water Engineering III	C	S4	6	Water Engineering II	
CEPR018	CIVP301	Civil Engineering Practice I	C			Work Readiness program	
CEPR028	CIVP302	Civil Engineering Practice II	C			Civil Engineering Practice I	

2.4.4 Two (2) semesters of appropriate Civil Engineering work integrated learning to be completed. See Par. 2.1.4 above.

It is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who experience any problem when trying to register must contact the Head of Department for advice.

Students who do not register their work integrated learning cannot be monitored and evaluated resulting the training **NOT** being recognised.

2.4.5 **Course Content**

Diploma (ECP)	**Diploma**	**Subjects**	**Contents**
APPC101	AMCE101	Applied Mechanics for Civil Engineers	Unit 1: Numbers and conversions, Unit2 : Forces, Equilibrium concept and first condition of equilibrium , unit 4: Moment of forces and second condition of equilibrium, beams, frames, support reactions , shear force , bending moment, Unit 4 : Internal forces in structures and frames , Unit5 : centre of gravity and centroids , Unit 6: Moment of inertia , Unit 7 : Friction and wedges ,unit 8 : Work ,power and energy , Unit 9 : Conservation of momentum , unit 10 : simple machines , Unit 11 : applied Kinematics Practicals : Forces , Moment of forces , centroids
CMSK101	COSK101	Computer Skills I	The syllabus includes: hardware; software; data communications; computer applications; Windows; theory of computer and introduction to excel, word processing and spreadsheets.
CSTM101	CMET101	Construction Methods I	This course covers the very basics of the following topics: earthworks, structures, road engineering, dams, bridges, tunnels, harbours, railways, airports, safety, drainage, and labour-enhanced construction.
CEDR101	CIED101	Civil Engineering Drawing 1	The syllabus includes: Reinforced Concrete, Structural Steelwork, and Surveying.
MAMT 101	MATH101	Mathematics I	The syllabus includes: basic algebra and trigonometry; differential calculus with applications; integral calculus with applications; statistics, complex numbers and hyperbolic functions.

STPR101	SUTP101	Surveying: Theory and Practical	Surveying ,Geomatics, Types of Surveying ,Branches of Surveying ,Spatial Data,Co-ordinate systems and map projection systems used in South Africa Coordinate calculations Joins and Polars ,Levelling ,Introduction to Spirit Levelling, Principles of Spirit Levelling ,Angle and distance measurement Introduction to Electromagnetic Distance Measurement (EDM),Traversing, Site Surveying, Coordinates of intersecting lines Traversing, Coordinate calculations Joins and Polars, Circular curves, Transition curves, Vertical Curves, Angle and distance measurement, Construction surveying, GIS.
CMMS102	COSK102	Communication Skills IA	The syllabus includes: hardware; software; data communications; computer applications; Dos; Windows; theory of computer and introduction to Office XP, word processing and spreadsheets.
CSTM102	CMAT102	Construction Materials I	The syllabus includes: The study of soil, concrete, bitumen, other common materials found on construction site, environment issues and internal building materials and finishes; introduction to Soil and concrete practicals.
CEDR 102	CIED 102	Civil Engineering Drawing II	The syllabus includes: Introduction to AutoCAD, Geometric Construction, First Angle Orthographic, Isometric, and Beams & Slabs.
CENM 102	CEMA102	Civil Engineering Management	The syllabus includes: Management of construction project, Management of construction company, Management of engineering design, Economic analysis, Contract management, Management of industrialized building and Management information systems.
MAMT 102	MATH102	Mathematics II	The syllabus includes: further differential and integral calculus with applications; matrix algebra; linear programming; statistics and differential equations.
TSTR 102	THST102	Theory of Structures II	The syllabus includes: The study of sectional properties of structural members, stresses and strains, simply supported beams and cantilevers with point loads, uniformly distributed and uniformly varying loads and analysis of statically determinate pin-jointed frames.
ENPC 102	EPAC 102	Engineer practice and communication (Engineer in Society and Professional Ethics)	The syllabus includes: The world of work, developing employability skills, developing employability skills, skills inventory, professional writing, interviews, industry presentations, discipline-specific topics.
GSME 201	GESM201	Geology and Soil Mechanics	The syllabus includes: The study of soil in terms of densities, moisture contents, liquid limits, soli classification, identifying the type of material to be used during construction
RFCM 201	RECM201	Reinforced Concrete & Masonry Design III	The syllabus includes: Loading & resistance (partials factors), limit states design & Analysis (Ultimate and serviceability limit state), design of

			structural members (Beam, slabs, columns and foundations) and concrete practicals (flexural strength test, workability of concrete and cubes test)
TRPE 201	TENG201	Transportation Eng.	The syllabus includes: Transportation planning, traffic engineering, route location, design criteria, horizontal alignment, vertical alignment, cross-sectional elements, safety barriers, intersection and interchange design.
WATE 201	WENG 201	Water Engineering I	The syllabus includes: The study of pressures in fluids, calculating hydrostatic forces on various shapes of sluice gates, fluid flow by means of gravitational acceleration , fluid flow by means of centrifugal pumps, losses in pipes. It involves also general aspects of water treatment, general methods of water treatment, overview of conventional water treatment processes, stabilization of water for domestic use, processes for desalination of water, treatment problems related to the operation of treatment plants, safety issues in treatment plant, wastewater treatment processes and sludge disposal.
ENVE128	ENVE201	Introduction to Environmental Engineering	The syllabus includes: General aspects of Water treatment, Conventional Water treatment processes, Point of use treatment processes, Treatment of sewage, The complete treatment, Wastewater flows and characteristics, Operations of water works, Wastewater collection systems, and Urban Planning
CENS 201	CENS 201	Engineering Statistics	The syllabus includes: Descriptive Statistics**,** Basic Probability concepts**,** Random variables and Probability distributions**,** Statistical intervals of a single sample**,** Estimation of parameters and testing of Hypotheses**,** Regression analysis**,** Computer-aided statistical analysis of data (e.g.: Excel®, R Statistics and Design Expert®). And Applications on engineering problems
DOCE201	DOCE201	Documentation for Civil Engineers	The syllabus includes: The study of Quantities, Estimating, Specifications and General Conditions of Contract.
CEDE 202	CIED 202	Civil engineering design	This module involve the provision of solution to basic civil engineering problems through design projects and its presentation.
GEEG 202	GEOT 202	Geotechnical Eng.	The syllabus includes: Total, pore-water and effective stresses, shear strength of soils, permeability of water through soils, consolidation, slope stability, foundations, and site investigations.
SANL202	STRU 202	Structural Analysis	Structural analysis is the determination of the effects of loads on physical structures and their components. The syllabus includes the analysis for the following; Moment area theorem, Moment distribution, Plastic theory, Strain energy for frames.
STTD 202	SSTM 202	Structural Steel & Timber Design III	The syllabus includes: Loading and resistance (partial factors), limit states design and Analysis, connection design (bolted and welded connections), columns base plate connection, elements design (grade of structural steel, axial tension, axial compression, bending and defection); practical (timber test).

EAPD 202	EWPD 202	Earthworks and Pavement Design	The syllabus includes: The study of Bitumen, coal tar, Pavement materials, Surfacing materials, Modified Bitumen, Bitumen surfacing and seal design and pavement rehabilitation and design. It also includes; introduction to Bitumen Practical and model maker software.
WATE202	WENG 202	Water Engineering II	The syllabus includes: The study of hydrology, stormwater design, Patching of records for rainfall, Open channel uniform flows and open channel non uniform flows, Water demand and distribution, Dam design, Borehole construction and water resources management. It includes abstraction from a single well in an unconfined aquifer piratical and ARCGIS software.

2.4.6 **Restriction on Subjects**

A student can only continue with a subject in the 4-year programme of the same name at the next level if the same subject at the preceding level has been passed. In addition, the following pre-requisites apply with respect to the subjects and associated credits in the 4-year programme:

2.4.7 **Examination Regulations**

Refer to General Handbook Rule: 22

2.4.8 **Pass Requirements**

A candidate passes a subject if a final mark of at least 50% is obtained. The final mark consists of 40% of the year mark and 60% of the examination mark for examination subjects.

A candidate must obtain a sub-minimum of 40% in the examination to pass a course. Where the examination in a course consists of two or more papers, a sub-minimum of 40% must be obtained in each paper.

The student's performance in certain subjects is assessed by Continuous Evaluation, and no examinations are written. Details of this assessment method are included in the relevant subject Study Guides.

2.4.9 **Practicals / Laboratory**

Practical work is done in the following subjects and forms part of the assessment:

Surveying I & Surveying (Civil) II

Details of the assessment of the practicals are given in the relevant Study Guides.

Laboratory work is done in the following subjects:

Applied Mechanics I	Structural Analysis III
Construction Materials I	Water Engineering III
Theory of Structures II	Geotechnical Engineering III
Structural Analysis II	Reinforced Concrete and Masonry Design III
Drawing II	Structural Steel and Timber Design III
Water Engineering II	Transportation Engineering III
Geotechnical Engineering II	

Details of these assessments of laboratory work are given in the relevant Study Guides.

Note: Students have to report to the relevant subject lecturer for all their practical classes within the first week of lectures. **This also applies to students who register late.**

2.5 **Diploma in Surveying** : (4-Year Programme - ECP)
NQF Level : 6
SAQA Credits : 360
Duration : 4 years

The Extended Curriculum Programme (ECP) for Surveying is a four year course. The first year of study is foundational and is split into two semesters. From the second year the courses are identical to the diploma programme.
The admission requirements for the ECP Programme are as below:

2.5.1 **Minimum Admission Requirements**
Admission for selection to the 4-year programme is granted to those applicants who meet the minimum admission requirements for the corresponding regular programme. Candidates shall have obtained a valid National Senior Certificate or Senior Certificate or NQF Level 4 with the following minimum rating codes:

- **Table 1:** Minimum admission requirements for applicants with a National Senior Certificate

Programme	English Home Language or English Additional Language	Mathematics	Physical Science	Home Language
ECP	4 or 5	4	4	-
RP	4 or 5	4	4	-

In addition the minimum total points must be 20.

- **Table 2:** Minimum admission requirements for applicants with a Senior Certificate

Programme	English	Mathematics	Physical Science	Technical Drawing
ECP	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)
RP	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)	D(HG) or C(SG)

In addition the minimum total points must be 20.

Table 3: Minimum admission requirements for applicants with NQF Level 4

Programme	Credits required
ECP	A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement", at NQF Level 4
RP	A minimum of 130 total credits, with a maximum of 60 credits with "Partial Achievement", at NQF Level 4

ECP: Extended Curriculum Programme; **RP**: Regular Programme;
HG: Higher Grade; **SG:** Standard Grade;
NQF: National Qualifications Framework

Note: Even if a candidate satisfies the stated admission requirements, he/she will not automatically be accepted. Admission is based on applicants passing an entrance test, on merit and the number of available spaces.

2.5.2 **Subjects, Curriculum Compilation, Course Codes**

SUBJECTS	**National Diploma (ECP) CISURE**	Diploma (ECP) CISENE	**PREREQUISITES**
YEAR 1			
First Semester			
Basic Science	EFBS101	BCIE001	-
Computer Literacy	EFCL101	COLI001	-
Introduction to English Communication Skills	EFCS101	IECS001	-
Basic Drawing	EFBD101	BADR001	-
Basic Mathematics	EFBM101	BAMA001	-
Second Semester			
Mathematics	EFMA102	MATH002	Basic Mathematics
Survey Drawing	EFSD102	SURD002	Basic Drawing
Survey Physics	EFSP102	SUPH002	Basic Science
Introduction to Geomatics	EFIG102	INGE002	- -
Computation in Surveying	EFCO102	COSU002	Computer Literacy
YEAR 2			
First Semester			
Computer Skills I	ERCO201	CMPK101	Computation in Surveying
Construction Methods I	ERCM201	CONM101	- -
Drawing I	ERDR201	DANG101	Survey Drawing
Mathematics I	ERMA201	MAMT101	Mathematics
Surveying I	ERSU201	SRVY101	Introduction to Geomatics
Physics I	ERPH201	PSCS101	Survey Physics
Second Semester			
English Communication Skills I	EREC202	ECMK102	Introduction to English Communication Skills
Geography I	ERGG202	GEGR102	- -
Mathematics II	ERMA202	MAMT102	Mathematics I
Photogrammetry II	ERPG202	PHTO102	Surveying I & Mathematics I
Surveying II	ERSU202	SRVY102	Surveying I
Survey Drawing II	ERSD202	SDRW102	Drawing I
YEAR 3			
First Semester			
English Communication Skills II	EREC301	ECMK201	English Communication Skills I
Control Surveying III	ERSU301	CSRV201	Surveying II

Legal Principles I	ERLP301	LGLP201	- -
Statistics I	ERST301	STSS201	Mathematics II
Photogrammetry III	ERPG301	PHTO201	Photogrammetry II
Management (Civil) I	ERMC301	MCVL201	-
Second Semester			
Adjustment of Errors III	ERAE302	ADJE202	Statistics I, Mathematics II, Surveying II
Cadastral Surveying III	ERCS302	CADS202	Survey Drawing II, Surveying II, Legal Principles I
Computer Applications III	ERAC302	CMAP202	Computer Skills I, Surveying II
Geographic Information Systems III	ERGI302	GINS202	CO-REQUISITE: Computer Applications III
Surveying III	ERSU301	SRVY202	Surveying II
English Communication Skills III	ERES302	EMCK301	English Communication Skills II
Work Readiness Program	-	SUPR000	-
YEAR 4			
First Semester			
Survey Practice I (WIL)	ERSP401	SPRA301	Work Readiness Program Surveying II
Second Semester			
Survey Practice II (WIL)	ERSP402	SPRA302	Survey Practice I

2.5.3 **Course Content Diploma / ECP**

- **Computer Skills I (COML101 / CMPK101)**
  The syllabus includes: Computers and Information Processing, Windows 10, Word processing, Spreadsheets, Internet and e-mail, Online collaboration

- **Construction Methods I (CMET101 / CONM101)**
  The syllabus includes: earthworks & construction plants, structures (steel, concrete & bricks), dams, transportation: (road; bridge; tunnel; railway; harbour; airport), drainage & water supply, policy matters, safety, labour-enhanced construction.

- **Drawing I (DRNG101 / DANG101)**
  the syllabus includes: introduction to CAD, introduction to google earth, use CAD to draw longitudinal profiles, a topographical plan, a cadastral diagram, traverse data.

- **Mathematics I (MATE101 / MAMT101)**
  The syllabus includes: Find equations of ellipse and to sketch them, solve exponential and logarithmic equations, sketch trigonometric graphs and solve trigonometric equations in radians, find derivatives of functions and to apply differentiation for maximisation and minimization, integrate and use integration to find area under a curve, work with complex numbers, use matrix in solving system of equations.

- **Surveying I (SURY101 / SRVY101)**
  The syllabus includes: spirit levelling, angular observations, distance measurement, the South African coordinate system, join and polar calculations, traversing, tacheometry, area and volume calculations.

- **Physics I (PHSC101 / PSCS101)**
  The syllabus includes: graphing & vectors, density, kinematics, dynamics, energy, electrostatics, magnetic fields.

- **Communication Skills IA (COLL102) / English Communication Skills I (ECMK102)**
  The syllabus includes: academic writing skills, communication theory; meetings; public speaking & presentation skills; report writing skills.

- **Geography I (GEOG102 / GEGR102)**
  The syllabus includes: the solar system, climatology, oceanography, geomorphology, map, projections, GIS.

- **Mathematics II (MATE102 / MAMT102)**
  The syllabus includes: further differential and integral calculus with applications; matrix algebra; statistics and differential equations, hyperbolic functions.

- **Photogrammetry II (PHOT102 / PHTO102)**
  The syllabus includes: digital images, determination of heights of images, parallax measurements, planimetric positions, use of digital photogrammetric software, flight planning.

- **Surveying II (SURY102 / SRVY102)**
  The syllabus includes: electromagnetic distance measurement, intersection, resection, trilateration, setting out of curves, topographic surveys, GPS.

- **Survey Drawing II (SURD102 / SDRW102)**
  The syllabus includes: advanced CAD functions, complex topographical plan, cadastral working plan, cadastral diagram from working plan, using CAD to present horizontal curve data.

- **Communication Skills IB (COLL201) / English Communication Skills II (ECMK201)**
  The syllabus includes: the process of writing, business writing, visual literacy, surveying terms, progress report writing, status reports, business correspondence, meetings.

- **Control Surveying III (COSU201 / CSRV201)**
  The syllabus includes: triangulation networks, resection with graphical adjustment, calibration of total stations and EDMs, traverse with external orientation, trilateration with graphical adjustment, trigonometric levelling networks, advanced GPS surveys.

- **Legal Principles I (LEGP201 / LGLP201)**
  The syllabus includes: classification of South African law, the South African judiciary, contract law, business enterprises, personal and real rights, ownership, leases and servitudes, registration of surveyors, Geomatics Act, Land Survey Act, Expropriation Act.

- **Statistics I (STTT201 / STSS201)**
  The syllabus includes: probability density functions, Binomial distribution, normal distribution, mean and variance of random variable, normal approximation to the Poisson distribution, hypothesis testing, regression, chi-squared table, confidence intervals

- **Photogrammetry III (PHOT201 / PHTO201)**
  The syllabus includes: stereo photogrammetry, absolute orientation, photogrammetric control, aerial triangulation, ortho rectification, DEM generation, mosaicing, terrestrial photogrammetry, digital photogrammetry, LIDAR

- **Management (Civil) I (MCIV201 / MCVL201)**
  The syllabus includes: economic analysis, contract management, management of – a construction project; a construction company; engineering design; an industrialised building; information systems.

- **Adjustment of Errors III (ADER202 / ADJE202)**
  The syllabus includes: theory of errors, statistical analysis, matrix algebra. least squares adjustment, network adjustment

- **Cadastral Surveying III (CASU202 / CADS202)**
  The syllabus includes: Surveying of boundaries, Land Rights, Forms of Land Title, Surveys conducted by Land Surveyors, Survey Records, Diagrams and General Plans.

- **Communication Skills IC (COLL202) / English Communication Skills III (EMCK301)**
  The syllabus includes: corporate CV, interviews, negotiation, small group communication, cross-cultural communication.

- **Computer Applications III (COAP202 / CMAP202)**
  The syllabus includes: Apply problem solving techniques and programming skills to solve commercial/scientific problems, apply basic business principles and effectively analyse Business, to be able to provide solutions for specific problems, Implement software solutions in one or more development environments

- **Surveying III (SURY202 / SRVY202)**
  The syllabus includes: circular curves, transition curves, vertical curves, deformation surveys, precise levelling, and construction survey.

- **Geographic Information Systems III (GEIS202 / GINS202)**
  The syllabus includes: Introduction to Geographic Information Systems, Spatial Data Concepts, Spatial Referencing in GIS, GIS Data Acquisition and Structuring, Spatial Data Quality and Data Sharing, Management of Data in a GIS, Data Analysis in a GIS, Presentation & Dissemination of Spatial Data

- **Work Readiness Program (SUPR000)**
  The syllabus includes: Prepares the student for the world of work.

- **Survey Practice I (SUPR301 / SPRA301)**
  To promote integration of theoretical concepts learned in the academic environment with industrial practice. To develop other skills, that cannot be fully developed in a classroom, practicals or laboratory environment.

- **Survey Practice II (SUPR302 / SPRA302)**
  To promote integration of theoretical concepts learned in the academic environment with industrial practice. To develop other skills, that cannot be fully developed in a classroom, practicals or laboratory environment.

2.5.4 **For Work Integrated learning, see Par 2.2.8 above.**
It is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who experience any problem when trying to register must contact the Head of Department for

advice. Students who do not register their work integrated learning cannot be monitored and evaluated resulting the training **NOT** being recognised.

2.5.5 **Restriction on Subjects**

A student can only continue with a subject in the 4-year programme of the same name at the next level if the same subject at the preceding level has been passed. In addition, the following pre-requisites apply with respect to the subjects and associated credits in the 4-year programme:

2.5.6 **Examination Regulations**

Refer to General Handbook Rule: 22

2.5.7 **Pass Requirements**

A candidate passes a subject if a final mark of at least 50% is obtained. The final mark consists of 40% of the year mark and 60% of the examination mark for examination subjects. A candidate must obtain a sub-minimum of 40% in the examination to pass a course. Where the examination in a course consists of two or more papers, a sub-minimum of 40% must be obtained in each paper.

The student's performance in certain subjects is assessed by Continuous Evaluation, and no examinations are written. Details of this assessment method are included in the relevant subject Study Guides.

2.5.8 **Practicals**

Practical work is done in the following subjects and forms part of the assessment:
Surveying I, Surveying II, Control Surveying III, Surveying III, Cadastral Surveying III, Geographic Information Systems III & Photogrammetry III
Details of the assessment of the practicals are given in the relevant Study Guides.
All practicals are compulsory.

Note: Students have to report to the relevant subject lecturer for all their practical classes within the first week of lectures. **This also applies to students who register late.**

3. DEPARTMENT OF ELECTRICAL ENGINEERING

3.1 Diploma in Electrical Engineering

SAQA ID	:	96856
NQF Level	:	6
SAQA Credits	:	360
Duration	:	3 years
Qualification Code	:	**ELENDI**

Purpose and Rationale of the Qualification

A qualifying learner will be competent to apply technical knowledge, engineering principles and problem-solving techniques in the field of Electrical Engineering by operating within the relevant standards and codes in collaboration with other members of the engineering team.

The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Technician-in-Training in the field of Electrical Engineering.

Qualification Rules

The qualification will be awarded to a learner who has provided evidence to the satisfaction of the assessors that the stated competence of the qualification, as detailed in the specified outcomes, has been achieved, either through education or training in a single provider`s learning programme or through experience that complies with the stated specified outcomes.

Exit Level Outcomes

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

- Practice Electrical Engineering activities and applications at the level expected of a Professional Technician (Engineering)
- Manage Electrical Engineering activities and applications at the level expected of a Professional Technician (Engineering)

3.1.1. Minimum Admission Requirements (3-year Diploma)

- National Senior Certificate with rating codes:

  English Home Language (4)
  or
  English First Additional Language (4)
  Mathematics (4)
  Physical Science (4)

- A pass in all subjects in the bridging programme offered by the Department of Electrical Engineering at Mangosuthu University of Technology (MUT).

- Senior Certificate or equivalent with a minimum subject-related symbol as follows:

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

- A minimum of 60% pass in N4 Engineering Science, Maths and two other electrical subjects, plus a Matric Certificate or equivalent with English (50% pass).

- NCV Level 4 with a minimum of 50% pass in the following subjects: 3 Fundamental: English, Mathematics (not Maths Literacy) and Life Orientation. A minimum of 60% in Physical Science and any two Electrical-related subjects, preferably Electrical Principles & Practice and Electronic Control & Digital Electronics.

- An appropriate GCE, GCSE, IGCSE or Cambridge School Certificate with at least five subjects at GCE 'O' level including Mathematics, Science and English that has been passed with an A, B or C symbol. Three of the five subjects must have been passed at the same examination sitting. This applies to learners from SADC countries.

- N5/ N6 – Not considered for registration purposes or credit/exemption purposes.

Please take note of the following:

- **Selection will be based on merit and availability of space.**
- **Meeting the minimum requirements does not, in any way, guarantee admission.**

Students with technical College qualifications can apply to be considered for the granting of exemptions according to the Recognition of Prior Learning (RPL) as listed below if they have passed with a minimum of **50%** in every subject.

Technical/FET College Subjects	University Exempted Subjects
Communication N4 and N5	Communication Skills I
Computer Principles N4 and N5	Computer Skills I
Mathematics N4 and N5	Mathematics I
Industrial Electronics N4 and N5	Electronics I
Digital Electronics N4 and N5	Digital Systems I
Electrotechnics N4 and N5	Electrical Engineering I
Engineering Science N4 and N5	Physics I
Strength of Materials and Structures N4 and N5	Strength of Materials II

3.1.2. Duration of Study

Three years, consisting of Four Semesters (S1, S2, S3 & S4) of formal time (full-time study at the University) over a minimum of **two years**, and two semesters (P1 & P2) of experiential time (in-service training) undertaken at an accredited training provider/employer over **one year**, in accordance with a prescribed syllabus, and subject to the University's evaluation and approval.

- **Electrical Engineering Practice I (P1) may be done after successful completion of ALL S1, S2, S3 and S4 subjects.**
- Electrical Engineering Practice II (P2) must be done after the successful completion of **P1**.
- Electrical Engineering Practice (P1 or P2) must be registered on the date the training commences.

3.1.3. Curriculum Compilation and Pre-Requisites

i) The Diploma will be issued on completion of 268 credits of formal time taken from the offerings below, and 92 credits of experiential time, for a total of 360 credits.

ii) Attendance of P0 (a work readiness program) is compulsory and is used as an eligibility criterion for placement for Work Intergraded Learning.

iii) A learner doing P1, registers for Electrical Engineering Practice I, and one doing P2 registers for Electrical Engineering Practice II. **Registration must be done on or before the date of commencement**. Completion of two semesters of experiential training, in accordance with the guidelines laid down in the logbook, will generate a credit of 92.

iv) There are four specialisation streams i.e., Power Systems Engineering **(ELDIPS)**, Electronics and Telecommunication Engineering **(ELDIET)**, Process Automation and Control Engineering **(ELDIME)** and Mechatronics Engineering **(ELDIME)**.

v) Students select their area of specialization during the S2 level enrollment. After registration for S2 no further changes of streams are allowed. For curriculum compilation, the department will consider electives as compulsory subjects for the chosen stream. All specialization subjects are compulsory for graduation.

vi) The offering of specialization subjects in each stream may alternate between semesters.

vii) The effective commencement date of this curriculum was the First Semester of 2021.

viii) The twelve (12) ECSA GAs are assessed in exit levels subjects, Table 1.

ix) If a student fails a Graduate Attribute (GA) assessment in any exit level subject, he/she automatically fails the subject.

x) Students need to achieve a sub-minimum mark of 50% in the Practical to be granted DP. Otherwise, they automatically fail the subject.

Table 1. ECSA Graduate Attributes Table at the Expose, Develop and Assessment Stages

Subjects	NQF Level	Credits	Core/ Elective	Assessment Method	Exposure	Development	Assessment
SEMESTER 1							
					EXPOSED	**DEVELOPED**	**ASSESSED**
Mathematics I	5	12	C	EXAM	**GA1, GA9**		
Physics I	5	12	C	EXAM		**GA2, GA4**	
Communication Skills I	5	5	C	EXAM	**GA6, GA8**		
Computer Skills I	5	5	C	EXAM	**GA5, GA9**		
Electrical Engineering I	5	10	C	EXAM	**GA1, GA5**		
Electronics I	5	10	C	EXAM	**GA1, GA5**		
Digital Systems I	5	10	C	EXAM	**GA3, GA5**		
SEMESTER 2							
Mathematics II	5	12	C	EXAM		**GA1, GA9**	
Electrical Engineering II	5	10	C	EXAM		**GA1, GA9**	
Electronics II	5	10	C	EXAM		**GA1, GA5**	
Digital Systems II	5	10	C	EXAM		**GA3, GA5**	
Projects I	5	10	C	CONT	**GA3, GA7**		

Electrical Machines II	5	10	E	EXAM		**GA5,**	
Electronic Communication II	5	10	E	EXAM		**GA2**	
Process Instrumentation II	5	10	E	EXAM		**GA4**	
Strengths of Materials II	5	10	E	EXAM		**GA5,**	
SEMESTER 3							
Digital Systems III	6	12	C	EXAM		**GA3, GA5**	
Mathematics III	6	12	C	EXAM		**GA1, GA9**	
Projects II	5	10	C	CONT		**GA3, GA7**	
Software Design II	6	12	C	EXAM		**GA5,**	
Control Systems II	6	12	C	EXAM		**GA4, GA5**	
Electrical Engineering III	6	12	E	EXAM		**GA1, GA5**	
Digital Communications II	6	12	E	EXAM		**GA2**	
Process Instrumentation III	6	12	E	EXAM			**GA4**
Mechatronics III	6	12	E	EXAM		**GA5,**	
SEMESTER 4							
Design Projects III	6	12	C	CONT			**GA3, GA6, GA7,GA8**
Software Design III	6	12	C	EXAM			**GA11**
Power Electronics III	6	12	E	EXAM			**GA1**
Electrical Machines III	6	12	E	EXAM			**GA5**
Electrical Distribution III	6	12	E	EXAM			**GA4**
Electrical Protections III	6	12	E	EXAM			**GA2**
Radio Engineering III	6	12	E	EXAM			**GA2**
Signal Processing III	6	12	E	EXAM			**GA5**
Electronics III (Elective)	6	12	E	EXAM			**GA1**
Microwave Communications III	6	12	E	EXAM			**GA4**
Control Systems III	6	12	E	EXAM			**GA2**
Automation III	6	12	E	EXAM			**GA5**
Robotics III	6	12	E	EXAM			**GA4**
WIL (P1)	6	44			**GA9, GA10, GA12**	**GA9, GA10, GA12**	
WIL (P2)	6	48					**GA9, GA10,GA12**

GA1-Problem solving

GA2-Application of scientific and engineering knowledge

GA3-Engineering Design

GA4-Investigation

GA5-Engineering methods, and tools, including information technology

GA6-Professional and Technical communication

GA7-Impact of Engineering activity

GA8-Individual and teamwork

GA9-Independent learning
GA10-Engineering professionalism
GA11-Engineering management
GA12-Workplace practice

4.1.4 Diploma in Electrical Engineering course summary (ELENDI)

Diploma in Electrical Engineering (96856) (3 Years)			
S1 Subjects			
Communication Skills I			
Computer Skills I			
Mathematics I			
Electrical Engineering I			
Electronics I			
Digital Systems I			
Physics I			
S2 Subjects			
Power Systems Engineering (ELDIPS)	**Electronics and Telecommunication Engineering (ELDIET)**	**Process Automation and Control Engineering (ELDIPA)**	**Mechatronics Engineering (ELDIME)**
Digital Systems II	Digital Systems II	Digital Systems II	Digital Systems II
Electronics II	Electronics II	Electronics II	Electronics II
Electrical Engineering II	Electrical Engineering II	Electrical Engineering II	Electrical Engineering II
Mathematics II	Mathematics II	Mathematics II	Mathematics II
Projects I	Projects I	Projects I	Projects I
Electrical Machines II	Electronic Communication II	Process Instrumentation II	Strengths of Materials II
S3 Subjects			
Digital Systems III	Digital Systems III	Digital Systems III	Digital Systems III
Mathematics III	Mathematics III	Mathematics III	Mathematics III
Projects II	Projects II	Projects II	Projects II
Software Design II	Software Design II	Software Design II	Software Design II
Control Systems II	Control Systems II	Control Systems II	Control Systems II
Electrical Engineering III	Digital Communications II	Process Instrumentation III	Mechatronics III
S4 Subjects			
Design Projects III	Design Projects III	Design Projects III	Design Projects III
Software Design III	Software Design III	Software Design III	Software Design III
Power Electronics III	Electronics III	Electronics III	Power Electronics III
Electrical Machines III	Microwave Communications III	Automation III	Automation III
Electrical Distributions III	Radio Engineering III	Control Systems III	Control Systems III
Electrical Protections III	Signal Processing III	Signal Processing III	Robotics III

4.1.5 Subjects, Curriculum Compilation, Course Codes and Pre-requisites

Diploma in Electrical Engineering (3208105) (3 Years)								
Code	**Subjects**	**C/O/E**	**Semester /Year**	**Assessment Method**	**NQF Level**	**SAQA Credit**	**Pre-requisites**	**Co-requisites**
CSKI101	Communication Skills I	C	S1	CA	5	5		
COMS101	Computer Skills I	C	S1	CA	5	5		
MATM101	Mathematics I	C	S1	EX	5	12		
ELEN101	Electrical Engineering, I	C	S1	EX	5	10		
ECTR101	Electronics I	C	S1	EX	5	10		
DISY101	Digital Systems I	C	S1	EX	5	10		
PHYC101	Physics I	C	S1	EX	5	12		
	TOTAL S1 Weighting					**64**		
MTMT102	Mathematics II	C	S2	EX	5	12	Mathematics I	
ELEN102	Electrical Engineering II	C	S2	EX	5	10	Electrical Eng. I Mathematics I	
DISY102	Digital Systems II	C	S2	EX	5	10	Digital Systems I	
PROJ102	Projects I	C	S2	CA	5	10	Electrical Eng. I Electronics I Communication Skills I	
ECTR102	Electronics II	C	S2	EX	5	10	Electronics I	

							Electrical Eng I	
ELMA102	Electrical Machines II	E	S2	EX	5	10	Electrical Eng. I Physics I	Mathematics II
ELCO102	Electronic Communication II	E	S2	EX	5	10	Electronics I Digital Systems I Physics I	
PINS201	Process Instrumentation II	E	S2	EX	5	10	Electrical Eng. I Physics I	
STRE102	Strength of Materials II	E	S2	EX	5	10	Physics I Mathematics I	
	TOTAL S2 Weighting					**62**		
MTMT201	Mathematics III	C	S3	EX	6	12	Mathematics II	
DISY201	Digital Systems III	C	S3	EX	6	12	Digital Systems II	
SFDE201	Software Design II	C	S3	EX	6	12	Digital Systems II	
PRJT201	Projects II	C	S3	CA	5	10	Projects I Electronics II Electrical Engineering II	
COSY201	Control Systems II	C	S3	EX	6	12	Mathematics II	Mathematics III
ELEN202	Electrical Engineering III	E	S3	EX	6	12	Electrical Eng. II Mathematics II	
DIGC202	Digital Communications II	E	S3	EX	6	12	Electronic Comm. II	Mathematics III
PINS202	Process Instrumentation III	E	S3	EX	6	12	Process Instr. II	Mathematics III
MECH201	Mechatronics III	E	S3	EX	6	12	Strength of Materials II Electronics II Digital Systems II	
TOTAL S3 Weighting						**70**		
DPRO202	Design Project III	C	S4	CA	6	12	Projects II Digital Systems III Maths III	
ELDI202	Electrical Distribution III	E	S4	EX	6	12	Electrical Eng. III	
SFDE202	Software Design III	C	S4	EX	6	12	Software Design II	
PWRE202	Power Electronics III	E	S4	EX	6	12	Electronics II Electrical Eng. II Mathematics III	
ELMA201	Electrical Machines III	E	S4	EX	6	12	Electrical Mach. II Electrical Eng. III	
EPRO202	Electrical Protection III	E	S4	EX	6	12	Electrical Eng. III Mathematics II	Electrical Distribution III
RADE201	Radio Engineering III	E	S4	EX	6	12	Digital Communication II	
ECTR202	Electronics III	E	S4	EX	6	12	Electronics II Mathematics III	
SIPR202	Signal Processing III	E	S4	EX	6	12	Mathematics III	
MCRC202	Microwave Communication III	E	S4	EX	6	12	Mathematics III Digital Communication II	
COSY202	Control Systems III	E	S4	EX	6	12	Control Systems II Mathematics III	

ROBO202	Robotics III	E	S4	EX	6	12	Control Systems II Mechatronics III Mathematics III Digital Systems III	
AUTM202	Automation III	E	S4	EX	6	12	Control Systems II Mathematics III Digital Systems III	
ELDI00	Work Readiness Program	C	S4	CA	NA	NA		
TOTAL S4 Weighting						**72**		

4.1.6 Examination Regulations

Refer to the General Handbook Rule: G22

4.1.7 Work Integrated Learning (In-Service Training- 92 Credits)

Electrical Engineering Practice I (P1) 44
Electrical Engineering Practice II (P2) 48

Learners who acquired any form of work experience and wishes for this experience to be considered for P1/P2 training will need to comply with institution's RPL Policy. Such applicants may be admitted to diploma qualifications through one of the purposes of RPL namely, access, exemption, accreditation and advancement;

4.1.8 Course Content

CSKI101	**Communication Skills I**
	Offered by Service Department Communication theory, non-verbal communication (body language), oral presentations, interviews, developing leadership and participation skills. Technical reports and correspondence.
COMS101	**Computer Skills I**
	Offered by Service Department Learners must acquire theory and practical skills and knowledge. Theory knowledge to be learned is Personal Computer Basics, Computer Filing, Display Devices, Internet Privacy and Security, Connectors and Adapters, Network Basics, Multimedia Devices, Processors and Memory, Data Storage Devices, Network Security Overview and Safety. Practical skills to be acquired are Operating System XP and Application Software Microsoft Office 365 which include Microsoft Word, Microsoft Excel and MS PowerPoint and MS Teams. Introduction to MATLAB and Simulink
MATM101	**Mathematics I**
	Formative assessment • Tutorials. **Summative assessment** • Three class tests and Examination. Major Test 1 40% Major Test 2 40% Minor Test 20% **Overview of Syllabus:** Basic mathematics. Differentiation. Integration. Matrices and determinants. Vectors. Data handling. Complex numbers or mensuration.

ELEN101	**Electrical Engineering I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 35% Test 2 35% Tutorials 10% Practicals 20% **Overview of Syllabus:** Electrical and Mechanical Quantities, Basic Electrical Components, DC theory and Network Analysis, Electromagnetism and Magnetic circuits, Inductance and Capacitance, Basic AC theory.
ECTR101	**Electronics I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Practical Assignments, Examination Test 1 25% Test 2 25% Tutorials 25% Practicals 25% **Overview of Syllabus:** Oscilloscopes, Semiconductor theory and atomic structure, PN Diodes and their applications, Bipolar junction transistors and Operational Amplifiers
DISY101	**Digital Systems I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical) and Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction to Digital Systems, Logic gates, Boolean Algebra and Logic Simplification, Combination Logic Analysis, Functions of Combinational Logic, Number Systems:- operation and Codes.
PHYC101	**Physics I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical and mini-project), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Remedial mathematics, basic units, vectors and scalars, kinetics, mechanics, momentum, moments, work, energy and power, pressure, density, heat, optics, waves and sound, electric current, magnetism, radio-activity. Practical physics.
MTMT102	**Mathematics II**
	Formative assessment • Tutorials. **Summative assessment** • Three class tests and Examination Major Test 1 40% Major Test 2 40% Minor Test 20% **Overview of Syllabus:** Revision of differentiation (Mathematics I). Differentiation of functions with more than one variable. Further integration. Numerical methods. First-order ordinary differential equations. Matrices (Gauss elimination).
ELEN102	**Electrical Engineering II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination

	Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Alternating Current and Voltage generation, AC RLC circuit components and Phasors, AC Circuit Theorems, Power in AC Circuits, Series and parallel RLC resonant circuits, Introduction to Three Phase systems.
DISY102	**Digital Systems II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practical's 25% **Overview of Syllabus:** Latches, Flip flops and Timers, Counters, Shift Registers, Memory and Storage, Digital Signal Interfacing and Processing, Introduction to Microcontrollers.
PROJ102	**Projects I**
	Course is assessed through continuous assessment. Final Mark (FM) = 25%x Simulation +25% x Constructed project + 30% measurement and presentation + 20% final Document **Overview of Syllabus:** PCB Design using Proteus, Simulation using Proteus, Assembling the project, Testing and Debugging, Report.
ECTR102	**Electronics II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** DC Power supplies, BJT DC biasing, BJT AC analysis, FET Biasing, Operational Amplifiers
ELMA102	**Electrical Machines II**
	Formative assessment • Tutorials, Homework, quizzes , Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** D.C. Generators, D.C. Motors, Single Phase Transformers, Single Phase induction machines.
ELCO102	**Electronic Communication II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Fundamental Concepts of Transmission and Reception, Frequency and Amplitude Modulation Systems, Communication Techniques, Transmitter and Receiver Measurements
STRE102	**Strength of Materials II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination

	Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction (Review of statics), axial loading, torsion, pure bending, beams, shearing, stress, transformations, principal stresses and columns.
MATTM201	**Mathematics III**
	Formative assessment • Tutorials. **Summative assessment** • Three class tests and Examination Major Test 1 40% Major Test 2 40% Minor Test 20% **Overview of Syllabus:** First-order ordinary differential equations. Higher-order differential equations. Laplace transforms. Infinite series. Fourier series. Matrix analysis. Probability and statistics. Elements of analytic geometry in 2D and 2D space.
DISY201	**Digital Systems III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation Summative assessment • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 20% Practicals 30% **Overview of Syllabus:** Introduction to Embedded C Programming, Introduction to MPLAB-X, PIC architecture, PIC Programming in C Language, PIC I/O Port Programming, Serial Port Programming in C Language, LCD and Keyboard interfacing, Introduction to ADC and DAC.
SFDE201	**Software Design II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Tutorials 25% Practicals 25% **Overview of Syllabus:** C++ programming structure, I/O streams and Classes, Control Structures, Arrays and strings, User Defined functions, Data abstraction and inheritance, Exception handling, Recursions
PRJT201	**Projects II**
	Course is assessed through continuous assessment. The weightings of the assessment are as follows: Final Mark (FM) = 33%x Simulation + 33% x breadboard prototype +34% x Constructed project. **Overview of Syllabus: S**imulation, Prototype development, PCB design, Report writing, Preparatory design proposal document.
COSY021	**Control Systems II**
	Formative assessment • Tutorials, Classroom small-group work, WhatsApp group discussion forum, Student self-assessment through e-learning platform. **Summative assessment** • Two class tests, Project assignment, Practical Evaluation, Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction to Control Systems; Modelling of Control Systems in Frequency Domain using Laplace Transforms; Time Response of First and Second-order Control Systems; Reduction of Multiple Subsystems; Steady-State Errors; State-Space Representation of dynamic systems.

ELMA201	**Electrical Machines III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Three phase transformers, Three phase induction machines, Synchronous machines Alternators), Synchronous machines (Motors)
DIGC202	**Digital Communications II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Probability and Random Processes: Probability distributions, Random variables, Random processes, Statistical averages, Correlation, Digital Modulation Techniques: Signal space analysis, BPSK, QPSK, QAM, Digital Demodulation & Detection Techniques: Correlator-demodulator, Maximum likelihood detection (MLD) in additive white Gaussian noise (AWGN), bit error rate (BER) performance, Channel Encoder/Decoder: Linear block codes, Cyclic codes, Convolutional codes, Viterbi algorithm, Information Theory: Source Entropy, Huffman Coding, Channel Capacity.
PINS201	**Process Instrumentation II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Control valves & pumps, Control instruments, Continuous control, Sequential control, Instrumentation documentation.
MECH201	**Mechatronics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction to Mechatronics, Transducers, Analogue Signal Conditioning, Actuating Systems, System Interfacing and Data Acquisition, Programmable Logic Controller
DPRO201	**Design Projects III**
	This subject is assessed through continuous assessment. The course components mark weightings will be determined as follows: • Proposal Document (GA7) = 20% • Project Presentation (GA6) = 20% • Final Document (GA8) = 30% • Project Artefact (GA3) = 30% **Overview of Syllabus:** Introduction to the Engineering Design Process, Problem definition, Literature review, Generation of multiple solutions. Analysis and selection of most appropriate solution, Testing and implementation, Feasibility study, Project implementation – design, simulation, construction, testing and documentation, Project oral presentation.
ELEN202	**Electrical Engineering III**
	Formative assessment

	• Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Applications of Complex Numbers in Phasor notations, 3-Phase AC Systems Analysis, Electrical Power Measurement and analysis in 3-Phase AC Systems, Per-unit System, Introduction to AC Power Flow Analysis, Electric Lighting Systems.
ELDI202	**Electrical Distribution III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Introduction to generation, Variable loads on power stations, Economics of power generation and Tariffs, Power factor improvement, Supply systems, Mechanical and Electrical design of overhead lines, Performance of transmission lines, Underground cables.
SFDE202	**Software Design III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Practical's 50% **Overview of Syllabus:** Installing a Local Web Server, Installing PHP, MySQL and Apache, PHP Syntax and Functions, Working with PHP in Websites, Creating Databases and working With MySQL, Security in PHP
PWRE202	**Power Electronics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Introduction to power electronics, Power electronics switches, AC to DC converters, DC to DC converters, DC to AC converters, AC to AC converters, Introduction to drives.
EPRO202	**Electrical Protection III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Three phase Theory Revision, Introduction to Electrical protection, Symmetrical fault calculations, Instrument transformers, Unsymmetrical fault calculations, Switchgears; circuit breakers, protective relays, fuses, switches, Protection of alternator and transformers, Protection of bus-bars, Overvoltage protection.
RADE201	**Radio Engineering III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Electromagnetic waves, Radio propagation techniques and Antennas, Introduction to Radar Systems, Introduction to Cellular networks and Frequencies management, Introduction to Mobile Networks

ECTR202	**Electronics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignment/Project 10% Practicals 50% **Overview of Syllabus:** Feedback and Oscillator Circuits, Voltage Regulators –SMPS, Two-Terminal Devices, PNPN Devices, Linear-Digital ICs, Op-Amp Applications – Amplifiers, Filters, Multi-stage amplifiers
SIPR202	**Signal Processing III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Signals and signal processing systems, Discrete time systems in time domain, Discrete time signals in frequency domain, The z Transform
MCR202	**Microwave Communication III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** A Review of Electromagnetic Theories and Frequencies Management, Transmission Line Theory, Transmission Lines and Waveguides, Microwave Network Analysis, Impedance Matching and Tuning, Power Dividers, Mixers and Directional Couplers, Microwave Filters, Digital Line-of-Sight Microwave Radio Links.
PINS202	**Process Instrumentation III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Automatic Process Control, Control Systems & Instrumentation, Analytical & Renewable Energy Sensors, Boilers, Heat Exchangers & Distillation Columns, Safety & Environmental Control, Industry 4.0
COSY202	**Control Systems III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Modelling 1st, 2nd Order systems, Stability, Laplace-Domain Analysis, Frequency-Domain techniques, Feedback compensation, PID Controller Tuning, Case study: SISO system Compensation Simulation.
ROBO202	**Robotics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Robotics overview, Basic mechanics, Robot locomotion principles, Robot environmental interaction (Sensor and actuators), Power sources for robots, Robot Brains, Embedded robotics - systems design process.

AUTM202	**Automation III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 10% Practicals 50% **Overview of Syllabus:** Automation Fundamentals, Automation Justification and Productivity Concepts, Computer Numerical Control (CNC), Introduction to Industrial Robots, Programmable Logic Controllers (PLCs), Programming PLCs, Manufacturing Systems, Industrial Networks and SCADA Systems.
ELDI00	Work Readiness Program
	Overview of Syllabus: Integrate an understanding of the experiential learning process, Identify their own skills Conduct Job Searches, Compile a CV and Cover Letter, Prepare adequately for interviews, Understand his/her role in the workplace: Increase efficiency (Productivity), Identify waste in the workplace, Understand impact of waste on company productivity, Understand importance of planning in the workplace, Understand problem identification and solving, Understand concepts of Quality, Cost and Delivery, Understand Plan Do, Check, Action (PDCA) cycle.

4.1.9 Additional Regulation and Rules

- A learner is not allowed to register for an offering unless the pre-requisite subject(s) have been passed.
- If for any reason, a learner is found to be registered for any subject without the pre-requisite, the learner will automatically be de-registered in that subject.
- Learners may not register for any S4 level subject unless all subjects have been passed at the S1 and S2 level.
- A learner is only allowed to register across two consecutive levels, e.g. S1 & S2 or S2 & S3 or S3 & S4. It is not allowed to register across S1 & S3 or S2 & S4. If for any reason, a learner is found to be registered for any subject without the pre-requisite, the learner will be de-registered immediately.

4.2 Diploma in Electrical Engineering (4 Year Programme)

NQF Level : 6
SAQA Credit : 390
Duration : 4 years
Qualification Code : **ELENEC**

(4-year Diploma) (Extended Curriculum Program)

A 4-year Extended Curriculum Programme (ECP) is designed to provide structured support for underprepared learners. It ensures that sufficient support is provided during the initial year of study while guaranteeing the same exit standards as the 3-year programme.

The first year is generic to Electrical, Civil and Mechanical Engineering. In the second year, the first semester of study, the learner joins the S1 level of the chosen field, i.e. Electrical, Civil or Mechanical Engineering. After acquiring the required skills and knowledge from year 1, the learner follows the same programme as the 3-year Diploma Programme.

Purpose and Rationale of the Qualification

A qualifying learner will be competent to apply technical knowledge, engineering principles and problem-solving techniques in the field of Electrical Engineering by operating within the relevant standards and codes in collaboration with other members of the engineering team.

The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Technician-in-Training in the field of Electrical Engineering.

Qualification Rules

The qualification will be awarded to a learner who has provided evidence to the satisfaction of the assessors that the stated competence of the qualification, as detailed in the specified outcomes, has been achieved, either through education and training in a single provider`s learning programme or through experience that complies with the stated specified outcomes.

Exit Level Outcomes

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

- Practice Electrical Engineering activities and applications at the level expected of a Professional Technician (Engineering)
- Manage Electrical Engineering activities and applications at the level expected of a Professional Technician (Engineering)

4.2.1. **Minimum Admission Requirements (4-year Diploma)**

- National Senior Certificate with rating codes:

English Home Language	(4)
(or)	
English First Additional Language	(4)
Mathematics	(4)
Physical Science	(4)

- Senior Certificate or equivalent with a minimum subject-related symbol as follows:

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

- A minimum of 60% pass in N4 Engineering Science, Maths and two other electrical subjects, plus a Matric Certificate or equivalent with English (50% pass).

- NCV Level 4 with a minimum of 50% pass in the following subjects: 3 Fundamental: English, Mathematics (not Maths Literacy) and Life Orientation. A minimum of 60% in Physical Science and any two Electrical-related subjects, preferably Electrical Principles & Practice and Electronic Control & Digital Electronics.

- An appropriate GCE, GCSE, IGCSE or Cambridge School Certificate with at least five subjects at GCE 'O' level including Mathematics, Science and English that has been passed with an A, B or C symbol. Three of the five subjects must have been passed at the same examination sitting. This applies to learners from SADC countries.
- N5 and/or N6 – Not considered for registration purposes or credit/exemption purposes.

<u>Please take note of the following:</u>

- **Selection will be based on merit and availability of space.**

- **Meeting the minimum requirements does not, in any way, guarantee admission.**

Students with technical College qualifications can apply to be considered for the granting of exemptions according to the Recognition of Prior Learning (RPL) as listed below if they have passed with a minimum of 50% in every subject.

Technical/FET College Subjects	University Exempted Subjects
Communication N4 and N5	Communication Skills I
Computer Principles N4 and N5	Computer Skills I
Mathematics N4 and N5	Mathematics I
Industrial Electronics N4 and N5	Electronics I
Digital Electronics N4 and N5	Digital Systems I
Electrotechnics N4 and N5	Electrical Engineering I
Engineering Science N4 and N5	Physics I
Strength of Materials and Structures N4 and N5	Strength of Materials II

4.2.2. Duration of Study

Three years consisting of Four Semesters (S1, S2, S3 & S4) of formal time (full-time study at the University) over a minimum **two years**, and two semesters (P1 & P2) of experiential time (in-service training) undertaken at an accredited training provider/employer over **one year**, in accordance with a prescribed syllabus, and subject to the University's evaluation and approval.

- Electrical Engineering Practice I (P1) may be done after successful completion of **all S1, S2, S3 and S4** subjects.
- Electrical Engineering Practice II (P2) must be done after successful completion of **P1**.
- Electrical Engineering Practice (P1 or P2) must be registered on the date the training commences.

4.2.3. Curriculum Compilation and Pre-Requisites

i) The Diploma will be issued on completion of 30 credits from ECP Year 1 and 268 credits of formal time taken from the S1 to S4 offerings below, and 92 credits of experiential time, for a total of 390 credits.

ii) Attendance of P0 (a work readiness program) is compulsory and is used as eligibility criterion for placement for Work Intergraded Learning.

iii) A learner doing P1 registers for Electrical Engineering Practice I, and one doing P2 registers for Electrical Engineering Practice II. **Registration must be done on the date of commencement**. Upon completion of two semesters of experiential training, in accordance with the guidelines laid down in the logbook, will generate a credit of 92.

iv) There are four specialisation streams i.e. Power Systems Engineering **(ELECPS)**, Electronics and Telecommunication Engineering **(ELECET)**, Process Automation and Control Engineering **(ELECPA)** and Mechatronics Engineering **(ELECME)**.

v) Students select their area of specialization during the S2 level enrollment. After registration for S2, no further changes of streams are allowed. For curriculum compilation, the department will consider electives as compulsory subjects for the chosen stream. All specialization subjects are compulsory for graduation.

vi) The offering of specialization subjects in each stream may alternate between semesters.

vii) The effective commencement date of this curriculum was the First Semester of 2021.

viii) The twelve (12) ECSA GAs are assessed in exit levels subjects.

ix) If a student fails a Graduate Attribute (GA) assessment in any exit level subject, he/she automatically fails the subject.

x) Students need to achieve a sub-minimum mark of 50% in the Practical to be granted DP. Otherwise, they automatically fail the subject.

Subjects	NQF Level	Credits	Core/ Elective	Assessment Method	Exposure	Development	Assessment
SEMESTER 1							
					EXPOSED	**DEVELOPED**	**ASSESSED**
Mathematics I	5	12	C	EXAM	**GA1, GA9**		
Physics I	5	12	C	EXAM		**GA2, GA4**	
Communication Skills I	5	5	C	EXAM	**GA6, GA8**		
Computer Skills I	5	5	C	EXAM	**GA5, GA9**		
Electrical Engineering I	5	10	C	EXAM	**GA1, GA5**		
Electronics I	5	10	C	EXAM	**GA1, GA5**		
Digital Systems I	5	10	C	EXAM	**GA3, GA5**		
SEMESTER 2							
Mathematics II	5	12	C	EXAM		**GA1, GA9**	
Electrical Engineering II	5	10	C	EXAM		**GA1, GA9**	
Electronics II	5	10	C	EXAM		**GA1, GA5**	
Digital Systems II	5	10	C	EXAM		**GA3, GA5**	
Projects I	5	10	C	CONT	**GA3, GA7**		
Electrical Machines II	5	10	E	EXAM		**GA5,**	
Electronic Communication II	5	10	E	EXAM		**GA2**	
Process Instrumentation II	5	10	E	EXAM		**GA4**	
Strengths of Materials II	5	10	E	EXAM		**GA5,**	
SEMESTER 3							
Digital Systems III	6	12	C	EXAM		**GA3, GA5**	
Mathematics III	6	12	C	EXAM		**GA1, GA9**	
Projects II	5	10	C	CONT		**GA3, GA7**	
Software Design II	6	12	C	EXAM		**GA5,**	
Control Systems II	6	12	C	EXAM		**GA4, GA5**	
Electrical Engineering III	6	12	E	EXAM		**GA1, GA5**	
Digital Communications II	6	12	E	EXAM		**GA2**	
Process Instrumentation III	6	12	E	EXAM			**GA4**
Mechatronics III	6	12	E	EXAM		**GA5,**	
SEMESTER 4							
Design Projects III	6	12	C	CONT			**GA3, GA6, GA7,GA8**
Software Design III	6	12	C	EXAM			**GA11**

Power Electronics III	6	12	E	EXAM			**GA1**
Electrical Machines III	6	12	E	EXAM			**GA5**
Electrical Distribution III	6	12	E	EXAM			**GA4**
Electrical Protections III	6	12	E	EXAM			**GA2**
Radio Engineering III	6	12	E	EXAM			**GA2**
Signal Processing III	6	12	E	EXAM			**GA5**
Electronics III (Elective)	6	12	E	EXAM			**GA1**
Microwave Communications III	6	12	E	EXAM			**GA4**
Control Systems III	6	12	E	EXAM			**GA2**
Automation III	6	12	E	EXAM			**GA5**
Robotics III	6	12	E	EXAM			**GA4**
WIL (P1)	6	44			**GA9, GA10, GA12**	**GA9, GA10, GA12**	
WIL (P2)	6	48					**GA9, GA10,GA12**

GA1-Problem solving
GA2-Application of scientific and engineering knowledge
GA3-Engineering Design
GA4-Investigation
GA5-Engineering methods, and tools, including information technology
GA6-Professional and Technical communication
GA7-Impact of Engineering activity
GA8-Individual and teamwork
GA9-Independent learning
GA10-Engineering professionalism
GA11-Engineering management
GA12-Workplace practice

4.2.4 Electrical Engineering Diploma course summary (ELENEC)

Diploma: Electrical Engineering: (96856)(4 Years)	
Foundation I	**Foundation II**
Basic Science I	Communication Skills
Computer Literacy I	Engineering Calculations
Life Skills and Study Skills	Engineering Science I
Drawing	Computer Applications I
Mathematics	Drawing I
S1 Subjects	
Communication Skills I	
Computer Skills I	
Mathematics I	
Electrical Engineering I	
Electronics I	
Digital Systems I	
Physics I	
S2 Subjects	

Power Systems Engineering (ELECPS)	Electronics and Telecommunication Engineering (ELECET)	Process Automation and Control Engineering (ELECPA)	Mechatronics Engineering (ELECME)
Digital Systems II	Digital Systems II	Digital Systems II	Digital Systems II
Electronics II	Electronics II	Electronics II	Electronics II
Electrical Engineering II	Electrical Engineering II	Electrical Engineering II	Electrical Engineering II
Mathematics II	Mathematics II	Mathematics II	Mathematics II
Projects I	Projects I	Projects I	Projects I
Electrical Machines II	Electronic Communication II	Process Instrumentation II	Strengths of Materials II
S3 Subjects			
Digital Systems III	Digital Systems III	Digital Systems III	Digital Systems III
Mathematics III	Mathematics III	Mathematics III	Mathematics III
Projects II	Projects II	Projects II	Projects II
Software Design II	Software Design II	Software Design II	Software Design II
Electrical Engineering III	Digital Communications II	Process Instrumentation III	Mechatronics III
Control Systems II	Control Systems II	Control Systems II	Control Systems II
S4 Subjects			
Design Projects III	Design Projects III	Design Projects III	Design Projects III
Software Design III	Software Design III	Software Design III	Software Design III
Electrical Machines III	Electronics III	Electronics III	Power Electronics III
Power Electronics III	Microwave Communications III	Automation III	Automation III
Electrical Distributions III	Radio Engineering III	Control Systems III	Control Systems III
Electrical Protections III	Signal Processing III	Signal Processing III	Robotics III

4.2.5 Subjects, Curriculum Compilation, Course Codes

Diploma in Electrical Engineering (96856) (4 Years)								
Code	**Subjects**	***C/O/E**	**Semester /Year**	**Assessment Method**	**NQF Level**	**SAQA Credit**	**Pre-requisites**	**Co-requisites**
BASI000	Basic Science I		Foundation/1	EX	4	3		
COLI000	Computer Literacy I		Foundation/1	CA	4	3		
LSSS000	Life Skills and Study Skills		Foundation/1	CA	4	3		
DRAW000	Drawing		Foundation/1	CA	4	3		
MATT000	Mathematics		Foundation/1	EX	4	3		
COSK000	Communication Skills		Foundation/2	CA	4	3	Life Skills and Study Skills	
ECAL000	Engineering Calculations		Foundation/2	EX	4	3	Mathematics	
ENGS000	Engineering Science I		Foundation/2	EX	4	3	Basic Science I	
COAP000	Computer Applications I		Foundation/2	CA	4	3	Computer Literacy I	
DRWN000	Drawing I		Foundation/2	CA	4	3	Drawing	

Total Weighting						**30**		
COMK101	Communication Skills I	C	S1	CA	5	5	Communication Skills	
CKIL101	Computer Skills I	C	S1	CA	5	5	Computer Applications I	
MATS101	Mathematics I	C	S1	EX	5	12	Engineering Calculations	
ELEE101	Electrical Engineering I	C	S1	EX	5	10	Engineering Science I	
ELET101	Electronics I	C	S1	EX	5	10	Engineering Science I	
DIGS101	Digital Systems I	C	S1	EX	5	10	Engineering Science I	
PHCS101	Physics I	C	S1	EX	5	12	Engineering Science I	
Total S1 Weighting						**64**		
MATS102	Mathematics II	C	S2	EX	5	12	Mathematics I	
ELEE102	Electrical Engineering II	C	S2	EX	5	10	Electrical Eng. I Mathematics I	
DIGS102	Digital Systems II	C	S2	EX	5	10	Digital Systems I	
PRJT102	Project I	C	S2	CA	5	10	Electrical Eng. I Electronics I Communication Skills I	
ELET102	Electronics II	C	S2	EX	5	10	Electronics I Electrical Eng I	
ELEM102	Electrical Machines II	E	S2	EX	5	10	Electrical Eng. I Physics I	Mathematics II
ELEC102	Electronic Communication II	E	S2	EX	5	10	Electronics I Digital Systems I Physics I	
PRIN128	Process Instrumentation II	E	S2	EX	5	10	Electrical Eng. I Physics I	
STMA102	Strength of Materials II **(ME)**	E	S2	EX	5	10	Physics I Mathematics I	
Total S2 Weighting						**62**		
MATS201	Mathematics III	C	S3	EX	6	12	Mathematics II	
DIGS201	Digital Systems III	C	S3	EX	6	12	Digital Systems II	
SFTD201	Software Design II	C	S3	EX	6	12	Digital Systems II	
PROJ128	Projects II	C	S3	CA	5	10	Projects I Electronics II Electrical Engineering II	
CONS201	Control Systems II	C	S3	EX	6	12	Mathematics II	Mathematics III
EENG202	Electrical Engineering III	E	S3	EX	6	12	Electrical Eng. II Mathematics II	
DICM202	Digital Communications II	E	S3	EX	6	12	Electronic Comm. II	Mathematics III

PROI202	Process Instrumentation III	E	S3	EX	6	12	Process Instr. II	Mathematics III
MECE201	Mechatronics III **(ME)**	E	S3	EX	6	12	Strength of Materials II Electronics II Digital Systems II	
Total S3 Weighting						**70**		
DPRJ202	Design Project III	C	S4	CA	6	12	Projects II Digital Systems III Maths III	
ELED202	Electrical Distribution III	E	S4	EX	6	12	Electrical Eng. III	Electrical Engineering III
SFTD202	Software Design III	C	S4	EX	6	12	Software Design II	
PWEL202	Power Electronics III	E	S4	EX	6	12	Electronics II Electrical Eng. II Mathematics III	
ELEM138	Electrical Machines III	E	S4	EX	6	12	Electrical Mach. II Electrical Eng. III	
ELCP202	Electrical Protection III	E	S4	EX	6	12	Electrical Eng. III Mathematics II	Electrical Distribution III
RAEN201	Radio Engineering III	E	S4	EX	6	12	Digital Communication II	
ELTR202	Electronics III	E	S4	EX	6	12	Electronics II Mathematics III	
SIGP202	Signal Processing III	E	S4	EX	6	12	Mathematics III	
MWCM202	Microwave Communication III	E	S4	EX	6	12	Mathematics III Digital Communication II	
CONS202	Control Systems III	E	S4	EX	6	10	Control Systems II Mathematics III	
ROBT202	Robotics III	E	S4	EX	6	12	Control Systems II Mechatronics III Mathematics III Digital Systems III	
ATMT202	Automation III	E	S4	EX	6	12	Control Systems II Mathematics III Digital Systems III	
ELEC000	Work Readiness Program	C	S4	CA	NA	NA		
Total S4 Weighting						**72**		
***C= Compulsory; O= Optional; E=Electives ; EX-Examination; CA-Continuous Assessment**								

4.2.6 Examination Regulations

Refer to the General Handbook Rule: G22

4.2.7 Work Integrated Learning (In-Service Training- 92 Credits)

Electrical Engineering Practice I (P1) 44

Electrical Engineering Practice II (P2) 48

Learners who acquired any form of work experience and wish for this experience to be considered for P1/P2 training will need to comply with the institution's RPL Policy (Refer to RPL Policy clause 4.2). Such applicants may be admitted to diploma qualifications through one of the purposes of RPL namely, access, exemption, accreditation and advancement.

4.2.8 Course Content

COMK101	**Electrical English Communication Skills I**
	Offered by Service Department Communication theory, non-verbal communication (body language), oral presentations, interviews, developing leadership and participation skills. Technical reports and correspondence.
CKIL101	**Computer Skills I**
	Offered by Service Department Learners have to acquire theory and practical skills and knowledge. Theory knowledge to be learned is Personal Computer Basics, Managing Computer Contents, Display Devices, Internet Privacy and Security, Connectors and Adapters, Network Basics, Multimedia Devices, Processors and Memory, Data Storage Devices, Network Security Overview and Safety. Practical skills to be acquired are Operating systems and Application Software Microsoft Office 365 which includes Microsoft Word, Microsoft Excel, MS PowerPoint and MS Teams. Introduction to MATLAB and Simulink
MATS101	**Mathematics I**
	Formative assessment • Tutorials. **Summative assessment** • Three class tests, and Examination Major Test 1 40% Major Test 2 40% Minor Test 20% **Overview of Syllabus:** Basic mathematics. Differentiation. Integration. Matrices and determinants. Vectors. Data handling. Complex numbers or mensuration.
ELEE101	**Electrical Engineering I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 35% Test 2 35% Tutorials 10% Practicals 20% **Overview of Syllabus:** Electrical and Mechanical Quantities, Basic Electrical Components, DC theory and Network Analysis, Electromagnetism and Magnetic circuits, Inductance and Capacitance, Basic AC theory.
ELET101	**Electronics I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Practical Assignments, Examination Test 1 25% Test 2 25% Tutorials 25% Practicals 25% **Overview of Syllabus:** Oscilloscope, Semiconductor theory and atomic structure, PN Diodes and their applications Bipolar junction transistors, Operational Amplifiers
DIGS101	**Digital Systems I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical) , Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction to Digital Systems, Logic gates, Boolean Algebra and Logic Simplification, Combination Logic Analysis, Functions of Combinational Logic, Number Systems:-operation and Codes.
PHCS101	**Physics I**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical and mini-project), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25%

	Overview of Syllabus: Remedial mathematics, basic units, vectors and scalars, kinetics, mechanics, momentum, moments, work, energy and power, pressure, density, heat, optics, waves and sound, electric current, magnetism, radioactivity. Practical physics.
MATS102	**Mathematics II**
	Formative assessment • Tutorials. **Summative assessment** • Three class tests and Examination Major Test 1 40% Major Test 2 40% Minor Test 20% **Overview of Syllabus:** Revision of differentiation (Mathematics I). Differentiation of functions with more than one variable. Further integration. Numerical methods. First-order ordinary differential equations. Matrices (Gauss elimination).
ELEE102	**Electrical Engineering II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Alternating Current and Voltage generation, AC RLC circuit components and Phasors, AC Circuit Theorems, Power in AC Circuits, Series and parallel RLC resonant circuits, Introduction to Three Phase systems.
DIGS102	**Digital Systems II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Latches, Flip flops and Timers, Counters, Shift Registers, Memory and Storage, Digital Signal Interfacing and Processing, Introduction to Microcontrollers.
PRJT102	**Projects I**
	Course is assessed through continuous assessment. Final Mark (FM) = 25% x Simulation +25% x Constructed project + 30% measurement and presentation + 20% final Document **Overview of Syllabus:** PCB Design using Proteus, Simulation using Proteus, Assemble the project, Test and Debug, Report.
ELET102	**Electronics II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** DC Power supplies, BJT DC biasing, BJT AC analysis, FET Biasing, Operational Amplifiers
ELEM102	**Electrical Machines II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** D.C. Generators, D.C. Motors, Single Phase Transformers, Single Phase induction machines
ELEC102	**Electronic Communication II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation

	Summative assessment • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Fundamental Concepts of Transmission and Reception, Frequency and Amplitude Modulation Systems, Communication Techniques, Transmitter and Receiver Measurements
STMA102	**Strength of Materials II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction (Review of statics), axial loading, torsion, pure bending, beams, shearing, stress, transformations, principal stresses, and columns.
MATS201	**Mathematics III**
	Formative assessment • Tutorials. **Summative assessment** • Three class tests and Examination. Major Test 1 40% Major Test 2 40% Minor Test 20% **Overview of Syllabus:** First-order ordinary differential equations. Higher-order differential equations. Laplace transforms. Infinite series. Fourier series. Matrix analysis. Probability and statistics. Elements of analytic geometry in 2D and 2D space.
DIGS201	**Digital Systems III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation Summative assessment • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 20% Practicals 30% **Overview of Syllabus:** Introduction to Embedded C Programming, Introduction to MPLAB-X, PIC architecture, PIC Programming in C Language, PIC I/O Port Programming, Serial Port Programming in C Language, LCD and Keyboard interfacing, Introduction to ADC and DAC
SFTD201	**Software Design II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Tutorials 25% Practicals 25% **Overview of Syllabus:** C++ programming structure, I/O streams and Classes, Control Structures, Arrays and strings, User Defined functions, Data abstraction and inheritance, Exception handling, Recursions
PROJ128	**Projects II**
	Course is assessed through continuous assessment. The weightings of the assessment are as follows: Final Mark (FM) = 33% x Simulation + 33% x breadboard prototype +34% x Constructed project. **Overview of Syllabus: S**imulation, Prototype development, PCB design, Report writing, Preparatory design proposal document
COSY128	**Control Systems II**
	Formative assessment • Tutorials, Classroom small-group work, WhatsApp group discussion forum, Student self-assessment through e-learning platform. **Summative assessment** • Two class tests, Project assignment, Practical Evaluation, Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:**

	Introduction to Control Systems; Modelling of Control Systems in Frequency Domain using Laplace Transforms; Time Response of First and Second-order Control Systems; Reduction of Multiple Subsystems; Steady-State Errors; State-Space Representation of dynamic systems
ELEM138	**Electrical Machines III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Three phase transformers, Three phase induction machines, Synchronous machines Alternators), Synchronous machines (Motors)
DICO128	**Digital Communications II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Probability and Random Processes: Probability distributions, Random variables, Random processes, Statistical averages, Correlation, Digital Modulation Techniques: Signal space analysis, BPSK, QPSK, QAM, Digital Demodulation & Detection Techniques: Correlator-demodulator, Maximum likelihood detection (MLD) in additive white Gaussian noise (AWGN), bit error rate (BER) performance, Channel Encoder/Decoder: Linear block codes, Cyclic codes, Convolutional codes, Viterbi algorithm, Information Theory: Source Entropy, Huffman Coding, Channel Capacity.
PRIN128	**Process Instrumentation II**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Control valves & pumps, Control instruments, Continuous control, Sequential control, Instrumentation documentation.
MECE201	**Mechatronics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Assignments 25% Practicals 25% **Overview of Syllabus:** Introduction to Mechatronics, Transducers, Analogue Signal Conditioning, Actuating Systems, System Interfacing and Data Acquisition, Programmable Logic Controller
DEPR0138	**Design Projects III**
	This subject is assessed through continuous assessment. : The course components mark weightings will be determined as follows: • Proposal Document (GA7) = 20% • Project Presentation (GA6) = 20% • Final Document (GA8) = 30% • Project Artefact (GA3) = 30% **Overview of Syllabus:** Introduction to the Engineering Design Process, Problem definition, Literature review, Generation of multiple solutions. Analysis and selection of most appropriate solution, Testing and implementation of chosen solution, Feasibility study, Project implementation – design, simulation, construction, testing and documentation, Project oral presentation.
ELEN138	**Electrical Engineering III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation

	Summative assessment • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Applications of Complex Numbers in Phasor notations, 3-Phase AC Systems Analysis, Electrical Power Measurement and analysis in 3-Phase AC Systems, Per-unit System, Introduction to AC Power Flow Analysis, Electric Lighting Systems.
ELDI138	**Electrical Distribution III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Introduction to generation, Variable loads on power stations, Economics of power generation and Tariffs, Power factor improvement, Supply systems, Mechanical and Electrical design of overhead lines, Performance of transmission lines, Underground cables.
SOFD038	**Software Design III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 25% Test 2 25% Practical's 50% **Overview of Syllabus:** Installing a Local Web Server, Installing PHP, MySQL and Apache, PHP Syntax and Functions, Working with PHP in Websites, Creating Databases and working With MySQL, Security in PHP
POEL138	**Power Electronics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Introduction to power electronics, Power electronics switches, AC to DC converters, DC to DC converters, DC to AC converters, AC to AC converters, Introduction to drives.
ELPR138	**Electrical Protection III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Three phase Theory Revision, Introduction to Electrical protection, Symmetrical fault calculations, Instrument transformers, Unsymmetrical fault calculations, Switchgears; circuit breakers, protective relays, fuses, switches, Protection of alternator and transformers, Protection of bus-bars, Overvoltage protection
RADE138	**Radio Engineering III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Electromagnetic waves , Radio propagation techniques and Antennas, Introduction to Radar Systems, Introduction to Cellular networks and Frequencies management , Introduction to Mobile Networks
ELET138	**Electronics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignment/Project 10% Practicals 50%

	Overview of Syllabus: Feedback and Oscillator Circuits, Voltage Regulators –SMPS, Two-Terminal Devices, PNPN Devices, Linear-Digital ICs, Op-Amp Applications – Amplifiers, Filters, Multi-stage amplifiers
SIPR138	**Signal Processing III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Signals and signal processing systems, Discrete time systems in time domain, Discrete time signals in frequency domain, The z-Transform
MICE138	**Microwave Communication III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** A Review of Electromagnetic Theories and Frequencies Management, Transmission Line Theory, Transmission Lines and Waveguides, Microwave Network Analysis, Impedance Matching and Tuning, Power Dividers, Mixers and Directional Couplers, Microwave Filters, Digital Line-of-Sight Microwave Radio Links.
PRIN138	**Process Instrumentation III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Automatic Process Control, Control Systems & Instrumentation, Analytical & Renewable Energy Sensors, Boilers, Heat Exchangers & Distillation Columns, Safety & Environmental Control, Industry 4.0
COSY138	**Control Systems III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Modelling 1st, 2nd Order systems, Stability, Laplace-Domain Analysis, Frequency-Domain techniques, Feedback compensation, PID Controller Tuning, Case study: SISO system Compensation Simulation.
ROBT238	**Robotics III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Robotics overview, Basic mechanics, Robot locomotion principles, Robot environmental interaction (Sensor and actuators), Power sources for robots, Robot Brains, Embedded robotics - systems design process.
PTAT038	**Automation III**
	Formative assessment • Tutorials, Homework, quizzes, Practical Evaluation **Summative assessment** • Two class tests, Assignments (Theoretical), Examination Test 1 20% Test 2 20% Assignments 10% Practicals 50% **Overview of Syllabus:** Automation Fundamentals, Automation Justification and Productivity Concepts, Computer Numerical Control (CNC), Introduction to Industrial Robots, Programmable Logic Controllers (PLCs), Programming PLCs, Manufacturing Systems, Industrial Networks and SCADA Systems.

ELEC000	Work Readiness Program
	Overview of Syllabus: Integrate an understanding of the experiential learning process, Identify their own skills Conduct Job Searches, Compile a CV and Cover Letter, Prepare adequately for interviews, Understand his/her role in the workplace: Increase efficiency (Productivity), Identify waste in the workplace, Understand impact of waste on company productivity, Understand importance of planning in the workplace, Understand problem identification and solving, Understand concepts of Quality, Cost and Delivery, Understand Plan Do, Check, Action (PDCA) cycle.

4.2.9 Additional Regulation and Rules

- A learner is not allowed to register for an offering unless the pre-requisite subject(s) have been passed.
- If, for any reason, a learner is found to be registered for any subject without the pre-requisite, the learner will automatically be de-registered in that subject.
- Learners may not register for any S4 level subject unless all subjects have been passed at the S1 and S2 level.
- A learner is only allowed to register across two consecutive levels, e.g. S1 & S2 or S2 & S3 or S3 & S4. It is not allowed to register across S1 & S3 or S2 & S4. If, for any reason, a learner is found to be registered for any subject without the pre-requisite, the learner will be de-registered immediately.
- Switching streams after selection in S2 will only be allowed once student has graduated.
- Registration of additional modules after completing the suite of modules in the stream is subject to University regulatory framework.

4.3 Pre-Technician Programme

The course is a bridging programme which prepares learners for entry to the Diploma in Electrical Engineering.

4.3.1 Entry Requirements

i) National Senior Certificate with rating codes:

English Home Language	(3)
(or)	
English First Additional Language	(3)
Mathematics	(3)
Physical Science	(3)

ii) Senior Certificate or equivalent with a minimum subject-related symbol as follows:

Physical Science	D (SG) / E (HG)
Mathematics	D (SG) / E (HG)
English	D (SG) / E (HG)

Please take note of the following:

- **Selection may be based on merit and availability of space.**
- **Meeting the minimum requirements does not, in any way, guarantee admission.**

4.3.2 Diploma Entry Requirements

Learners who pass the Pre-Technician programme will gain access into the Diploma Programme subject to the learner passing all subjects in this programme.

4.3.3 Repeating Pre-Technician Programme

This programme may not be repeated.

4.3.4 Examination Regulations

Refer to the General Handbook Rule: G22

4.3.5 Subjects, Curriculum Compilation, Course Codes

Pre-Technician Programme: Electrical Engineering		
Code	**Subjects**	**Assessment Method**
AMATE11	Electrical Engineering Mathematics	Examination
ACOME11	English Communication	Examination
AINLO11	Introduction to Logic Systems	Examination
APREN11	Principles of Electrical Engineering	Examination
ABASE11	Basic Electronics	Examination
AINTR11	Introduction to Computers	Continuous
AEPRA11	Engineering Project	Continuous
All Subjects are compulsory		

4.4 Departmental Regulations

Reference, together with departmental regulations, will be made to all institutional rules in the "General Regulations for Students".

- Students who are found to be contravening the minimum requirements after registration, for any reason, will be de-registered immediately. The departmental decision on registration matters is final.
- Student who has failed Pre-Tech in any other department will not be allowed to register in the Department of Electrical Engineering.
- Students who are guilty of plagiarism in any assessments will automatically fail the assessment.
- A minimum of 80% attendance of all lectures is compulsory per institutional rules.

4. DEPARTMENT OF MECHANICAL ENGINEERING

The National Diploma programmes were phased out in 2018 and replaced with the Diploma programmes. The returning students will be requested to migrate to the new qualification.

The department rules are aligned with the Mangosuthu University of Technology's General Handbook Rules.

4.1 Qualification name: Diploma in Mechanical Engineering (MEENDI)

HEQSF Qualification Type : 63 SAQA Qualification ID : 72293
CESM Code : 081501 SAQA Credits : Minimum 360
NQF Level: 6
Duration: 3 years

Rationale for the Qualification

The Engineering profession contributes to the technological, socio-economic, built environment and environmental infrastructure of the country, facilitating socio-economic growth and sustainability The Diploma in Engineering Technology in Mechanical Engineering is primarily vocational, or industry oriented, characterised by underpinning theoretical knowledge and general principles and the application thereof to real situations or technology transfer. The qualification provides learners with a sound knowledge base in a field of Mechanical Engineering in response to the needs of the community, as well as local, regional, and national industry by producing competent graduates.

Statement of Purpose

The primary purpose of the diploma in Mechanical Engineering is to develop focused knowledge and skills as well as experience in a work-related context. The Diploma equips graduates with the knowledge base, theory, skills, and methodology of Mechanical Engineering as a foundation for further training and experience towards becoming a competent engineering technician. This foundation is achieved through a thorough grounding in mathematics and natural sciences specific to Mechanical Engineering, engineering sciences, engineering design and the ability to apply established methods. Engineering knowledge is complemented by methods for understanding of the impacts of engineering solutions on people and the environment.

A student will be awarded with the qualification and will be able to register as a professional technician with the Engineering Council of South Africa (ECSA) when he/she has demonstrated the knowledge in Mechanical Engineering and the graduate attributes defined below.

ECSA Graduate Attributes

Graduate Attribute 1: Problem Solving

Apply engineering principles to systematically diagnose and solve well-defined engineering problems.

Level Descriptor: Well-defined engineering problems:

a. Can be solved mainly by practical engineering knowledge, underpinned by related theory; **and have one or more of the characteristics:**
b. are largely defined but may require clarification;
c. are discrete, focused tasks within engineering systems;

d. are routine, frequently encountered, may be unfamiliar but in familiar context;
and have one or more of the characteristics:
e. can be solved in standardized or prescribed ways;
f. are encompassed by standards, codes and documented procedures; requires authorization to work outside limits;
g. information is concrete and largely complete, but requires checking and possible supplementation;
h. involve several issues but few of these imposing conflicting constraints and a limited range of interested and affected parties.

Graduate Attribute 2: Application of scientific and engineering knowledge
Apply knowledge of mathematics, natural science, and engineering sciences to applied engineering procedures, processes, systems and methodologies to solve well-defined engineering problems.

Range Statement: Knowledge of mathematics, natural science and engineering science is characterized by:
8. A coherent range of fundamental principles in mathematics and natural science underlying a sub-discipline or recognized practice area.
9. A coherent range of fundamental principles in engineering science and technology underlying an engineering sub-discipline or recognized practice area.
10. A codified practical knowledge in recognized practice area.
11. The use of mathematics, natural sciences, and engineering sciences, supported by established mathematical formulas, codified engineering analysis, methods and procedures to solve well-defined engineering problems.

Graduate Attribute 3: Engineering Design
Perform procedural design of components, systems, works, products or processes to meet desired needs normally within applicable standards, codes of practice and legislation.

Range Statement: Design problems used in assessment must conform to the definition of well-defined engineering problems:
1. A design project should be used to provide evidence of compliance with this outcome.
2. The problem would be typical of those in which the graduate would participate in an employment situation shortly after graduation.
3. The selection of components, systems, engineering works, products or processes to be designed is dependent on the sub-discipline.
4. A design project should include one or more of the following impacts: social, economic, legal, health, safety, and environmental.

Graduate Attribute 4: Investigation
Conduct investigations of well-defined problems through locating and searching relevant codes and catalogues, conducting standard tests, experiments, and measurements.

Range Statement: The balance of investigation should be appropriate to the discipline. An investigation should be typical of those in which the graduate would participate in an employment situation shortly after graduation.
Note: An investigation differs from a design in that the objective is to produce knowledge and understanding of a phenomenon.

Graduate Attribute 5: Engineering methods, skills, tools, including Information Technology

Use appropriate techniques, resources, and modern engineering tools including information technology for the solution of well-defined engineering problems, with an awareness of the limitations, restrictions, premises, assumptions, and constraints.

Range Statement: A range of methods, skills, and tools appropriate to the discipline of the program including:

1. Sub-discipline specific tools, processes, or procedures.
2. Computer packages for computation, simulation, and information handling.
3. Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork.
4. Basic techniques from economics, management, and health, safety and environmental protection.

Graduate Attribute 6: Professional and Technical Communication

Communicate effectively, both orally and in writing within an engineering context.

Range Statement: Material to be communicated is in a simulated professional context:

1. Audiences are engineering peers, academic personnel and related engineering persons using appropriate formats.
2. Written reports range from short (minimum 300 words) to long (a minimum of 2000 words excluding tables, diagrams and appendices), covering material at the exit level.
3. Methods of providing information include the conventional methods of the discipline, for example engineering drawings, physical models, and bills of quantities as well as subject-specific methods.

Graduate Attribute 7: Impact of Engineering Activity

Demonstrate knowledge and understanding of the impact of engineering activity on the society, economy, industrial and physical environment, and address issues by defined procedures.

Range Statement: The combination of social, workplace (industrial) and physical environmental factors must be appropriate to the sub-discipline of the qualification. Evidence may include case studies typical of the technical practice situations in which the graduate is likely to participate.

Issues and impacts to be addressed:

1. Are encompassed by standards and documented codes of practice.
2. Involve a limited range of stakeholders with differing needs.
3. Have consequences that are locally important and are not far reaching.
4. Are well-defined and discrete and part of an engineering system.

Graduate Attribute 8: Individual and Teamwork

Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member and leader in a technical team and to manage projects.

Range Statement:

1. The ability to manage a project should be demonstrated in the form of the project indicated in Graduate Attribute 3 (GA 3).
2. Tasks are discipline specific and within the technical competence of the graduate.
3. Projects could include laboratories, business plans, design, etc.

4. Management principles include:
    a. Planning: set objectives, select strategies, implement strategies, and review achievement.
    b. Organising: set operational model, identify, and assign tasks, identify inputs, delegate responsibility and authority.
    c. Leading: give directions, set example, communicate, motivate.
    d. Controlling: monitor performance, check against standards, identify variations and take remedial action.

Graduate Attribute 9: Independent Learning
Engage in independent and life-long learning through well-developed learning skills.

Range Statement: The learning context is well-structured with some unfamiliar elements.

Graduate Attribute 10: Engineering Professionalism
Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.

Range Statement: Evidence includes case studies, memorandum of agreement, code of conduct, membership of professional societies, etc typical of engineering practice situations in which the graduate is likely to participate.

Graduate Attribute 11: Engineering management
Demonstrate knowledge and understanding of engineering management principles.

Range Statement: Basic techniques from project management applied to one's own work, as a member and leader in a technical team, and to manage projects in multidisciplinary environments.

Graduate Attribute 12: Workplace practices
Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.

Note: The purpose of work-integrated learning is to enable the learner to connect academic learning with workplace practice.

Range Statement: Tasks to demonstrate this outcome may be performed in one or more of the following curriculum types:

19. Work-directed theoretical learning: in which theoretical forms of knowledge are introduced and sequences in ways that meet both academic criteria and are applicable and relevant to the career-specific components.
20. Problem-based learning: where students work in small self-directed groups to define, carry out and reflect on a task which is usually a real-life problem.
21. Project-based learning: that brings together intellectual enquiry, real world problems and student engagement in meaningful work.
22. Workplace learning: where students are placed in a professional practice or simulated environment within a training programme.
23. Simulated learning.

a. **Admission Requirements**

i) National Senior Certificate (Grade 12) with rating codes:

English Home Language (4)
or English First Additional Language (4)
Mathematics (4)
Physical Science (4)
Technical Drawing or equivalent (4)
Additional recommended school subject: Mechanical Technology

ii) Senior Certificate or equivalent with a minimum symbol D (HG) or C (SG) in Mathematics, Physical Science, English and Technical Drawing. Additional recommended school subject: Mechanical Technology

iii) Pass in all Pre-Tech subjects (6 subjects) with a minimum of 50% for each

iv) An appropriate N3 certificate with a minimum of four subjects passed at 50% each including Mathematics, Technical Drawing and Engineering Science and Grade 12 level English passed with at least symbol D (SG)

v) An appropriate GCE, GCSE, IGCSE, or Cambridge School Certificate with at least five subjects at GCE 'O' level including Mathematics, Physics, Chemistry, English, and Technical Drawing, each being passed with an A, B or C symbol. Three of the five subjects must have been passed at the same examination sitting

vi) **NCV Admission Requirements**

NCV Level 4 with a minimum of 50% pass in the following subjects:
Three fundamental subjects which must include English and Mathematics and a minimum of 60% in the three compulsory subjects from the **Engineering and Related Design** programme plus **Mechanical Draughting and Technology** plus **Physical Science**.

NB: It is important to note that each student will be assessed on merit.
All admissions are based on a selection process only!

- **Transfer from Technical / FET Colleges**

Students having passed subjects as listed below (with a minimum of 50% each) will be granted exemptions according to the Recognition of Prior Learning.

Technical/FET College Subjects	University Exempted Subjects
Communication N4	Communication Studies I
Mathematics N4 and N5	Mathematics I
Mechanotechnics N5	Mechanics I
Mechanotechnics N6	Mechanics of Machines II
Power Machines N6	Thermodynamics II
Strength of Materials N6	Strength of Materials II
Mech Eng Drawing & Design N5	Mech Eng Drawing I
Mech Eng Drawing & Design N6	Mech Eng Design II

It is important to note that each student will be assessed on merit.

Applications for credits and exemptions must be submitted to the Head of Department before the registration date.

b. **Duration of Study**

The duration of the course is three years comprising two years academic studies at the University and one year Work Integrated Learning (Experiential Learning) in industry undertaken at an appropriate training provider, in accordance with a prescribed programme as stated in a logbook. Logbooks for Work Integrated Learning will be issued to students at the commencement of their training. Students who do not register for their Work Integrated Learning cannot be monitored and evaluated, resulting in the training not being recognised. It is the student's responsibility to register for the training which must be done prior to commencement of training. A student can only register P1 after attending S4. Students who did not complete all the S4 courses must first get permission from the HOD to register for P1.

c. **Curriculum Compilation**

The curriculum compilation for the Diploma in Mechanical Engineering is as follows:

Subjects, Curriculum Compilation, Course Codes

Code	Subjects	*C/E	Year / Semester	Assessment Method	NQF Level	Credits	Pre-requisites
CSKL101 COMM311	Communication Studies I	C	Y1(S1)	Examination	5	7	
CPSK101 COSME01	Computer Skills I	C	Y1(S1)	Examination	5	7	
ELEC101 *ELTR011*	Electrotechnology I	C	Y1(S1)	Examination	5	12	
MATI101 MATME01	Mathematics I	C	Y1(S1)	Examination	5	12	
MEED101 MEDR011	Mech. Engineering Dwg. I	C	Y1(S1)	Continuous	5	12	
MEME101 MMEN011	Mech. Manuf. Eng. I	C	Y1(S1)	Examination	5	12	
MECH101 MECA011	Mechanics I	C	Y1(S1)	Examination	5	12	
FLME102 FLUM121	Fluid Mechanics II	C	Y1(S2)	Examination	5	12	Mechanics I & Mathematics I
MATI102 MATME02	Mathematics II	C	Y1(S2)	Examination	5	12	Mathematics I
COAD102 CADR011	Comp. Aided Draught I	C	Y1(S2)	Continuous	5	12	Mechanical Engineering Drawing I and Computer Skills
STOM102 STRE121	Strength of Materials II	C	Y1(S2)	Examination	5	12	Mechanics I & Mathematics I
THER102 TEMO021	Thermodynamics II	C	Y1(S2)	Examination	5	12	Mechanics I & Mathematics I
MEOM102 MECM121	Mechanics of Machines II	C	Y1(S2)	Examination	5	12	Mechanics I & Mathematics I
MEDS201 MEDE021	Mech. Eng. Design II	C	Y2(S1)	Examination	6	12	Mech. Eng. Drawing I Strength of Mechanics II
FLME201 FLUM331	Fluid Mechanics III	C	Y2(S1)	Examination	6	12	Fluid Mechanics II
MEOM201	Mechanics of Machines III	C	Y2(S1)	Examination	6	12	Mechanics of

MECM331							Machines II
STOM201 STRE331	Strength of Materials III	C	Y2(S1)	Examination	6	12	Strength of Materials II
THER201 TEMO231	Thermodynamics III	C	Y2(S1)	Examination	6	12	Thermodynamics II
MTHM102 MATME03	Mathematics III	C	Y2 (S1)	Examination	6	12	Mathematics II
APSM202 APSM031	Applied Strength of Materials III	C	Y2(S2)	Examination	6	12	Strength of Materials III
MAEN202 MAEN011	Maintenance Eng. I	C	Y2(S2)	Examination	5	12	Mathematics I, Mech. Manufacturing Eng. I
HYDM202 HYMA031	Hydraulic Machines III	C	Y2(S2)	Examination	6	12	Fluid Mechanics III
STPL202 STPL031	Steam Plant III	C	Y2(S2)	Examination	6	12	Thermodynamics III
THMA202 THEM031	Theory of Machines III	C	Y2(S2)	Examination	6	12	Mechanics of Machines III & Mathematics II
MEDS202 MEDE131	Mech. Eng. Design III	C	Y2(S2)	Examination	6	12	Mech. Eng. Design II & Computer Aided Drw. I
WORKRP0 MEPR001	Mech. Eng. Practice 0, P0	*C*	*Y2 (S2)*	Attendance	5	6	
MEPR301 MEPR011	Mech. Eng. Practice I, P1	*C*	*Y3 (S1)*	WIL Logbook	5	40	CSKL101, MATI101 MEED101, MECH101, WORKRP0
MEPR302 MEPR021	Mech. Eng. Practice II, P2	*C*	*Y3 (S2)*	WIL Logbook	6	44	MEDES21, Mechanical Eng. Pract I
C=Compulsory; E=Electives							

b. **Elective Subjects**:

The following subjects are offered to sufficient students wanting to do the subject. They are conducted after hours, at an extra cost, and they carry a full credit value.

Subjects, Curriculum Compilation, Course Codes

Code	Subjects	*C/E	Year / Semester	Assessment Method	NQF Level	Credit	Pre-requisites
MOVE102 MOVE111	Motor Vehicle Eng. I	E	Y1 (S2)	Continuous	5	12	
MEME102 MMEN021	Mech. Manuf. Eng. II	E	Y1 (S2)	Continuous	5	12	Mech. Manuf. Eng. I
MEME201 MMEN031	Mech. Manuf. Eng. III	E	Y2 (S3)	Continuous	6	12	Mech. Manuf. Eng. II
MASK102 MASKM01	Management Skills I	E	Y1 (S2)	Examination	5	12	Communication Studies I
MACD202 MACH031	Machine Design III	E	Y2 (S2)	Continuous	6	12	Mech. Eng. Design III
ELEC201 ELTR121	Electrotechnology II	E	Y2(S1)	Examination	5	12	Electrotechnology I
EMAS102 EMSC011	Engineering Materials & Science I	E	Y1 (S2)	Examination	5	12	Mech. Manuf. Eng. I
C=Compulsory; E=Electives							

e. **Examination Regulations**
Refer to the General Handbook Rule: G22.

f. **Assessments**
A candidate will undergo two distinct assessments in the diploma programme: academic assessment and graduate attributes assessment.

g. **Pass Requirements**
To pass a subject the candidate must obtain a final mark of 50% or more in the academic assessment and must satisfy the requirements of the graduate attribute development and/ or assessment concurrently.

h. **Pre-requisite**
A pre-requisite for an academic pass is that a candidate should have a minimum of 40% in the examination mark, otherwise he/she fails (even if the course mark and exam mark together total 50% or more.)

i. **Practicals**
The attendance of all practical classes is compulsory. Failure to attend practicals will result in the candidate not obtaining a course mark for that subject and may not meet the requirements of graduate attribute.

j. **Timetable Clashes** (Refer to Rule G.16 in the General Handbook)
Students may not register for any subjects that result in a timetable clash.

k. **Work Integrated Learning (WIL)**
It consists of P1 (6 month) and P2 (6 month) and it is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who do not register their work integrated learning cannot be monitored nor evaluated and their training will not be recognised. Student must obtain his/her logbook from the Department of Mechanical Engineering before the commencement of their training. Students are only eligible for graduation after completion, submission and acceptance of all the required reports.

5.2 Diploma in Mechanical Engineering -Extended Curriculum (MEENEC)

Qualification name: Diploma in Mechanical Engineering (MEENC)
HEQSF Qualification Type : 63 SAQA Qualification ID: 72293
CESM Code : 081501 SAQA Credits : Minimum 360
NQF Level : 6
Duration : 4 years

Diploma in Mechanical Engineering (4-Year Programme)
The minimum study period for the Diploma: Engineering: Mechanical is usually three years. However, students are usually under-prepared and complete the programme in 4, 5 or 6 years. A 4-year programme (also known as an Extended Curriculum programme) has been designed to provide structured support to students over a period of four years. A range of additional interventions are offered to students who are accepted in this programme. This programme has been a response to the well-known inequalities in South African society and to cater for varying levels of student preparedness. It ensures that sufficient support is provided during the initial years of

study while guaranteeing the same exit standards as the 3-year programme.

The 4-year programme addresses gaps and disparities in students' educational and life experience so that they can be better equipped to manage the Diploma programme. It also provides students with broad educational and life skills, including Mathematics, language literacy and subject knowledge. While students are mostly tutored separately in small classes in their first year, they undertake their studies and lectures as integral members of the Diploma student group.

This programme in Mechanical Engineering is further unique and designed in such a way that after the first semester, students may transfer to similar programmes in Civil Engineering or Electrical Engineering without sacrificing time or quality of training.

Rationale for the Qualification

The Engineering profession contributes to the technological, socio-economic, built environment and environmental infrastructure of the country, facilitating socio-economic growth and sustainability The Diploma in Engineering Technology in Mechanical Engineering is primarily vocational, or industry oriented, characterised by underpinning theoretical knowledge and general principles and the application thereof to real situations or technology transfer. The qualification provides learners with a sound knowledge base in a field of Mechanical Engineering in response to the needs of the community, as well as local, regional and national industry by producing competent graduates.

Statement of Purpose

The primary purpose of the diploma in Mechanical Engineering is to develop focused knowledge and skills as well as experience in a work-related context. The Diploma equips graduates with the knowledge base, theory, skills and methodology of Mechanical Engineering as a foundation for further training and experience towards becoming a competent engineering technician. This foundation is achieved through a thorough grounding in mathematics and natural sciences specific to Mechanical Engineering, engineering sciences, engineering design and the ability to apply established methods. Engineering knowledge is complemented by methods for understanding of the impacts of engineering solutions on people and the environment.

A student will be awarded with the qualification and will be able to register as a professional technician with the Engineering Council of South Africa (ECSA) when he/she has demonstrated the knowledge in Mechanical Engineering and the graduate attributes defined below

ECSA Graduate Attributes

Graduate Attribute 1: Problem Solving

Apply engineering principles to systematically diagnose and solve well-defined engineering problems.

Level Descriptor: Well-defined engineering problems:

a. Can be solved mainly by practical engineering knowledge, underpinned by related theory;

and have one or more of the characteristics:

b. are largely defined but may require clarification;
c. are discrete, focused tasks within engineering systems;
d. are routine, frequently encountered, may be unfamiliar but in familiar context;

and have one or more of the characteristics:

e. can be solved in standardized or prescribed ways;
f. are encompassed by standards, codes and documented procedures; requires authorization to work outside limits;
g. information is concrete and largely complete, but requires checking and possible supplementation;
h. involve several issues but few of these imposing conflicting constraints and a limited range of interested **and affected parties**

Graduate Attribute 2: Application of scientific and engineering knowledge

Apply knowledge of mathematics, natural science and engineering sciences to applied engineering procedures, processes, systems and methodologies to solve well-defined engineering problems.

Range Statement: Knowledge of mathematics, natural science and engineering science is characterized by:

1. A coherent range of fundamental principles in mathematics and natural science underlying a sub-discipline or recognized practice area.
2. A coherent range of fundamental principles in engineering science and technology underlying an engineering sub-discipline or recognized practice area.
3. A codified practical knowledge in recognized practice area.
4. The use of mathematics, natural sciences, and engineering sciences, supported by established mathematical formulas, codified engineering analysis, methods and procedures to solve well-defined engineering problems.

Graduate Attribute 3: Engineering Design

Perform procedural design of components, systems, works, products, or processes to meet desired needs normally within applicable standards, codes of practice and legislation.

Range Statement: Design problems used in assessment must conform to the definition of well-defined engineering problems:

1. A design project should be used to provide evidence of compliance with this outcome.
2. The problem would be typical of those in which the graduate would participate in an employment situation shortly after graduation.
3. The selection of components, systems, engineering works, products, or processes to be designed is dependent on the sub-discipline.
4. A design project should include one or more of the following impacts: social, economic, legal, health, safety, and environmental.

Graduate Attribute 4: Investigation

Conduct investigations of well-defined problems through locating and searching relevant codes and catalogues, conducting standard tests, experiments and measurements.

Range Statement: The balance of investigation should be appropriate to the discipline. An investigation should be typical of those in which the graduate would participate in an employment situation shortly after graduation.

Note: An investigation differs from a design in that the objective is to produce knowledge and understanding of a phenomenon.

Graduate Attribute 5: Engineering methods, skills, tools, including Information Technology
Use appropriate techniques, resources, and modern engineering tools including information technology for the solution of well-defined engineering problems, with an awareness of the limitations, restrictions, premises, assumptions, and constraints.

Range Statement: A range of methods, skills and tools appropriate to the discipline of the program including:

1. Sub-discipline specific tools, processes, or procedures.
2. Computer packages for computation, simulation, and information handling.
3. Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork.
4. Basic techniques from economics, management, and health, safety and environmental protection.

Graduate Attribute 6: Professional and Technical Communication
Communicate effectively, both orally and in writing within an engineering context.

Range Statement: Material to be communicated is in a simulated professional context:

1. Audiences are engineering peers, academic personnel and related engineering persons using appropriate formats.
2. Written reports range from short (minimum 300 words) to long (a minimum of 2000 words excluding tables, diagrams, and appendices), covering material at the exit level.
3. Methods of providing information include the conventional methods of the discipline, for example engineering drawings, physical models, and bills of quantities as well as subject-specific methods.

Graduate Attribute 7: Impact of Engineering Activity
Demonstrate knowledge and understanding of the impact of engineering activity on the society, economy, industrial and physical environment, and address issues by defined procedures.

Range Statement: The combination of social, workplace (industrial) and physical environmental factors must be appropriate to the sub-discipline of the qualification. Evidence may include case studies typical of the technical practice situations in which the graduate is likely to participate.
Issues and impacts to be addressed:

1. Are encompassed by standards and documented codes of practice.
2. Involve a limited range of stakeholders with differing needs.
3. Have consequences that are locally important and are not far reaching.
4. Are well-defined and discrete and part of an engineering system.

Graduate Attribute 8: Individual and Teamwork
Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member and leader in a technical team and to manage projects.

Range Statement:

- The ability to manage a project should be demonstrated in the form of the project indicated in Graduate Attribute 3 (GA 3).
- Tasks are discipline specific and within the technical competence of the graduate.
- Projects could include laboratories, business plans, design, etc.
- Management principles include:
    - Planning: set objectives, select strategies, implement strategies and review achievement.

- Organising: set operational model, identify and assign tasks, identify inputs, delegate responsibility and authority.
- Leading: give directions, set example, communicate, motivate.
- Controlling: monitor performance, check against standards, identify variations and take remedial action.

Graduate Attribute 9: Independent Learning
Engage in independent and life-long learning through well-developed learning skills.

Range Statement: The learning context is well-structured with some unfamiliar elements.

Graduate Attribute 10: Engineering Professionalism
Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.

Range Statement: Evidence includes case studies, memorandum of agreement, code of conduct, membership of professional societies, etc typical of engineering practice situations in which the graduate is likely to participate.

Graduate Attribute 11: Engineering management
Demonstrate knowledge and understanding of engineering management principles.

Range Statement: Basic techniques from project management applied to one's own work, as a member and leader in a technical team, and to manage projects in multidisciplinary environments.

Graduate Attribute 12: Workplace practices
Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.

Note: The purpose of work-integrated learning is to enable the learner to connect academic learning with workplace practice.

Range Statement: Tasks to demonstrate this outcome may be performed in one or more of the following curriculum types:

1. Work-directed theoretical learning: in which theoretical forms of knowledge are introduced and sequences in ways that meet both academic criteria and are applicable and relevant to the career-specific components.
2. Problem-based learning: where students work in small self-directed groups to define, carry out and reflect on a task which is usually a real-life problem.
3. Project-based learning: that brings together intellectual enquiry, real world problems and student engagement in meaningful work.
4. Workplace learning: where students are placed in a professional practice or simulated environment within a training programme.
5. Simulated learning.

a. **Admission Requirements**

i) National Senior Certificate (Grade 12) with rating codes:
English Home Language (4)
or English First Additional Language (4)

Mathematics (4)
Physical Science (4)
Technical Drawing or equivalent (4)
Additional recommended school subject: Mechanical Technology

ii) Senior Certificate or equivalent with a minimum symbol D (HG) or C (SG) in Mathematics, Physical Science, English and Technical Drawing. Additional recommended school subject: Mechanical Technology

iii) An appropriate N3 certificate with a minimum of four subjects passed at 50% each including Mathematics, Technical Drawing and Engineering Science and Grade 12 level English passed with at least symbol D (SG)

v) An appropriate GCE, GCSE, IGCSE, or Cambridge School Certificate with at least five subjects at GCE 'O' level including Mathematics, Physics, Chemistry, English and Technical Drawing, each being passed with an A, B or C symbol. Three of the five subjects must have been passed at the same examination sitting

vi) **NCV Admission Requirements**
NCV Level 4 with a minimum of 50% pass in the following subjects:
Three fundamental subjects which must include English and Mathematics and a minimum of 60% in the three compulsory subjects from the **Engineering and Related Design** programme plus **Physical Science**.

NB: It is important to note that each student will be assessed on merit.

ADMISSION IS BASED ON A SELECTION PROCESS ONLY!!!

b. **Duration of Study**
4 years full time

c. **Subjects, Curriculum Compilation, Course Codes**

Code	Subjects	*C/ E	Semester /Year	Assessment Method	NQF Level	Credit	Pre-requisites
BASC000 BASC001	Basic Science I	C	Y1 (S1)	Examination	5		
CMLI000 COMP001	Computer Literacy I	C	Y1 (S1)	Examination	5		
LSAS000 LIFE001	Life Skills and Study Skills	C	Y1 (S1)	Examination	5		
DING000 DRAW001	Drawing	C	Y1 (S1)	Examination	5		
MATI000 MATS001	Mathematics	C	Y1 (S1)	Examination	5		
COMS000 COMS001	Communication Skills	C	Y1 (S2)	Examination	5		Life Skills and Study Skills (LIFE001)

ENCA000 ENCA001	Engineering Calculations	C	Y1 (S2)	Examination	5		Mathematics (MATS001)
ENSC000 ENSC001	Engineering Science I	C	Y1 (S2)	Examination	5		Basic Science I (BASC000)
CAPP000 COAP001	Computer Applications I	C	Y1 (S2	Examination	5		Computer Literacy I (CMLI000)
DWNG000 DRAW002	Drawing I	C	Y1 (S2)	Examination	5		Drawing I (DRAW001)
CTIO101 COMM118	Communication Studies I	C	Y2 (S1)	Examination	5	7	Communication Skills (COMS001)
CMPS101 COSME18	Computer Skills I	C	Y2 (S1)	Examination	5	7	Computer Applications I
ELTR101 ELTR118	Electrotechnology I	C	Y2 (S1)	Examination	5	12	Engineering Calculations Engineering Science I
MTMA101 MATME18	Mathematics I	*C*	Y2 (S1)	Examination	5	12	Engineering Calculations
MEND101 MEDR118	Mech. Eng. Drawing I	C	Y2 (S1)	Continuous	5	12	Drawing I (DRAW002)
MMAE101 MMEN118	Mech. Manuf. Eng. I	C	Y2 (S1)	Examination	5	12	Drawing I (DRAW002)
MCHA101 MECA118	Mechanics I	C	Y2 (S1)	Examination	5	12	Engineering Calculations Engineering Science I
FLUM102 FLUM128	Fluid Mechanics II	C	Y2 (S2)	Examination	5	12	Mechanics I & Mathematics I
MTMA102 MATME28	Mathematics II	C	Y2 (S2)	Examination	5	12	Mathematics I
CAID102 CADR118	Comp. Aided Draught. I	C	Y2 (S2)	Continuous	5	12	Mechanical Engineering Drawing I Computer Skills I
SOMA102 STRE128	Strength of Materials II	C	Y2 (S2)	Examination	5	12	Mechanics I & Mathematics I
TERM102 TEMO128	Thermodynamics II	C	Y2 (S2)	Examination	5	12	Mechanics I & Mathematics I
MOMA102 MECM128	Mechanics of Machines II	C	Y2 (S2)	Examination	5	12	Mechanics I & Mathematics I
FLUM201 FLUM138	Fluid Mechanics III	C	Y3 (S1)	Examination	6	12	Fluid Mechanics II
MOMA201 MECM138	Mech. Of Machines III	C	Y3 (S1)	Examination	6	12	Mechanics of Machines II
SOMA201 STRE138	Strength of Materials III	C	Y3 (S1)	Examination	6	12	Strength of Materials II
TERM201 TEMO138	Thermodynamics III	C	Y3 (S1)	Examination	6	12	Thermodynamics II
MTMA201 MATME38	Mathematics III	C	Y3 (S1)	Examination	6	12	Mathematics II
MNGD201 MEDE128	Mech. Eng. Design II	C	Y3 (S1)	Examination	6	12	Mech. Eng. Drawing I, Strength of Materials II
MNGD202 MEDE138	Mech. Eng. Design III	C	Y3 (S2)	Examination	6	12	Mech. Eng. Design II & Computer Aided Drw. I
ASMA202 APSM138	Applied Strength of Mat. III	C	Y3 (S2)	Examination	6	12	Strength of Materials III
MAIN202 MAEN118	Maintenance Eng. I	C	Y3 (S2)	Examination	5	12	Mathematics I, Mech. Manufacturing Eng. I

HMAC202 HYMA138	Hydraulic Machines III	C	Y3 (S2)	Examination	6	12	Fluid Mechanics III
STMP202 STPL138	Steam Plant III	C	Y3 (S2)	Examination	6	12	Thermodynamics III
TMAC202 THEM138	Theory of Machines III	C	Y3 (S2)	Examination	6	12	Mechanics of Machines III & Mathematics II
WORKRP 0 MEPR018	Mech. Eng. Practice 0, P0	C	Y3 (S2)	Attendance	5	6	
MECP301 MEPR118	Mech. Eng. Practice I, PI	C	Y4 (S1)	WIL Logbook	5	40	MTMA101, CTIO101 MCHA101, MEND101, WORKRP0,
MECP302 MEPR128	Mech. Eng. Practice II, PII	C	Y4 (S2)	WIL Logbook	6	44	MNGD201, Mechanical Eng. Pract I
C=Compulsory; E=Electives							

b. **Additional, Optional Subjects**:

The following subjects are offered to sufficient students wanting to do the subject. They are conducted after hours, at an extra cost, and they carry a full credit value.

Subjects, Curriculum Compilation, Course Codes

Code	Subjects	*C/E	Year / Semester	Assessment Method	NQF Level	Credits	Pre-requisites
MVEE102 MOVE118	Motor Vehicle Eng. I	E	Y2 (S2)	Continuous	5	12	
MMAE102 MMEN128	Mech. Manuf. Eng. II	E	Y2 (S2)	Continuous	5	12	Mech. Manuf. Eng. I
MMAE201 MMEN138	Mech. Manuf. Eng. III	E	Y3 (S1)	Continuous	6	12	Mech. Manuf. Eng. II
MANS201 MASKM18	Management Skills I	E	Y2 (S2)	Examination	5	12	Communication Studies I
ENMS102 EMSC118	Engineering Materials & Science I	E	Y2 (S2)	Examination	5	12	Mech. Manuf. Eng. I
MDSN202 MACH138	Machine Design III	E	Y3 (S2)	Continuous	6	12	Mech. Eng. Design III
ELTR201 ELTR128	Electrotechnology II	E	Y3 (S1)	Examination	5	12	Electrotechnology I
C=Compulsory; E=Electives							

e. **Examination Regulations**

Refer to the General Handbook Rule: G22.

f. **Assessments**

A candidate will undergo two distinct assessments in the diploma programme: academic assessment and graduate attributes assessment.

g. **Pass Requirements**

To pass a subject the candidate must obtain a final mark of 50% or more in the academic assessment and must satisfy the requirements of the graduate attribute development and/ or assessment concurrently.

h. **Pre-requisite**

A pre-requisite for an academic pass is that a candidate should have a minimum of 40% in the examination mark, otherwise he/she fails (even if the course mark and exam mark together total 50% or more.)

i. **Practicals**

The attendance of all practical classes is compulsory. Failure to attend practicals will result in the candidate not obtaining a course mark for that subject and may not meet the requirements of graduate attribute.

j. **Timetable Clashes (Refer to Rule G.16 in the General Handbook)**

Students may not register for any subjects that result in a timetable clash.

k. **Work Integrated Learning (WIL)**

It consists of P1 (6 month) and P2 (6 month) and it is the student's responsibility to register his/her training. This must be done before or on commencement of the training. Students who do not register their work integrated learning cannot be monitored nor evaluated and their training will not be recognised. Student must obtain his/her logbook from the Department of Mechanical Engineering before the commencement of their training. Students are only eligible for graduation after completion, submission, and acceptance of all the required reports.

5.3 Access Course: Mechanical Engineering (Pre-Tech course)

The course is a diploma-specific bridging course which prepares students for entry to the Diploma in Mechanical Engineering.

a. **Admission Requirements**

i) National Senior Certificate with rating codes:

English Home Language	(3)
or English First Additional Language	(3)
Mathematics	(3)
Physical Science	(3)

ii) Satisfactory achievement rating code (4) in their Home Language;
A minimum of 130 total credits; with a maximum of 60 credits with "Partial Achievement", at NQF Level 4 with a minimum of 50% pass in English, Mathematics and Physical Science

iii) Grade 12 Certificate or equivalent, including passes in

Mathematics	D (SG) / E (HG)
Physical Science	D (SG) / E (HG)
English	D (SG) / E (HG)

iv) A full N3 certificate (4 subjects including Mathematics and Physical Science with a minimum 50% pass for each) and Grade 12 English symbol D (SG)

v) An appropriate GCE, GCSE, IGCSE or Cambridge School certificate must have passed five approved ordinary level subjects including English Language, provided three subjects have been passed at the same examination sitting. Only symbols A, B or C are accepted as passes.

vi) **NCV Admission Requirements**

NCV Level 4 with a minimum of 50% pass in the following subjects:
Three fundamental subjects which must include English and Mathematics and a minimum of 60% in the three compulsory subjects from the **Engineering and Related Design** programme plus Physical Science.

ADMISSION IS BASED ON A SELECTION PROCESS!!!

b. **Duration of Study**

Study will be for a period of six months.

c. **Subjects, Curriculum Compilation, Course Codes**

Code	Subjects	*C/E	Semester /Year	Assessment Method	NQF Level	Pre-requisites
ACOMM11	Communication	C	PRETECH	Examination	5	
ADRAM11	Drawing	C	PRETECH	Continuous	5	
AMATM11	Mathematics	C	PRETECH	Examination	5	
APITE11	Industrial Technology	C	PRETECH	Continuous	5	
AINME11	Introduction to Mechanics	C	PRETECH	Examination	5	
ABASC11	Basic Engineering Sc.	C	PRETECH	Examination	5	
C=Compulsory; E=Electives						

d. **Examination Regulations**

Refer to Part One: Rule 1.22

e. **Pass Requirements**

Students must pass ALL six subjects at 50% each during a single examination session, for promotion to the S1 level. This course may not be repeated.

f. **Practicals**

Students are expected to attend all practical sessions offered in the course.

g. Pre-Technician students are not excluded from writing examinations if their course mark is below 40%, i.e. all students will gain entry to the examination regardless of their course mark.

h. **Repeating Pre-Technician Course**

This course may not be repeated.

COURSE CURRICULUM

Subject Code	Subject includes
S1, semester 1	
Mechanics I	Vectors, resultants and equilibrants, determining unknown forces on a system of coplanar concurrent forces, moments, friction and centres of gravity, linear motion with uniform acceleration, motion in a vertical plane, angular motion, work and power, momentum, impulse and Newton's laws, potential and kinetic energy, centrifugal and centripetal force, simple lifting machines
Mechanical Engineering Drawing I	Orthographic projection: first and third angle, isometric drawing, interpenetration and developments, sectioning and assembly drawing, auxiliary drawing, introduction to CAD (AutoCAD 2016), 2D drawing

	commands in AutoCAD
Mechanical Manufacturing Engineering I	Safety and safety legislation, identification on materials and their property, ferrous, non-ferrous, non-metals, synthetic and composite materials, application and manufacturing of various materials. Measuring equipment: micrometers, vernier and protractors, hand, and machine tools: lathe, shaper, pedestal grinder. Drilling machine, fly press, welding
Electrotechnology 1	General concept of atomic theory, electric current, electricity basics, electric resistance, electric circuits, electromagnetism, induction capacitors, measuring instruments, storage cells
Mathematics I	Basic algebra and trigonometry, differential calculus with applications, integral calculus with applications, statistics, complex numbers, and hyperbolic functions
Computer Skills and Programming I	Hardware, software, data communications, computer applications, theory of computer and introductions to office suite which include MS Word, MS Excel, MS Power Point, network overview and security, data storage, introduction to programming
Communication Studies I	Academic writing skills, communication theory, meetings, public speaking & presentations, technical report writing and correspondence
S2 Semester 2	
Fluid Mechanics II	Fluid properties, pressure in fluids, hydrostatic forces, buoyancy, hydrostatic machines, fluid flow, flow measurement, flow through pipelines (Darcy and Chezy formula, minor losses)
Strength of Materials II	Simple plain trusses, simple stress and strain, thin cylinders, shafts and rigid couplings, close – coiled helical springs, geometric properties of beam sections, bending moment and shear force
Mechanics of Machine II	General dynamics. Vehicle dynamics, hoists and haulages, power transmission (belts, clutches, chain drives, gearboxes), brakes, simple harmonic motion
Computer Aided Draughting I	AUTOCAD (drawing with precision, creating and editing objects, Dimensioning, working with text, hatching, blocks & X-refs, plotting) INTRODUCTION TO INVENTOR (creating base features, sketched secondary features, creating pick and place, features, work features, model and display manipulation, advanced features and duplication tools, assembly environment, manipulating the assembly, display, assembly tools, drawing basics)
Thermodynamics II	Thermodynamics laws & systems, gases and single-phase systems, steam and two-phase systems, steam plant, combustion.
Mathematics II	Exponential Equations, Hyperbolic functions, Differentiation, Inverse Trigonometric functions, inverse hyperbolic functions, Partial Differentiation, Integration, Numerical Methods, First Order Differential equations
S3 Semester 3	
Mechanics of Machines III	Simple mechanisms, velocity and acceleration in mechanisms, toothed gearing, gear trains (including epicyclic arrangements), balancing of rotating masses.
Mechanical Engineering	Design process steps/cycle, Fits and Limits, Simple Stresses & Theories of

Design II	failure, Combined Stresses, Pipe & joint design, riveted joint design, Welded Joint design, Screwed/Fasteners Joint design, keys & splines, couplings.
Strength of Materials III	Space trusses, second moment of area, bending stresses, eccentric load on short columns and loaded beams, temperature stresses, strain energy due to direct stress, fatigue, basic two dimensional stress analysis
Thermodynamics III	Steady flow energy equation, Gas and steam nozzles, air reciprocating compressors, heat engine and refrigerators, Ideal gas cycle, I.C Engine and engine Trial, refrigeration cycles.
Fluid Mechanics III	Pipe friction, flow under varying head, and introduction to pumps, piping systems, channel flow, viscous flow, and vortices. forces exerted by a moving fluid, transmission of power by pipelines
Mathematics III	Fourier Series, Linear differential equations with constant coefficients, Laplace transforms
S4 Semester 4	
Mechanical Engineering Design III	Shaft Design, Gear design, Clutch Design, Bearing Design, Cotter and Knuckle joint Design, Brake Design, Pressure vessel Design, Spring Design, Belt drive Design
Steam Plant III	Power generation, Ideal Rankine cycle, Reheat and regenerative cycles, condensers and cooling towers, steam and gas turbines, Heat transfer: conduction, convection, radiation, Psychometrics
Hydraulic Machines III	Centrifugal pump design and performance, pumps in systems: series and parallel, positive displacement pumps, impulse water turbines, reaction water turbines.
Theory of Machines III	Turning moment/crank effort diagrams, analytical analysis of cam motion, balancing of reciprocating and rotating masses, free vibrations & introduction to 2nd order differential equations
Maintenance Engineering, I	Maintenance function, maintenance strategies, assets register, reliability centred maintenance (RCM), failure modes and effect analysis (FMEM), maintenance documentation, backlog management, life cycle costing, turning maintenance into profit centre,
Applied Strength of Materials III	Deflection of beams, complex strain, 3-D strain & strain gauges, strains in thin-walled vessels subjected to fluid pressure, thick cylinders subjected to an internal pressure, transformation of internal stresses: complex stress systems, buckling, struts &slender columns
Electives subjects	
Engineering Materials & Science I	Introduction to the Structure of Matter, Atomic Structure, Crystal Structure, Imperfections in the Atomic Arrangement, Mechanical Properties & Testing, Strengthening Mechanisms in Metals, Solidifications and Dispersion Strengthening, Corrosion & Wear
Machine Design III	Review of component designs of power transmission mechanisms, manufacturing methods, assembly and joining methods, practical maintenance of the machine, Project Report (Project Proposals, Literature Review, Methodology, Results and presentation, Discussion, conclusions and Recommendations, Oral presentations, Submission of the write up
Management Skills I -Mech Eng	Introduction to Management, Business Leadership/Management, Productivity & Work Study, The Economic Structure, Basic Accounting, Engineering Contracts, Technical Report Writing Skills

Motor Vehicle Engineering I	Engine outlay and cycles, cylinder head and valves, cylinder block, crankshafts, piston, rings and connecting rods, lubrication circuit, Cooling system, Fuel system, Starting circuit, Ignition circuit, Gearboxes, Clutch, Differentials, Body structure, Suspension, Braking systems, Tyres
Mechanical Manufacturing Engineering II	Manufacturing Overview, Safety &Work holding devices, Quality standards, Measurement and Tolerances, Metal joining methods, non –traditional Machining, Bulk Metal Deformation, Powder Metallurgy, Plastic Moulding processes
Mechanical Manufacturing Engineering III	Automation and Control Technologies, Material Handling Systems and Identification Technologies, Computer Numerical Control of Machines (CNC), Manufacturing Operations and Production Concepts, Rapid Prototyping, Flexible Manufacturing Systems (FMS) and Assembly Lines, Industrial Robotics, CAD/CAM,
Electrotechnology II	A.C voltage generation, electrical measurements, AC circuits, Power in AC circuits, Resonance in AC circuit, Complex numbers Three phase system, Transformer, DC current machines and motors

5.4 Qualification name: Advanced Diploma in Mechanical Engineering (ADMECHEN)

SAQA Qualification ID : 119525
CESM Code 081501
NQF Level : 7
SAQA Credits : Minimum 120

Rationale for the Qualification

The Engineering profession contributes to the technological, socio-economic, built environment and environmental infrastructure of the country, facilitating socio-economic growth and sustainability. The Advanced Diploma in Engineering Technology in Mechanical Engineering is primarily vocational, or industry oriented, characterized by underpinning theoretical knowledge and general principles and the application thereof to real situations or technology transfer. The qualification provides students with a sound knowledge base in a field of Mechanical Engineering in response to the needs of the community, as well as local, regional, and national industry by producing competent graduates.

A range of additional interventions are offered to students who are accepted in this programme. Such interventions include counselling and mentorship programmes. The Advanced Diploma programme has been a response to the well-known inequalities in South African society and to cater for varying levels of student preparedness. It ensures that sufficient support is provided during the initial years of study while guaranteeing expected graduate attributes.

The Advanced Diploma programme closes the gaps and disparities in students' educational and life experience so that they can be better equipped to contribute the economy. It also provides students with broad educational and life skills, including Mathematics, mechanical engineering subject specific knowledge. While students are mostly tutored

separately in small groups, they undertake their studies and lectures as integral members of the Advanced Diploma student group.

The Advanced Diploma programme in Mechanical Engineering is designed in such a way that after completing the programme, a student can progress to a bachelor's in engineering technology Honours programme.

Statement of Purpose

The Advanced Diploma in Mechanical Engineering is intended for mechanical engineering practitioners who, on achieving this qualification, will be able to apply management, analytical and practical engineering techniques, and knowledge to conduct operations and solve problems in a mechanical engineering working environment in the areas of design, manufacturing, maintenance, environmental engineering and automation and control.

The Advanced Diploma in Mechanical Engineering is aligned with ECSA prescribed standards, and the graduate must be able to demonstrate competence in the Graduate Attributes (GAs) 1 to 11.

The graduate attributes are designed to meet the educational requirement towards registration as a Candidate or Professional Engineering Technician with the Engineering Council of South Africa and acceptance as a candidate to write the examinations for Certificated Engineers.

ECSA Graduate Attributes

The graduate attributes defined below are stated generically and may be assessed invarious engineering disciplinary or cross-disciplinary contexts in a provider-based or simulated practice environment.

General Range Statement: The competencies defined in the eleven graduate attributes may be demonstrated in a university-based, simulated workplace context. Competencies stated generically may be assessed in various engineering disciplinary or cross-disciplinary contexts.

Graduate Attribute 1: Problem solving

Identify, formulate, analyze and solve broadly-defined engineering problems

Graduate Attribute 2: Application of scientific and engineering knowledge

Apply knowledge of mathematics, natural sciences, engineering fundamentals and an engineering speciality to solve broadly-
defined engineering problems.

Range Statement: Mathematics, natural science and engineering sciences are applied in formal analysis and modelling of engineering situations, and for reasoning about and conceptualizing engineering problems.

Graduate Attribute 3: Engineering design

Perform creative, procedural, and non-procedural design and synthesis of components,systems, engineering works, products or processes.

Range Statement: Design problems used in exit-level assessment must conform to thedefinition of a broadly-defined engineering problem.

1. A major design problem should be used to provide evidence.
2. The selection of components, systems, engineering works, products or processes tobe designed are dependent on the discipline or practice area.

Graduate Attribute 4: Investigations, experiments, and data analysis

Demonstrate competence to design and conduct investigations and experiments.

Range Statement: The balance of investigation and experiment should be appropriate to the discipline. Research methodology is to be applied in research or an investigation where the student engages with selected knowledge in the research literature of the discipline.

Note: An investigation differs from a design in that the objective is to produce knowledgeand understanding of a phenomenon and a recommended course of action rather than specifying how an artifact could be produced.

Graduate Attribute 5: Engineering methods, skills, and tools, including informationtechnology

Demonstrate competence to use appropriate engineering methods, skills and tools, including those based on information technology.

Range Statement: A range of methods, skills, and tools appropriate to the disciplinarydesignation of the program including:

1. Discipline-specific tools, processes or procedures;
2. Computer packages for computation, modelling, simulation, and information handling;
3. Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork.

Graduate Attribute 6: Professional and technical communication

Demonstrate competence to communicate effectively, both orally and in writing, with engineering audiences and the community at large.

Range Statement: Material to be communicated is in an academic or simulated professionalcontext.

1. Audiences range from engineering peers, management, and lay persons, using appropriate academic or professional discourse.
2. Written reports range from short (300-1000 words plus tables diagrams) to long (10 000 to 15 000 words plus tables, diagrams, and appendices), covering material at exit-level.
3. Methods of providing information include the conventional methods of the discipline, for example engineering drawings, as well as subject- specific methods

Graduate Attribute 7: Sustainability and impact of engineering activity

Demonstrate critical awareness of the sustainability and impact of engineering activity on thesocial, industrial, and physical environment.

Range Statement: The combination of social, workplace (industrial) and physicalenvironmental factors must be appropriate to the discipline or other designation of the qualification. Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: health, safety and environmental protection; risk assessment and management and the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

Graduate Attribute 8: Individual, team and multidisciplinary working

Demonstrate competence to work effectively as an individual, in teams and in multidisciplinary environments.

Range Statement: Multidisciplinary tasks require co-operation across at least one disciplinary boundary. Co-

operating disciplines may be engineering disciplines with different fundamental bases other than that of the programme or may be outside engineering.

Graduate Attribute 9: Independent learning ability
Demonstrate competence to engage in independent learning through well-developed learning skills.

Range Statement: Operate independently in complex, ill-defined contexts requiring personal responsibility and initiative, accurately self-evaluate and take responsibility forlearning requirements; be aware of social and ethical implications of applying knowledge in particular contexts.

Graduate Attribute 10: Engineering professionalism
Demonstrate critical awareness of the need to act professionally and ethically and to exercise judgment and take responsibility within own limits of competence.

Range Statement: Evidence includes case studies typical of engineering practice situations in which the graduate is likely to participate. Ethics and the professional responsibility of an engineer and the contextual knowledge specified in the range statement of Graduate Attribute 7 is generally applicable here.

Graduate Attribute 11: Engineering management
Demonstrate knowledge and understanding of engineering management principles and economic decision-making.

Range Statement: Basic techniques from economics, business management; project management applied to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Admission Requirements
The admission to the proposed programme is subject to the MUT's general academic admission rules and the specific requirements of the Faculty of Engineering. In addition, students must be in possession of:

- National Diploma in Mechanical Engineering (NQF Level 6)
- Diploma in Mechanical Engineering (NQF Level 6)
- An appropriate National Diploma in Mechanical Engineering equivalent to NQF Level 6
- A cognate qualification in mechanical engineering equivalent to NQF level 6 – foreign qualifications approved by SAQA

- ***Please note, the intake of new students only takes place in the first semester.***

Duration of Study
The minimum study period for the Advanced Diploma in Mechanical Engineering is one-year full time or two years part time.

Curriculum Compilation

The curriculum compilation for Advanced Diploma in Mechanical Engineering is as follows:

SUBJECT CODE	MODULE TITLE	S1/S2 /Y	NQF LEVEL	ASSESSMENTS E/C	CREDITS	COMPULSORY/ ELECTIVE	Pre-requisites
DEPR 470	Design Project IV	Y	7	Continuous	28	C	
MTHM 471	Mathematics IV,	S1	7	Examination	12	C	
THER 471	Thermodynamics IV,	S1	7	Examination	12	C	
FLUM 471	Fluids IV,	S1	7	Examination	12	C	
MEVI 471	Mechanical vibration,	S1	7	Examination	12	C	
ENPM 471	Engineering Business and Project management	S1	7	Examination	8	C	
TURB 472	Turbomachinery,	S2	7	Examination	12	C	Fluid Mechanics IV
STAN 472	Stress Analysis,	S2	7	Examination	12	C	
AUCO 472	Automatic Control	S2	7	Examination	12	C	
RACO 472	Refrigeration and air conditioning	S2	7	Examination	12	C	Thermodynamics IV
EENG 472	Environmental engineering	S2	7	Examination	12	C	

Examination Regulations

Refer to the General Handbook Rule: G22.

i. **Assessments**

A candidate will undergo two distinct assessments in the Advanced diploma programme: academic assessment and graduate attributes assessment.

ii. **Pass Requirements**

To pass a subject the candidate must obtain a final mark of 50% or more in the academic assessment and must satisfy the requirements of the graduate attribute development and/ or assessment concurrently.

iii. **Practicals**

The attendance of all practical classes is compulsory. Failure to attend practicals will result in the candidate not obtaining a course mark for that subject.

COURSE CURRICULUM

Subject Code	Subject includes
Annual	
	The Literature Review; Design Project Methodology; Design Project Calculations; Results and Discussion; Design Project / Manufacturing drawings and Formatting and Formalities
Semester 1	
Mathematics IV	Multiple Integrals; Partial Differential Equations; Vector Calculus
Thermodynamics IV	One Dimensional Steady State Heat Conduction; Multi-dimensional Steady State Heat Conduction; Unsteady State Heat Conduction; Convection; Heat Exchangers; Boiling and Condensation; Radiation Heat Transfer and Mass Transfer
Fluid IV	Flow in Pipe Networks; Boundary Layers; External flow over bodies and Fluid Friction; Dimensional Analysis and Similarity; Compressible Flow
Mechanical Vibration	• Single degree of freedom of systems (SDOF): Free Vibration; Forced Vibration; Application of forced SDOF Systems

	• Multi degree of freedom of systems (MDOF)
Eng. Business & Project Management	Engineering Project Management; Project Life Cycle and Phases; Project Planning and Scheduling; Project Costing; Organizational Structures; Entrepreneurship; Marketing Plan; Organizational and financial Plan; Business Transportation and Logistics
Semester 2	
Refrigeration & Air-conditioning	Heat Transfer; Refrigeration and air conditioning applications; Cycle Diagrams; Multi-Stage Vapour Compression Refrigeration Systems; Vapour Absorption Refrigeration Systems; Refrigeration Plant Components; Psychometrics; Air conditioning systems; Air conditioning equipment, components, and controls; Heat load calculations.
Turbo Machines	Basic Concepts of Turbo Machines; Basic Equations and dimensional analysis; Centrifugal compressors and fans; Axial flow compressors and fans; Axial flow steam and gas turbines; Radial flow gas turbines.
Stress Analysis	Mechanical Properties of Metals; Cracking in Metals; Fracture Mechanics; Finite Element Method (FEM) and Finite Element Analysis (FEA)
Automatic Control	Principles of control systems; Control Loop Block Diagrams; Two Position and PID Control Systems (Controllers; Actuators; Sensors & Programming).
Environmental Engineering	Industry Approaches to Waste Management; Cost of Environmental Management; Environmental Risk Assessment; Occupational Health and Safety Act 85 of 1993 and Regulations

IMPORTANT NOTICE

The department rules must be read in conjunction with the Mangosuthu University of Technology's General Handbook Rules

INDEMNITY CLAUSE

Mangosuthu University of Technology is not liable to the learner or any third party for any demands, loss of life or amenities caused in whatever manner to the learner at the workplace where the Work Integrated Learning takes place. Despite the aforementioned, it is the responsibility of the learner to inform Mangosuthu University of Technology in writing of an unsafe or unhealthy conditions in the workplace where the student is receiving the training. Whilst every effort will be made to help students in securing placement for Work Integrated Learning the University does not guarantee such placements.