MUT

MANGOSUTHU
UNIVERSITY OF TECHNOLOGY

FACULTY OF **NATURAL SCIENCES**

2024

shape and own the future

FACULTY

OF

NATURAL SCIENCES

PROSPECTUS

2024

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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:

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1.1 DEPARTMENT OF AGRICULTURE

Qualification **SAQA ID:** 72283
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. 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 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 timetable, 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:** 72283
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

- 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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- 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 timetables are handed out on the first day of lectures.
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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 timetable, 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.

- **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:** 72284
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.
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D.3 Class attendance

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- 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:** 72284
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.
- 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 timetables 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.

1.5 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

2.1. Bachelor of Health Sciences: Medical Laboratory Science

2.1.1. Bachelor of Health Sciences: Medical Laboratory Science

HEQSF Qualification Type: 68 SAQA Qualification ID: 97931

CESM Code: 0907 SAQA Credits: 514

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 in order to foster good business management and entrepreneurship skills. A distinguishing feature of this programme is the development of 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**
BHAP100A	Human Anatomy, Physiology and Disease I	12	S1/Y1	*	5	
BIMSC01 1. BHEC101 2. BHEP101 3. BBIO102	Integrative Medical Sciences I (3 modules) 1. Health Chemistry 2. Health Physics 3. Biostatistics	 10 10 10	 S1/Y1 S1/Y1 S2/Y1	 * * *	 5 5 5	
BIME100	Introduction to Medical Laboratory Sciences I	18	S1&S2/Y 1	*	5	
BHAP100B	Human Anatomy, Physiology and Disease II	12	S2/Y1	*	5	BHAP100A
BCEB102	Cell Biology I	12	S2/Y1	*	5	
BIMM102	Immunology I	12	S2/Y1	*	5	
BECS101	English Communication Skills I	8	S1/Y1	*	5	
BCCH200 1. BCCH201 2. BCCH202	Clinical Chemistry II (2 modules) Clinical Chemistry IIA Clinical Chemistry IIB	 12 12	 S1/Y2 S2/Y2	 * *	 6 6	 BCEB102 BHEC101 BHAP100B BIME100 BCCH201
BMMI200 1. BMMI201 2. BMMI202	Medical Microbiology II (2 modules) Medical Microbiology IIA Medical Microbiology IIB	 12 12	 S1/Y2 S2/Y2	 * *	 6 6	 BHAP100B 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	BHAP100B BIME100
BCTO202	Cytology II	12	S1/Y2	*	6	BHAP100B BIME100

BCMB202	Molecular Biology II	12	S2/Y2			BCEB102 BIME100
BHAE202	Haematology 11	12	S2/y2		6	BIMH201
BITS100	Computer Skills II	16	S1 & S2/Y2	*	6	None
BCCH301	Clinical Chemistry III	18	Sl/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
BREM302A	Research Methods III	8	S1/Y3	*	7	BBIO102
BREM302B	Research Methods III	8	S2/Y3	*	7	BREM302A
BINPA302	Integrated Pathophysiology	16	S2/Y3	*	7	BHAP100B
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 (*Immunohaematology)*				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.

1

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.

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	ANCP 102
ANCP102	Analytical Chemistry: Practical II	S2	12	120	Summative / Formative	5	ANCH101 CHMS101 MATH101	ANCP 102
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	ANCH 202
ANCH202	Analytical Chemistry III	S4	24	240	Summative / Formative	6	ANCH102	ANCP 202
CHQA202	Chemical Quality Assurance	S4	12	120	Summative / Formative	6		
CHER000	Work Readiness Programme	S4				6	ANCH102 ANCP102	ANCH 202 ANCP 202
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	

3.1.4 **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**
CESM Code 010101 **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

[1] 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)

[2] 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)

[3] 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	NQF Level	Pre-requisites	Co-requisites	SAQA Credits
AGEX 101	Agriculture: Extension IA	C	S1	2 tests, practical reports, project report(s), final examination	6			10
BASE 101	Basic English	C	Y1	4 tests, assignments, final examination	6			10
BASC 101	Basic Science IA	C	S1	2 tests, assignment s, final examination	6			10
HAHY101	Health and Hygiene IA	C	S1	2 tests & assignments, practical test(s), final examination	6			10
HUEC101	Human Ecology IA	C	S1	2 tests, assignments, final examination	6			10
SKIL 101	Computer Skills 1A	C	S1	Continuous Assessment	6			10
AGEX102	Agriculture: Extension IB	C	S2	2 tests, assignment, practical reports, final examination	6	AGEX 101		10
BASC102	Basic Science IB	C	S2	2 tests, assignments, practical reports, final examination	6	BASC10 1		10
HAHY102	Health and Hygiene IB	C	S2	2 tests, assignments, final examination	6	HAHYA 011		12
HUEC102	Human Ecology IB	C	S2	2 tests, assignments, final examination	6	HECA1 01		10
COMK102	Computer Skills 1B	C	S2	Continuous Assessment	6	SIKL101		10
ARCE201	Agriculture: Extension IIA	C	S3	4 tests, assignment, practical reports, final examination	6	AGEX1 02		15
BAFO201	Basic Food I	C	S3	2 tests, assignments, practical reports, practical examination, final examination	6	BASC10 2		10
BASS 201	Basic Skills IA	C	S3	2 tests, assignments, project (s) reports, practical examination, final examination	6			10
EXTE 201	Extension IA	C	S3	2 tests, assignments, final examination	6			12
HUEC201	Human Ecology IIA	C	S3	2 tests, assignments, final examination	6	HUEC1 02		15
ARCE202	Agriculture: Extension IIB	C	S4	4 tests, assignments, practical reports, final examination	6	ARCE2 01		15

BNUT202	Basic Nutrition I	C	S4	2 tests; assignments, practical examination, final examination	6	BASC102		10
BASS 202	Basic Skills IB	C	S4	2 tests, assignments, practical examination, final examination	6	BASS201		10
EXTE 202	Extension IB	C	S4	2 tests, assignments, final examination	6	EXTE201		12
HUEC202	Human Ecology IIB	C	S4	2 tests, assignments, final examination	6	HUEC201		15
ARCE301	Agriculture: Extension IIIA	C	S5	4 tests, assignments, practical reports, final examination	6	ARCE202		15
BAFO301	Basic Food II	C	S5	2 tests, assignments, practical reports, practical examination, final examination	6	BAFO201		10
EXTE 301	Extension IIA	C	S5	2 tests, assignments, final examination	6	EXTE202		12
HUEC301	Human Ecology IIIA	C	S5	2 tests, assignments, final examination	6	HUEC202		15
ARCE301	Agriculture: Extension IIIB	C	S6	3 tests, assignments, practical reports, final examination	6	ARCE301		15
BNUT302	Basic Nutrition II	C	S6	2 tests, assignments, practical reports, final examination	6	BNUT202		10
EXTE 302	Extension IIB	C	S6	2 tests, assignments, final examination	6	EXTE301		12
HUEC302	Human Ecology IIIB	C	S6	2 tests, assignments, project report, final examination	6	HUEC301		15
LAPL 302	Land use Planning III	C	S6	2 tests, assignments, Land use planning projects **(WIL project)**	6	ARCE301;	ARCE301 EXTE302 HUEC302	20

4.8 Examination Regulations

Refer to Part One: Rule 22.

4.9 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 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.

4.10 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.

4.11 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.

4.12 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 Community Development	Diploma in Agricultural Extension and Community Development/ 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	Minimum duration: One year	The programme will provide opportunities to Graduates to work in various Agricultural Industries, Agro-processing Industries, Food Processing Industries, Public Sector, relevant Research Institutes, etc. as Extension Officers/ Agricultural Advisors/ Community Development Officers/ Technicians/ Farm managers/ Farmer/Researchers, etc.	**SAQA Credits**: 120 **NQF Level**: 07 **Mode of delivery**: Contact **Intake for the 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

5.1.1 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.

5.2.2 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 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.

5.2.3 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.

5.2.4 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

5.2.5 **Duration of Study**

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

5.2.6 **Curriculum compilation**

BSc in Environmental Health module distribution over the study period:

Year 1						
N°	**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						
N°	**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						
N°	**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	Y3
9	Waste Management	14	7	BSWAS03	NONE	S2
10	Bachelor of Science Work Integrated Learning (WIL)	11,2	7	BSWIL03	NONE	Y3

Year 4						
N°	**Module Description**	**SAQA Credits**	**NQF**	**Module Code**	**Prerequisite**	**Year/ Semester**
1	Disaster Management	9	8	BSDM004	NONE	S1
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	S1
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

5.2.7 Work Integrated Learning (WIL)

A total of 60.1 credits constitutes 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			

5.2.8 **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.

All semester modules in the final year are to be done only in semester 1.

5.2.9 **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 — 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:						
ISYS100	Information Systems I	Y1	5	30	EX	
DSOF100	Development Software I	Y1	5	30	EX	
TPRO100	Technical Programming I	Y1	5	30	EX	
SSOF100	System Software I	Y1	5	30	EX	
Elective Group A: Software Development: [INSDIP]						
ISYS200	Information Systems II	Y2	6	30	EX	ISYS100
ITSL200	Information Technology Skills I	Y2	5	30	EX	
DSOF200	Development Software II	Y2	6	30	EX	DSOF100 ISYS100 SSOF100
TPRO200	Technical Programming II	Y2	6	30	EX	TPRO100 DSOF100
ISYS300	Information Systems III	Y3	6	30	CA	ISYS200
DSOF300	Development Software III	Y3	6	30	CA	DSOF200 ISYS200
ITNP300	Internet Programming II	Y3	6	30	CA	
IDSE300	Industry Exposure III	Y3	6	30	CA	DSOF200 ISYS200 ITSL200 TPRO200
Elective Group B: Communication Networks: [INCDIP]						
CNET200	Communication Networks II	Y2	6	30	EX	SSOF100 TPRO100
IMTS200	Information Technology Skills I	Y2	5	30	EX	
DTRS200	Distributed Systems II	Y2	6	30	EX	ISYS100 DSOF100
ITCS200	IT Electronics II	Y2	6	30	EX	DSOF100 TPRO100
CNET300	Communication Networks III	Y3	6	30	CA	CNET200
DTRS300	Distributed Systems III	Y3	6	30	CA	DTRS200
ITCS300	IT Electronics III	Y3	6	30	CA	ITCS200
IEXP300	Industry Exposure III	Y3	6	30	CA	CNET200 DTRS200 ITCS200 IMTS200

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 indicate 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, Development Software 1 and Systems Software 1. Additionally, students may only progress from one year of study to the next if the following progression rules are satisfied:

Level 1 to Level 2: In order to register for any level 2 subject, the student must have passed at least 50% of the subjects at level 1 (i.e. having a minimum of 60 credits).
Level 2 to Level 3: In order to register for any level 3 subject, the student must have passed all level 1 subjects and passed at least 50% of the subjects at level 2 (i.e. having a minimum of 180 credits).
Finally, a student must have passed all other subjects before they can register for the subject Industry Exposure 3.

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 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						
COFU000	Computing Fundamentals	Y1	5	30	EX	
IPSP000	Introduction to Problem-Solving and Programming Concepts	Y1	5	30	EX	
COMA000	Computer Maths	Y1	5	30	EX	
ENLS000	English Language Skills	Y1	5	30	EX	
Year 2						
IFSY100	Information Systems I	Y2	5	30	EX	COFU000
DVSF100	Development Software I	Y2	5	30	EX	IPSP000 COMA000
TLPR100	Technical Programming I	Y2	5	30	EX	IPSP000 COMA000
SYST100	System Software I	Y2	5	30	EX	COFU000 ENLS000

Year 3 and 4 - Elective Group A: Software Development: [INSECP]						
IFSY200	Information Systems II	Y3	6	30	EX	IFSY100
IFTS200	Information Technology Skills I	Y3	5	30	EX	
DVSF200	Development Software II	Y3	6	30	EX	DVSF100 IFSY100 SYST100
TLPR200	Technical Programming II	Y3	6	30	EX	TLPR100 DVSF100
IFSY300	Information Systems III	Y4	6	30	CA	IFSY200
DVSF300	Development Software III	Y4	6	30	CA	DVSF200 IFSY200
ITPR300	Internet Programming II	Y4	6	30	CA	
INXP300	Industry Exposure III	Y4	6	30	CA	DVSF200 IFSY100 IFTS200 TLPR200
Year 3 and 4 - Elective Group B: Communication Networks: [INCECP]						
CONE200	Communication Networks II	Y3	6	30	EX	SYST100 TLPR100
ITSK200	Information Technology Skills I	Y3	5	30	EX	
DISY200	Distributed Systems II	Y3	6	30	EX	IFSY100 DVSF100
ITEL200	IT Electronics II	Y3	6	30	EX	DVSF100 TLPR100
CONE300	Communication Networks III	Y4	6	30	CA	CONE200
DISY300	Distributed Systems III	Y4	6	30	CA	DISY200
ITEL300	IT Electronics III	Y4	6	30	CA	ITEL300
INEX300	Industry Exposure III	Y4	6	30	CA	CONE200 DISY200 ITEL200 ITSK200

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 indicate 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, Development Software 1 and Systems Software 1.

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

Level 1 to Level 2: In order to register for any level 2 subject, the student must have passed Computing Fundamentals, Introduction to Programming, and one other subject at level 1 (i.e., having a minimum of 90 credits).

Level 2 to Level 3: In order to register for any level 3 subject, the student must have passed all level 1 subjects and passed at least 50% of the subjects at level 2 (i.e., having a minimum of 180 credits).

Level 3 to Level 4: In order to progress to level 4, the student must pass all level 1 and level 2 subjects, and pass at least 50% of the subjects registered at level 3 (i.e., have a minimum of 300 credits).

Finally, a student must have passed all other subjects before they can register for the subject Industry Exposure 3.

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 Networks 2 is to expose the students to routing and switching networking technologies, computer networks configuration and implementation of advanced techniques for configured networks. It further exposes the student to the different networking protocols and principles used to scale, manage, diagnose and securing complex computer networks.

COMMUNICATION NETWORKS 3 **CNET300 | CONE300**

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

The purpose of Communication Networks 3 is to provide students with a comprehensive understanding of enterprise networking concepts, security principles, and automation techniques.

This course is designed to help students develop the knowledge and skills needed to design, implement, and manage secure enterprise networks. The course also emphasizes the importance of security in enterprise networks. The goal of this module is to provide students with a holistic understanding of enterprise networking that goes beyond just technical knowledge.

COMPUTER MATHEMATICS I **COMA000**

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 provide individuals with a basic understanding of what computers are, how they work, and how they can be used in various settings. The module typically covers topics such as computer hardware and software, operating systems, computer networks, and an introduction to Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and Microsoft Access. The primary goal of this module is to familiarize students with the basics of using computers, so they can effectively and efficiently navigate digital technology in their personal and professional lives. This module also includes hands-on training and exercises to build practical skills, such as how to use a keyboard and mouse, how to browse the internet, and how to create and manage files.

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. Students are also introduced to HTML, CSS, and JavaScript to implement a limited set of the designed solutions. They also introduced to basic APP development making use of a drag-and-drop environment.

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

System Development Project:

Students work in groups to design and implement a solution to a real-world problem. The application of knowledge and skills learnt throughout the programme, culminates in the development of a fully functional software Application project. Students will experience the process of an agile systems development methodology using Scrum (iterative incremental development) in order to formulate a scenario, analyze, design and develop the application system which must conform to industry or societal requirements.

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 module aims to teach students how to analyze and design complex systems. The course covers topics such as system modeling, requirements gathering, system design, implementation, testing, and maintenance. Students will learn how to use various tools and techniques to analyze existing systems and design new ones that meet the needs of stakeholders. The course covers topics such as database architecture, data modeling, database normalization, database management systems, SQL programming, and data manipulation. Students will learn how to design databases that are efficient, scalable, and secure, and how to use SQL to manipulate data and extract meaningful insights. The course aims to equip students with the skills and knowledge necessary to become successful systems analysts and designers in various industries.

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 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.

IT Electronics II course covers the fundamental concepts and principles of IoT technology and digital systems concepts including hardware, software, network components and electrical components. The course is designed to provide a comprehensive understanding of IoT, its applications, and the challenges involved in implementing IoT systems at large.
The course often begins with an overview of IoT, its background, and its impact on various industries. The course then goes in-depth on the different parts of an IoT systems. The design and construction of an IoT system, as well as the choice of the best hardware, software, and communication protocols, will be taught to the students. The course will also help students to understand how to analyse data generated by IoT systems, and how to apply machine learning and data analytics techniques to derive insights and make informed decisions. Additionally, the course will discuss the challenges of IoT, such as security, privacy, and ethical concerns. Students will learn about the best practices and techniques for securing IoT systems, and how to mitigate the risks associated with IoT deployments.

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 provide an overview of computer networks, their components, and their functions. The course covers basic network concepts such as network topology, protocols, and architecture. It also introduces networking hardware devices such as routers, switches, and hubs, as well as the OSI and TCP/IP network models. Students in this course will perform basic configuration of network devices and gain a fundamental understanding of how networks work and how data is transmitted across them.

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 **TPRO200 | 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 design java windows forms from scratch. They are exposed to NetBeans, where they design Java forms more rapidly using NetBeans drag-and-drop tools. In addition, students learn to develop a Database application, where the Java Apache 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	Information and Project Management 4	IPMA400	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	ICT Management 4	ICTM400	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 assessment 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)

Programme Code: NATDIP (NQF Level: 6)

SAQA Credits: Minimum 360

7.1.1 Admission requirements

Selection criteria for admission to the Diploma: Nature Conservation are based on both academic prowess and field experience.

i) National Senior Certificate with minimum rating codes:
Life Sciences (5)
English Home Language (5)
or English First Additional Language (5)

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.

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 **Class and practical attendance**

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. A class attendance of at least 80% is required to gain examination entry.

7.1.11 **Work integrated learning (WIL)**

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)**
Programme Code: ADNAT (NQF Level: 7)
Minimum Credits: 120

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.

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 videoconferencing, 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 can 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 always applied within the conservation programme.

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 **Class and practical attendance**

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. A class attendance of at least 80% is required to gain examination entry.

7.3 **Post Graduate Diploma in Nature Conservation (SAQA Qualification ID: 93614)**
Programme Code: POGNAT (NQF Level: 8)
Minimum Credits: 120

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.

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 videoconferencing, 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 can 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 Class and practical attendance

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. A class attendance of at least 80% is required to gain examination entry.

7.4. **Master of Nature Conservation (SAQA Qualification ID: 98830)**
Programme Code: MATNAT (NQF Level 9)

Minimum Credits: 180

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: **Head of Department- Nature Conservation, P O Box 12363, Jacobs, 4026; 031 819 9440.**

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 videoconferencing, 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, practicals, exam	9	None	None	20
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 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.

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 **Class and practical attendance**

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. A class attendance of at least 80% is required to gain examination entry.

7.5. **Bachelor of Applied Science in Nature Conservation (SAQA Qualification ID:11126**
Programme Code: BASNAT (NQF Level: 7
Minimum Credits: 360

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	C	S5	Integrated	7	TERP021	15

	VEGM031						
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 censusing.
- 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 **Class and practical attendance**
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. A class attendance of at least 80% is required to gain examination entry.

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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