NELSON MANDELA
METROPOLITAN UNIVERSITY

FACULTY OF SCIENCE

PROSPECTUS 2012

Enquiries:

Faculty of Science
P O Box 77000
NELSON MANDELA METROPOLITAN UNIVERSITY
PORT ELIZABETH
6031

Contact information

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Faculty Administrator (South Campus)
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Student Information (IVR): +27 (0)41 504 9000

NB: Your **student number** must appear on all correspondence.
Correspondence must be directed to **The Registrar**.

NB:

Although the information contained in this Prospectus has been compiled as accurately as possible, the Council and the Senate of the NMMU accept no responsibility for any errors or omissions. This Prospectus is applicable only to the 2012 academic year. Information on syllabus and module outcomes is available on the NMMU website.

ADDRESS OF THE UNIVERSITY

Admissions

The Admissions Section
PO Box 77000
Nelson Mandela Metropolitan University
PORT ELIZABETH
6031

Telephone: +27 (0)41 504 3911

Finance

The Finance Department
PO Box 77000
Nelson Mandela Metropolitan University
PORT ELIZABETH
6031

Student Accounts
Telephone: +27 (0)41 504 4229
+27 (0)41 504 3090
Financial Aid
Telephone: +27 (0)41 504 2550

Examinations & Graduation

The Examinations Section
PO Box 77000
Nelson Mandela Metropolitan University
PORT ELIZABETH
6031

Telephone numbers
North Campus: +27 (0)41 504 3107
South Campus: +27 (0)41 504 1239
Missionvale Campus: +27 (0)41 504 2709

General

The Registrar
PO Box 77000
Nelson Mandela Metropolitan University
PORT ELIZABETH
6031

PE Campuses +27 (0)41 504 1111
George Campuses +27 (0)44 801 5111
Student enquiries +27 (0)41 504 9000

e-mail: info@nmmu.ac.za
Website: http://www.nmmu.ac.za

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1 VISION AND MISSION

The Faculty of Science is one of seven faculties at the NMMU. It is well established with highly-motivated academic staff, together with well-qualified technical and other support staff.

The Faculty offers the following qualification types: National Higher Certificate, National Diploma, Bachelor of Technology/Baccalaureus Technologiae, Bachelor of Commerce/Baccalaureus Commercii, Bachelor of Science/Baccalaureus Scientiae, Bachelor of Science in Information Systems/Baccalaureus Scientiae in Informaticae Systems, Bachelor of Commerce Honours/Baccalaureus Commercii Honores, Bachelor of Science Honours/Baccalaureus Scientiae Honores, Master of Technology/Magister Technologiae, Master of Science/Magister Scientiae, Doctor of Technology/Doctor Technologiae, Doctor of Philosophy/Philosophiae Doctor.

The qualifications of the Faculty are designed to give students an adequate grounding in the fundamental principles of their chosen fields of study. The practical nature of these qualifications is reflected in the significant number of hours which students spend in modern, well-equipped laboratories. The students are prepared for interesting and rewarding careers. Short qualifications are conducted in the NMMU Continuing Education Programme to keep those in industry at the cutting edge of technology.

Staff in the Faculty has gained recognition throughout South Africa and internationally while students are sought after across the country because of the high level of training they receive.

2 STAFF

OFFICE OF THE DEAN

Executive Dean	Prof A W R Leitch BSc, BSc Hons, MSc, PhD (UPE)
Secretary	Mrs A Beer

FACULTY ADMINISTRATION

Senior Manager: Faculty Administration	Ms N J Nxati N Dip Com Adm (PET), B Tech Com Adm (PET), B Tech HRM (NMMU)

Summerstrand South Campus:

Manager: Faculty Administration	Ms L Roodt BCom (NMMU)
Faculty Administrators	Ms F Heilbron
	Ms L Koen

Missionvale Campus:

Faculty Administrator	Ms M Mazinyo BA (UPE)

SCHOOLS/DEPARTMENTS

SCHOOL OF BIOMOLECULAR AND CHEMICAL SCIENCES

Department of Biochemistry and Microbiology

Summerstrand South Campus:

Professors	Prof C L Frost BSc, BSc (Hons), MSc, PhD (UPE)
	Prof V Oosthuizen BSc, BSc (Hons), MSc, PhD (UPE)
	Prof S Roux BSc, BSc (Hons), MSc, HED (PU for CHE), DMedSci (Pretoria)
	Prof M Van de Venter BSc, BSc (Hons), MSc, PhD (UPE)
Senior Lecturers	Dr G Dealtry BSc (Hons) (Newcastle), MSc (Birmingham), PhD (Essex)
	Dr T G Downing BSc, BSc (Hons), MSc (Rhodes), PhD (Stellenbosch)
	Dr B M Somai BSc, BSc (Hons), MSc (UDW), PhD (South Carolina)
Lecturers	Dr H Davids BSc, BSc (Hons), MSc, PhD (UPE)
	Dr S Govender BSc, BSc (Hons), MSc (UDW), PhD (Stellenbosch)
Missionvale Campus	Dr A K Knight BSc (PU for CHE), BSc (Hons), MSc, PhD (UP), HED (Stellenbosch)
Honorary Professor	Prof L Graf Doctor Degree (EötvösLorand Univ.), PhD, DSc (Hungarian Academy of Sciences)

Department of Chemistry

Summerstrand North Campus:

Professor	Prof B Zeelie BSc, BSc Hons, MSc, PhD (UPE)
Senior Lecturers	Mr R D Venter BSc (Hons) (Rhodes), MSACI
	Dr N Vorster BSc, BSc (Hons), MSc, PhD (UPE)
Lecturers	Ms M F C Ghenne NH Dip Chem, B Tech Quality (PET)
	Ms Noah M Tech Chem (PET)
	Ms L E Roodt N Dip Anal Chem (PET), Int Cert Med Tech, B Tech PSE (PET), M Tech Ed (PET)
	Dr G Rubidge D Tech Chem (PET)

Summerstrand South Campus:

Professor of Organic Chemistry	Prof C W McCleland BSc, BSc Hons, MSc, PhD (UPE)
Professor of Inorganic Chemistry	Prof T I A Gerber BSc (UPE), MSc (UOFS), PhD (Unisa)
Associate Professor	Prof E Ferg D Tech Chem (PET)
Senior Lecturer	Mr S Gerber MSc (Stell)
Lecturers	Dr A Abrahams PhD (NMMU)
	Dr D Grooff PhD (NMMU)
	Dr B G Hlangothi MSc (Vista), PhD (UJ)
	Mr P Hlangothi MSc (UNIN)
	Dr N Mama PhD (NMMU)

Secretary	Ms H Kendrick

Missionvale Campus:

Lecturers	Mr A Maclean M Tech (PET)
	Ms C Clark BSc (Hons) (UPE)

Department of Textile Science

Honorary Professor and Head of Department	Prof L Hunter BSc (Hons) (Cape Town), MSc, PhD (UPE), CText ATI FTI, occupying the Philip Frame Chair of Textile Technology
Associate Professor	Prof R D Anandjiwala BScText (Gujarat), BText (Baroda), MTech (India Inst of Technology), PhD (Leeds), CText FTI

SCHOOL OF COMPUTER SCIENCE, MATHEMATICS, PHYSICS AND STATISTICS

Department of Computing Sciences

Summerstrand South Campus:

Head of Department	Prof J H Greyling BSc, BSc (Hons), MSc, PhD (UPE), MICSIT
Professors	Prof A P Calitz PhD (UPE), PMCSSA, MICSIT
	Prof J L Wesson BCom, BCom (Hons), MCom, PhD (UPE), MCSSA, MICSIT
Associate Professor	Prof C B Cilliers BSc, BSc (Hons), MSc (UPE), PhD (NMMU), MICSIT
Senior Lecturers	Dr L Barnard BCom (UPE), NHDip (IT), MTech (IT) (PET), PhD (UPE), MICSIT, MCSSA
	Dr N L O Cowley BSc, BSc (Hons), MSc (UPE), PhD (NMMU) BEd, HED (UPE), PMCSSA, MICSIT, PrSciNat
	Dr D Vogts BSc, BSc (Hons), MSc (UPE), PhD (NMMU)
Lecturers	Ms C H Dixie BCom, HDE, BCom (Hons), MSc (UPE)
	Mr M C Du Plessis BSc, BSc (Hons), MSc (NMMU)
	Mr K A Naudé BSc, BSc (Hons) (UPE), MSc (NMMU)
	Mrs J Nel NDip (IT), BTech (IT) (PET), BSc (Hons) (UPE)
	Mrs B M Scholtz BSc, BSc (Hons) (UPE), MSc (NMMU)
	Mrs M Taljaard BSc (UOFS), HDE (Unisa), BSc Hons, MSc (UPE), MCSSA
	Ms L Van der Post BAFA (Cape Town), BA (Hons) (Comp Sci), HDE (UPE), MA (Comp Sci) (NMMU)
Technical – Network Administrator	Mr J RademakersNDip Comp Data Proc, IT (PE Tech)
Technical – Assistant Network Administrator	Mr C Van der Merwe BCom (UPE)

Technical	Mrs H Irvine MSCE (NT 4), MSCE (2000), MSCA (2000), MCT, A+ Technician, Network+ Technician, Microsoft Office User Specialist on Microsoft Excel & Microsoft Word
Secretary	Mrs E Milbourn
Administrative Co-ordinator	Ms C van Onselen
Administrative Assistant	Ms I T Teyise
Lab Assistant	Mrs M Zomba
Administrative Assistant	Mrs D E van der Walt Diploma in Education (PECE), Certificate in Organisation and Work Study (TechnikonPta)

Missionvale Campus:

Lecturers	Mrs A Esterhuyse Certified Instructor: Microsoft Office, Lotus SmartSuite, Novel/Corel WordPerfect Suite
	Ms N Tansley NDip Comp Data Proc, BTech (IT) (PE Tech), MTech (NMMU)
	Mr N Jafta BSc IS (NMMU)
	Mr G Jaftha BSc (NMMU)

2nd Avenue Campus:

Lecturer	Mrs N Moffat NDip Comp Data Proc, BTech IT (PET)

Department of Mathematics and Applied Mathematics

Summerstrand South Campus:

Professors	Prof G L Booth BSc, BSc (Hons), STD (Cape Town), MSc (Rhodes), PhD (Stell)
	Prof H France-Jackson BSc, MSc, PhD (University of Warsaw, Poland)
	Prof N J Groenewald BSc, BSc Hons, MSc (UPE), PhD (Rhodes)
	Prof W A Olivier BSc, BSc Hons, MSc, PhD (UPE)
Associate Professors	Prof J W Gonsalves BSc, BSc (Hons), MSc, PhD (UPE)
	Prof E W Straeuli BSc, BSc (Hons), MSc (UP), D Phil (Zurich)
Senior Lecturers	Mr J J Coetzee BSc, BSc (Hons), MSc (UPE)
	Dr S Juglal B Paed (Arts) UDW, BA (Hons - Maths) UPE, MSc (Maths) UPE, PhD (Maths) NMMU
	Dr J E Maritz BSc Ed (UWC), BSc (Hons) (UPE), MSc (UPE), PhD (UKZN)
Lecturers	Dr P Padayachee BSc (Natal), BSc Hons (Unisa), HED, MEd (Vista), PhD (NMMU)
	Mr Q N Petersen BSc, BSc (Hons), MSc (UPE)
	Mr C J Pretorius BSc, BSc (Hons), MSc (NMMU)
	Mr H Smith, BSc, BSc (Hons), MSc (UPE)
	Miss N Vosloo BSc, BSc (Hons)
	Dr S J Wagner-Welsh BCom, BSc, BSc Hons, MSc (UPE), PhD (NMMU)

	Dr M Walton BCom, BCom (Hons), MCom (UPE), PhD (NMMU)
	Dr M Weigt, BSc, BSc (Hons), MSc (US), PhD (UCT)

Summerstrand North Campus:

Principal Lecturer	Mr M Ackermann BSc, BSc (Hons), MSc (UPE), HDE (Unisa)
Lecturers	Mr J R de Jager BSc, BSc (Hons), MSc (UPE)
	Mr C O Parsons BSc, BSc (Hons), MSc (UPE)
	Mr T E Thelejane BSc, BSc (Hons), MSc (Unitra)

Missionvale Campus:

Lecturers	Mr M A Hendricks STD, BSc (UWC), BSc Hons (Unisa), MEd (Maths) (Rhodes)
	Mrs C Klitsie BA, HED (UPE), BEdHons (NMMU)
	Mrs S Potgieter BA (UPE), HEd (Unisa), BTech (PET), MEd (UPE)
	Mrs L Schoeman BA (UPE), HED (US), BA (Hons) (UPE)

Department of Physics

Summerstrand South Campus:

Professors	Prof J A AEngelbrecht PhD (UPE) MAcad, PrSciNat
	Prof J H Neethling PhD (UPE)
	Prof D Raubenheimer MSc, PhD (UPE), PrSciNat
Associate Professors	Prof J R Botha PhD (UPE)
	Prof E E van Dyk PhD (UPE), PrSciNat
	Prof A Venter MSc, PhD (UPE)
	Prof M C Wagener PhD (UPE)
Senior Lecturers	Dr N G Hashe PhD (NMMU)
	Dr F J Vorster MSc (UPE), PhD (NMMU)
Lecturers	Mr J Jonker MSc (Cape Town)
Secretary	Mrs J Ferreira
	Mrs L Kritzinger
Senior Technician	Vacant
Technician	Mr J B Wessels
Laboratory Technician	Mr E C September

Summerstrand North Campus:

Lecturer	Mr O J Lombard MSc (UPE)
	Mr T Ryan BSc (Hons) (UPE)
Laboratory Assistant	Mrs R Donough

Missionvale Campus:

Lecturer	Mr M C Bacela BSc (Hons) (Vista) (contract)
	Mr I Coopersamy BSc Hons (US), HDE, MEd (Vista), QA (City & Guilds, London)
Laboratory Assistant	Mr L Somdaka

Department of Statistics

Summerstrand South Campus:

Professor	Prof I N Litvine MSc, PhD (Kiev)
Senior Lecturers	Mr J Hugo MSc (UOFS)
	Dr G D Sharp BSc (Hons) (Rhodes), MSc (UPE), PhD (Rhodes)
Lecturers	Mr W J Brettenny MSc (NMMU)
	Mr D G Friskin MCom (UPE)
	Mr L Kepe MSc (Stellenbosch), HDE (Rhodes)
	Mr B J Lubczonok MSc (Rhodes)
	Ms N Mkuzangwe MSc (Rhodes)
	Mr P Swanepoel MCom (NMMU)
Secretary	Ms R Vincent

Missionvale Campus:

Lecturer	Mr J M Simakani MSc (LimburgsUniv Belgium), GradDip (Stat) (Institute of Stats, London), PGDTE (Unisa), CDipAF (ACCA)

2nd Avenue Campus:

Lecturer	Mr H Rossouw BSc, BSc Hons, HOD (UPE), Diploma Datametrie (Unisa)

SCHOOL OF ENVIRONMENTAL SCIENCES

Department of Agriculture and Game Management

Summerstrand North Campus:

Professor	Prof P du P van Niekerk BSc (Agric) (Stell), DPLR, N Dip MgtPrac, D Tech (PET)
Senior Lecturers	Mr P R Celliers MSc (Agric) (UOFS)
	Mr W R van Heerden BSc (Agric) (Hons) (UOFS), MSc (Agric) (Pret), MBL (Unisa)
Lecturers	Mr H I McCarthy NHDT (CivEng) (PET), N Dip (GRM) (NMMU) B Tech (GRM) (NMMU)
	Mr T M Pittaway N Dip (Agric), B Tech (Agric), M Tech (Agric) (PET)

Department of Botany

Summerstrand South Campus:

Professors	Prof J B Adams (Hiscock) PhD (UPE), PrSciNat
	Prof R M Cowling PhD (Cape Town), PriSciNat
Associate Professor	Prof E E Campbell BSc (Stellenbosch), PhD (UPE), PrSciNat
Senior Lecturer	Dr D R du Preez BScHons (Wits), PhD (UPE)
	Dr P T Gama MSc (North Carolina), PhD (NMMU)
Lecturer	Ms P Lithauer BSc, BSc (Hons), HDE (UPE), M Agric (Stellenbosch)

Department of Geosciences

Summerstrand South Campus:

Associate Professors	Prof V Kakembo MSc, PhD (Rhodes)
Principal Lecturer	Dr N L Webb BEd (UPE), MA, PhD (Rhodes), MPhil (Stell), STD (Cape Town)
Senior Lecturer	Dr P Q Siyongwana PhD (UPE)
Lecturers	Mr C R Anderson MSc (UPE)
	Mrs H W Britz NDip Cartography (Cape Town), Unigis (Manchester Metropolitan), MTech Cartography (Cape Town)
	Mr G Brunsdon MSc (NMMU)
	Dr A H de Wit MA (UOFS), DPhil (UPE)
	Mrs L L Williams MA (UPE)

Department of Zoology

Summerstrand South Campus:

Professor	Prof G I H Kerley MSc (Pret), PhD (UPE)
Senior Lecturers	Dr N Mzilikazi PhD (UKZN)
	Dr P A Pistorius PhD (Pret)
	Dr G J Rossouw MSc (Stell), PhD (UPE)
	Dr N A Strydom MSc (UPE), PhD (Rhodes)
	Dr P Nel PhD (UCT)
Secretary	Ms M Myles MPhil (Stell)
Senior Laboratory Technician	Mr P H du Toit BSc (Hons) (UPE)
Laboratory Technician	Mr B Seale
Laboratory Technician	Ms M Hawkins BSc (Hons) (UP)

Missionvale Campus:

Lecturers	Mr M J Potgieter MSc (NMMU)
	Ms C Joubert BSc (Hons) (NMMU)

REGISTERED ENTITIES

Telkom Centre of Excellence

Distributed Multimedia Applications Unit

Head	Prof J L Wesson BCom, BCom (Hons), MCom, PhD (UPE), MCSSA, MICSIT
Vice-Head	Dr N L O Cowley BSc, BSc (Hons), MSc (UPE), PhD (NMMU), BEd, HED (UPE), PMCSSA, MICSIT, PrSciNat
Coordinator	Vacant
Administrative Assistant	Mrs D E van der Walt Diploma in Education (PECE), Certificate in Organisation and Work Study (TechnikonPta)

Optical Fibre Characterisation Unit

Head	Prof AWR Leitch BSc, BSc Hons, MSc, PhD (UPE)
Manager	Dr T Gibbon BSc, BSc Hons (UPE), MSc, PhD (NMMU)

Photovoltaics Unit

Head	Prof E E van Dyk PhD (UPE), PrSciNat

Institute for Chemical Technology

Director	Prof B Zeelie PhD (UPE)

Centre for Energy Research

Director	Prof E E van Dyk, PhD (UPE), PrSciNat

Centre of Expertise in Forecasting

Director	Prof I N Litvine, MSc, PhD (Kiev State Shevchenko University)
Deputy Director	Mr P Swanepoel, BCom, BCom (Hons), MCom (NMMU)

Centre for African Conservation Ecology

Director	Prof G I H Kerley MSc (Pret), PhD (UPE)
Deputy Director	Prof E E Campbell BSc (Stell), PhD (UPE), PrSciNat
Academic Staff	Prof V Kakembo MSc, PhD (Rhodes)
	Dr A F Boshoff BSc (Hons) (Pret), Phd (London)
	Dr D R du Preez BSc (Hons)(Wits), PhD (UPE)
	Dr N Mzilikazi PhD (UKZN)
	Dr S L Wilson PhD (UPE)
	Dr S R Henley BSc (Hons)(NU), PhD (UPE)
Administrator	Dr S Parker-Nance BSc (Pret), PhD (UPE)

Integrated Environmental and Coastal Management

Head	Dr D R du Preez PhD (UPE)
Vice-Head	Dr R Nel PhD (UCT)

InnoVenton and the Downstream Chemicals Technology Station

Director	Prof B Zeelie PhD (UPE)
Deputy Director	Dr G Dugmore DTech: Chemistry (PE Technikon)

Centre for High Resolution Transmission Electron Microscopy

Director	Prof J H Neethling, MSc (UPE), PhD (UPE)

3 GENERAL INFORMATION AND REGULATIONS

Every student of this Faculty is also bound by the NMMU's regulations as contained in the General Prospectus. The Dean of the Faculty will take disciplinary action in the event of contravention of departmental and general regulations. **It is the responsibility of every student to acquaint him/herself with the contents of the General Prospectus.**

3.1 MINIMUM REQUIREMENTS FOR REGISTRATION FOR SPECIFIC MODULES IN THE FACULTY OF SCIENCE

Study Fields	***Required Subjects***
Agricultural Management	NSC rating of at least 2 (30-39%) for Mathematics.
Analytical Chemistry	NSC rating of at least 2 (30-39%) for Mathematics & Physics.
Applied Mathematics	NSC rating of at least 4 (50-59%) for Mathematics.
Biochemistry	NSC rating of at least 4 (50-59%) for Mathematics.
Botany	NSC rating of at least 4 (50-59%) for Mathematics.
Chemistry	NSC rating of at least 4 (50-59%) for Mathematics.
Computer Science	NSC rating of at least 4 (50-59%) for Mathematics.
Game Ranch Management	NSC rating of at least 2 (30-39%) for Mathematics.
Geography	NSC rating of at least 3 (40-49%) for Mathematics.
Geology	NSC rating of at least 3 (40-49%) for Mathematics.
Mathematics	NSC rating of at least 4 (50-59%) for Mathematics.
Microbiology	NSC rating of at least 4 (50-59%) for Mathematics.
Physics	NSC rating of at least 4 (50-59%) for Mathematics.
Polymer Technology	NSC rating of at least 2 (30-39%) for Mathematics.
Statistics	NSC rating of at least 4 (50-59%) for Mathematics.
Textile Science	Postgraduate only.
Zoology	NSC rating of at least 3 (40-49%) for Mathematics.

Satisfactory performance on the access assessment test is required for module registration purposes if the NSC achievement level indicated has not been met.

3.2 FACULTY MANAGEMENT COMMITTEE

The Faculty Management Committee is responsible for discipline within the Faculty and administers these regulations. The Faculty Management Committee consists of the Dean, Heads of School and Heads of Department in the Faculty of Science.

3.3 CANCELLATION AND CHANGE OF QUALIFICATION, MODULE OR CLASS GROUP

A student will be permitted to change his/her qualification, modules or class group only with the consent of the Head of Department, and only within the first two weeks of the semester. After this, any changes are subject to the approval of the Faculty Management Committee. All requests for changes must be submitted in writing.

The final day for cancellation of modules, in any semester, is the last day on which a refund of fees is given for a cancelled module. This date is available in the general prospectus and/or from the Faculty Office.

3.4 ATTENDANCE

It is of mutual benefit to lecturer and student that all lectures be attended. Absenteeism from all **practicals** must be explained in writing before the next practical session. A student will have to write more than half of the scheduled tests in order to be considered for admission to the examination in a particular module.

Should a student be absent from any test, a medical certificate or acceptable **written** explanation must be submitted to the lecturer within **three working days**. A test mark of 0% will otherwise be given. **This ruling will be strictly enforced.**

3.5 ACADEMIC PROGRESS

- A student must show satisfactory progress in his/her assignments and tests. The Faculty Management Committee reserves the right to bar any student who does not show satisfactory progress from examinations or from classes.
- A subminimum of 40% for the class mark for each instructional offering is required for admission to examinations except in the case of modules which are examined by means of continuous evaluation.

3.6 DISCIPLINE

If a lecturer deems a student's academic progress or conduct to be unsatisfactory, the lecturer may refer the matter to the Faculty Management Committee, which will, after an investigation, act within the general rules and regulations of the NMMU. In extreme cases of misconduct a student's studies may be terminated. The student has a right to appeal to the Central Disciplinary Committee of the NMMU.

3.7 CO-OPERATIVE EDUCATION

All the National Diplomas are offered in a co-operative manner. A co-operative education programme is one in which academic study for entry into a profession is usually combined with an experiential period of learning in industry in such a way that they supplement each other. The experiential period involves the solution of real problems, giving practical experience of the application and usefulness of knowledge gained at the NMMU. Project work is submitted for academic assessment during the experiential period.

Professionals of any discipline need appropriate work experience before they can practice their chosen career effectively. Experience shows that the integration of theory and in-service/experiential learning creates diplomats who are more mature and hence readily employable. Work experience encourages students to develop a greater sense of responsibility, place more reliance on their judgement, and find greater meaning in their studies. Students become involved with people from different backgrounds and develop greater confidence when working as part of a team.

3.8 EXPERIENTIAL LEARNING REQUIREMENTS

To fulfil the requirements of the National Diploma, a student must complete at least one semester of applicable experiential learning.

Guides outlining the requirements for successful completion of experiential learning are obtainable from the Faculty Office. In each module, the student is given projects and/or assignments which must be completed and submitted for evaluation.

It is imperative for students to register for the experiential learning component. This can be done at the beginning of the term or prior to leaving the campus at the end of the preceding term. Special registration forms for this purpose are obtainable from the Faculty Office.

Although the NMMU will help as far as possible to arrange practical learning, in the final instance the onus in this respect will be on the student. Many firms sponsor students and in these cases the experiential learning is naturally arranged by the sponsoring firm.

3.9 GENERAL ADMISSION REQUIREMENTS

Prospective students who **MATRICULATED PRIOR TO 2008** must please contact NMMU's Admissions Office to determine their admission requirements.
Tel: 041 504 3911
E-mail: admissions@nmmu.ac.za
Web: www.nmmu.ac.za

- Prospective students will need at least a **National Senior Certificate (NSC)** or equivalent school-leaving certificate for admission to a diploma programme and must ensure that four of their seven subjects are from the designated list for admission to a degree programme.
- If an N3 Certificate was obtained, the N3 results together with the applicant's Grade 12 language results are used.
- Apart from this, there are also specific subject requirements for some qualifications.
- Admission to an undergraduate programme will be further determined by an applicant's Admission Points Score (APS). The APS system is used for allocating point values to your seven NSC subjects (see Table A).
- Applicants who do not meet the general requirements for the APS and/or the specific requirements for admission to a module or programme may be given the opportunity to be assessed on the Access Assessment Battery (AAB). Applicants must have a minimum APS of 22 in order to apply for a programme at the NMMU.
- There are limits to the number of students that can be admitted to each programme. Meeting the minimum admission requirements does NOT guarantee acceptance and you may be required to undergo further testing and/or be interviewed. If a programme is full, you may be denied admission even though you meet the minimum requirements.

Qualification Minimum Statutory Entry Requirement
National Higher Certificate: Pass NSC, together with any other university requirements.
Diploma: Pass NSC with an achievement rating of 3 (40-49%) or better in four subjects, together with any other university requirements.
Bachelor's Degree: Pass NSC with an achievement rating of 4 (50-59%) or better in four subjects from the designated list, together with any other university requirements.

How to calculate your Admission Point Score (APS)

- The APS system allocates point values to the levels of achievement obtained for your matric subjects.
- Write down your seven NSC subjects and the levels obtained. If you have 8 or more subjects, use Life Orientation + the best six subjects (the six subjects which have the highest level).
- Allocate points according to the table above.
- Add up the number of points you have to calculate your APS.

Table A:

NSC	NSC %	APS	APS %
		8	90-100%
7	80-100%	7	80-89%
6	70-79%	6	70-79%
5	60-69%	5	60-69%

NSC	NSC %	APS	APS %
4	50-59%	4	50-59%
3	40-49%	3	40-49%
2	30-39%	2	30-39%
1	0-29%	0	0-29%

REGULATIONS

For detailed information on the NMMU's rules, please refer to the GENERAL PROSPECTUS. The following is some additional information as well as abstracts of the more pertinent points from the aforementioned booklet. Students are expected to acquaint themselves with **all** the regulations in the General Prospectus and in the Faculty Prospectus.

CLASS ATTENDANCE

Minimum Attendance

Due to the practical nature of the classes offered, students have to attend a minimum of 80% of lectures to gain admission to the examination, unless special leave is granted.

Absenteeism

The following rules apply in particular to the students of this Faculty:

1. Students who fail to attend lectures, need to supply their lecturers with reasons for their absence. This should be done before (if possible) or within three (3) days of the date of absenteeism.
2. If students have valid reasons, they should put it in writing. After the relevant lecturers have signed a student's letter, it needs to be handed in to the Faculty Officer who will keep it on the student's record for consideration when applying the 80% attendance criterion.

   In the case of illness, an official NMMU medical certificate is required and submitted to the Faculty Officer within three days of their return. The Faculty Officer will forward a copy of the document to the relevant Head of Department.

If students do not write a test, submit a project, etc. as a result of absenteeism, and have not followed rules (1) and (2), they will be given a nil for that particular exercise. If a student has a valid reason for his/her absenteeism and has followed the correct procedure, lecturers may use their discretion.

MISCONDUCT

Students who are found guilty of misconduct during a test will be given a qualification mark of nil and may then be denied access to the examination in the subject concerned.

EXAMINATIONS

Please take special note of the following important regulations pertaining to examinations as contained in the General Prospectus.

- Determination of class mark, examination mark and final mark.
- Pass requirements.
- Special examinations, continuous evaluation and re-examinations.

3.10 RE-ADMISSION REQUIREMENTS FOR UNDERGRADUATE PROGRAMMES

The University has adopted a policy regulating the readmission of students to undergraduate programmes. These readmission requirements expect of students to make continuous academic progress that will allow them to complete their qualifications within a reasonable period. In the case of the three-year 360 credit Bachelors and Diploma qualifications the expectation is that students will have completed the qualification in not more than 5 years, which means that a student must pass at least 72 credits per year. It is further assumed that

- students may initially find the transition from school to university challenging;
- it is theoretically possible for a student to complete 120 credits in the fifth year of study.

Consequently, it is assumed that only students who have not managed to pass 60 credits per year up to year four of their studies will be excluded. Students who have not managed to pass a minimum of 72 credits per year will only be readmitted subject to certain **conditions** (e g limiting the number of modules that a student may register for, or a requirement to pass at least 80% of the modules registered for in the first semester in order to be allowed to continue with the second semester) and will be alerted to the fact that continued lack of satisfactory progress may lead to a refusal of readmission.

Readmission requirements
In order to be readmitted, a student needs to have accumulated a minimum number of credits at the end of each year of study, as indicated in the table below. If that has not been achieved, the student may either be readmitted subject to certain conditions or be refused readmission. In the event of refusal a student may lodge an **appeal** in terms of the procedure prescribed in the General Prospectus.

Three-year (360 credits) programmes

Period of registration	Outcome		
	Continue Studies	**Conditional readmission**	**No readmission**
After year 1	72+ credits	Less than 71 credits	Not applicable
After year 2	144+ credits	120 – 143 credits	Less than 120 credits
After year 3	216+ credits	180 – 215 credits	Less than 180 credits
After year 4		All students	Less than 240 credits
After year 5			Less than 360 credits, unless special circumstances exist

Extended Programmes

- Students in extended programmes will only be readmitted to the programme at the start of their second year of study if they have passed at least 50% of the modules prescribed in year 1 of the programme.
- Students will not be re-admitted to further studies in the extended programmes if they have not passed all the foundational modules after three years of study.

- Where the maximum period allowed for the mainstream programme is five years, it is **six years** for the corresponding extended programme. For purposes of readmission, students in extended programmes must therefore reach the benchmarks in terms of credits set for students in the mainstream programmes after 2, 3, 4 and 5 years, only after 3, 4, 5 and 6 years respectively.

Procedure to determine whether readmission requirements have been met
The following process will be followed to determine whether a student has met the readmission requirements:

- At the end of each year Faculty Administration reviews students' progress and simultaneously identifies those students who have not met the required readmission requirements. Heads of Department, in consultation with Faculty Administration, finalise the list of students who have not met the readmission requirements;
- Faculty Administration informs students accordingly in writing and copies of the letters are placed on the students' records;
- Students who have been refused readmission have one opportunity to apply for enrolment in an alternative programme via the Faculty Administration Office;
- Students have the right to appeal against the decision to refuse them readmission. The appeal procedure is outlined in the General Prospectus.

3.11 DEPARTMENT OF COMPUTING SCIENCES

General rules
A series of tutorial and programming assignments will form part of the modules offered by the Department. Students must show satisfactory progress with these assignments during scheduled practical sessions in venues designated by the University. Part-time candidates who have access to approved computer facilities may apply for exemption from practical classes at the University on condition that the practical assignments and projects are performed satisfactorily. A subminimum of 40% is required for the class mark, as well as a subminimum of 40% for the examination in each module. In the case of insufficient computer facilities the Department reserves the right to select students.

WRFC101 Exemption
Students who have passed CAT in Grade 12 with a final mark of at least 80% receive automatic exemption from WRFC101.

Competency Tests
Competency Tests can be applied for to test whether a candidate can be exempted from modules WRFC101/102 and WRA101/102. Refer to the exemption rules in the Prospectus.

3.12 STATEMENT ON THE UNIVERSITY'S INTERVENTION IN THE EVENT OF POSSIBLE DISRUPTIONS TO ACADEMIC ACTIVITIES

From past experience the University knows that circumstances beyond our control may disrupt our academic activities. The University therefore reserves the right to implement certain emergency measures when deemed necessary to manage such situations. Please note that the University shall not be held liable for any inconvenience, damage or other negative consequence resulting from the implementation of such emergency measures.

4 EXTENDED QUALIFICATIONS

4.1 DIPLOMA: ANALYTICAL CHEMISTRY (EXTENDED): FULL-TIME (QUALIFICATION CODE: 3147 – 07)

ADMISSION REQUIREMENTS

- Minimum statutory NSC requirements for diploma entry and for the language of teaching and learning must preferably be met. In exceptional cases, however, candidates who only meet the minimum NSC requirements for certificate entry will be considered. Candidates must perform satisfactorily in the NMMU access assessment test.
- NSC achievement rating of at least 2 (30 - 39%) for Mathematics. NSC achievement rating of at least 2 (30 - 39%) for Physical Sciences.
- Applicants who have an APS of 22 or higher, will be referred for access assessment.

APPLICABLE RULES

- Candidates shall only be permitted to register for any modules in the second year of study if they have passed all the modules prescribed in the first year of study.
- Candidates will only be allowed to continue with any modules of the second year of the regular ND qualification if they meet the corresponding requirements in the standard National Diploma qualification.
- Candidates who have not completed all the foundational modules in the qualification after three (3) years of full-time study will not be allowed to re-register for the qualification.
- Candidates who pass **all** the modules in the first year of the extended ND Analytical Chemistry at the first attempt will be accepted for studies in the first year of the National Diplomas in Polymer Science, Radiography, Biomedical Technology or Environmental Health, provided that space is available on the relevant qualification. Students may be required to include further developmental language and Academic and Life Skills modules in their qualification.

DURATION

The qualification shall extend over a period of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Academic & Life Skills Development I	Year	ALM1110	2
	Introduction to Volumetric Analysis	Year	APX13P0	7
	Introduction to Computer Applications	Year	APX22P0	2
	Academic Literacy I	Year	CAC1220	3
	Introduction to Laboratory Skills	Year	GCX12P0	4
	Introduction to Chemical Science	Year	GCX14T0	1
	Introduction to Chemical Equilibrium	Year	GCX17T0	2
	Introduction to Acid Base Chemistry	Year	ICX21T0	2
	Pre-calculus	Semester 1	MAT11X1	4

		Presented	Module Code	Credit Value
	Physics		**MFS11X0**	
	Physics I (module 1)	Semester 1	MFS11X1	6
	Physics II (module 2)	Semester 2	MFS12X2	6
	Introduction to Organic Chemistry	Year	OCX21T0	5
	Introduction to Intermolecular Forces and Gases	Year	PCX21T0	3
	Mathematics I	Semester 2	WIS11X2	4
	Computing Skills I	Year	CCP11X0	6
	Credits First Year	**Minimum**		**57**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Gravimetric Analysis	Semester 1	ACC13T0	5
	Potentiometry	Semester 2	ACC23T0	6
	Trimetric Methods of Analysis	Semester 2	ACC24T0	6
	Volumetric Techniques	Semester 2	ACP21P0	5
	Potentiometric Analysis	Semester 2	ACP24P0	5
	Academic & Life Skills Development II	Year	ALM2110	2
	Academic Literacy II	Year	CAC2110	2
	Atomic Theory	Semester 1	GCC15T0	2
	Bonding Theory	Semester 1	GCC16T0	3
	Introductory Inorganic Chemistry	Semester 2	ICC22T0	4
	Redox Chemistry	Semester 2	ICC23T0	4
	Desiccation / Special Atmospheres	Semester 2	ICC24P0	2
	Physical Organic Techniques	Semester 2	OCC22P0	6
	Physical Property Determination	Semester 2	PCC21P0	4
	Electrochemistry I	Semester 2	PCC22T0	5
	Credits Second Year	**Minimum**		**61**

Year 3: NMMU 2nd Level Modules Approved for the regular 3 Year National Diploma Analytical Chemistry Qualification (3146) with a Minimum Total Credit Value of 120.

Year 4: NMMU 3rd Level Modules Approved for the regular 3 Year National Diploma Analytical Chemistry Qualification (3146) with a Minimum Total Credit Value of 120.

4.2 DIPLOMA: ANALYTICAL CHEMISTRY (EXTENDED): FULL-TIME (QUALIFICATION CODE: 3151 – 07) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 365)

ADMISSION REQUIREMENTS

- Minimum statutory NSC requirements for diploma entry and for the language of teaching and learning must preferably be met. In exceptional cases, however, candidates who only meet the minimum NSC requirements for certificate entry will be considered. Candidates must perform satisfactorily in the NMMU access assessment test.
- NSC achievement rating of at least 2 (30 - 39%) for Mathematics. NSC achievement rating of at least 2 (30 - 39%) for Physical Sciences.
- Applicants who have an APS of 22 or higher, will be referred for access assessment.

PROMOTION AND APPLICABLE RULES

- Candidates shall only be permitted to register for any modules in the second year of study if they have passed all the modules prescribed in the first year of study.
- Candidates will only be allowed to continue with any modules of the second year of the regular ND qualification if they meet the corresponding requirements in the standard National Diploma qualification and abide by its promotion and applicable rules as described in the prospectus.
- Candidates who have not completed all the foundational modules in the qualification after three (3) years of full-time study will not be allowed to re-register for the qualification.
- Candidates who pass **all** the modules in the first year of the extended ND Analytical Chemistry at the first attempt will be accepted for studies in the first year of the National Diplomas in Polymer Science, Radiography, Biomedical Technology or Environmental Health, provided that space is available on the relevant qualification. Students may be required to include further developmental language and Academic and Life Skills modules in their qualification.

SITE OF DELIVERY

This qualification will be offered on the Summerstrand North Campus of the university.

DURATION

The qualification shall extend over a period of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Introduction to General Chemistry 1	Semester 1	GCC1X1	12
	Introduction to Inorganic Chemistry 2	Semester 2	ICC1X2	9
	Introduction to Organic Chemistry 2	Semester 2	OCC1X2	9
	Physical Chemistry 2	Semester 2	PCC2002	12
	Pre-Calculus	Semester 1	MAT11X1	4
	Mathematics 1	Semester 2	WIS11X2	4
	Physics 1 for diploma in analytical chemistry	Semester 1	MFS12X1	7

		Presented	Module Code	Credit Value
	Computing Skills	Year	CCP11X0	6
	Academic & Life Skills Development 1	Year	ALM1110	2
	Academic Literacy 1	Year	CAC1220	3
	Credit First Year			**68**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Analytical Chemistry 1	Semester 1	ACC1001	24
	Analytical Chemistry 2	Semester 2	ACC2002	24
	Academic & Life Skills Development 11	Year	ALM2110	2
	Academic Literacy 11	Year	CAC2110	2
	Credit Second Year			**52**
	Credit First & Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Analytical Chemistry 3A	Semester 1	ACC3001	11
	Analytical Chemistry 3A Practical	Semester 1	ACC3011	13
	Analytical Chemistry 3B	Semester 2	ACC3002	10
	Analytical Chemistry 3B Practical	Semester 2	ACC3012	13
	Inorganic Chemistry 3A	Semester 1	ICC3001	8
	Inorganic Chemistry 3B	Semester 2	ICC3002	9
	Organic Chemistry 3A	Semester 1	OCC3001	9
	Organic Chemistry3B	Semester 2	OCC3002	8
	Physical Chemistry 3A	Semester 1	PCC3001	8
	Physical Chemistry 3B	Semester 2	PCC3002	9
	Mathematics 2	Semester 1/ Semester 2	WIS2111/2	10
	Introduction to Quality Assurance	Semester 2	SAC32T0	6
	Statistics for Analytical chemistry	Semester 1	SAC31T0	6
	Computer skills for analytical chemistry	Semester 1	CCP2222	5
	Credit Third Year			**125**

		Presented	Module Code	Credit Value
Fourth Year				
	Chemistry Industry Practical	Year	CIP2110	60
	Chemical Project	Year	CJP3110	60
	Credit Third Year			**120**
	Total Programme Credits			**365**

4.3 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: BIOLOGICAL SCIENCES: BIOCHEMISTRY & MICROBIOLOGY (EXTENDED): FULL-TIME (QUALIFICATION CODE: 20012 – V7/A7) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 364)

QUALIFICATION OVERVIEW

The qualification for BSc studies provides alternative university access to students who have the potential to succeed but do not meet the minimum admission requirements for the mainstream qualification.

The purpose of the qualification is to integrate additional academic support and skills development with mainstream modules in order to prepare the student for successful completion of the BSc degree.

ADMISSION REQUIREMENTS

Minimum statutory NSC requirements for degree entry must be met or equivalent school-leaving certificate. In exceptional cases candidates who do not meet the statutory requirements for admission to a Bachelors degree, but perform very well in the NMMU access assessment battery will be considered for Senate's discretion admission.

- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30–39%) for Mathematics.
- NSC achievement rating of at least 2 (30–39%) for Physical Science.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.
- Candidates must perform satisfactorily in the NMMU Access Assessment Test.

PROMOTION

- Candidates shall only be permitted to register for any modules in the second year of study if they have passed at least 9 of the modules prescribed in the first year of study.
- Candidates who do not meet the promotion requirement above will only be allowed to re-register for the programme if they have passed a minimum of 6 foundational modules in their first year of study.
- Candidates who have not completed all the foundational modules in the programme after three (3) years of full-time study will not be allowed to re-register for the programme.

SITE OF DELIVERY

The first two years of the programme will be offered on the NMMU Missionvale campus and the foundational modules will only be offered on this campus. The last two years of the programme will be offered on the NMMU Summerstrand campus (South). Students will not be allowed to move from the Missionvale campus if they have more than one outstanding foundational module.

DURATION

The qualification shall extended over a minimum of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	English for Science	Year	LEA1X1	4
	Academic & Life Skills Development 1	Year	ALM111	4
	Extended Computing Fundamentals	Year	WRFC141	6
	Pre-calculus 1	Semester 1	MATF1X1	4
	Pre-calculus 2	Semester 2	MATF1X2	4
	Extended General Chemistry 111	Semester 1	CHG1X1	5
	Extended General Chemistry 112	Semester 2	CHG1X2	5
	Concepts of Physics	Semester 1	FF101	4
	Mechanics	Semester 2	FBB111	4
	Extended Cell Biology	Semester 1	BIO111	10
	Augmented Plant Structure	Semester 2	BOT125	5
	Augmented Animal Diversity	Semester 2	ZFO125	5
	Credits First Year			**60**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	English for Science	Year	LEA121	2
	Academic & Life Skills Development	Year	ALM112	2
	Extended Inorganic Chemistry 111	Semester 1	CHI1X1	7
	Extended Organic Chemistry 111	Semester 2	CHO1X1	5
	Mathematics Special 101 F	Semester 1	MATA1X1	5
	Mathematics Special 102 F	Semester 2	MATA1X2	5
	Electricity, Magnetism	Semester 2	FBB121	4
	Properties of Matter	Semester 1	FBB112	4
	Augmented Evolution and Systematics	Semester 1	BOT135	5
	Extended Computing Fundamentals 142	Year	WRFC142	8
	Extended Principles of Animal Evolution	Semester 1	ZFO13X	5
	Extended Plant Ecology & Environmental Botany	Semester 2	BOT14X	5

		Presented	Module Code	Credit Value
	Extended Animal Patterns in Time and Space	Semester 2	ZFO14X	5
	Credits Second Year			**62**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Select three of the following groups corresponding to the modules selected in the first year:			
	(Note that if Microbiology is a major, then you must register for Biochemistry 2. If Microbiology 2 is not registered for together with Biochemistry 2, then BM251 must be registered for instead of BC221.)			
	Biochemistry II			
	Introductory Biochemistry	Term 1	BC211	10
	Immunology	Term 2	BC221	10
	Carbohydrate Metabolism	Term 3	BC231	10
	Lipid Metabolism	Term 4	BC241	10
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Chemistry II			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Organic	Semester 2	CHO201	12
	Chemistry Physical	Year	CHP203	12
	Microbiology II			
	Introductory Microbiology	Term 1	BM210	10
	Host-Microbe Interactions and Epidemiology	Term 3	BM221	10
	Control of Micro-Organisms	Term 4	BM240	10
	Microbial Genetics	Term 2	BM251	10
	Physiology II			
	Physiology & Related Pathology of Human Cellular, Muscular & Endocrine Systems	Term 1	BSP201	10
	Human Nervous System & Senses	Term 2	BSP202	10
	Human Transport & Circulatory System	Term 3	BSP203	10
	Human Digestive, Respiratory, Fluid Balance & Reproductive Systems	Term 4	BSP204	10
	Zoology II			
	Comparative Vertebrate Anatomy	Semester 1	ZOO220	10
	Animal Physiology	Semester 1	ZOO221	10

		Presented	Module Code	Credit Value
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Credits Third Year			**120**
		Presented	**Module Code**	**Credit Value**
Fourth Year				
	Select two of the following majors corresponding to the modules selected in the previous year:			
	Biochemistry III ♦			
	Protein Technology	Semester 1	BC311	15
	Enzymology	Semester 1	BC330	15
	Eukaryotic Genetics	Term 3	BC341	15
	Cellular Biochemistry	Term 4	BC351	15
	Chemistry III ♦			
	Chemistry Inorganic	Year	CHI303	20
	Chemistry Organic	Year	CHO303	20
	Chemistry Physical	Year	CHP303	20
	Microbiology III ♦			
	Bacteriology and Microbial Ecology	Term 1	BM311	15
	Virology and Mycology	Term 2	BM321	15
	Molecular Genetics and Gene Manipulation	Term 3	BM341	15
	Industrial Microbiology and Biotechnology	Term 4	BM361	15
	Credits Fourth Year			**120**

♦ Major modules (please refer to the General Prospectus).

4.4 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: BIOLOGICAL SCIENCES: MARINE BIOLOGY, CONSERVATION BIOLOGY, ECOLOGY, ENVIRONMENTAL MANAGEMENT & COASTAL ZONE MANAGEMENT (EXTENDED): FULL-TIME (QUALIFICATION CODE: 20011 – A7/V7) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 364)

QUALIFICATION OVERVIEW

The qualification for BSc studies provides alternative university access to students who have the potential to succeed but do not meet the minimum admission requirements for the mainstream qualification. The purpose of the qualification is to integrate additional academic support and skills development with mainstream modules in order to prepare the student for successful completion of the BSc degree.

ADMISSION REQUIREMENTS

Minimum statutory NSC requirements for degree entry must be met or equivalent school-leaving certificate. In exceptional cases candidates who do not meet the statutory requirements for admission to a Bachelors degree, but perform very well in the NMMU access assessment battery will be considered for Senate's discretion admission.

- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30–39%) for Mathematics.
- NSC achievement rating of at least 2 (30–39%) for Physical Science.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.
- Candidates must perform satisfactorily in the NMMU Access Assessment Test.

PROMOTION

- Candidates shall only be permitted to register for any modules in the second year of study if they have passed at least 9 of the modules prescribed in the first year of study.
- Candidates who do not meet the promotion requirement above will only be allowed to re-register for the programme if they have passed a minimum of 6 foundational modules in their first year of study.
- Candidates who have not completed all the foundational modules in the programme after three (3) years of full-time study will not be allowed to re-register for the programme.

SITE OF DELIVERY

The first two years of the programme will be offered on the NMMU Missionvale campus and the foundational modules will only be offered on this campus.
The last two years of the programme will be offered on the NMMU Summerstrand campus (South). Students will not be allowed to move from the Missionvale campus if they have more than one outstanding foundational module.

DURATION

The qualification shall extended over a minimum of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	English for Science	Year	LEA1X1	4
	Academic & Life Skills Development 1	Year	ALM111	4
	Extended Computing Fundamentals	Year	WRFC141	6
	Pre-calculus 1	Semester 1	MATF1X1	4
	Pre-calculus 2	Semester 2	MATF1X2	4
	Extended General Chemistry 111	Semester 1	CHG1X1	5
	Extended General Chemistry 112	Semester 2	CHG1X2	5
	Concepts of Physics	Semester 1	FF101	4
	Mechanics	Semester 2	FBB111	4
	Extended Cell Biology	Semester 1	BIO111	10
	Augmented Plant Structure	Semester 2	BOT125	5
	Augmented Animal Diversity	Semester 2	ZFO125	5
	Credits First Year			**60**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	English for Science	Year	LEA121	2
	Academic & Life Skills Development	Year	ALM112	2
	Extended Inorganic Chemistry 111	Semester 1	CHI1X1	7
	Extended Organic Chemistry 111	Semester 2	CHO1X1	5
	Mathematics Special 101 F	Semester 1	MATA1X1	5
	Mathematics Special 102 F	Semester 2	MATA1X2	5
	Electricity, Magnetism	Semester 2	FBB121	4
	Properties of Matter	Semester 1	FBB112	4
	Augmented Evolution and Systematics	Semester 1	BOT135	5
	Extended Computing Fundamentals 142	Year	WRFC142	8
	Extended Principles of Animal Evolution	Semester 1	ZFO13X	5
	Extended Plant Ecology & Environmental Botany	Semester 2	BOT14X	5
	Extended Animal Patterns in Time and Space	Semester 2	ZFO14X	5
	Credits Second Year			**62**

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Zoology II			
	Comparative Vertebrate Anatomy	Semester 1	ZOO220	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Select one of the following groups corresponding to the modules completed in the first two years:			
	Chemistry II			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Organic	Semester 2	CHO201	12
	Chemistry Physical	Year	CHP203	12
	Geography II			
	Pedo-Geomorphological Studies	Term 1	GEN211	10
	Economic and Development Geography	Term 2	GEO212	10
	Introduction to Cartography and GIS	Term 3	GIS211	10
	Society and Environment	Term 4	GEN212	10
	Geology II			
	Palaeontology	Semester 1	GGL201	10
	Structural Geology	Semester 1	GGL202	10
	Mineralogy	Semester 2	GGL203	10
	Sedimentary Petrology	Semester 2	GGL204	10
	Credits Third Year			**120**
		Presented	**Module Code**	**Credit Value**
Fourth Year				
	Compulsory modules:			
	Botany III ♦			
	Applied Marine Botany	Semester 1	BOT310	12
	Plant Physiology	Semester 1	BOT320	12
	Plant Eco-physiology	Semester 2	BOT330	12
	Plant Ecology and Environmental Management	Semester 2	BOT340	12
	Project	Year	BOT350	12

	Zoology III ♦			
	Aquatic Ecology	Semester 1	ZOO311	15
	Applied Aquatic Science	Semester 1	ZOO322	15
	Integrating Topics in Zoology	Semester 2	ZOO334	15
	Evolutionary Ecology	Semester 2	ZOO342	15
	Credits Fourth Year			**120**

♦ Major modules (please refer to the General Prospectus).

4.5 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: ENVIRONMENTAL SCIENCES (EXTENDED): FULL-TIME (QUALIFICATION CODE: 20015 – A7/V7) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 364)

QUALIFICATION OVERVIEW

The qualification for BSc studies provides alternative university access to students who have the potential to succeed but do not meet the minimum admission requirements for the mainstream qualification.

The purpose of the qualification is to integrate additional academic support and skills development with mainstream modules in order to prepare the student for successful completion of the BSc degree.

ADMISSION REQUIREMENTS

- Minimum statutory NSC requirements for degree entry must be met or equivalent school-leaving certificate. In exceptional cases candidates who do not meet the statutory requirements for admission to a Bachelors degree, but perform very well in the NMMU access assessment battery will be considered for Senate's discretion admission.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30–39%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.
- Candidates must perform satisfactorily in the NMMU Access Assessment Test.

PROMOTION

- Candidates shall only be permitted to register for any modules in the second year of study if they have passed at least 9 of the modules prescribed in the first year of study.
- Candidates who do not meet the promotion requirement above will only be allowed to re-register for the programme if they have passed a minimum of 6 foundational modules in their first year of study.
- Candidates who have not completed all the foundational modules in the programme after three (3) years of full-time study will not be allowed to re-register for the programme.

SITE OF DELIVERY

The first two years of the programme will be offered on the NMMU Missionvale campus and the foundational modules will only be offered on this campus. The last two years of the programme will be offered on the NMMU Summerstrand campus (South). Students will not be allowed to move from the Missionvale campus if they have more than one outstanding foundational module.

DURATION

The qualification shall extend over a minimum of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	English for Science	Year	LEA1X1	4
	Academic & Life Skills Development	Year	ALM111	4
	Extended Computing Fundamentals 1.1A	Year	WRFC141	6
	Pre-calculus 1	Semester 1	MATF1X1	4
	Pre-calculus 2	Semester 2	MATF1X2	4
	Foundations of Economic and Settlement Geography	Semester 1	GEO011	6
	Foundations of Meteorology and Climatology	Semester 2	GEN001	6
	Introduction to the Earth	Semester 1	GGL121	6
	Rock and Minerals	Semester 2	GGL122	6
	Extended Cell Biology	Semester 1	BIO111	10
	Augmented Plant Structure	Semester 2	BOT125	5
	Augmented Animal Diversity	Semester 2	ZFO125	5
	Credits First Year			**66**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	English for Science	Year	LEA121	2
	Academic & Life Skills Development	Year	ALM112	2
	Foundations of Geomorphology	Semester 1	GEN002	6
	Geological Processes	Semester 1	GGL123	6
	Structure and Economic Geology	Semester 2	GGL124	6
	Augmented Evolution and Systematics	Semester 1	BOT135	5
	Extended Computing Fundamentals 142	Year	WRFC142	8
	Foundation of Geo-Information Science & Cartography	Semester 2	GIS1X1	6
	Extended Principles of Animal Evolution	Semester 1	ZFO13X	5
	Extended Plant Ecology & Environmental Botany	Semester 2	BOT14X	5
	Extended Animal Patterns in Time and Space	Semester 2	ZFO14X	5

		Presented	Module Code	Credit Value
	Credits Second Year			**56**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Select three of the following groups corresponding to the modules completed in the first two years:			
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Select either A or B:			
A1	**Chemistry II**			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Organic	Semester 2	CHO201	12
	Chemistry Physical	Year	CHP203	12
A2	**Geography II**			
	Pedo-Geomorphological Studies	Term 1	GEN211	10
	Economic and Development Geography	Term 2	GEO212	10
	Introduction to Cartography and GIS	Term 3	GIS211	10
	Society and Environment	Term 4	GEN212	10
B1	**Geology II**			
	Palaeontology	Semester 1	GGL201	10
	Structural Geology	Semester 1	GGL202	10
	Mineralogy	Semester 2	GGL203	10
	Sedimentary Petrology	Semester 2	GGL204	10
B2	**Zoology II**			
	Comparative Vertebrate Anatomy	Semester 1	ZOO220	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Credits Third Year			**120**

		Presented	Module Code	Credit Value
Fourth Year				
	Select two of the following majors corresponding to the modules selected in the previous year:			
	Botany III ♦			
	Applied Marine Botany	Semester 1	BOT310	12
	Plant Physiology	Semester 1	BOT320	12
	Plant Eco-physiology	Semester 2	BOT330	12
	Plant Ecology and Environmental Management	Semester 2	BOT340	12
	Project	Year	BOT350	12
	Chemistry III			
	Chemistry Inorganic	Year	CHI303	20
	Chemistry Organic	Year	CHO303	20
	Chemistry Physical	Year	CHP303	20
	Geography III ♦			
	Geo-Information Systems	Term 1	GIS301	15
	Geomorphology	Term 2	GEN301	15
	Photogrammetry and Remote Sensing	Term 3	GIS304	15
	Environmental Resource Management	Term 4	GEN313	15
	Geology III ♦			
	Igneous Petrology	Semester 1	GGL301	15
	Stratigraphy	Semester 1	GGL302	15
	Geo-tectonics and Metamorphic Petrology	Semester 2	GGL303	15
	Economic Geology	Semester 2	GGL304	15
	Zoology III ♦			
	Aquatic Ecology	Semester 1	ZOO311	15
	Applied Aquatic Science	Semester 1	ZOO322	15
	Integrating Topics in Zoology	Semester 2	ZOO334	15
	Evolutionary Ecology	Semester 2	ZOO342	15
	Credits Fourth Year			**120**

♦ Major modules (please refer to the General Prospectus).

4.6 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: GEOSCIENCES: GEOGRAPHY & GEOLOGY (EXTENDED): FULL-TIME (QUALIFICATION CODE: 20014 – A7/V7) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 364)

QUALIFICATION OVERVIEW

The qualification for BSc studies provides alternative university access to students who have the potential to succeed but do not meet the minimum admission requirements for the mainstream qualification.

The purpose of the qualification is to integrate additional academic support and skills development with mainstream modules in order to prepare the student for successful completion of the BSc degree.

ADMISSION REQUIREMENTS

- Minimum statutory NSC requirements for degree entry must be met or equivalent school-leaving certificate. In exceptional cases candidates who do not meet the statutory requirements for admission to a Bachelors degree, but perform very well in the NMMU access assessment battery will be considered for Senate's discretion admission.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30–39%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.
- Candidates must perform satisfactorily in the NMMU Access Assessment Test.

PROMOTION

- Candidates shall only be permitted to register for any modules in the second year of study if they have passed at least 9 of the modules prescribed in the first year of study.
- Candidates who do not meet the promotion requirement above will only be allowed to re-register for the programme if they have passed a minimum of 6 foundational modules in their first year of study.
- Candidates who have not completed all the foundational modules in the programme after three (3) years of full-time study will not be allowed to re-register for the programme.

SITE OF DELIVERY

The first two years of the programme will be offered on the NMMU Missionvale campus and the foundational modules will only be offered on this campus. The last two years of the programme will be offered on the NMMU Summerstrand campus (South). Students will not be allowed to move from the Missionvale campus if they have more than one outstanding foundational module.

DURATION

The qualification shall extend over a minimum of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	English for Science	Year	LEA1X1	4
	Academic & Life Skills Development	Year	ALM111	4
	Extended Computing Fundamentals 1.1A	Year	WRFC141	6
	Pre-calculus 1	Semester 1	MATF1X1	4
	Pre-calculus 2	Semester 2	MATF1X2	4
	Foundations of Economic and Settlement Geography	Semester 1	GEO011	6
	Foundations of Meteorology and Climatology	Semester 2	GEN001	6
	Introduction to the Earth	Semester 1	GGL121	6
	Rock and Minerals	Semester 2	GGL122	6
	Extended Cell Biology	Semester 1	BIO111	10
	Augmented Plant Structure	Semester 2	BOT125	5
	Augmented Animal Diversity	Semester 2	ZFO125	5
	Credits First Year			**66**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	English for Science	Year	LEA121	2
	Academic & Life Skills Development	Year	ALM112	2
	Foundations of Geomorphology	Semester 1	GEN002	6
	Geological Processes	Semester 1	GGL123	6
	Structure and Economic Geology	Semester 2	GGL124	6
	Augmented Evolution and Systematics	Semester 1	BOT135	5
	Extended Computing Fundamentals 142	Year	WRFC142	8
	Foundation of Geo-Information Science & Cartography	Semester 2	GIS1X1	6
	Extended Principles of Animal Evolution	Semester 1	ZFO13X	5
	Extended Plant Ecology & Environmental Botany	Semester 2	BOT14X	5
	Extended Animal Patterns in Time and Space	Semester 2	ZFO14X	5
	Credits Second Year			**56**

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Geography II			
	Pedo-Geomorphological Studies	Term 1	GEN211	10
	Economic and Development Geography	Term 2	GEO212	10
	Introduction to Cartography and GIS	Term 3	GIS211	10
	Society and Environment	Term 4	GEN212	10
	Geology II			
	Palaeontology	Semester 1	GGL201	10
	Structural Geology	Semester 1	GGL202	10
	Mineralogy	Semester 2	GGL203	10
	Sedimentary Petrology	Semester 2	GGL204	10
	Select one of the following groups:			
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Zoology II			
	Comparative Vertebrate Anatomy	Semester 1	ZOO220	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Credits Third Year			**120**
		Presented	**Module Code**	**Credit Value**
Fourth Year				
	Compulsory modules:			
	Geography III ♦			
	Geo-Information Systems	Term 1	GIS301	15
	Geomorphology	Term 2	GEN301	15
	Photogrammetry and Remote Sensing	Term 3	GIS304	15
	Environmental Resource Management	Term 4	GEN313	15
	Geology III ♦			
	Igneous Petrology	Semester 1	GGL301	15
	Stratigraphy	Semester 1	GGL302	15
	Geo-tectonics and Metamorphic Petrology	Semester 2	GGL303	15
	Economic Geology	Semester 2	GGL304	15
	Credits Fourth Year			**120**

♦ Major modules (please refer to the General Prospectus).

4.7 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: INFORMATION SYSTEMS (EXTENDED): FULL-TIME (QUALIFICATION CODE: 20013 – A7/V7) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 366)

QUALIFICATION OVERVIEW

The qualification for BSc studies provides alternative university access to students who have the potential to succeed but do not meet the minimum admission requirements for the mainstream qualification.

The purpose of the qualification is to integrate additional academic support and skills development with mainstream modules in order to prepare the student for successful completion of the BSc degree.

ADMISSION REQUIREMENTS

- Minimum statutory NSC requirements for degree entry must be met or equivalent school-leaving certificate. In exceptional cases candidates who do not meet the statutory requirements for admission to a Bachelors degree, but perform very well in the NMMU access assessment battery will be considered for Senate's discretion admission.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40–49%) for Mathematics.
- Applicants with an Admission Points Score between 28 and 37 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.
- Candidates must perform satisfactorily in the NMMU Access Assessment Test.

PROMOTION

- Candidates shall only be permitted to register for any modules of the second year of study if they have passed at least 7 of the modules prescribed in the first year of study.
- Candidates who do not meet this promotion requirement will only be allowed to re-register for the programme if they have passed a minimum of 5 modules in their first year of study.
- Candidates who have not completed all the foundational modules in the programme after three (3) years of full-time study will not be allowed to re-register for the programme.

SITE OF DELIVERY

The first two years of the programme will be offered on the NMMU Missionvale campus and the foundational modules will only be offered on this campus. The last two years of the programme will be offered on the NMMU Summerstrand campus (South). Students will not be allowed to move from the Missionvale campus if they have more than one outstanding foundational module.

DURATION

The qualification shall extend over a minimum of four years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	English for Business	Year	LEA1X2	4
	Academic & Life Skills Development 1	Year	ALM111	4
	Extended Computing Fundamentals 1.1	Year	WRFC141	6
	Extended Programming Fundamentals 1.1	Year	WRA141	8
	Pre-calculus 1	Semester 1	MATF1X1	4
	Pre-calculus 2	Semester 2	MATF1X2	4
	Mathematics for Accounting	Semester 2	MACC101	12
	Foundation Accounting	Semester 1	RF100	4
	Extended Accounting 101A	Semester 2	RF111	4
	Extended Business Management 101	Year	EB111	9
	Credits First Year			**59**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	English for Business	Year	LEA122	2
	Academic & Life Skills Development 2	Year	ALM112	2
	Foundation Statistics	Semester 1	STAF121	4
	Extended Accounting 101 B	Semester 1	RF112	4
	Augmented General Accounting 102	Semester 2	RGF102	10
	Extended Business Management 102	Year	EB112	9
	Extended Programming Fundamentals 1.2	Year	WRA142	8
	Extended Computing Fundamentals 1.2	Year	WRFC142	6
	Statistics 102	Semester 2	STAE102	12
	Augmented Mathematics Special 1	Semester 1	MATA1X1	5
	Augmented Mathematics Special 2	Semester 2	MATA1X2	5
	Credits Second Year			**67**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Data Structures and Algorithms 2.1	Semester 1	WRA201	8
	Data Structures and Algorithms 2.2	Semester 2	WRA202	8
	Computer Architecture Networks 2.1	Semester 1	WRC201	6
	Introduction to Business Systems	Semester 2	WRBA202	6
	Information Systems 2.1	Semester 1	WRI201	6
	Information Systems 2.2	Semester 2	WRI202	6

		Presented	Module Code	Credit Value
	Web Systems II			
	Web Systems 2.1	Semester 1	WRWS201	8
	Web Systems 2.2	Semester 2	WRWS202	8
	Mathematics Special II			
	Mathematics Special B1	Semester 1	MATB101	8
	Mathematics Special B2	Semester 2	MATB102	8
	Select 48 credits from groups A to E:			
A	**Computer Science II**			
	Business Process Modelling	Semester 1	WRBP201	6
	Computer Architecture and Networks 2.2	Semester 2	WRC202	6
B	**Statistics II**			
	Probability, Distributors Theory and Estimation	Semester 1	STAT202	20
	Regression Analysis and Advanced Regression Topics	Semester 2	STAT203	20
C	**Accounting II/General Accounting II**			
	(General) Accounting	Semester 1	R(G)201	14
	(General) Accounting	Semester 2	R(G)202	14
D	**Management II**			
	Marketing Management	Semester 1	EBM201	14
	Logistics/Purchasing Management	Semester 2	EBM202	14
E	**Economics II**			
	Macroeconomics	Semester 1	EC201	14
	Microeconomics	Semester 2	EC202	14
	Credits Third Year			**120**
		Presented	**Module Code**	**Credit Value**
Fourth Year				
	Compulsory modules:			
	Computer Science III ♦			
	Advanced Data Structures	Semester 1	WRA301	10
	Advanced Programming 3.1	Semester 1	WRAP301	10
	Advanced Programming 3.2	Semester 2	WRAP302	11
	Database Systems 3	Semester 1	WRDB301	7
	User Interface Design	Semester 2	WRUI301	7
	Project	Year	WRR301	9
	Multimedia Systems III ♦			
	Multimedia Systems 3.1	Semester 1	WRMS301	10
	Multimedia Systems 3.2	Semester 2	WRMS302	10
	Management Information Systems III ♦			
	Management Information Systems 3.1	Semester 1	WRB301	8
	Management Information Systems 3.2	Semester 2	WRB302	8

		Presented	Module Code	Credit Value
	Select 31 credits from groups A to D:			
A	**Computer Science III ♦**			
	Language and Automata Theory	Semester 2	WRL301	10
	Enterprise Resource Planning Systems 3.1	Semester 1	WRER301	11
	Enterprise Resource Planning Systems 3.2	Semester 2	WRER302	11
B	**Statistics III**			
	Non-Parametric Statistical Procedures	Semester 1	STAT302	10
	Econometric Models	Semester 1	STAT303	14
	Special Topics in Statistics	Semester 1	STAT304	6
	Experimental Design & ANOVA	Semester 2	STAT306	10
	Time Series Analysis	Semester 2	STAT307	10
	Operations Research	Semester 2	STAT309	10
C	**Business Management III**			
	Financial Management	Semester 1	EBM301	24
	General and Strategic Management	Semester 2	EBM302	24
D	**Economics III**			
	Public Economics	Semester 1	ECO301	10
	Economics of Financial Markets	Semester 1	ECO302	10
	Applied Micro-economics	Semester 1	ECO303	10
	Econometrics	Semester 1	ECO304	10
	Development Economics	Semester 2	ECO305	10
	International Economics	Semester 2	ECO306	10
	Credits Fourth Year			**120**

♦ Major modules (please refer to the General Prospectus).

5 NATIONAL HIGHER CERTIFICATE: LEATHER TECHNOLOGY: PART-TIME (QUALIFICATION CODE: 2230 – 45) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS

- Minimum statutory NSC requirements for diploma entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30-39%) for Mathematics or 5 (60-69%) for Mathematical Literacy.
- NSC achievement rating of at least 2 (30-39%) for Physical Sciences.
- If the applicant has Mathematical Literacy instead of Mathematics, additional modules may be added to the programme, which will extend the length of the qualification.

DURATION

Two years of part-time study with six two-week compulsory practical courses run at the International School of Tanning Technology in Grahamstown.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Dyehouse Operations I	Year	LDO1112	24
	Dyehouse Operations I Practical	Year	LDP1112	12
	Leather Finishing I Practical	Year	LFP1112	12
	Leather Finishing I	Year	LLF1112	24
	Tanning I Practical	Year	LPR1112	18
	Tanning I	Year	LTA1112	30
	Credits First Year			**120**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Dyehouse Operations II	Year	LDO2112	24
	Dyehouse Operations II Practical	Year	LDP2112	12
	Leather Finishing II Practical	Year	LFP2112	12
	Leather Finishing II	Year	LLF2112	24
	Tanning II Practical	Year	LPR2112	12
	Tanning II	Year	LTA2112	36
	Credits Second Year			**120**

Please contact: Dr C Jackson-Moss at (046) 622 7310.

6 NATIONAL DIPLOMAS

6.1 NATIONAL DIPLOMA: AGRICULTURAL MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 3452 – 01) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 360)

ADMISSION REQUIREMENTS

- Admission Points Score of 30.
- Minimum NSC requirements for diploma entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30-39%) for Mathematics or 3 (40-49%) for Mathematical Literacy.
- Applicants with an Admission Points Score between 22 and 29 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

Recommended NSC subjects

Economics, Agricultural Management Practices, Agricultural Sciences, Agricultural Technology, Life Sciences, Accounting

OR

A four-subject National Certificate (N3) with two languages at Grade 12 level. Recognition of prior learning will be considered.

APPLICABLE RULES

The following guidelines will apply:

- A student will not normally be allowed to proceed with new subjects if he/she has failed three or more subjects in the previous exam.
- A student, who progresses at an unacceptable rate, may be refused further registration on grounds of poor academic performance. Such students may be referred to Student Counselling for consultation and evaluation.
- If a student fails the same subject three times, he is normally not allowed further registration on grounds of poor academic performance.
- A student undergoing experiential training in the practical year has to pass:
  - all the assignments;
  - the oral examination at the end of the practical year.

DURATION

The National Diploma is a three-year full-time qualification of which two years are spent at the NMMU and one year in practice undergoing experiential training.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Animal Production I	Semester 1	AAP1111	10
	Animal Production II	Semester 2	AAP2212	10
	Computer Applications: Agriculture II	Semester 2	ACA2112	10
	Agricultural Management I	Semester 1	AGM1121	10

		Presented	Module Code	Credit Value
	Agricultural Management II	Semester 2	AGM2222	10
	Production and Operational Techniques I	Semester 1	APO1111	10
	Plant Production I	Semester 1	APP1111	10
	Plant Production II	Semester 2	APP2212	10
	Pasture Science I	Semester 2	APS1112	10
	Soil Classification II	Semester 2	ASC2112	10
	Agricultural Soil Science I	Semester 1	ASS1111	10
	Computer Skills I	Semester 1	CCP1111	5
	Credits First Year			**115**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Agricultural Engineering I		**AGE1120**	
	Module A	Semester 1	AGE1221	12
	Module B	Semester 2	AGE1232	12
	Agricultural Management III ♦	Year	AGM3330	24
	Agricultural Law I		**ALA1120**	
	Commercial Law – General Principles of Contract	Semester 1	JHT1111	12
	Labour Law and Capita Selecta	Semester 2	ALA1222	12
	Personnel Management I (Agriculture)		**AMA1100**	
	Personnel Management	Year	AMA1120	18
	Communication	Year	AMA1130	6
	Select one of the following modules:			
	Animal Production III (option) ♦	Year	AAP3310	24
	Plant Production III (option) ♦	Year	APP3310	24
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Agricultural Practice III	Year	APE3010	96
	Agricultural Production Management II	Year	APM2210	12
	Agricultural Production Techniques II	Year	APT2210	12
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

PREREQUISITE SUBJECTS

MODULE	PREREQUISITES
Agricultural Management II (AGM2222)	Agricultural Management I (AGM1121)
Agricultural Management III (AGM3330)	Agricultural Management II (AGM2222)
Plant Production II (APP2212)	Plant Production I (APP1111)
Plant Production III (APP3310)	Plant Production II (APP2212)
Animal Production II (AAP2212)	Animal Production I (AAP1111)
Animal Production III (AAP3310)	Animal Production II (AAP2212)
Soil Classification II (ASC2112)	Agricultural Soil Science I (ASS1111)
Computer Application (Agric) II (ACA2112)	Computer Skills I (CCP1111)
Agricultural Production Management II (APM2210)	Agricultural Management III (AGM3330) Agricultural Law I (ALA1120) Personnel Management Agriculture I (AMA1100)
Agricultural Production Techniques II (APT2210)	Plant Production III (APP3310) or Animal Production III (AAP3310) Pasture Science I (APS1112)

EXPERIENTAL TRAINING REQUIREMENTS

To fulfil the requirements of the National Diploma a student must complete at least one year of applicable experiential training. In the curriculum the experiential training is treated as three modules called **Agricultural Production Management II**, **Agricultural Production Techniques II** and **Agricultural Practice III**.

Students may undergo practical training on their parents' farms, other appropriate farms or with companies and institutions involved in the agricultural sector. Although the NMMU will as far as possible try to assist students with finding employment, in the final instance the onus to obtain suitable employment will be on the student.

6.2 NATIONAL DIPLOMA: ANALYTICAL CHEMISTRY: FULL-TIME (QUALIFICATION CODE: 3146 – 01) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 360) (NO NEW INTAKE FOR 2012)

ADMISSION REQUIREMENTS

- Admission Points Score of 34.
- Minimum NSC requirements for diploma entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40-49%) for Mathematics.
- NSC achievement rating of at least 3 (40-49%) for Physical Sciences.
- If an applicant has not taken the optional Mathematics topics, additional modules may be added, which may extend the duration of study.
- Applicants with an Admission Points Score between 24 and 33 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

Two years of full-time study at the NMMU followed by one year in-service training in a suitable laboratory, which includes Chemical Industry Practical and Chemistry Project.

CURRICULUM

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Analytical Chemistry III ♦		**CHA33M0**	
	Electrochemical Analysis	Year	ACC31T0	6
	Analytical Spectroscopy	Year	ACC32T0	6
	Chromatographic Methods of Analysis	Year	ACC33T0	6
	Thermal Methods of Analysis	Year	ACC34T0	6
	Analytical Chemistry III Practical ♦		**CAL33M0**	
	Computer Applications II	Year	ACP31P0	4
	Practical Spectroscopy	Year	ACP32P0	7
	Analytical GLC	Year	ACP33P0	7
	Electrochemical Methods of Analysis	Year	ACP36P0	6
	Chemical Quality Assurance ♦		**CQA22M0**	
	Statistics for Analytical Chemists	Year	SAC31T0	6
	Principles of Quality Assurance	Year	SAC32T0	6
	Inorganic Chemistry III ♦		**CHI33M0**	
	Thermodynamic Aspects of Inorganic Chemistry	Year	ICC34T0	6
	Descriptive TM Chemistry	Year	ICC33T0	6
	Inorganic Techniques: Synthesis and Character	Year	ICC34P0	6
	Organic Chemistry III ♦		**CHO33M0**	
	Hydrocarbons	Year	OCC36T0	5
	Functional Group Chemistry	Year	OCC37T0	5
	Chromatography (separations)	Year	OCC33P0	2
	Organic Synthesis	Year	OCC35P0	5
	Physical Chemistry III ♦		**CPC33M0**	
	Thermodynamics	Year	PCC31T0	4
	Electrochemistry II	Year	PCC35T0	2
	Introductory Kinetics	Year	PCC34T0	4
	Physical Aspects of Chemical Synthesis	Year	PCC34P0	7
	Select one of the following modules:			
	Mathematics II	Semester 1 or Semester 2	WIS2111 or WIS2112	10 12
	Chemical Process Industries	Semester 1	CPI2101	12
	Credits Second Year			**120**

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Chemical Industry Practical	Year	CIP2110	60
	Chemical Project	Year	CJP3110	60
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

Third Year
For any intending B Tech students it is recommended that Mathematics II be completed by the end of the third year.
(Qualifications will only be presented if registration numbers allow.)

TRAINING LABORATORIES
A list of possible employers in the Eastern Cape is obtainable from the Department of Analytical Chemistry.

6.3 NATIONAL DIPLOMA: ANALYTICAL CHEMISTRY: FULL-TIME (QUALIFICATION CODE: 3152 – 01) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 364)

ADMISSION REQUIREMENTS
- Admission Points Score of 34.
- Minimum NSC requirements for diploma entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40-49%) for Mathematics.
- NSC achievement rating of at least 3 (40-49%) for Physical Sciences.
- If an applicant has not taken the optional Mathematics
- Applicants with an Admission Points Score between 24 and 33 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

PROMOTION AND APPLICABLE RULES
- Candidates shall only be permitted to register for any modules in the second level of study (**A2**) if they have passed all of the Chemistry and Computer modules and at least one of either Mathematics I or Physics I prescribed in the first year of study.
- Candidates who have not completed all of the first-year modules in the qualification after three (3) years of full-time study will not be allowed to re-register for the qualification.
- In order for candidates to be promoted to the 2nd year of study (**A3**), they must consult the relevant module pre-requisites and co-requisites. A candidate is not allowed to carry more than one (1) module from the previous year of study.
- Candidates who intend doing their final year of in-service training (IST) are allowed to carry only **one** 2nd-year (**A3**) module. Under special circumstances, a candidate may carry a maximum of two 2nd-year modules (**A3**) while doing their IST. The candidate would have to apply and obtain written permission from the program co-ordinator.

- Candidates are required to complete their IST in a chemistry-related industry (approved by the programme co-ordinator) for a minimum period of 12 months. Under special circumstances, candidates may apply to the program co-ordinator to consider an IST period of 11 months.

SITE OF DELIVERY

This qualification will be presented on the Summerstrand North Campus of the university.

DURATION

Two years of full-time study at the NMMU followed by one year in-service training in a suitable laboratory, which includes Chemical Industry Practical and Chemistry Project.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Analytical Chemistry 1	Semester 1	ACC1001	24
	General Chemistry 1	Semester 1	GCC1001	16
	Analytical Chemistry 2	Semester 2	ACC2002	24
	Inorganic Chemistry 2	Semester 2	ICC2002	12
	Organic Chemistry 2	Semester 2	OCC2002	12
	Physical Chemistry 2	Semester 2	PCC2002	12
	Mathematics 1	Semester 1	WIS1111	7
	Physics 1 for diploma in analytical chemistry	Semester 1	MFS1201	7
	Computer Skills 1	Semester 1	CCP1111/2	5
	Credit First Year			**119**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Analytical Chemistry 3A	Semester 1	ACC3001	11
	Analytical Chemistry 3A Practical	Semester 1	ACC3011	13
	Analytical Chemistry 3B	Semester 2	ACC3002	10
	Analytical Chemistry 3B Practical	Semester 2	ACC3012	13
	Inorganic Chemistry 3A	Semester 1	ICC3001	8
	Inorganic Chemistry 3B	Semester 2	ICC3002	9
	Organic Chemistry 3A	Semester 1	OCC3001	9
	Organic Chemistry 3B	Semester 2	OCC3002	8
	Physical Chemistry 3A	Semester 1	PCC3001	8
	Physical Chemistry 3B	Semester 2	PCC3002	9
	Mathematics 2	Semester 1/ Semester 2	WIS2111/2	10
	Introduction to Quality Assurance	Semester 2	SAC32T0	6

		Presented	Module Code	Credit Value
	Statistics for Analytical chemistry	Semester 1	SAC31T0	6
	Computer skills for analytical chemistry	Semester 1	CCP2222	5
	Credits Second Year			**125**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Chemistry Industry Practical	Year	CIP2110	60
	Chemical Project	Year	CJP3110	60
	Credits Third Year			**120**
	Total Programme Credits			**364**

6.4 NATIONAL DIPLOMA: GAME RANCH MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 3456 – 01) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 358)

ADMISSION REQUIREMENTS

- Admission Points Score of 30.
- Minimum NSC requirements for diploma entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 2 (30-39%) for Mathematics or 3 (40-49%) for Mathematical Literacy.
- Applicants with an Admission Points Score between 22 and 29 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.
- All applicants are subject to a selection process performed by the Department.

Recommended NSC subjects

Economics, Agricultural Management, Agricultural Sciences, Life Sciences, Accounting

OR

A four-subject National Certificate (N3) with two languages at Grade 12 level. Recognition of prior learning will be considered.

APPLICABLE RULES

- A student will not normally be allowed to proceed with new subjects if he has failed three or more subjects in the previous exam.
- A student who progresses at an unacceptable rate, may be refused further registration on grounds of poor academic performance. Such student may be referred to Student Counselling and evaluation.
- If a student fails the same subject three times, he is normally not allowed further registration on grounds of poor academic performance.

DURATION

The National Diploma is a three-year full-time qualification of which two years are spent at the NMMU and one year in practice undergoing experiential training.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Soil Science I	Semester 1	AGG1111	10
	Computer Usage I	Semester 2	GCU1212	12
	Game Ranch Economics I	Semester 2	GER1212	12
	Game Ranch Ecology I	Semester 1	GRE1111	12
	Game Ranch Ecology II	Semester 2	GRE2212	12
	Game Ranch Management I	Semester 1	GRM1111	12
	Game Ranch Management II	Semester 2	GRM2212	12
	Game Science I	Semester 1	GRS1111	12
	Game Science II	Semester 2	GRS2212	12
	Rangeland Studies I	Semester 1	GSR1111	12
	Credits First Year			**118**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Game Ranch Economics II	Semester 1	GER2311	15
	Game Ranch Economics III	Semester 2	GER3412	15
	Game Utilization I or Game Lodge Management I	Semester 1	GGU1311 GLM1311	15
	Game Utilization II or Game Lodge Management II	Semester 2	GGU2412 GLM2412	15
	Game Health Management I	Semester 2	GHM1412	15
	Game Ranch Ecology III	Semester 1	GRE3311	15
	Game Ranch Management III	Semester 2	GRM3412	15
	Game Science III	Semester 1	GRS3311	15
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Game Ranch Application I	Year	GRA1011	60
	Game Ranch Application II	Semester 2	GRA2012	60
	Credits Third Year			**120**

SUBJECT	PREREQUISITES
Game Science II (GRS2212)	Game Science I (GRS1111)
Game Science III (GRS3311)	Game Science II (GRS2212)
Game Ranch Ecology II (GRE2212)	Game Ranch Ecology I (GRE1111)
Game Ranch Ecology III (GRE3311)	Game Ranch Ecology II (GRE2212)
Game Ranch Management II (GRM2212)	Game Ranch Management I (GRM1111)
Game Ranch Management III (GRM3412)	Game Ranch Management II (GRM2212)

EXPERIENTIAL TRAINING REQUIREMENTS

To fulfil the requirements of the National Diploma a student must complete at least one year of applicable experiential training. Students may undergo experiential training with any approved employer within the game industry. Although the NMMU will assist students in finding suitable employment, the onus to obtain suitable employment is on the student.

6.5 NATIONAL DIPLOMA: POLYMER TECHNOLOGY: FULL-TIME (QUALIFICATION CODE: 3234 – 01) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 358)

ADMISSION REQUIREMENTS

- Admission Points Score of 32.
- Minimum NSC requirements for diploma entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40-49%) for Mathematics.
- NSC achievement rating of at least 3 (40-49%) for Physical Sciences.
- If an applicant has not taken the optional Mathematics topics, additional modules may be added, which may extend the duration of study.
- Applicants with an Admission Points Score between 22 and 31 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

APPLICABLE RULES

Promotion requirements and exclusion policy appear in the Chemistry Department Regulations, which are supplied to all students at registration.

DURATION

Theoretical Training of 24 months at the NMMU and a further 12 months of Practical training in a related industry.

CURRICULUM

		Presented	Module Code	Credit Value
First Year – Semester 1				
	Compulsory modules:			
	Analytical Chemistry I	Semester 1	ACC1001	24
	Computer Skills I	Semester 1	CCP1111/2	5
	General Chemistry I	Semester 1	GCC1001	16
	Physics I for Diploma in Analytical Chemistry	Semester 1	MFS1201	7
	Mathematics I	Semester 1	WIS1111	7

		Presented	Module Code	Credit Value
First Year – Semester 2				
	Practical Module	Semester 2	CHO22P2	5
	Theory Module	Semester 2	CHO22T2	5
	Paint Technology II Practical	Semester 2	PPA21P2	10
	Paint Technology II Theory	Semester 2	PPA21T2	10
	Polymer Technology II Practical – Rubber	Semester 2	PPP2212	5
	Polymer Technology II Practical – Plastics	Semester 2	PPP2222	5
	Polymer Technology II – Rubber	Semester 2	PPT2212	5
	Polymer Technology II – Plastics	Semester 2	PPT2222	5
	Polymer Raw Materials II Practical – Rubber	Semester 2	WPP2122	5
	Polymer Raw Materials II Practical – Plastics	Semester 2	WPP2132	5
	Polymer Raw Materials II – Rubber	Semester 2	WPT2122	5
	Polymer Raw Materials II – Plastics	Semester 2	WPT2132	5
	Credits First Year			**129**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Analytical Techniques III Practical	Semester 2	CAP3112	9
	Analytical Techniques III Theory	Semester 2	CAT3112	9
	Process Chemistry II	Semester 2	CPR2222	9
	Paint Technology III Practical ♦	Semester 1	PPA31P1	9
	Paint Technology III ♦	Semester 1	PPA31T1	9
	Polymer Technology III Practical – Rubber	Semester 1	PPP3211	4
	Polymer Technology III Practical – Plastics	Semester 1	PPP3221	4
	Polymer Technology III – Rubber	Semester 1	PPT3211	4
	Polymer Technology III – Plastics	Semester 1	PPT3221	4
	Polymer Raw Materials III	Semester 1	WPT3111	9
	Polymer Science II Practical	Semester 1	WSP2111	10
	Polymer Science III Practical ♦	Semester 2	WSP3212	9
	Polymer Science II	Semester 1	WST2111	10
	Polymer Science III ♦	Semester 2	WST3212	9
	Credits Second Year			**108**

		Presented	Module Code	Credit Value
Third Year				
	Compulsory module:			
	Polymer Production Practice	Year	CPP3110	120
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

Students can migrate from Analytical Chemistry (3146) to Polymer Technology and vice versa after the first six months of study, subject to space available in the respective courses.

7 BACHELOR OF COMMERCE/BACCALAUREUS COMMERCII: FINANCIAL MODELLING: FULL-TIME (QUALIFICATION CODE: 40039 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 372)

ADMISSION REQUIREMENTS

- Admission Points Score of 38.
- Minimum NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics or 6 (70-79%) for Mathematical Literacy.
- If an applicant presents with Mathematical Literacy instead of Mathematics, additional modules may be added to the programme, which will extend the length of the programme or he/she could be placed in an extended programme.
- Applicants with an Admission Points Score between 28 and 37 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Statistics 1			
	Financial Statistics	Semester 1	STAE101	12
	Business Statistics	Semester 2	STAE102	12
	Computer Science 1			
	Computing Fundamentals 1.1	Semester 1	WRFC101	8
	Computing Fundamentals 1.2	Semester 2	WRFC102	8
	Special Mathematics 1			
	Mathematics (Special) A 1	Semester 1	MATA101	8
	Mathematics (Special) A 11	Semester 2	MATA102	8
	Accounting 1			
	Accounting	Semester 1	R101	10
	Accounting Or General Accounting	Semester 2 Semester 2	R102 RG102	14 14
	Business Management 1			
	Introduction to Business Management & Entrepreneurship	Semester 1	EB101	12
	Introduction to the Business Functions	Semester 2	EB102	12
	Economics 1			
	Introduction to Microeconomics	Semester 1	EC101	12
	Introduction to Macroeconomics	Semester 2	EC102	12

		Presented	Module Code	Credit Value
	Credits First Year			**128**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Statistics 2			
	Probability Distribution Theory and Estimation	Semester 1	STAT202	20
	Regression Analysis & Advanced Regression Topics	Semester 2	STAT203	20
	Statistical Modelling in Finance	Semester 2	STAE201	20
	Special Mathematics 1			
	Mathematics (Special) B 1	Semester 1	MATB101	8
	Mathematics (Special) B 11	Semester 2	MATB102	8
	Applied Mathematics 2			
	Scientific Computing and Simulation	Semester 1	MASC201	20
	Economics 2			
	Macroeconomics	Semester 1	EC201	14
	Microeconomics	Semester 2	EC202	14
	Credits Second Year			**124**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Statistics 3 ♦			
	Non-Parametric Statistical Procedures	Semester 1	STAT302	10
	Econometric Models	Semester 1	STAT303	14
	Special Topics in Statistics	Semester 1	STAT304	6
	Time Series Analysis	Semester 2	STAT307	10
	Calculus of Derivatives	Semester 2	STAE301	10
	Financial Modelling	Semester 2	STAE302	15
	Applied Mathematics 3 ♦			
	Partial Differential Equations	Semester 1	MAPM311	15
	Economics 3 ♦			
	Economics of Financial Markets	Semester 1	ECO302	10
	Managerial Economics	Semester 1	ECO308	10
	Development Economics	Semester 2	ECO305	10
	International Economics	Semester 2	ECO306	10
	Credits Third Year			**120**

CHOOSING THE PROGRAMME

Choosing this programme leads to a career in **Statistical Data Analysis in Finance.** This is a new, innovative, program whose focus lies in the intersection of statistics and financial modelling. Graduates of the program will be able to deploy effectively a wide range of computational statistical techniques to model and solve problems in finance and econometrics and to understand the algorithmic routines.

Financial modellers are used in the:

- Banking industry to analyse financial data.
- Insurance industry to model actuarial scenario's.
- Automotive industry to forecast trends and component stocks.
- Petroleum industry to forecast prices, model optimisation algorithms and evaluate operations.
- Mineral processing industry to estimate and model financial scenario's and optimize operations.

8 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE (20000, 20023, 20020, 20025, 20026, 20024, 20003, 20099, 20022 & 20021)

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

APPLICABLE RULES

- Unless Senate decides otherwise the degree shall be obtained by completing modules with a total credit value of at least 368 (360 credits for students who have passed all the modules WRFC101/WRSC101; WRFC102; WRA101 and WRA102 comprising the first year of Computer Science and Information Systems) of which
  - at least 120 credits are on NMMU level 3 and at least 240 credits on NMMU level 2 or a higher level;
  - at least 338 credits are from the list of approved subjects below.
- Two major subjects are required to qualify for the BSc. To obtain credits for a major subject the student must obtain 30 credits for the first year, 40 for the second year and 60 for the third year in that major subject. In those subjects that have no first year, a major will consist of 40 credits at second year and 60 credits at third-year level. A maximum of 30 credits from another faculty may be selected.
- Exit-level major modules are those third-year modules which make up the major subjects referred to in the previous bullet.
- The exit-level modules in HMS modules as offered in Curriculum 20003 are HMS359, 332, 333, 334 and 335.

Approved Subjects

Applied Mathematics (MAPM)
Biochemistry (BC)
Botany (BOT)
Chemistry (CH...)
Computing Sciences (WR...)
Geology (GGL)
Geography (Environmental) (GEN-GIS-GEO)
Mathematics (MATH)
Microbiology (BM)
Physics (F)
Statistics (STAT/STAE)
Zoology (ZOO)

- **Computer literacy:** All BSc students must pass at least WRSC101 (8 credits) if registered for Applied Mathematics 1 or WRFC101 (8 credits) (or equivalent) or have passed an appropriate competency test.
- Unless Senate decides otherwise, a candidate who has failed a particular module three times shall not be allowed to re-register for that module.
- Where modules have substantially overlapping outcomes, credit shall not be given for more than one of those modules.

- Candidates registered for a degree in Statistics may not accumulate more than 40 credits from second year modules and 60 credits from third year modules presented by the Department of Statistics.
- Candidates registered for a degree in Geography may not accumulate more than 60 credits from third year modules presented in the Department of Geosciences.
- **Maximum credits offered for the BSc**: Unless the Dean decides otherwise, students may not offer modules to a value of more than 380 credits.
- 40 credits of Physiology 2 (BSP2) can only be registered in curriculum 20003 and 20020.

PROMOTION

- A candidate shall be allowed to register for modules on the second-year level only if he/she has passed first-year level modules in an approved programme with a total of at least 60 credits.
- A candidate shall be allowed to register for modules on the third-year level only if he/she has passed modules in an approved programme with a total of at least 180 credits of which at least 60 are on second-year level.
- Notwithstanding points 1 and 2 above, students who have not completed 128 credits at first-year level, must register for the balance of the 128 first-year credits before they may concurrently register for any second-year level credits. In the same way students who have not completed 120 credits at second-year level, must register for the balance of the 120 second-year credits before they may concurrently register for any third-year credits. In the case of timetable clashes between higher and lower year level modules the student must complete the lower level modules first.

DURATION

The programme shall extend over a minimum of three years of full-time study.

LINKED MODULES

For assessment purposes, certain modules offered by the Department in the Faculty of Science are classified as linked modules. The pass mark for modules in the Department is 50%. Linked modules, however, may be "passed on link" by earning a mark of less than 50%, provided that the aggregate mark for all the linked modules in the group is at least 50% and provided that at least a sub-minimum mark is achieved for the linked module and provided that the marks for all the linked modules have been achieved in the same academic year (including the reassessment period in January of the following year). A "fail" result achieved in a linked module will be amended to "pass on link" if the abovementioned conditions have been met.

CHOICE OF MODULES

Unless Senate decides otherwise, an approved curriculum shall consist of modules satisfying the requirements of the applicable rules above and be such that there are no lecture or examination timetable clashes at any stage and all prerequisites for subsequent modules are satisfied.

Specific prerequisites for certain modules

Candidates must comply with the sub-minimum requirements for modules set out in the Syllabus sections of the General Prospectus.

Summerstrand Campus: All modules for the BSc degree will be offered on the Summerstrand Campus.

8.1 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: APPLIED MATHEMATICS, COMPUTER SCIENCE, MATHEMATICAL STATISTICS AND PHYSICS: FULL-TIME (QUALIFICATION CODE: 20023 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 386)

With majors chosen from Applied Mathematics, Computer Science, Mathematics, Mathematical Statistics and Physics.

The following curriculum is a recommended programme for the BSc degree in the Faculty of Science. Other subject combinations are possible but not necessarily sensible. Discuss any other subject combinations with the relevant Heads of Department.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Select four of the following groups:			
	Applied Mathematics I			
	Graph Theory	Semester 1	MAPM111	8
	Mathematical Modelling	Semester 1	MAPM112	8
	Mechanics	Semester 2	MAPM113	8
	Numerical Methods I	Semester 2	MAPM114	8
	Computer Science I (if Applied Mathematics selected)			
	Programming Fundamentals 1.1	Semester 1	WRA101	8
	Programming Fundamentals 1.2	Semester 2	WRA102	8
	Computing Fundamentals for Scientists 1.1	Semester 1	WRSC101	8
	Computing Fundamentals 1.2	Semester 2	WRFC102	8
	Computer Science I			
	Programming Fundamentals 1.1	Semester 1	WRA101	8
	Programming Fundamentals 1.2	Semester 2	WRA102	8
	Computing Fundamentals 1.1	Semester 1	WRFC101	8
	Computing Fundamentals 1.2	Semester 2	WRFC102	8

		Presented	Module Code	Credit Value
	Mathematics I			
	Algebra 1	Semester 1	MATH101	8
	Differential Calculus	Semester 1	MATH102	8
	Integral Calculus	Semester 2	MATH103	8
	Algebra II	Semester 2	MATH104	8
	Physics I			
	Mechanics and Thermodynamics	Semester 1	F101	15
	Electricity, Magnetism and Optics	Semester 2	F102	15
	Statistics I			
	Statistics Probability & Distribution Theory	Semester 1	STAT101	15
	Introduction to Statistical Inference	Semester 2	STAT102	15
	Credits First Year			**124/126**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Select three of the following groups corresponding to the modules selected in the first year:			
	Computer Science II (select either A+B or A+C)			
	A:			
	Data Structures and Algorithms 2.1	Semester 1	WRA201	8
	Data Structures and Algorithms 2.2	Semester 2	WRA202	8
	Computer Architecture 2.1	Semester 1	WRC201	6
	Information Systems 2.1	Semester 1	WRI201	6
	Information Systems 2.2	Semester 2	WRI202	6
	B:			
	Web Systems 2.1	Semester 1	WRWS201	8
	Web Systems 2.2	Semester 2	WRWS202	8
	C:			
	Computer Architecture 2.2	Semester 2	WRC202	6
	Applied Mathematics II			
	Differential Equations	Semester 1	MAPM211	10
	Numerical Methods 2	Semester 1	MAPM212	10
	Transform Theory	Semester 2	MAPM213	10
	Linear Optimisation	Semester 2	MAPM214	10
	Mathematics II			
	Multivariable and Vector Calculus	Semester 1	MATH211	20
	Linear Algebra	Semester 2	MATH203	10
	Real Analysis	Semester 2	MATH214	10
	Physics II			
	Optics and Thermodynamics	Semester 1	F210	20
	Mechanics, Modern & Nuclear Physics	Semester 2	F212	20

		Presented	Module Code	Credit Value
	Statistics II			
	Theory of Distribution	Semester 1	STAT201	20
	Regression Analysis & Advanced Regression Topics	Semester 2	STAT203	20
	Credits Second Year			**120/130**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Select two of the following majors corresponding to the modules selected in the previous year:			
	Computer Science III (select either A+B or A+C): ♦			
	A:			
	Advanced Programming 3.1	Semester 1	WRAP301	10
	Advanced Programming 3.2	Semester 2	WRAP302	11
	Database Systems 3	Semester 1	WRDB301	7
	User Interface Design	Semester 2	WRUI301	7
	Project	Year	WRR301	9
	B:			
	Advanced Data Structures	Semester 1	WRA301	10
	Languages and Automata Theory	Semester 2	WRL301	10
	C:			
	Multimedia Systems 3.1	Semester 1	WRMS301	10
	Multimedia Systems 3.2	Semester 2	WRMS302	10
	Applied Mathematics III ♦			
	Partial Differential Equations	Semester 1	MAPM311	15
	Finite Difference Methods	Semester 1	MAPM312	15
	Non-linear Optimisation	Semester 2	MAPM313	15
	Dynamical Systems	Semester 2	MAPM314	15
	Mathematics III ♦			
	Advanced Linear Algebra	Semester 1	MATH311	15
	Advanced Real Analysis	Semester 1	MATH302	15
	Modern Algebra	Semester 2	MATH303	15
	Complex Functions	Semester 2	MATH314	15
	Physics III ♦			
	Electrodynamics & Quantum Mechanics	Semester 1	F310	30
	Crystallography & Solid State Physics	Semester 2	F321	30
	Statistics III ♦			
	Statistical Inference	Semester 1	STAT301	24
	Special Topics in Statistics	Semester 1	STAT304	6
	Theory of Linear Modules	Semester 2	STAT305	10
	Time Series Analysis	Semester 2	STAT307	10

		Presented	Module Code	Credit Value
	Operations Research	Semester 2	STAT309	10
	Credits Third Year			**124**

♦ Major modules (please refer to the General Prospectus).

***Choosing the combination*:**	
Year 1	Applied Mathematics 1, Computer Science 1, Mathematics 1 and Mathematical Statistics 1.
Year 2	Applied Mathematics 2, Mathematics 2 and Mathematical Statistics 2.
Year 3	Applied Mathematics 3 and Mathematical Statistics 3 leads to a career in **Industrial Mathematics** which is the problem-driven blend of Mathematics and Statistics that uses mathematical technologies to solve industrial problems. Industrial mathematics is an independent field which studies all mathematical methods that are directly relevant to industry.
	Industrial Mathematicians apply their talents to: • Optimize and manage factory production. • Design and test products. • Ensure quality control and customer service procedure. • Strategic planning. • Risk management. • Perform statistical analyses.
***Choosing the combination*:**	
Year 1	Applied Mathematics 1, Computer Science 1, Mathematics1 and (Mathematical Statistics 1 or Physics 1).
Year 2	Applied Mathematics 2, Computer Science 2, Mathematics 2.
Year 3	Applied Mathematics 3 and Computer Science 3 leads to a career in **Computational Mathematics.** Computational Mathematics is an innovative, multidisciplinary program whose focus lies in the intersection of mathematics and computer science. Graduates of the program will be able to deploy effectively a wide range of mathematical and computational techniques to solve problems in science and commerce; to develop, enhance and maintain the relevant software tools; and to communicate results of complex modules and simulations to end-users.
	Computational mathematicians study: • Parallel processes and parallel algorithms. • Numerical analysis and complexity. • Artificial intelligence and neural networks. • Optimization and non-linear programming. • Numerical solutions to PDE's and large scale computations. • Mathematical problems too complex for paper/pencil solutions. • Coding and Cryptography. • Computational geometry.

***Choosing the combination*:**	
Year 1	Applied Mathematics 1, Mathematics 1, Mathematical Statistics1**,** Physics and Computer Fundamentals.
Year 2	Applied Mathematics 2, Physics 2 and the modules MATH202, 203 and STAT202.
Year 3	Applied Mathematics 3 and Physics 3 leads to a career in **Computational Physics. Computational physics** is the study and implementation of numerical algorithms in order to solve problems in physics for which a quantitative theory already exists. Physicists often have a very precise mathematical theory describing how a system will behave. Physics problems are in general very difficult to solve exactly. Even apparently simple problems, such as calculating the wave function of an electron orbiting an atom in a strong electric field, may require great effort to formulate a practical algorithm (if one can be found).In addition, the computational cost of solving quantum mechanical problems is generally exponential in the size of the system (see computational complexity theory).Seeing as a typical macroscopic solid has of the order of 10^{23} constituent particles, it may be somewhat of an understatement to say this is a bit of a problem.
	Applications of computational physics Computational methods are widely used in solid state physics, fluid mechanics and image analysis in electron microscopy, amongst others. Computational physics borrows a number of ideas from computational chemistry – for example, the density functional theory used by computational physicists to calculate properties of solids is basically the same as that used by chemists to calculate the properties of molecules.
***Choosing the combination*:**	
Year 1	Applied Mathematics 1, Computer Science 1, Mathematics 1 and Physics 1.
Year 2	Physics 2, Computer Science 2 (and 40 credits from Applied Mathematics 2 and Mathematics 2).
Year 3	Computer Science 3 or (Computer Science 3 and Physics 3) provides for a combination of the problem-solving skills and analytical thinking developed through Physics and Computer Science which is an interface between science, technology and engineering and business. This combination provides a powerful platform for entering a variety of businesses, banks, the government and the military as well as various postgraduate programmes. Graduates in physics and computer science can, and do, excel in a diverse range of situations and occupation.
***Choosing the combination*:**	
Year 1	Applied Mathematics 1, Computer Science 1, Mathematics 1 and Physics 1.
Year 2	Computer Science 2, Mathematics 2 (and 40 credits from Applied Mathematics 2 and Physics 2).
Year 3	Computer Science 3 and Mathematics 3 provides for a combination of the problem-solving skills, analytical thinking, programming design and application development. This program provides a powerful platform for entering a variety of employment opportunities in business. It can also lead to various postgraduate programmes.

8.2 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: BIOCHEMISTRY, CHEMISTRY AND MICROBIOLOGY: FULL-TIME (QUALIFICATION CODE: 20020 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 368)

The following curriculum is a recommended programme for the BSc degree in the Faculty of Science. Other subject combinations are possible but not necessarily sensible. Any other subject combinations must be discussed with the relevant Heads of Department.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

CAREER OPTIONS

Industry (chemical, food, biotechnological), teaching, research (medical, agricultural, chemical, sport, nutritional).

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Botany 1			
	Plant Cell Biology	Semester 1	BOT110	7
	Plant Structure	Semester 1	BOT120	8
	Plant Evolution and Systematics	Semester 2	BOT130	7
	Plant Ecology and Environmental Botany	Semester 2	BOT140	8
	Chemistry 1			
	Chemistry General	Semester 1	CHG101	15
	Chemistry Inorganic	Semester 2	CHI101	9
	Chemistry Organic	Semester 2	CHO101	6
	Computer Science 1			
	Computing Fundamentals	Semester 1	WRFC101	8
	Mathematics Special 1			
	Mathematics Special 101	Semester 1	MATA101	8
	Mathematics Special 102	Semester 2	MATA102	8
	Physics Special 1			
	Mechanics & Thermodynamics	Semester 1	FBB101	7

		Presented	Module Code	Credit Value
	Electricity, Magnetism and Optics	Semester 2	FBB102	7
	Zoology 1			
	Animal Cell Biology and Histology	Term 1	ZOO110	7
	Animal Diversity	Term 2	ZOO120	8
	Principles of Animal Evolution	Term 3	ZOO131	8
	Animal Patterns in Time and Space	Term 4	ZOO141	7
	Credits First Year			**128**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Select three of the following groups corresponding to the modules selected in the first year:			
	(Note that if Microbiology is a major, then you must register for Biochemistry 2. If Microbiology 2 is not registered for together with Biochemistry 2, then BM251 must be registered for instead of BC221.)			
	Biochemistry 2			
	Introductory Biochemistry	Term 1	BC211	10
	Immunology	Term 2	BC221	10
	Carbohydrate Metabolism	Term 3	BC231	10
	Lipid Metabolism	Term 4	BC241	10
	Botany 2			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Chemistry 2			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Organic	Semester 2	CHO201	12
	Chemistry Physical	Year	CHP203	12
	Microbiology 2			
	Introductory Microbiology	Term 1	BM210	10
	Host-Microbe Interactions and Epidemiology	Term 3	BM221	10
	Control of Micro-Organisms	Term 4	BM240	10
	Microbial Genetics	Term 2	BM251	10
	Physiology 2			
	Physiology & Related Pathology of Human Cellular, Muscular & Endocrine Systems	Term 1	BSP201	10
	Human Nervous System & Senses	Term 2	BSP202	10
	Human Transport & Circulatory System	Term 3	BSP203	10

		Presented	Module Code	Credit Value
	Human Digestive, Respiratory, Fluid Balance & Reproductive Systems	Term 4	BSP204	10
	Zoology 2			
	Comparative Vertebrate Anatomy	Semester 1	ZOO211	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Select two of the following majors corresponding to the modules selected in the previous year:			
	Biochemistry 3 ♦			
	Protein Technology	Semester 1	BC311	15
	Enzymology	Semester 1	BC330	15
	Eukaryotic Genetics	Term 3	BC341	15
	Cellular Biochemistry	Term 4	BC351	15
	Chemistry 3 ♦			
	Chemistry Inorganic	Year	CHI303	20
	Chemistry Organic	Year	CHO303	20
	Chemistry Physical	Year	CHP303	20
	Microbiology 3 ♦			
	Bacteriology and Microbial Ecology	Term 1	BM311	15
	Virology and Mycology	Term 2	BM321	15
	Molecular Genetics and Gene Manipulation	Term 3	BM341	15
	Industrial Microbiology and Biotechnology	Term 4	BM361	15
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

LINKED MODULES

For assessment purposes, certain modules offered by the Department in the Faculty of Science are classified as linked modules. The pass mark for modules in the Department is 50%. Linked modules, however, may be "passed on link" by earning a mark of less than 50%, provided that the aggregate mark for all the linked modules in the group is at least 50% and provided that at least a sub-minimum mark is achieved for the linked module and provided that the marks for all the linked modules have been achieved in the same academic year (including the reassessment period in January of the following year). A "fail" result achieved in a linked module will be amended to "pass on link" if the abovementioned conditions have been met.

8.3 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: BIOLOGICAL SCIENCES: MARINE BIOLOGY, CONSERVATION BIOLOGY, ECOLOGY, ENVIRONMENTAL MANAGEMENT & COASTAL ZONE MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 20025 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 368)

The following curriculum is a recommended programme for the BSc degree in the Faculty of Science. Other subject combinations are possible but not necessarily sensible. Any other subject combinations must be discussed with the relevant Heads of Department.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40-49%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Botany I			
	Plant Cell Biology	Semester 1	BOT110	7
	Plant Structure	Semester 1	BOT120	8
	Plant Evolution and Systematics	Semester 2	BOT130	7
	Plant Ecology and Environmental Botany	Semester 2	BOT140	8
	Computer Science I			
	Computing Fundamentals	Semester 1	WRFC101	8
	Zoology I			
	Animal Cell Biology and Histology	Term 1	ZOO110	7
	Animal Diversity	Term 2	ZOO120	8
	Principles of Animal Evolution	Term 3	ZOO131	8
	Animal Patterns in Time and Space	Term 4	ZOO141	7
	Select either Option A or Option B:			
	A1: Geography I			
	Introduction to Economic and Settlement Geography	Term 1	GEO111	7
	Introduction to Meteorology and Climatology	Term 2	GEN101	8
	Introduction to Geomorphology	Term 3	GEN102	8

		Presented	Module Code	Credit Value
	Introduction to Geo-Information Science & Cartography	Term 4	GIS101	8
	A2: Geology I			
	Introduction to Earth	Semester 1	GGL111	7
	Mineralogy and Petrology	Semester 1	GGL112	8
	Physical Geology	Semester 2	GGL113	7
	Structural and Economic Geology	Semester 2	GGL114	8
	B1: Chemistry I			
	Chemistry General	Semester 1	CHG101	15
	Chemistry Inorganic	Semester 2	CHI101	9
	Chemistry Organic	Semester 2	CHO101	6
	B2: Mathematics Special I			
	Mathematics Special	Semester 1	MATA101	8
	Mathematics Special	Semester 2	MATA102	8
	B3: Physics Special I			
	Mechanics & Thermodynamics	Semester 1	FBB101	7
	Electricity, Magnetism & Optics	Semester 2	FBB102	7
	Credits First Year			**128/129**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Zoology II			
	Comparative Vertebrate Anatomy	Semester 1	ZOO211	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Select one of the following groups corresponding to the modules selected in the first year:			
	Chemistry II			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Physical	Year	CHP203	12
	Chemistry Organic	Semester 2	CHO201	12

		Presented	Module Code	Credit Value
	Geography II			
	Pedo-Geomorphological Studies	Term 1	GEN211	10
	Economic and Development Geography	Term 2	GEO212	10
	Introduction to Cartography and GIS	Term 3	GIS211	10
	Society and Environment	Term 4	GEN212	10
	Geology II			
	Palaeontology	Semester 1	GGL201	10
	Structural Geology	Semester 1	GGL202	10
	Mineralogy	Semester 2	GGL203	10
	Sedimentary Petrology	Semester 2	GGL204	10
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Botany III ♦			
	Applied Marine Botany	Semester 1	BOT310	12
	Plant Physiology	Semester 1	BOT320	12
	Plant Eco-physiology	Semester 2	BOT330	12
	Plant Ecology and Environmental Management	Semester 2	BOT340	12
	Project	Year	BOT350	12
	Zoology III ♦			
	Aquatic Ecology	Semester 1	ZOO311	15
	Applied Aquatic Science	Semester 1	ZOO322	15
	Integrating Topics in Zoology	Semester 2	ZOO334	15
	Evolutionary Ecology	Semester 2	ZOO342	15
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

8.4 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: ENVIRONMENTAL SCIENCES: FULL-TIME (QUALIFICATION CODE: 20026 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 368)

The following curriculum is a recommended programme for the BSc degree in the Faculty of Science. Other subject combinations are possible but not necessarily sensible. Any other subject combinations must be discussed with the relevant Heads of Department.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40-49%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory module:			
	Computer Science I			
	Computing Fundamentals	Semester 1	WRFC101	8
	Select four of the following groups:			
	Botany I			
	Plant Cell Biology	Semester 1	BOT110	7
	Plant Structure	Semester 1	BOT120	8
	Plant Evolution and Systematics	Semester 2	BOT130	7
	Plant Ecology and Environmental Botany	Semester 2	BOT140	8
	Chemistry I			
	Chemistry General	Semester 1	CHG101	15
	Chemistry Inorganic	Semester 2	CHI101	9
	Chemistry Organic	Semester 2	CHO101	6
	Geography I			
	Introduction to Economic and Settlement Geography	Term 1	GEO111	7
	Introduction to Meteorology and Climatology	Term 2	GEN101	8
	Introduction to Geomorphology	Term 3	GEN102	8
	Introduction to Geo-Information Science and Cartography	Term 4	GIS101	8

		Presented	Module Code	Credit Value
	Geology I			
	Introduction to Earth	Semester 1	GGL111	7
	Mineralogy and Petrology	Semester 1	GGL112	8
	Physical Geology	Semester 2	GGL113	7
	Structural and Economic Geology	Semester 2	GGL114	8
	Mathematics Special I			
	Mathematics Special 101	Semester 1	MATA101	8
	Mathematics Special 102	Semester 2	MATA102	8
	Physics Special I			
	Mechanics & Thermodynamics	Semester 1	FBB101	7
	Electricity, Magnetism & Optics	Semester 2	FBB102	7
	Zoology I			
	Animal Cell Biology and Histology	Term 1	ZOO110	7
	Animal Diversity	Term 2	ZOO120	8
	Principles of Animal Evolution	Term 3	ZOO131	8
	Animal Patterns in Time and Space	Term 4	ZOO141	7
	Credits First Year			**128/129**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Select three of the following groups corresponding to the modules selected in the first year:			
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8
	Project	Year	BOT250	8
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Select either A or B:			
A	**Chemistry II**			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Physical	Year	CHP203	12
	Chemistry Organic	Semester 2	CHO201	12
B	**Geography II**			
	Pedo-Geomorphological Studies	Term 1	GEN211	10
	Economic and Development Geography	Term 2	GEO212	10
	Introduction to Cartography and GIS	Term 3	GIS211	10
	Society and Environment	Term 4	GEN212	10

		Presented	Module Code	Credit Value
	Geology II			
	Palaeontology	Semester 1	GGL201	10
	Structural Geology	Semester 1	GGL202	10
	Mineralogy	Semester 2	GGL203	10
	Sedimentary Petrology	Semester 2	GGL204	10
	Zoology II			
	Comparative Vertebrate Anatomy	Semester 1	ZOO211	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Select two of the following majors corresponding to the modules selected in the previous year:			
	Botany III ♦			
	Applied Marine Botany	Semester 1	BOT310	12
	Plant Physiology	Semester 1	BOT320	12
	Project	Year	BOT350	12
	Plant Eco-physiology	Semester 2	BOT330	12
	Plant Ecology and Environmental Management	Semester 2	BOT340	12
	Chemistry III			
	Chemistry Inorganic	Year	CHI303	20
	Chemistry Organic	Year	CHO303	20
	Chemistry Physical	Year	CHP303	20
	Geography III ♦			
	Geo-Information Systems	Term 1	GIS301	15
	Geomorphology	Term 2	GEN301	15
	Photogrammetry and Remote Sensing	Term 3	GIS304	15
	Environmental Resource Management	Term 4	GEN313	15
	Geology III ♦			
	Igneous Petrology	Semester 1	GGL301	15
	Stratigraphy	Semester 1	GGL302	15
	Geo-tectonics and Metamorphic Petrology	Semester 2	GGL303	15
	Economic Geology	Semester 2	GGL304	15
	Zoology III ♦			
	Aquatic Ecology	Semester 1	ZOO311	15
	Applied Aquatic Science	Semester 1	ZOO322	15
	Integrating Topics in Zoology	Semester 2	ZOO334	15
	Evolutionary Ecology	Semester 2	ZOO342	15

		Presented	Module Code	Credit Value
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

8.5 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: GEOSCIENCES: GEOGRAPHY AND GEOLOGY: FULL-TIME (QUALIFICATION CODE: 20024 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 368)

The following curriculum is a recommended programme for the BSc degree in the Faculty of Science. Other subject combinations are possible but not necessarily sensible. Any other subject combinations must be discussed with the relevant Heads of Department.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 3 (40-49%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Computer Science I			
	Computing Fundamentals	Semester 1	WRFC101	8
	Geography I			
	Introduction to Economic and Settlement Geography	Term 1	GEO111	7
	Introduction to Meteorology and Climatology	Term 2	GEN101	8
	Introduction to Geomorphology	Term 3	GEN102	8
	Introduction to Geo-Information Science and Cartography	Term 4	GIS101	8
	Geology I			
	Introduction to Earth	Semester 1	GGL111	7
	Mineralogy and Petrology	Semester 1	GGL112	8
	Physical Geology	Semester 2	GGL113	7
	Structural and Economic Geology	Semester 2	GGL114	8

		Presented	Module Code	Credit Value
	Select either Option A or Option B:			
	A1: Chemistry I			
	Chemistry General	Semester 1	CHG101	15
	Chemistry Inorganic	Semester 2	CHI101	9
	Chemistry Organic	Semester 2	CHO101	6
	A2: Mathematics Special			
	Mathematics Special 101	Semester 1	MATA101	8
	Mathematics Special 102	Semester 2	MATA102	8
	A3: Physics Special I			
	Mechanics & Thermodynamics	Semester 1	FBB101	7
	Electricity, Magnetism & Optics	Semester 2	FBB102	7
	B1: Botany I			
	Plant Cell Biology	Semester 1	BOT110	7
	Plant Structure	Semester 1	BOT120	8
	Plant Evolution and Systematics	Semester 2	BOT130	7
	Plant Ecology and Environmental Botany	Semester 2	BOT140	8
	B2: Zoology I			
	Animal Cell Biology and Histology	Term 1	ZOO110	7
	Animal Diversity	Term 2	ZOO120	8
	Principles of Animal Evolution	Term 3	ZOO131	8
	Animal Patterns in Time and Space	Term 4	ZOO141	7
	Credits First Year			**128/129**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Geography II			
	Pedo-Geomorphological Studies	Term 1	GEN211	10
	Society and Environment	Term 3	GEN212	10
	Economic and Development Geography	Term 2	GEO212	10
	Introduction to Cartography and GIS	Term 4	GIS211	10
	Geology II			
	Palaeontology	Semester 1	GGL201	10
	Structural Geology	Semester 1	GGL202	10
	Mineralogy	Semester 2	GGL203	10
	Sedimentary Petrology	Semester 2	GGL204	10
	Select one of the following groups:			
	Botany II			
	Plant and Algal Systematics	Semester 1	BOT210	8
	Plant Ecology	Semester 1	BOT220	8

		Presented	Module Code	Credit Value
	Marine Botany	Semester 2	BOT230	8
	Economic Botany and Plant Biotechnology	Semester 2	BOT240	8
	Project	Year	BOT250	8
	Zoology II			
	Comparative Vertebrate Anatomy	Semester 1	ZOO211	10
	Animal Physiology	Semester 1	ZOO221	10
	Population Ecology	Semester 2	ZOO231	10
	Community Ecology	Semester 2	ZOO241	10
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Geography III ♦			
	Geo-Information Systems	Term 1	GIS301	15
	Geomorphology	Term 2	GEN301	15
	Photogrammetry and Remote Sensing	Term 3	GIS304	15
	Environmental Resource Management	Term 4	GEN313	15
	Geology III ♦			
	Igneous Petrology	Semester 1	GGL301	15
	Stratigraphy	Semester 1	GGL302	15
	Geotectonics and Metamorphic Petrology	Semester 2	GGL303	15
	Economic Geology	Semester 2	GGL304	15
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

8.6 BACHELOR OF SCIENCE/BACCALAUREUS SCIENTIAE: HUMAN MOVEMENT SCIENCE AND BIOCHEMISTRY: FULL-TIME (QUALIFICATION CODE: 20003 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 372)

The following curriculum is a recommended programme for the BSc degree in the Faculty of Science. Other subject combinations are possible but not necessarily sensible. Any other subject combinations must be discussed with the relevant Heads of Department.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Chemistry I			
	Chemistry General	Semester 1	CHG101	15
	Chemistry Inorganic	Semester 2	CHI101	9
	Chemistry Organic	Semester 2	CHO101	6
	Computer Science II			
	Computing Fundamentals 1.1	Semester 1	WRFC101	8
	Human Movement Science			
	Sport Coaching I	Semester 1	HMS130	8
	Anatomy	Semester 2	HMS131	8
	Sport and Exercise Psychology	Semester 1	HMS134	8
	Motor Control and Learning I	Semester 2	HMS135	8
	Exercise Science I	Semester 1	HMS136	8
	Sport Management I	Semester 1	HMS137	8
	Recreation I	Semester 2	HMS138	8
	Evaluation I	Semester 2	HMS139	8
	Mathematics Special I			
	Mathematics Special 101	Semester 1	MATA101	8
	Mathematics Special 102	Semester 2	MATA102	8

		Presented	Module Code	Credit Value
	Select two of the following modules:			
	Human Movement Science I			
	Athletics (Field)	Term 2	HMS116	5
	Athletics (Track)	Term 1	HMS117	5
	Cricket	Term 4	HMS118	5
	Dance	Term 3	HMS119	5
	Gymnastics	Term 4	HMS120	5
	Hockey	Term 2	HMS121	5
	Life Saving	Term 1	HMS122	5
	Netball	Term 2	HMS123	5
	Rugby	Term 3	HMS124	5
	Soccer	Term 3	HMS125	5
	Swimming	Term 1	HMS126	5
	Tennis	Term 4	HMS127	5
	Credits First Year			**128**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Biochemistry II			
	Introductory Biochemistry	Term 1	BC211	10
	Carbohydrate Metabolism	Term 3	BC231	10
	Lipid Metabolism	Term 4	BC241	10
	Microbial Genetics	Term 2	BM251	10
	Physiology II			
	Physiology & Rel Patho of Human Cell, Musc & End	Term 1	BSP201	10
	Physiology: Human Nervous System & Senses	Term 2	BSP202	10
	Physiology: Human Transport & Circulatory Systems	Term 3	BSP203	10
	Physiology: Human Digest, Resp, Fluid Bal & Repro	Term 4	BSP204	10
	Human Movement Science 2			
	Biomechanics I	Semester 2	HMS132	8
	Exercise Physiology I	Semester 1	HMS133	8
	Anatomy II	Semester 2	HMS231	8
	Exercise Science II	Semester 1	HMS236	8
	Select one of the following modules:			
	Human Movement Science II			
	Exercise Science Practice Specialisation	Year	HMS359	16

		Presented	Module Code	Credit Value
	Sport Specialisation	Year	HMS360	16
	Credits Second Year			**128**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Biochemistry III ♦			
	Protein Technology	Term 1	BC311	15
	Enzymology	Term 2	BC330	15
	Eukaryotic Genetics	Term 3	BC341	15
	Cellular Biochemistry	Term 4	BC351	15
	Human Movement Science III ♦			
	First Aid	Semester 1	HMS140	8
	Exercise Psychology II	Semester 1	HMS333	8
	Sport & Exercise Psychology II	Semester 1	HMS334	8
	Motor Control & Learning II	Semester 1	HMS335	8
	Biomechanics II	Semester 2	HMS332	8
	Evaluation Methods II	Semester 2	HMS339	8
	Growth & Development	Semester 2	HMS340	8
	Credits Third Year			**116**

♦ Major modules (please refer to the General Prospectus).

LINKED MODULES

For assessment purposes, certain modules offered by the Department of Biochemistry & Microbiology in the Faculty of Science are classified as **linked modules**. Linked modules are linked with their relevant couplet modules. The pass mark for modules in the Department is 50%. Linked modules, however, may be "passed on link" by earning a mark of less than 50%, provided that the aggregate mark for the linked module and the relevant couplet module is at least 50%, a mark of 40% is obtained in an examination and provided that at least a sub-minimum mark is achieved for the linked module. The sub-minimum mark for linked modules is 40%. A "fail" result achieved in a linked module will be amended to "pass on link" if the abovementioned conditions have been met. **Modules may only be passed on link in the same academic year.**

8.7 BACHELOR OF SCIENCE: INFORMATION SYSTEMS/ BACCALAUREUS SCIENTIAE: INFORMATICAE SYSTEMS: FULL-TIME (QUALIFICATION CODE: 20099 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 360)

ADMISSION REQUIREMENTS

- Admission Points Score of 38.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics.
- Applicants with an Admission Points Score between 28 and 37 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

Specific prerequisites for certain modules
Candidates must comply with the prerequisites for modules listed in the Syllabus and the "List of Modules", as well as with the sub-minimum requirements for modules set out in the Faculty Prospectus.

APPLICABLE RULES

- Unless Senate decides otherwise, the degree shall be obtained by completing modules with a total credit value of at least 360 of which
  - a minimum of 136 credits are on NQF level 5 and a minimum of 174 credits are on NQF level 6;
  - a minimum of 255 credits are from the compulsory modules and 105 are from the elective modules.
- Unless Senate decides otherwise, a candidate who has failed a particular module three times shall not be allowed to re-register for that module.
- Where modules have substantially overlapping outcomes, credit shall not be given for more than one of those modules.

CHOICE OF MODULES
Unless Senate decides otherwise, the approved curriculum shall consist of the modules outlined below, satisfying the requirements and be such that there are no lecture or examination timetable clashes at any stage and all prerequisites for subsequent modules are satisfied.

DURATION
The qualification shall extend over three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Computer Science I			
	Computing Fundamentals 1.1	Semester 1	WRFC101	8
	Computing Fundamentals 1.2	Semester 2	WRFC102	8
	Programming Fundamentals 1.1	Semester 1	WRA101	8
	Programming Fundamentals 1.2	Semester 2	WRA102	8
	Computing Fundamentals for Scientists	Semester 1	WRSC101	8

		Presented	Module Code	Credit Value
	Mathematics Special I			
	Mathematics Special A1	Semester 1	MATA101	8
	Mathematics Special A2	Semester 2	MATA102	8
	Statistics I			
	Financial Mathematics	Semester 1	STAE101	12
	Business Statistics	Semester 2	STAE102	12
	Business Management I			
	Introduction to Business Management and Entrepreneurship	Semester 1	EB101	12
	Select 36 credits from groups A to D:			
A	**Applied Mathematics I**			
	Graph Theory	Semester 1	MAPM111	8
	Mathematical Modelling	Semester 1	MAPM112	8
B	**Business Management I**			
	Introduction to Business Functions	Semester 2	EB102	12
C	**Economics I**			
	Introduction to Microeconomics	Semester 1	EC101	12
	Introduction to Macroeconomics	Semester 2	EC102	12
D	**Accounting I**			
	Accounting 1.1	Semester 1	R101	10
	Accounting 1.2 *or*	Semester 2	R102	14
	General Accounting 1.2	Semester 2	RG102	14
	Credits First Year			**120**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Computer Science II			
	Data Structures and Algorithms 2.1	Semester 1	WRA201	8
	Data Structures and Algorithms 2.2	Semester 2	WRA202	8
	Computer Architecture Networks 2.1	Semester 1	WRC201	6
	Introduction to Business Systems	Semester 2	WRBA202	6
	Information Systems 2.1	Semester 1	WRI201	6
	Information Systems 2.2	Semester 2	WRI202	6
	Web Systems II			
	Web Systems 2.1	Semester 1	WRWS201	8
	Web Systems 2.2	Semester 2	WRWS202	8
	Mathematics Special II			
	Mathematics Special B1	Semester 1	MATB101	8
	Mathematics Special B2	Semester 2	MATB102	8

		Presented	Module Code	Credit Value
	Select 48 credits from groups A to E:			
A	**Computer Science II**			
	Business Process Modelling	Semester 1	WRBP201	6
	Computer Architecture and Networks 2.2	Semester 2	WRC202	6
B	**Statistics II**			
	Probability, Distributors Theory and Estimation	Semester 1	STAT202	20
	Regression Analysis and Advanced Regression Topics	Semester 2	STAT203	20
C	**Accounting II/General Accounting II**			
	Accounting 2.1	Semester 1	R201	14
	Accounting 2.2	Semester 2	R202	14
	OR			
	General Accounting 2.1	Semester 1	RG201	14
	General Accounting 2.2	Semester 2	RG202	14
D	**Management II**			
	Marketing Management	Semester 1	EBM201	14
	Logistics/Purchasing Management	Semester 2	EBM202	14
E	**Economics II**			
	Macroeconomics	Semester 1	EC201	14
	Microeconomics	Semester 2	EC202	14
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Computer Science III ♦			
	Advanced Data Structures	Semester 1	WRA301	10
	Advanced Programming 3.1	Semester 1	WRAP301	10
	Advanced Programming 3.2	Semester 2	WRAP302	11
	Database Systems	Semester 1	WRDB301	7
	User Interface Design	Semester 2	WRUI301	7
	Project	Year	WRR301	9
	Multimedia Systems III ♦			
	Multimedia Systems 3.1	Semester 1	WRMS301	10
	Multimedia Systems 3.2	Semester 2	WRMS302	10
	Management Information Systems III ♦			
	Management Information Systems 3.1	Semester 1	WRB301	8
	Management Information Systems 3.2	Semester 2	WRB302	8
	Select 31 credits from groups A to D:			
A	**Computer Science III ♦**			
	Language and Automata Theory	Semester 2	WRL301	10

		Presented	Module Code	Credit Value
	Enterprise Resource Planning Systems 3.1	Semester 1	WRER301	11
	Enterprise Resource Planning Systems 3.2	Semester 2	WRER302	11
B	**Statistics III**			
	Non-Parametric Statistical Procedures	Semester 1	STAT302	10
	Econometric Models	Semester 1	STAT303	14
	Special Topics in Statistics	Semester 1	STAT304	6
	Experimental Design & ANOVA	Semester 2	STAT306	10
	Time Series Analysis	Semester 2	STAT307	10
	Operations Research	Semester 2	STAT309	10
C	**Business Management III**			
	Financial Management	Semester 1	EBM301	24
	General and Strategic Management	Semester 2	EBM302	24
D	**Economics III**			
	Public Economics	Semester 1	ECO301	10
	Economics of Financial Markets	Semester 1	ECO302	10
	Applied Micro-economics	Semester 1	ECO303	10
	Econometrics	Semester 1	ECO304	10
	Development Economics	Semester 2	ECO305	10
	International Economics	Semester 2	ECO306	10
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

NOTE: Candidates must ensure that they comply with all the prerequisites for the elective modules.

8.8 BACHELOR OF SCIENCE /BACCALAUREUS SCIENTIAE: MATERIALS DEVELOPMENT: FULL-TIME (QUALIFICATION CODE: 20022 – A1) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 368)

The following curriculum is based on the three cornerstone subjects in Science (Mathematics, Physics and Chemistry) and provides an excellent basis for persons wishing to **teach physical science and/or mathematics** up to senior secondary level at school. It also offers a sensible subject combination for postgraduate studies in these subjects.

This curriculum will also launch into a **postgraduate programme** at the NMMU in Solid State Physics, Electron Microscopy, Crystal Growth, Optical Fibre studies and Renewable Energy; all **with an emphasis on materials development**. In addition, the programme provides a platform from which the student can enter the field of materials science and engineering. Materials scientists develop and analyse various alloys, ceramics and other novel materials. As such they play an increasingly important role in adding value to the range of minerals mined in South Africa.

ADMISSION REQUIREMENTS

- Admission Points Score of 40.
- Minimum statutory NSC requirements for degree entry must be met.
- English, Afrikaans or isiXhosa (home language or first additional language) on at least level 3 (40-49%).
- NSC achievement rating of at least 4 (50-59%) for Mathematics.
- Applicants with an Admission Points Score between 30 and 39 may be referred to write the Access Assessment Test before a decision is made on whether or not to admit the applicant to the course.

DURATION

The programme shall extend over a minimum of three years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Chemistry I			
	Chemistry General	Semester 1	CHG101	15
	Chemistry Inorganic	Semester 2	CHI101	9
	Chemistry Organic	Semester 2	CHO101	6
	Physics I			
	Mechanics and Thermodynamics	Semester 1	F101	15
	Electricity, Magnetism and Optics	Semester 2	F102	15
	Applied Mathematics I			
	Graph Theory	Semester 1	MAPM111	8
	Mathematical Modelling	Semester 1	MAPM112	8
	Mechanics	Semester 2	MAPM113	8
	Numerical Methods 1	Semester 2	MAPM114	8
	Mathematics I			
	Algebra 1	Semester 1	MATH101	8
	Differential Calculus	Semester 1	MATH102	8
	Integral Calculus	Semester 2	MATH103	8
	Algebra II	Semester 2	MATH104	8
	Computer Science I			
	Computing Fundamentals for Scientists	Semester 1	WRSC101	8
	Credits First Year			**132**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Select three of the following groups:			
	Applied Mathematics II			
	Differential Equations	Semester 1	MAPM211	10
	Numerical Methods 2	Semester 1	MAPM212	10
	Transform Theory	Semester 2	MAPM213	10

		Presented	Module Code	Credit Value
	Linear Optimisation	Semester 2	MAPM214	10
	Chemistry II			
	Chemistry Analytical	Semester 1	CHA201	9
	Chemistry Inorganic	Semester 1	CHI201	7
	Chemistry Organic	Semester 2	CHO201	12
	Chemistry Physical	Semester 2	CHP203	12
	Physics II			
	Optics and Thermodynamics	Semester 1	F210	20
	Mechanics, Modern and Nuclear Physics	Semester 2	F212	20
	Mathematics II			
	Multivariable and Vector Calculus	Semester 1	MATH211	20
	Linear Algebra	Semester 2	MATH203	10
	Real Analysis	Semester 2	MATH214	10
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Select two of the following majors corresponding to the modules selected in the previous year:			
	Applied Mathematics III ♦			
	Partial Differential Equations	Semester 1	MAPM311	15
	Finite Difference Methods	Semester 1	MAPM312	15
	Non-linear Optimisation	Semester 2	MAPM313	15
	Dynamical Systems	Semester 2	MAPM314	15
	Chemistry III ♦			
	Chemistry Inorganic	Year	CHI303	20
	Chemistry Organic	Year	CHO303	20
	Chemistry Physical	Year	CHP303	20
	Physics III ♦			
	Electrodynamics & Quantum Mechanics	Semester 1	F310	30
	Crystallography & Solid State Physics	Semester 2	F321	30
	Mathematics III			
	Advanced Linear Algebra	Semester 1	MATH311	15
	Advanced Real Analysis	Semester 1	MATH302	15
	Modern Algebra	Semester 2	MATH303	15
	Complex Functions	Semester 2	MATH314	15
	Credits Third Year			**120**

♦ Major modules (please refer to the General Prospectus).

9 BACHELOR OF TECHNOLOGY/BACCALAUREUS TECHNOLOGIAE

9.1 BACHELOR OF TECHNOLOGY/BACCALAUREUS TECHNOLOGIAE: AGRICULTURAL MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 4452 – 01/38) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- An applicable three-year tertiary or equivalent qualification.
- Academic qualifications, as well as relevant work experience, will be taken into account during selection.
- Students with less than two years' relevant experience will be required to write an admission test.
- Recognition of prior learning will be considered.

APPLICABLE RULES

A student who progresses at an unacceptable rate, may be refused further registration on grounds of poor academic performance. Such students may be referred to Student Counselling for consultation and evaluation. In order to obtain the qualification, the student must pass all the listed subjects.

DURATION

The Bachelor of Technology/Baccalaureus Technologiae: Agricultural Management is offered on a block release basis. This means that students attend two study schools of one week and two weeks respectively per year. Students master the skills and knowledge needed by means of self study and project work. This method of delivery makes it possible for working persons to register for the degree. On this basis, the duration of the degree qualification is two years. If sufficient demand exists, the qualification is also offered on a one-year full-time basis.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Financial Management IV ♦	Year	AGM4110	30
	Strategic Management IV ♦	Year	ASM4110	30
	Credits First Year			**60**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Animal Production IV (Option) ♦ *or*	Year	AAP4110	30
	Plant Production IV (Option) ♦	Year	APP4110	30
	Leadership development II ♦	Year	ALD2110	30
	Credits Second Year			**60**

♦ Major modules (please refer to the General Prospectus).

9.2 BACHELOR OF TECHNOLOGY/BACCALAUREUS TECHNOLOGIAE: CHEMISTRY: FULL-TIME/PART-TIME (QUALIFICATION CODE: 4165 – 01/21) (NQF LEVEL: 7, TOTAL CREDITS FOR QUALIFICATION: 120)

The Bachelor of Technology/Baccalaureus Technologiae: Chemistry qualification forms the fourth year of study at the NNMU. The standard of this qualification is high and offers a high degree of specialisation.

ADMISSION REQUIREMENTS

Entrance requirements for the B Tech Chemistry degree qualification are as follows: National Diploma: Analytical Chemistry or an equivalent qualification.

DURATION

The qualification can be done full-time (1 year) or part-time (2 years) at the university. The part-time qualification will only cover two of the subject areas within each respective year. The course timetable is structured to accommodate the part–time student. The theoretical modules for a particular year are offered during two evenings per week and one afternoon per week for the practical. The modules of research methodology will be done in the first year and the research project that is linked to the person's employment in the second year of study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time & Part-time				
	Compulsory modules:			
	Analytical Chemistry IV ♦		**CHA4120**	
	Advanced Atomic Spectroscopy	Year	ACC41T1	6
	Advanced Chromatography	Year	ACC42T1	6
	Analytical Method Development and Validation	Year	ACC43T1	6
	Analytical Practical Project	Year	ACC41P1	6
	Inorganic Chemistry IV ♦		**CHI4120**	
	Organometallic Chemistry	Year	ICC41T1	6
	Homogeneous Catalysis	Year	ICC42T1	6
	Bio-inorganic Chemistry	Year	ICC43T1	6
	Inorganic Practical Project	Year	ICC41P1	6
	Organic Chemistry IV ♦		**CHO4120**	
	Advanced Topics in Organic Chemistry	Year	OCC41T1	14
	Organic Practical Project	Year	OCC41P1	6
	Heterocycles and Natural Products	Year	OCC4101	4
	Chemistry Project (Special topic & research project) ♦	Year	CMP4110	24
	Physical Chemistry IV ♦		**CPC4120**	
	Advanced Kinetics	Year	PCC41T1	8
	Surface Chemistry	Year	PCC43T1	10
	Physical Practical Project	Year	PCC41P1	6

		Presented	Module Code	Credit Value
	Research Methodology ♦	Year	CRM4111	15
	Total Credits			**120**

♦ Major modules (please refer to the General Prospectus).

9.3 BACHELOR OF TECHNOLOGY/BACCALAUREUS TECHNOLOGIAE: GAME RANCH MANAGEMENT: FULL-TIME/PART-TIME (QUALIFICATION CODE: 4456 – 01/21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- An applicable three-year tertiary qualification or equivalent qualification.
- Academic qualifications, as well as relevant work experience, will be taken into account.
- Recognition of prior learning will also be considered.

APPLICABLE RULES

A student who progresses at an unacceptable rate, may be refused further registration on grounds of poor academic performance. Such students may be referred to Student Counselling for consultation and evaluation. In order to obtain the qualification, the student must pass all the listed subjects.

DURATION

The Bachelor of Technology/Baccalaureus Technologiae: Game Ranch Management is offered on a block release basis. This means that students attend two study schools of one week and two weeks respectively per year. Students master the skills and knowledge needed by means of self study and project work. This method of delivery makes it possible for working persons to register for the qualification. On this basis, the duration of the qualification is two years. If sufficient demand exists, the qualification is also offered on a one-year full-time basis.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Research Methodology ♦	Year	GMR4410	12
	Game Ranch Management IV ♦	Year	GRM4410	36
	Game Science IV ♦	Year	GRS4410	36
	Credits First Year			**84**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Game Ranch Economics IV ♦	Year	GER4410	18
	Game Ranch Strategic Management IV ♦	Year	GSM4410	18

		Presented	Module Code	Credit Value
	Credits Second Year			**36**

♦ Major modules (please refer to the General Prospectus).

9.4 BACHELOR OF TECHNOLOGY/BACCALAUREUS TECHNOLOGIAE: POLYMER TECHNOLOGY: FULL-TIME/PART-TIME (QUALIFICATION CODE: 4134 – 01/21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

National Diploma: Rubber or Polymer Technology or equivalent qualification.

DURATION

The qualification shall extend over one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time & Part-time				
	Compulsory modules:			
	Polymer Technology IV	Year	PPT4110	42
	Polymer Project	Year	WPJ4110	36
	Polymer Science IV	Year	WST4110	42
	Total Credits			**120**

The course will be offered subject to sufficient interest.

10 BACHELOR OF COMMERCE HONOURS & BACHELOR OF SCIENCE HONOURS/ BACCALAUREUS COMMERCII HONORES & BACCALAUREUS SCIENTIAE HONORES

10.1 BACHELOR OF COMMERCE HONOURS/BACCALAUREUS COMMERCII HONORES/: COMPUTER SCIENCE & INFORMATION SYSTEMS: FULL-TIME (QUALIFICATION CODE: 40509 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

60% weighted average for at least all the following Computer Science modules offered at third-year level. The total credits for qualifying third-year modules must be at least 60.

- WRAP301 and WRAP302 (or equivalent); and
- WRR301 (or equivalent); and
- Approved third-year Computer Science modules with a total credit of at least 16.

GENERAL

The Department must approve all applications for renewal of registration annually. The Department must approve the enrolment of a candidate for all the modules.

The Honours course consists of at least eight semester lecture modules with a total credit value of at least 88 and a treatise on an independent project. Each module will consist of a single topic taken over either one or two semesters. A two-semester module contributes 22 credits, a one-semester module 11 credits and the treatise on the project 32 credits. A total of at least 120 credits is required for the learning programme. The final mark for the Honours course is an aggregate of the marks for the module and the treatise, weighted according to their respective credit values.

RE-ADMISSION REQUIREMENTS

To be re-admitted to the Honours programme, the candidate in the previous year:

- must not have failed Honours modules with a total credit value of more than 33 credits;
- must not have failed the treatise, WRHP412; and
- must have passed Honours modules with a total credit value of at least 44 credits.

In order to register for the treatise, WRHP412, the candidate must have passed Honours modules with a total credit value of at least 66 credits.

DURATION

The qualification shall extend over at least one year of full-time study and a maximum of three years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time/Part-time				
	Compulsory modules:			
	Information Systems Project Management	Semester 1	WRHV411	11
	Treatise on the project	Year	WRHP412	32
	Data Warehousing	Semester 1	WRDW411	11
	E-Commerce	Semester 1	WREC411	11
	Usability Engineering	Semester 1	WREU411	11
	At least 44 credits selected from the following modules must be offered (not all modules will necessarily be presented every year. Presentation thereof will be determined by student numbers and staff availability):			
	Design in the Digital Domain	Semester 1	WRDD411	11
	Algorithmics	Semester 1	WRHA411	11
	Graphics	Semester 1	WRHG411	11
	Advanced Programming	Semester 1	WRHQ411	11
	Compiler Construction	Semester 1	WRHW411	11
	Research Frontiers in Computing	Semester 1	WRHY411	11
	Business Intelligence (subject to pre-requisite credit of WRER302)	Semester 1	WRBI411	11
	Evolutionary Computing	Semester 1	WRCI411	11
	Automata Theory	Semester 1	WRHA411	11
	Capita Selecta	Semester 1	WRHZ411	11
	Virtual Reality	Semester 1	WRVR411	11
	Another Honours module which **must** be approved by the HoD of Computing Sciences, subject to the condition that it should complement the other modules in the programme. **Approval is dependent upon submission of request on appropriate form available in the Department.**			22
	Total Credits	**Minimum**		**120**

10.2 BACHELOR OF COMMERCE HONOURS/BACCALAUREUS COMMERCII HONORES: INFORMATION SYSTEMS (SPECIALISING IN ACCOUNTING): FULL-TIME (QUALIFICATION CODE: 40519 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Unless otherwise approved by the Head of Department, and subject to General Rule G3.6, the prerequisites for entry into the Honours modules are as follows:

- a pass mark in one of Accounting 301 (R301) or General Accounting 301 (RG301); and
- a pass mark in Accounting 302 (R302) or a mark of at least 55% for General Accounting 302(RG302); and
- a weighted average of at least 60% for Database Systems (WRDB301), Project (WRR301), Management Information Systems 3.1 (WRB301), Management Information Systems 3.2 (WRB302), User Interface Design (WRUI301), ERP Systems 3.1 (WRER301) and ERP Systems 3.2 (WRER302).

provided that all these marks have been achieved within a maximum of two years preceding the year of registration for the Honours programme.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Business Research	Year	EBMR400	20
	Treatise: A research paper of between 10000 and 15000 words in a publishable form on a topic from the field of Accounting Information Systems or an approved related field.	Year	WRPC412	36
	Information Systems Project Management	Semester 1	WRHV411	11
	Business Intelligence	Semester 1	WRBI411	11
	E-Commerce	Semester 1	WREC411	11
	One of the following modules must be offered:			
	Strategic Management	Semester 1	EBMH400	20
	Financial Management	Semester 2	EBMJ400	20
	Investment Management	Semester 1	EBMG400	20
	One of the following modules must be offered (not all modules will necessarily be presented every year; presentation thereof will be determined by student numbers and staff availability):			
	Business Process Re-engineering	Semester 1/2	WRHB411	11
	Information Systems 4	Semester 1/2	WRHI411	11
	Software Engineering	Semester 1/2	WRHS411	11
	Capita Selecta	Semester 1/2	WRHZ411	11
	Data Warehousing	Semester 1/2	WRDW411	11
	Usability Engineering	Semester 1/2	WREU411	11
	Design in the Digital Domain	Semester 1	WRDD411	11
	Total Credits	**Minimum**		**120**

10.3 BACHELOR OF COMMERCE HONOURS/BACCALAUREUS COMMERCII HONORES: INFORMATION SYSTEMS (SPECIALISING IN AUDITING): FULL-TIME (QUALIFICATION CODE: 40517 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Unless otherwise approved, and subject to General Rule G3.6, the prerequisites for entry into the Honours modules are as follows:

- a pass mark in one of Auditing 301 (RO301) or General Auditing 301 (RGO301); and
- a pass mark in Auditing 302 (RO302) or a mark of at least 55% for General Auditing 302 (RGO302); and
- a weighted average of at least 60% for Database Systems (WRDB301), Project (WRR301), Management Information Systems 3.1 (WRB301), Management Information Systems 3.2 (WRB302), User Interface Design (WRUI301), ERP Systems 3.1 (WRER301) and ERP Systems 3.2 (WRER302).

provided that all these marks have been achieved within a maximum of two years preceding the year of registration for the Honours programme.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Risk-based Auditing	Semester 1	RRO401	15
	Information Systems Auditing	Semester 2	RIS412	15
	Treatise: A research paper of between 10000 and 15000 words in a publishable form on a topic from the field of Computer Auditing or an approved related field	Year	WRPA412	36
	Information Systems Project Management	Semester 1/2	WRHV411	11
	Business Intelligence	Semester 1/2	WRBI411	11
	Electronic Commerce	Semester 1/2	WREC411	11
	Two of the following modules must be offered (not all modules will necessarily be presented every year; presentation thereof will be determined by student numbers and staff availability):			
	Business Process Re-engineering	Semester 1/2	WRHB411	11
	Information Systems 4	Semester 1/2	WRHI411	11
	Software Engineering	Semester 1/2	WRHS411	11
	Capita Selecta	Semester 1/2	WRHZ411	11
	Data Warehousing	Semester 1/2	WRDW411	11
	Usability Engineering	Semester 1/2	WREU411	11
	Design in the Digital Domain	Semester 1	WRDD411	11
	Total Credits	**Minimum**		**120**

A person holding a BCom Honours in Information Systems with Auditing will be allowed to do the following two international qualifications:

1. Certified Internal Auditor (CIA).
2. Certified Information Systems Analyst (CISA).

10.4 BACHELOR OF COMMERCE HONOURS/BACCALAUREUS COMMERCII HONORES: INFORMATION SYSTEMS (SPECIALISING IN BUSINESS MANAGEMENT): FULL-TIME (QUALIFICATION CODE: 40518 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Unless otherwise approved, and subject to General Rule G3.6, the prerequisites for entry into the Honours modules are as follows:

- an average mark of at least 60% for the third-year Business Management modules;
- a weighted average of at least 60% for Database Systems (WRDB301), Project (WRR301), Management Information Systems 3.1 (WRB301), Management Information Systems 3.2 (WRB302), User Interface Design (WRUI301), ERP Systems 3.1 (WRER301) and ERP Systems 3.2 (WRER302);

provided that all these marks have been achieved within a maximum of two years preceding the year of registration for the Honours programme.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Business Research	Year	EBMR400	20
	Treatise: A research paper of between 1000 and 15000 words in a publishable form on a topic from the field of Business Information Systems or an approved related field	Year	WRPB412	36
	Information Systems Project Management	Semester 1/2	WRHV411	11
	Business Intelligence	Semester 1/2	WRBI411	11
	Electronic Commerce	Semester 1/2	WREC411	11
	One of the following modules must be offered:			
	Strategic Management	Semester 1	EBMH400	20
	Financial Management	Semester 2	EBMJ400	20
	Investment Management	Semester 1	EBMG400	20
	Marketing Management	Semester 1	EBMI400	20
	Entrepreneurship and Small Business Management	Year	EBMN400	20
	One of the following modules must be offered (not all modules will necessarily be presented every year; presentation thereof will be determined by student numbers and staff availability):			
	Business Process Re-engineering	Semester 1/2	WRHB411	11
	Information Systems 4	Semester 1/2	WRHI411	11

		Presented	Module Code	Credit Value
	Software Engineering	Semester 1/2	WRHS411	11
	Capita Selecta	Semester 1/2	WRHZ411	11
	Data Warehousing	Semester 1/2	WRDW411	11
	Usability Engineering	Semester 1/2	WREU411	11
	Design in the Digital Domain	Semester 1	WRDD411	11
	Total Credits	**Minimum**		**120**

10.5 BACHELOR OF COMMERCE HONOURS/BACCALAUREUS COMMERCII HONORES: STATISTICS: FULL-TIME (QUALIFICATION CODE: 40508 – A1/A2) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

The entrance qualification for the Honours degree in Mathematical Statistics is a Bachelor's degree with either Mathematical Statistics or Statistics as a major subject. Candidates who have not obtained an average of at least 60% in this major subject will only be admitted to the Honours programme with the special permission of the Department of Statistics, and on such conditions as may be determined by the Department and approved by FMC. The same rules will apply to candidates joining the programme after obtaining Bachelor's degrees at other universities. For these students, however, the Department of Statistics reserves the right to refuse students with inadequate Mathematical and End User Computing skills.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

The curriculum normally consists of five modules chosen from the list below. Candidates may replace some of these modules with other appropriate modules with the permission of the Department.

		Presented	Module Code	Credit Value
Full-time & Part-time				
	Select five of the following modules:			
	Quantitative Data Analysis with Statistics	Year	WSA400	24
	Categorical Data Analysis	Year	WSC400	24
	Research Methodology	Year	WSD400	24
	Sampling Theory	Year	WSE400	24
	Stochastic Processes	Year	WSG400	24
	Selective Topics in Actuarial Statistics	Year	WSH400	24
	Statistical Inference	Year	WSI400	24
	Treatise	Year	WSL400	24
	Multi-variate Statistical Methods	Semester 1	WSM400	24
	Non-parametric Statistics	Year	WSN400	24
	Credibility Theory and Econometrics	Year	WSO400	24

		Presented	Module Code	Credit Value
	Project	Year	WSP400	24
	Capita Selecta A	Year	WSQ400	24
	Time Series Analysis	Year	WSS400	24
	Regression Analysis	Year	WSU400	24
	Analysis of Variance	Year	WSV400	24
	Probability Theory	Year	WSW400	24
	Queuing Theory	Year	WSX400	24
	Measure and Integration Theory	Year	WSY400	24
	Mathematical Programming	Year	WSZ400	24
	Capita Selecta B	Year	WSR400	24
	Total Credits	**Minimum**		**120**

BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES
FULL-TIME: A1 - 1 YEAR
PART-TIME: A2 - 2 YEARS
(NQF LEVEL: 7 - TOTAL NQF CREDITS FOR QUALIFICATION:120)

CHOICE OF SUBJECTS

Senate may admit candidates to an Honours course in any of the following on the recommendation of the Department concerned, and may require them to complete as additional work a module or modules in any other prescribed subject:

Applied Mathematics (Qualification Code: 21513)	Mathematics (Qualification Code: 21506)
Biochemistry (Qualification Code: 21511)	Microbiology (Qualification Code: 21512)
Botany (Qualification Code: 21502)	Physics (Qualification Code: 21508)
Chemistry (Qualification Code: 21514)	Statistics (Qualification Code: 21507) (Qualification Code: 40508)
Computer Science & Information Systems (Qualification Code: 21504) (Qualification Code: 40509)	Zoology (Qualification Code: 21510)
Geography (Qualification Code: 21517 – Information Systems) (Qualification Code: 21518 - Environmental)	
Geology (Qualification Code: 21505)	

ADMISSION

Only candidates who satisfy Senate that they have attained an acceptable level of competence in their studies for the Bachelor's degree, shall be admitted to studies for the Honours degree. In particular a student shall, in addition to special provisions in departmental requirements as stated in the General List of Modules, have received an average mark of at least 60% at third-year level for the subject he/she intends to study at Honours level. Notwithstanding this requirement, FMC may grant a concession in exceptional circumstances, on the recommendation of the Head of the relevant department.

10.6 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: APPLIED MATHEMATICS: FULL-TIME (QUALIFICATION CODE: 21513 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

The entrance qualification for the Honours degree in Mathematics is a Bachelor's degree with either Mathematics or Applied Mathematics as a major subject. Candidates who have not obtained an average of at least 60% in this major subject will only be admitted to the Honours programme with the special permission of the Department, and on such conditions as may be determined by the Department. Candidates must in addition have completed the prerequisites for the modules which they select.

The Honours programme consists of 120 credits, which are obtained from approved modules selected from the list below. All MATH and MAPM modules are worth 24 credits at NMMU SAQA level 7.

The Honours degree in Mathematics is taken in one of the focus areas of Pure Mathematics or Computational Mathematics. Candidates must take the core modules in the focus area which they select. The core modules for the focus area of Pure Mathematics are: MATH401, MATH405 and one of MATH411, MATH402, and MATH404. The core modules for the focus area of Computational Mathematics are: MAPM401 and MAPM404.

Note that the modules and focus areas offered in any year will depend on both the availability of staff and student demand.

A candidate may, with the approval of the Department, obtain a maximum of 48 credits from modules offered in other Departments, provided that no substitutions may be made in respect of the core modules for the chosen focus area.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Select five of the following modules:			
	Finite Element Methods	Year	MAPM401	24
	Numerical Linear Algebra	Year	MAPM402	24
	Graph Theory	Year	MAPM403	24
	Continuum Mechanics	Year	MAPM404	24
	Numerical Analysis	Year	MAPM405	24
	Methods of Applied Mathematics	Year	MAPM406	24
	Capita Selecta	Year	MAPM407	24
	Project	Year	MAPM408	24
	Biomathematics	Year	MAPM419	24
	Partial Differential Equations	Year	MAPM410	24
	Total Credits	**Minimum**		**120**

10.7 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: BIOCHEMISTRY: FULL-TIME (QUALIFICATION CODE: 21511 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

To register for any Biochemistry level 4 module, 60 Biochemistry level 3 credits are required with an overall average of 60%, or special permission from the department and BC221 (40%). The curriculum consists of a number of modules of which the candidates must pass the compulsory core modules and elective modules to obtain 120 credits before the degree can be awarded.

General evaluation

The pass mark for all modules is 50%. A general oral examination is conducted at the end of the Honours programme.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Cell Biology	Year	BC411	12
	Protein Chemistry	year	BC441	12
	Standard Practicals	Semester 1	BC450	20
	Research Project	Year	BC460	40
	Mini-project	Year	BC470	12
	Select two of the following modules:			
	Analytical & Physical Biochemistry	Year	BC431	12
	Biotechnology	Year	BC480	12
	Medical Biochemistry	Year	BC490	12
	Molecular Biology	Year	BC421	12
	Total Credits	**Minimum**		**120**

10.8 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: BOTANY: FULL-TIME (QUALIFICATION CODE: 21502 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- A BSc degree majoring in Botany is usually required for acceptance into any fourth-year-level module.
- Students will be subjected to a selection process.

Students may select from the following specialisation fields:

- Conservation Biology
- Marine Botany
- Ecology
- Environmental Management
- Plant Physiology
- Systematic Botany

Selected topics that may be chosen with any of the specialisation fields are:

- Landscape Ecology and GIS.
- Environmental Management Procedures.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Botanical Techniques	Year	BOT410	30
	Selected topic 1	Semester 1	BOT420	15
	Selected topic 2	Semester 2	BOT430	15
	Selected topic 3	Semester 2	BOT440	15
	Project 1	Year	BOT450	20
	Project 2	Year	BOT460	20
	Oral examination	Year	BOT470	5
	Total Credits	**Minimum**		**120**

10.9 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: CHEMISTRY: FULL-TIME (QUALIFICATION CODE: 21515 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- BSc degree majoring in Chemistry.
- At least 60% for CH300 or equivalent. Students with a mark lower than 60% could be considered provided other criteria such as completion of the degree within the minimum prescribed period are met.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Analytical Methods	Year	CHA410	22
	General Theory A	Year	CHG410	22
	General Theory B	Year	CHG411	22
	Industrial Chemistry	Year	CHR410	10
	Select one of the following groups:			
	Inorganic Theory			
	Inorganic Theory	Year	CHI410	22
	Analytical / Inorganic Practical	Year	CHI411	22
	Organic Theory			
	Organic Theory	Year	CHO410	22
	Organic Practical	Year	CHO411	22
	Physical / Polymer Theory			

		Presented	Module Code	Credit Value
Full-time				
	Physical / Polymer Theory	Year	CHP410	22
	Physical / Polymer Practical	Year	CHP411	22
	Total Credits	**Minimum**		**120**

10.10 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: COMPUTER SCIENCE: FULL-TIME (QUALIFICATION CODE: 21504 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

60% weighted average for at least all the following Computer Science modules offered at third-year level. The total credits for qualifying third-year modules must be at least 60.

- WRAP301 and WRAP302 (or equivalent); and
- WRR301 (or equivalent); and
- Approved third-year Computer Science modules with a total credit of at least 16.

GENERAL

The Department must approve all applications for renewal of registration annually. The Department must approve the enrolment of a candidate for all the modules.

The Honours course consists of at least eight semester lecture modules with a total credit value of at least 88 and a treatise on an independent project. Each module will consist of a single topic taken over either one or two semesters. A two-semester module contributes 22 credits, a one-semester module 11 credits and the treatise on the project 32 credits. A total of at least 120 credits is required for the learning programme. The final mark for the Honours course is an aggregate of the marks for the module and the treatise, weighted according to their respective credit values.

RE-ADMISSION REQUIREMENTS

To be re-admitted to the Honours programme, the candidate in the previous year:

- must not have failed Honours modules with a total credit value of more than 33 credits;
- must not have failed the treatise, WRHP412; and
- must have passed Honours modules with a total credit value of at least 44 credits.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Information Systems Project Management	Semester 1	WRHV411	11
	Treatise on the project	Year	WRHP412	32
	At least four of the following modules must be offered (not all modules will necessarily be presented every year; presentation thereof will be determined by student numbers and staff availability):			
	Graphics	Semester 1	WRHG411	11
	Compiler Construction	Semester 1	WRHW411	11
	Usability Engineering	Semester 1	WREU411	11
	Evolutionary Computing	Semester 1	WRCI411	11
	Virtual Reality	Semester 1	WRVR411	11
	Advanced Programming	Semester 1	WRHQ411	11
	At most 33 credits selected from the following modules must be offered (not all modules will necessarily be presented every year; presentation thereof will be determined by student numbers and staff availability);			
	Design in the Digital Domain	Semester 1	WRDD411	11
	Data Warehousing	Semester 1	WRDW411	11
	E-Commerce	Semester 1	WREC411	11
	Research Frontiers in Computing	Semester 1	WRHY411	11
	Capita Selecta	Semester 1	WRHZ411	11
	Another Honours module which **must** be approved by the HoD of Computing Sciences, subject to the condition that it should complement the other modules in the programme. **Approval is dependent upon submission of request on appropriate form available in the Department.**			22
	Total Credits	**Minimum**		**120**

10.11 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: FORMULATION SCIENCE: FULL-TIME (QUALIFICATION CODE: 21520 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

A 360-credit post-school qualification at NQF level 6 from an accredited HEI with majors in an allied science (biology, chemistry, physics, biochemistry, or pharmacy), or chemical engineering, provided the 360-credit qualification includes a two-semester sequence of Organic Chemistry consisting of at least 20 credits. A full study record must be submitted along with:

- details of related work experience where applicable; and
- a typed motivation of maximum 2 A4 pages (1.5 line spacing, font size 10) that focuses on an applicant's ability to innovate and which will be evaluated by a standing panel.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Product Analysis and Testing	Year	CHF410	12
	Consumer Product Regulatory Frameworks	Year	CHF420	12
	Formulatory Statistical Methodologies	Year	CHF430	12
	Technology of Formulations	Year	CHF440	24
	Formulation Science	Year	CHF450	15
	Formulation Project	Year	CHF460	36
	Innovation and Entrepreneurship	Year	CHF470	9
	Total Credits	**Minimum**		**120**

10.12 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: GEOGRAPHY: ENVIRONMENTAL GEOGRAPHY: FULL-TIME (QUALIFICATION CODE: 21519 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

All students who wish to offer a BSc Honours in Geography must have passed Geography as a major with an aggregate mark of 55%. The requirement applies also to students who wish to offer BSc Honours in Geographic Information Systems. However, at the Head of Department's discretion, students from other backgrounds who wish to obtain a qualification specifically in GIS could be allowed to register for the programme.

A two-pronged Honours programme will be on offer. This will comprise a BSc Honours in Geography and BSc Honours in Geographic Information Systems. The programme consists of 5 modules - four compulsory modules and one elective.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Select five of the following modules:			
	Research Project	Year	GEN411	24
	Human Environment Interaction Elective	Year	GEN401	24
	Environmental Impact Studies	Year	GEN402	24
	Applied Physical Geography	Year	GEN404	24
	Geographical Information Systems	Year	GEN405	24

		Presented	Module Code	Credit Value
	Economic Geography Elective	Year	GEN406	24
	Settlement Geography Elective	Year	GEN407	24
	Urban Geography Elective	Year	GEO406	24
	Total Credits	**Minimum**		**120**

10.13 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: GEOGRAPHY: GEO-INFORMATION SYSTEMS: FULL-TIME (QUALIFICATION CODE: 21517 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

BSc or BA degree with pass of at least 60% for Geography III, its equivalent or permission granted by the Head of Department.

Students with a lower mark than 60% could be considered provided other criteria such as completion of the degree within the minimum prescribed period are met.

A two-pronged Honours programme will be on offer. This will comprise a BSc Honours in Geography and BSc Honours in Geographic Information Systems. The programme consists of 5 modules - four compulsory modules and one elective.

All students who wish to offer a BSc Honours in Geography must have passed Geography as a major with an aggregate mark of 55%. The requirement applies also to students who wish to offer BSc Honours in Geographic Information Systems. However, at the Head of Department's discretion, students from other backgrounds who wish to obtain a qualification specifically in GIS could be allowed to register for the programme.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Cartography	Term 1	GIS421	24
	Remote Sensing	Term 3	GIS422	24
	Geographical Information Systems	Term 2	GIS423	24
	Research Project	Term 4	GIS414	30
	Environmental Impact Studies	Term 4	GEN402	24
	OR			
	Any other module in The School of Environmental Sciences with credit value not less than 24			24
	Total Credits	**Minimum**		**120**

10.14 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: GEOLOGY: FULL-TIME (QUALIFICATION CODE: 21505 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Candidates who have successfully completed the BSc degree majoring in Geology may apply for admission to the Honours Class.
- Geology Honours students are required to register for 4 core modules: GGL401, GGL402, GGL403 and GGL404. In addition to these, Honours students must complete a written treatise on a geologic topic chosen in consultation with the Department (GGL405) and one of the following *capita selecta*:- GGL406 or GIS422.

Examinations

The examination consists of 5 written papers of equal weight (GGL401, GGL402, GGL403, GGL405 and GGL406). The examination mark together with the class mark will be used to calculate the final mark for each of the above modules.

Treatise

The mark for the treatise (GGL405) is equal to the final mark for one of the modules for which written exams are held.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Sedimentology & Stratigraphy	Year	GGL401	20
	Igneous Petrology	Year	GGL402	20
	Structural Geology & Geotectonics	Year	GGL403	20
	Economic Geology	Year	GGL404	20
	Treatise	Year	GGL405	20
	Groundwater & Geophysical Exploration	Year	GGL406	20
	Total Credits	**Minimum**		**120**

10.15 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: MATHEMATICAL STATISTICS: FULL-TIME (QUALIFICATION CODE: 21507 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Only candidates who satisfy Senate that they have attained an acceptable level of competence in their studies for the Bachelor's degree, shall be admitted to studies for the Honours degree. In particular, a student shall, in addition to special provisions in departmental requirements as stated in the General List of Modules, have received an average mark of at least 60% at third-year level for the subject he/she intends to study at Honours level. Notwithstanding this requirement, FMC may grant a concession in exceptional circumstances, on the recommendation of the Head of the relevant department.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

The curriculum normally consists of five modules chosen from the list below. Candidates may replace some of these modules with other appropriate modules with the permission of the Department.

		Presented	Module Code	Credit Value
Full-time & Part-time				
	Select five of the following modules:			
	Quantitative Data Analysis with Statistics	Year	WSA400	24
	Categorical Data Analysis	Year	WSC400	24
	Research Methodology	Year	WSD400	24
	Sampling Theory	Year	WSE400	24
	Stochastic Processes	Year	WSG400	24
	Selective Topics in Actuarial Statistics	Year	WSH400	24
	Statistical Inference	Year	WSI400	24
	Treatise	Year	WSL400	24
	Multi-variate Statistical Methods	Semester 1	WSM400	24
	Non-parametric Statistics	Year	WSN400	24
	Credibility Theory and Econometrics	Year	WSO400	24
	Project	Year	WSP400	24
	Capita Selecta A	Year	WSQ400	24
	Capita Selecta B	Year	WSR400	24
	Time Series Analysis	Year	WSS400	24
	Regression Analysis	Year	WSU400	24
	Analysis of Variance	Year	WSV400	24
	Probability Theory	Year	WSW400	24
	Queuing Theory	Year	WSX400	24
	Measure and Integration Theory	Year	WSY400	24

		Presented	Module Code	Credit Value
	Mathematical Programming	Year	WSZ400	24
	Total Credits	**Minimum**		**120**

10.16 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: MATHEMATICS: FULL-TIME (QUALIFICATION CODE: 21506 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

The entrance qualification for the Honours degree in Mathematics is a Bachelor's degree with either Mathematics or Applied Mathematics as a major subject. Candidates who have not obtained an average of at least 60% in this major subject will only be admitted to the Honours programme with the special permission of the Department, and on such conditions as may be determined by the Department. Candidates must in addition have completed the prerequisites for the modules which they select.

The Honours programme consists of 120 credits, which are obtained from approved modules selected from the list below. All MATH and MAPM modules are worth 24 credits at NMMU SAQA level 7.

The Honours degree in Mathematics is taken in one of the focus areas of Pure Mathematics or Computational Mathematics. Candidates must take the core modules in the focus area which they select. The core modules for the focus area of Pure Mathematics are: MATH401, MATH405 and one of MATH411, MATH402, and MATH404. The core modules for the focus area of Computational Mathematics are: MAPM401 and MAPM404.

Note that the modules and focus areas offered in any year will depend on both the availability of staff and student demand.

A candidate may, with the approval of the Department, obtain a maximum of 48 credits from modules offered in other Departments, provided that no substitutions may be made in respect of the core modules for the chosen focus area.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Select five of the following modules:			
	Functional Analysis	Year	MATH401	24
	Group Theory	Year	MATH402	24
	Measure and Integration Theory	Year	MATH403	24
	Ring Theory	Year	MATH404	24
	Topology	Year	MATH405	24

		Presented	Module Code	Credit Value
	Set Theory	Year	MATH406	24
	Capita Selecta	Year	MATH407	24
	Modern Geometry	Year	MATH408	24
	Foundations of Mathematics	Year	MATH409	24
	Modern Applied Algebra	Year	MATH410	24
	Abstract Algebra	Year	MATH411	24
	Total Credits	**Minimum**		**120**

10.17 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: MICROBIOLOGY: FULL-TIME (QUALIFICATION CODE: 21512 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

60% average for BM300 or 60% combined average for BM300 and BC300 or consent of department and BC221 (40%).

GENERAL EVALUATION

The pass mark for all modules is 50%. A general oral examination is conducted at the end of the Honours programme.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Microbiology		**BM400**	
	Techniques Course	Year	BM410	18
	General Microbiology	Year	BM420	12
	Molecular Biology	Year	BM430	12
	Industrial Microbiology	Year	BM440	12
	Seminars	Year	BM450	6
	Project	Year	BM460	60
	Total Credits	**Minimum**		**120**

10.18 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: PHYSICS: FULL-TIME (QUALIFICATION CODE: 21508 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Please contact the Manager: Faculty Administration.

The BSc Honours course consists of Theoretical Modules:
F401: Quantum Mechanics
F402: Statistical Mechanics and Thermodynamics
F403: Electrodynamics

The remaining theoretical modules consist of subjects on or relating to Solid State Physics and will be one of the following modules as determined by the department:
F404: Solid State Physics
F405: Semiconductor Physics
F406: Electron Diffraction and Image-Contrast Theory
F407: Module on topics in physics prescribed by the Department or taken in conjunction with other Departments.

- A practical module F408 based on experimental techniques and the utilisation of advanced research equipment. This could include a mini-project which would be written up as a treatise for external examination.
- Seminars, which form an integral part of the BSc Honours curriculum. Students are expected to submit their seminars in written format after presentation.

Prerequisites for BSc Honours in Physics:
- BSc in Physics.
- MAPM211; 212; 213; 214 or MATH211; 203; 214 or a combination of these.

DURATION
The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Quantum Mechanics	Semester 1	F401	24
	Statistical Mechanics and Thermodynamics	Semester 1	F402	24
	Electrodynamics	Semester 2	F403	24
	Practical	Year	F408	24
	Select one of the following modules:			
	Solid State Physics	Year	F404	24
	Semiconductor Physics	Year	F405	24
	Electron diffraction, image contrast theory	Year	F406	24
	Courses as prescribed by the Department	Year	F407	24
	Total Credits	**Minimum**		**120**

10.19 BACHELOR OF SCIENCE HONOURS/BACCALAUREUS SCIENTIAE HONORES: ZOOLOGY: FULL-TIME (QUALIFICATION CODE: 21510 – A1) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Applicants for the Zoology Honours programme, as well as applicants who wish to register for non-degree purposes for Honours modules in Zoology must:

(a) have obtained a BSc degree with a Zoology major for which a mark of at least 60% has been obtained; or
(b) be assessed by the Department of Zoology and undergo a departmental selection process approved by the Faculty Management Committee.

APPLICABLE RULES

Continuous assessment (CA) mark

Varies from module to module. Detailed information will be supplied at the start of each module.

Exam mark

The right to write exams for a module is not automatic, but must be earned by achieving a "Duly Performed" (DP) status. If you do not qualify for DP status, you are not allowed to write the exams.

DP status requirements

Attendance of all lectures, field trips, excursions and other activities as indicated by the Zoology Department, satisfactory performance in all assignments and a continuous assessment (CA) mark of at least 40%.

Computation of final mark

The CA mark generally contributes 60% and the Exam mark 40% to the final mark *but this may vary from module to module and year to year*.

Requirements to pass

Each module has the same requirements, i.e. a final mark of 50% for the module. Candidates must accumulate 120 Honours level credits from the list of approved modules, and must pass ZOO411, ZOO425 and ZOO420.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Data Skills	Year	ZOO411	21
	Research Competencies	Year	ZOO425	35
	Select four of the following modules:			
	Sustaining Exploited Marine Resources	Year	ZOO472	16
	Coastal Zone Integrated Environmental Management	Year	ZOO474	16
	Marine Predators	Year	ZOO478	16

		Presented	Module Code	Credit Value
Full-time				
	Conservation Biology & Planning	Year	ZOO482	16
	Ecology of African Animals	Year	ZOO484	16
	Applied Ecophysiology	Year	ZOO486	16
	Global Change & Biodiversity	Semester 1	ZOO490	16
	Total Credits	**Minimum**		**120**

11 MASTER OF TECHNOLOGY/MAGISTER TECHNOLOGIAE

11.1 MASTER OF TECHNOLOGY/MAGISTER TECHNOLOGIAE: AGRICULTURE: AGRI-BUSINESS MANAGEMENT (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 5451 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENT

For Master of Technology/Magister Technologiae/: Agriculture: Agri-business Management, the minimum entrance requirement is a Bachelor of Technology/Baccalaureus Technologiae: Agricultural Management. All applicants will be required to go through a selection process which may include psychometric testing and interviews. For the research-based M Tech and D Tech qualifications, the entrance requirement is a suitable degree at the B Tech or M Tech level. Recognition of prior learning will be considered.

DURATION

The Master of Technology/Magister Technologiae: Agriculture (Agri-business Management) is offered on a block release basis. This means that the students attend study schools during the year in addition to self study. Students master the skills and knowledge by means of self study and project work. This method of delivery makes it possible for working persons to work while furthering their studies.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	International Management V	Year	BIN5110	12
	Research Methodology V	Year	BNM5110	12
	Credits First Year			**24**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Research Paper (BHP5110)	Year	ADT5100	60
	Advanced Agricultural Management V	Year	BAL5110	12
	Agricultural Policy V	Year	BOL5110	12
	Project Management V	Year	BON5110	12
	Credits Second Year			**96**

Please take note that this qualification will only be offered if a minimum number of students register. The minimum will be required annually. Please contact the Department of Agriculture for further information.

11.2 MASTER OF TECHNOLOGY/MAGISTER TECHNOLOGIAE: AGRICULTURE (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 5452 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Further studies in Agricultural Management are possible as the M Tech and D Tech degrees in Agricultural Management are available as study options. These are research–based qualifications.

ADMISSION REQUIREMENTS

For the research-based M Tech and D Tech qualifications the entrance requirement is a suitable degree at the B Tech or M Tech level. A minimum of 60% must have been obtained in the previous qualification. Recognition of prior learning will be considered.

DURATION

The qualification shall extend over a minimum of one year of full-time study or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	ADT5000	120

11.3 MASTER OF TECHNOLOGY/MAGISTER TECHNOLOGIAE: CHEMISTRY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6165 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

A research project in the form of a dissertation is submitted to a panel of experts for evaluation. In addition to the research project, a compulsory qualification in Research Methodology must be completed.

ADMISSION REQUIREMENTS

Bachelor of Technology/Baccalaureus Technologiae: Chemistry or equivalent qualification.

DURATION

The qualification shall extend over a minimum of one year of full-time study or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	CMT5000	120

11.4 MASTER OF TECHNOLOGY/MAGISTER TECHNOLOGIAE: CHEMISTRY: PRODUCT AND PROCESS DEVELOPMENT (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6166 - 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Bachelor of Technology/Baccalaureus Technologiae: Chemistry, BSc Hons or B Eng (Chem) or equivalent qualification.

DURATION

The qualification shall extend over one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time & Part-time				
	Compulsory modules:			
	Research Project	Year	MRP5110	60
	Technopreneurship	Year	MTP5120	10
	Select five of the following modules:			
	Chemical Engineering for Chemists	Year	MCE5120	10
	Environmental Management	Year	MEA5120	10
	Financial Management	Year	MFA5110	10
	Marketing for Chemists	Year	MFC5110	10
	IP Management	Year	MIA5110	10
	Project Management	Year	MPA5110	10
	Statistical Experimental Design & Optimisation (Process Development)	Year	MPC5120	10
	Statistical Experimental Design & Optimisation (Product Development)	Year	MPD5120	10
	Quality and H & S Management	Year	MQM5120	10
	Laboratory Process Research & Development	Year	MRD5120	10
	Regulatory Matters	Year	MRM5120	10
	Technological Economics	Year	MTE5120	10
	Total Credits	**Minimum**		**120**

11.5 MASTER OF TECHNOLOGY/MAGISTER TECHNOLOGIAE: GAME RANCH MANAGEMENT (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 5456 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Further studies in Game Ranch Management are possible as the M Tech qualification in Game Ranch Management is available as a study option. This is a research-based qualification.

ADMISSION REQUIREMENTS

Bachelor of Technology/Baccalaureus Technologiae: Game Ranch Management or equivalent qualification. A minimum of 60% must have been obtained in previous qualification.

DURATION

The qualification shall extend over one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	GRP5510	120

12 MASTER OF COMMERCE AND MASTER OF SCIENCE/ MAGISTER COMMERCII AND MAGISTER SCIENTIAE

12.1 MASTER OF COMMERCE/MAGISTER COMMERCII: COMPUTER SCIENCE AND INFORMATION SYSTEMS (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 41008 - A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

NOTE: All candidates shall be subject to selection.

ADMISSION REQUIREMENTS

- Unless Senate decides otherwise, candidates shall be admitted to the studies for the Master's degree in Computer Science and Information Systems only if they hold an Honours degree in Computer Science and Information Systems and have obtained a weighted average mark of at least 60% for all Honours modules in Computer Science and Information Systems and at least 65% for the Honours treatise (project), as well as complying with such other selection criteria as laid down by the Department.
- Unless Senate decides otherwise, candidates shall only be re-admitted to the studies for the degree if they have satisfactorily completed at least two chapters of the dissertation and, if applicable, passed at least one 9-credit Master's module in the previous academic year.

The modules presented to Master's degree students in the Department are not the same as the Honours modules. The Master's degree modules include additional material, advanced case studies and practicals. The students are further required to do related research in the subject area.

There are three options:

- A dissertation on an approved topic with a credit value of 84 and approved module(s) with a total credit value of at least 36 from the topics listed in the Master's curriculum.
- A dissertation on an approved topic with a credit value of 102 and approved module(s) with a total credit value of at least 18 from the topics listed in the Master's curriculum.
- With special permission the Department will allow a dissertation on an approved topic with a credit value of 120.

Sub-code Name

- WRMD502 Computer Science and Information Systems Master's Dissertation – 102 credits (preferred option).
- WRMD503 Computer Science and Information Systems Master's Dissertation – 84 credits.

The Department must approve all applications for renewal of registration annually. The modules comprise topics selected annually by the department from the list below. For the list of currently active modules, refer to
http://www.nmmu.ac.za/default.asp?id=2040&sid=&bhcp=1

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
1	Algorithmics 5	Semester 1/2	WRHA501[1]	9
		Semester 1/2	WRHA502[1]	18
2	Business Process Reengineering	Semester 1/2	WRHB501	9
		Semester 1/2	WRHB502	18
3	Theory of Computation	Semester 1/2	WRHC501	9
		Semester 1/2	WRHC502	18
4	Theory of Database Systems	Semester 1/2	WRHD501	9
		Semester 1/2	WRHD502	18
5	Expert Systems	Semester 1/2	WRHE501	9
		Semester 1/2	WRHE502	18
6	Formal Languages	Semester 1/2	WRHF501	9
		Semester 1/2	WRHF502	18
7	Computer Graphics	Semester 1/2	WRHG501	9
		Semester 1/2	WRHG502	18
8	Human-Computer Interaction	Semester 1/2	WRHH501	9
		Semester 1/2	WRHH502	18
9	Information Systems 5	Semester 1/2	WRHI501	9
		Semester 1/2	WRHI502	18
10	Discrete Structures	Semester 1/2	WRHJ501	9
		Semester 1/2	WRHJ502	18
11	Computer Aided Learning	Semester 1/2	WRHK501	9
		Semester 1/2	WRHK502	18
12	Programming Languages	Semester 1/2	WRHL501	9
		Semester 1/2	WRHL502	18
13	Multimedia	Semester 1/2	WRHM501	9
		Semester 1/2	WRHM502	18
14	Data Communications and Networks	Semester 1/2	WRHN501	9
		Semester 1/2	WRHN502	18
15	Operating Systems	Semester 1/2	WRHO501	9
		Semester 1/2	WRHO502	18
16	Advanced Programming	Semester 1/2	WRHQ501	9
		Semester 1/2	WRHQ502	18
17	Client Server	Semester 1/2	WRHR501	9
		Semester 1/2	WRHR502	18
18	Software Engineering	Semester 1/2	WRHS501	9
		Semester 1/2	WRHS502	18
19	Logic Design and Interfacing	Semester 1/2	WRHT501	9
		Semester 1/2	WRHT502	18
20	Automata Theory	Semester 1/2	WRHU501[2]	9

		Presented	Module Code	Credit Value
Full-time				
		Semester 1/2	WRHU502[2]	18
21	Information Systems Project Management	Semester 1/2	WRHV501	9
		Semester 1/2	WRHV502	18
22	Compiler Construction	Semester 1/2	WRHW501	9
		Semester 1/2	WRHW502	18
23	Artificial Intelligence	Semester 1/2	WRHX501	9
		Semester 1/2	WRHX502	18
24	Research Frontiers in Computing	Semester 1/2	WRHY501	9
		Semester 1/2	WRHY502	18
25	*Capita Selecta*	Semester 1/2	WRHZ501	9
		Semester 1/2	WRHZ502	18
26	Electronic Commerce	Semester 1/2	WREC501	9
		Semester 1/2	WREC502	18
27	Design in the Digital Domain	Semester 1/2	WRDD501	9
		Semester 1/2	WRDD502	18
28	Data Warehousing	Semester 1/2	WRDW511	9
		Semester 1/2	WRDW512	18
29	Usability Engineering	Semester 1/2	WREU511	9
		Semester 1/2	WREU512	18
30	Evolutionary Computing	Year	WRCI501	9
		Semester 1/2	WRCI502	18
31	Virtual Reality Environment Development	Semester 1/2	WRVR501	9
		Semester 1/2	WRVR502	18
	Total Credits	**Minimum**		**120**

[1] Registration for these modules only approved if candidate does not have prior credit for WRA301, WRHA411 or WRHA412 (or equivalent). Co-registration for (WRA301 or WRHA411/WRHA412) and WRHA501/WRHA502 not permitted.

[2] Registration for these modules only approved if candidate does not have prior credit for WRL301, WRHU411 or WRHU412 (or equivalent). Co-registration for (WRL301 or WRHU411/WRHU412) and WRHU501/WRHU502 not permitted.

Topics in Artificial Intelligence: WRAI501 (20 credits)
This module is offered as an elective for the MSc (Computational Mathematics). Students who have credits for any of WRL301, WRHU411, WRCI411 or WRCI501 are not permitted to register for this module.

PREREQUISITES
At least WRA202 or the ability to use MATLAB at the level expected of successful WRA202 candidates. (Sixty lectures conventional face-to-face contact time.)

1. Structures, notation, terminology and regular sets.
2. Finite automata and regular languages.
3. Push down automata and context fee languages.
4. Genetic algorithms.
5. Neural networks.
6. Tools: Simulations.

12.2 MASTER OF COMMERCE/MAGISTER COMMERCII: MATHEMATICAL STATISTICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 41011 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS
BSc Honours: Mathematical Statistics.

DURATION
The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	WS500 or WSPE500	120

MASTER OF SCIENCE/MAGISTER SCIENTIAE

Except as otherwise provided below, the degree of Master of Science/Magister Scientiae shall be awarded in accordance with the General Rules for Masters' degrees.

ALLOCATION OF FINAL MARK FOR RESEARCH PROJECT
The mark for a master's treatise/dissertation is calculated as follows:

- The mark(s) of the external examiner(s) count at least 50% towards the final mark. If there is more than one external examiner, the average of the marks allocated by them constitutes the external mark. The same applies to the internal examiner(s).
- Where all the examiners pass the candidate, but there is a significant discrepancy between the marks allocated by the external and internal examiners, the Faculty Research, Technology and Innovation Committee has the discretion to attach a greater weight to the mark(s) of the external examiner(s).

AWARDING OF THE DEGREE CUM LAUDE
Unless Senate decides otherwise, a Master's candidate obtains the degree *cum laude* if he/she:

- in the case of a course work and research degree:
  - passes all the modules at the first attempt;
  - obtains a weighted average mark of at least 75% for all the modules; and
  - obtains a final mark of at least 75% for the treatise.
- in the case of a research degree, obtains a final mark of at least 75%

12.3 MASTER OF SCIENCE/MAGISTER SCIENTIAE: APPLIED MATHEMATICS (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22024 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Upon recommendation by the Department, changes in the prescribed syllabus may be considered.

ADMISSION REQUIREMENTS

BSc Honours: Applied Mathematics.

Dissertation

- The presentation of a dissertation on an approved research project.
- The presentation of at least one seminar on an approved topic.
- Additional courses or advanced lectures on current topics, which may be prescribed by the Department in special circumstances.
- The presentation of one article on the dissertation for publication in a recognised journal.

DURATION

The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory module:			
	Treatise	Year	MAPM508	60
	Select three of the following modules:			
	Finite Element Methods 501	Year	MAPM501	20
	Numerical Linear Algebra 502	Year	MAPM502	20
	Graph Theory 503	Year	MAPM503	20
	Continuum Mechanics 504	Year	MAPM504	20
	Numerical Analysis 505	Year	MAPM505	20
	Methods of Applied Mathematics 506	Year	MAPM506	20
	Capita Selecta 507	Year	MAPM507	20
	Total Credits	**Minimum**		**120**

12.4 MASTER OF SCIENCE/MAGISTER SCIENTIAE: APPLIED MATHEMATICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22013 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Upon recommendation by the Department, changes in the prescribed syllabus may be considered.

ADMISSION REQUIREMENTS
BSc Honours: Applied Mathematics.

Dissertation
- The presentation of a dissertation on an approved research project.
- The presentation of at least one seminar on an approved topic.
- Additional courses or advanced lectures on current topics, which may be prescribed by the Department in special circumstances.
- The presentation of one article on the dissertation for publication in a recognised journal.

DURATION
The qualification shall extend over at least one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	MAPM500	120

12.5 MASTER OF SCIENCE/MAGISTER SCIENTIAE: BIOCHEMISTRY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22011 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Upon recommendation by the Department, changes in the prescribed syllabus may be considered.

ADMISSION REQUIREMENTS
BSc Honours: Biochemistry.

Dissertation
- The presentation of a dissertation on an approved research project.
- The presentation of at least one seminar on an approved topic.
- Additional courses or advanced lectures on current topics, which may be prescribed by the Department in special circumstances.
- The presentation of one article on the dissertation for publication in a recognised journal.

DURATION
The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	BC500	120

12.6 MASTER OF SCIENCE/MAGISTER SCIENTIAE: BOTANY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22003 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Except as otherwise provided below, the degree of Master of Science/Magister Scientiae shall be awarded in accordance with the General Rules for Masters' degrees.

ADMISSION REQUIREMENTS

BSc Honours: Botany or equivalent.

ALLOCATION OF FINAL MARK FOR RESEARCH PROJECT

The mark for a Master's treatise/dissertation is calculated as follows:

- The mark(s) of the external examiner(s) count at least 50% towards the final mark. If there is more than one external examiner, the average of the marks allocated by them constitutes the external mark. The same applies to the internal examiner(s).
- Where all the examiners pass the candidate, but there is a significant discrepancy between the marks allocated by the external and internal examiners, the Faculty Research, Technology and Innovation Committee has the discretion to attach a greater weight to the mark(s) of the external examiner(s).

AWARDING OF THE DEGREE cum laude

Unless Senate decides otherwise, a Master's candidate obtains the degree *cum laude* if he/she –

- In the case of a course work degree:
  - o passes all the modules at the first attempt;
  - o obtains a weighted average mark of at least 75% for all the modules; and
  - o obtains a final mark of at least 75% for the treatise.
- In the case of a research degree, obtains a final mark of at least 75%.
- The Department may prescribe additional courses in Botany or in any other subject.
- The research project for the dissertation must be approved by the Faculty Management Committee (Science).
- See also general rules for Masters' degrees in the General Prospectus.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	BOT500	120

12.7 MASTER OF SCIENCE/MAGISTER SCIENTIAE: CHEMISTRY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22015 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

BSc Honours: Chemistry or equivalent.

APPLICABLE RULES

- The research project for the dissertation must be approved by the Faculty Management Committee (Science).
- See also general rules for Masters' degrees in the General Prospectus.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	CHM500	120

12.8 MASTER OF SCIENCE/MAGISTER SCIENTIAE: COMPUTER SCIENCE AND INFORMATION SYSTEMS (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22019 - A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Unless Senate decides otherwise, candidates shall be admitted to the studies for the Master's degree in Computer Science and Information Systems only if they hold an Honours degree in Computer Science and Information Systems and have obtained a weighted average mark of at least 60% for all Honours modules in Computer Science and Information Systems and at least 65% for the Honours treatise (project), as well as complying with such other selection criteria as laid down by the Department.
- **NOTE**: All candidates shall be subject to selection.
- Unless Senate decides otherwise, candidates shall only be re-admitted to the studies for the degree if they have satisfactorily completed at least two chapters of the dissertation and, if applicable, passed at least one 9-credit Master's module in the previous academic year.

The modules presented to Master's degree students in the Department are not the same as the Honours modules. The Master's degree modules include additional material, advanced case studies and practicals. The students are further required to do related research in the subject area.

There are three options:

- A dissertation on an approved topic with a credit value of 84 and approved module(s) with a total credit value of at least 36 from the topics listed in the Master's curriculum.
- A dissertation on an approved topic with a credit value of 102 and approved module(s) with a total credit value of at least 18 from the topics listed in the Master's curriculum.
- With special permission the Department will allow a dissertation on an approved topic with a credit value of 120.

Sub-code Name

- WRMD502 Computer Science and Information Systems Master's Dissertation – 102 credits (preferred option).
- WRMD503 Computer Science and Information Systems Master's Dissertation – 84 credits.

The Department must approve all applications for renewal of registration annually. The modules comprise topics selected annually by the department from the list below. For the list of currently active modules, refer to
http://www.nmmu.ac.za/default.asp?id=2040&sid=&bhcp=1

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
1	Algorithmics 5	Semester 1/2	WRHA501[1]	9
		Semester 1/2	WRHA502[1]	18
2	Business Process Reengineering	Semester 1/2	WRHB501	9
		Semester 1/2	WRHB502	18
3	Theory of Computation	Semester 1/2	WRHC501	9
		Semester 1/2	WRHC502	18
4	Theory of Database Systems	Semester 1/2	WRHD501	9
		Semester 1/2	WRHD502	18
5	Expert Systems	Semester 1/2	WRHE501	9
		Semester 1/2	WRHE502	18
6	Formal Languages	Semester 1/2	WRHF501	9
		Semester 1/2	WRHF502	18
7	Computer Graphics	Semester 1/2	WRHG501	9
		Semester 1/2	WRHG502	18
8	Human-Computer Interaction	Semester 1/2	WRHH501	9
		Semester 1/2	WRHH502	18

		Presented	Module Code	Credit Value
Full-time				
9	Information Systems 5	Semester 1/2	WRHI501	9
		Semester 1/2	WRHI502	18
10	Discrete Structures	Semester 1/2	WRHJ501	9
		Semester 1/2	WRHJ502	18
11	Computer Aided Learning	Semester 1/2	WRHK501	9
		Semester 1/2	WRHK502	18
12	Programming Languages	Semester 1/2	WRHL501	9
		Semester 1/2	WRHL502	18
13	Multimedia	Semester 1/2	WRHM501	9
		Semester 1/2	WRHM502	18
14	Data Communications and Networks	Semester 1/2	WRHN501	9
		Semester 1/2	WRHN502	18
15	Operating Systems	Semester 1/2	WRHO501	9
		Semester 1/2	WRHO502	18
16	Advanced Programming	Semester 1/2	WRHQ501	9
		Semester 1/2	WRHQ502	18
17	Client Server	Semester 1/2	WRHR501	9
		Semester 1/2	WRHR502	18
18	Software Engineering	Semester 1/2	WRHS501	9
		Semester 1/2	WRHS502	18
19	Logic Design and Interfacing	Semester 1/2	WRHT501	9
		Semester 1/2	WRHT502	18
20	Automata Theory	Semester 1/2	WRHU501[2]	9
		Semester 1/2	WRHU502[2]	18
21	Information Systems Project Management	Semester 1/2	WRHV501	9
		Semester 1/2	WRHV502	18
22	Compiler Construction	Semester 1/2	WRHW501	9
		Semester 1/2	WRHW502	18
23	Artificial Intelligence	Semester 1/2	WRHX501	9
		Semester 1/2	WRHX502	18
24	Research Frontiers in Computing	Semester 1/2	WRHY501	9
		Semester 1/2	WRHY502	18
25	*Capita Selecta*	Semester 1/2	WRHZ501	9
		Semester 1/2	WRHZ502	18
26	Electronic Commerce	Semester 1/2	WREC501	9
		Semester 1/2	WREC502	18
27	Design in the Digital Domain	Semester 1/2	WRDD501	9
		Semester 1/2	WRDD502	18
28	Data Warehousing	Semester 1/2	WRDW511	9
		Semester 1/2	WRDW512	18

		Presented	Module Code	Credit Value
Full-time				
29	Usability Engineering	Semester 1/2	WREU511	9
		Semester 1/2	WREU512	18
30	Evolutionary Computing	Year	WRCI501	9
		Semester 1/2	WRCI502	18
31	Virtual Reality Environment Development	Semester 1/2	WRVR501	9
		Semester 1/2	WRVR502	18
	Total Credits			**120**
[1] Registration for these modules only approved if candidate does not have prior credit for WRA301, WRHA411 or WRHA412 (or equivalent). Co-registration for (WRA301 or WRHA411/WRHA412) and WRHA501/WRHA502 not permitted.				
[2] Registration for these modules only approved if candidate does not have prior credit for WRL301, WRHU411 or WRHU412 (or equivalent). Co-registration for (WRL301 or WRHU411/WRHU412) and WRHU501/WRHU502 not permitted.				

Topics in Artificial Intelligence: WRAI501 (20 credits)
This module is offered as an elective for the MSc (Computational Mathematics). Students who have credits for any of WRL301, WRHU411, WRCI411 or WRCI501 are not permitted to register for this module.

PREREQUISITES
At least WRA202 or the ability to use MATLAB at the level expected of successful WRA202 candidates. (Sixty lectures conventional face-to-face contact time.)
1. Structures, notation, terminology and regular sets.
2. Finite automata and regular languages.
3. Push down automata and context fee languages.
4. Genetic algorithms.
5. Neural networks.
6. Tools: Simulations.

12.9 MASTER OF SCIENCE/MAGISTER SCIENTIAE: COMPUTER SCIENCE AND INFORMATION SYSTEMS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22004 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS
BSc Honours: Computer Science & Information Systems or equivalent.

APPLICABLE RULES
- The research project for the dissertation must be approved by the Faculty Management Committee (Science).
- See also general rules for Masters' degrees in the General Prospectus.

DURATION
The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	WRMD501	120

12.10 MASTER OF SCIENCE/MAGISTER SCIENTIAE: GEOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22005 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- The General Rules for Masters' degrees are applicable.
- A candidate must also comply with the requirements in the departmental policy document regarding studies towards a Master's degree.
- The research project for the dissertation must be approved by the Faculty Management Committee (Science).
- BSc Honours: Geology or equivalent.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	GGL500	120

12.11 MASTER OF SCIENCE/MAGISTER SCIENTIAE: GEOGRAPHY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22018 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- The General Rules for Masters' degrees are applicable.
- A candidate must also comply with the requirements in the departmental policy document regarding studies towards a Master's degree.
- The research project for the dissertation must be approved by the Faculty Management Committee (Science).
- BSc Honours: Geology or equivalent.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
	Research project and dissertation	Year	GEN500	120

12.12 MASTER OF SCIENCE/MAGISTER SCIENTIAE: MATHEMATICAL STATISTICS (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22023 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

BSc Honours: Mathematical Statistics.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

a. The curriculum consists of modules selected from the list below in consultation with the Department and a treatise or dissertation on an approved topic. Candidates may replace some of these modules with other appropriate modules with the permission of the Department. Each module below has a credit value of 24.

		Presented	Module Code	Credit Value
Full-time				
	Select one of the following modules:			
	Treatise	Year	WSPB500	48
	Treatise	Year	WSPC500	72
	Dissertation	Year	WSPD500	96
	Select modules to total 120 credits:			
	Categorical Data Analysis	Year	WSC500	24
	Stochastic Processes	Year	WSG500	24
	Selective Topics in Actuarial Statistics	Year	WSH500	24
	Statistical Inference	Semester 1	WSI500	24
	Multi-variate Statistical Methods	Year	WSM500	24
	Non-parametric Statistics	Semester 1	WSN500	24
	Credibility Theory and Econometrics	Year	WSO500	24
	Project	Year	WSPA500	24
	Capita Selecta A	Year	WSQ500	24
	Capita Selecta B	Year	WSR500	24
	Time Series Analysis	Semester 2	WSS500	24
	Regression Analysis	Year	WSU500	24
	Analysis of Variance	Year	WSV500	24
	Probability Theory	Year	WSW500	24

		Presented	Module Code	Credit Value
	Queuing Theory	Year	WSX500	24
	Measure and Integration Theory	Year	WSY500	24
	Mathematical Programming	Year	WSZ500	24
	Total Credits			**120**

12.13 MASTER OF SCIENCE/MAGISTER SCIENTIAE: MATHEMATICAL STATISTICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22007 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS
BSc Honours: Mathematical Statistics.

DURATION
The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	WSPE500	120

MAGISTER SCIENTIAE: MATHEMATICS MAIN CODE: MATH500 (QUALIFICATION CODE: 22006 – A1) MATHEMATICS (RESEARCH) (QUALIFICATION CODE: 22022 – A1) MATHEMATICS (COURSE WORK AND RESEARCH) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Students wishing to register for this degree must be in possession of an Honours degree in Mathematics or Applied Mathematics and demonstrated ability in the chosen area of specialization. They must in addition have completed any prerequisites prescribed for the modules which make up their curriculum, or must otherwise satisfy the Department of their ability to perform the work of the courses.

The Master's degree can be taken either by a dissertation only or by a combination of treatise and course work. The following modules are offered by the Department of Mathematics and Applied Mathematics. Each module has a weighting of 20 credits.

The modules which are offered in any academic year will depend on student demand and the availability of staff.

Students who take the Master's degree by a combination of a treatise and course work must take three approved courses from the list below. They may, with the approval of the Department substitute up to 40 credits with courses offered in other Departments, provided that such courses are of an acceptable mathematical standard. Honours courses offered in the Department, which were not taken as part of the Honours curriculum, may also be included.

The entire curriculum is subject to Departmental approval. The department offers a Master's degree in the following two focus areas:

Pure Mathematics

1. A Dissertation MATH511 (120 credits) on an approved topic,
2. A Treatise MATH510 (60 credits) on an approved topic and three (3) modules

The topics for the dissertation or treatise will be chosen in consultation with the department.

The modules may be selected from the list below:

Module Code	Module Description	Prerequisites
MATH501	Algebraic Topology (20 credits)	(MATH405 and MATH411) or (MATH402, MATH404 &MATH405)
MATH502	Near-ring Theory (20 credits)	MATH411 or (MATH402 and MATH404)
MATH503	Category Theory (20 credits)	MATH411 or (MATH402 and MATH404)
MATH504	Module Theory (20 credits)	MATH411 or (MATH402 and MATH404)
MATH505	Radical Theory (20 credits)	MATH411 or (MATH402 and MATH404)
MATH509	Capita Selecta (20 credits)	

Computational and Bio-Mathematics

1. A Dissertation MAPM509 (120 credits) on an approved topic.
2. A Treatise MAPM508 (60 credits) on an approved topic and three (3) modules.

The topics for the dissertation or treatise will be chosen in consultation with the department.

The modules may be selected from the list below:

Module Code	Module Description	Prerequisites
MAPM501	Finite Element Methods (20 credits)	MAPM401
MAPM502	Numerical Linear Algebra (20 credits)	MAPM402
MAPM503	Graph Theory (20 credits)	MAPM403
MAPM504	Continuum Mechanics (20 credits)	MAPM404
MAPM505	Numerical Analysis (20 credits)	MAPM405
MAPM506	Methods of Applied Mathematics (20 credits)	MAPM406
MAPM507	Capita Selecta (20 credits)	

Candidates may, with the permission of the department, replace some of these topics with other suitable topics.

12.14 MASTER OF SCIENCE/MAGISTER SCIENTIAE: MATHEMATICS (COURSE WORK AND RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22022 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Students wishing to register for this degree must be in possession of an Honours degree in Mathematics or Applied Mathematics and have demonstrated ability in the chosen area of specialisation. They must, in addition, have completed any prerequisites prescribed for the modules which make up their curriculum, or must otherwise satisfy the Department of their ability to perform the work of the courses.

The Master's degree can be taken either by a dissertation only or by a combination of treatise and course work. The following modules are offered by the Department of Mathematics and Applied Mathematics. Each module has a weighting of 20 credits. The modules which are offered in any academic year will depend on student demand and the availability of staff.

Students who take the Master's degree by a combination of a treatise and course work must take three approved courses from the list below. They may, with the approval of the Department, substitute up to 40 credits with courses offered in other Departments, provided that such courses are of an acceptable mathematical standard. Honours courses offered in the Department, which were not taken as part of the Honours curriculum, may also be included.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Algebraic Topology	Year	MATH501	20
	Near-ring Theory	Year	MATH502	20
	Category Theory	Year	MATH503	20
	Module Theory	Year	MATH504	20
	Radical Theory	Year	MATH505	20
	Capita Selecta	Year	MATH509	20
	Total Credits			**120**

Candidates may, with the permission of the department, replace some of these topics with other suitable topics.

12.15 MASTER OF SCIENCE/MAGISTER SCIENTIAE: MATHEMATICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22006 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Students wishing to register for this degree must be in possession of an Honours degree in Mathematics or Applied Mathematics and have demonstrated ability in the chosen area of specialisation. They must, in addition, have completed any prerequisites prescribed for the modules which make up their curriculum, or must otherwise satisfy the Department of their ability to perform the work of the courses.

The Master's degree can be taken either by a dissertation only or by a combination of treatise and course work. The following modules are offered by the Department of Mathematics and Applied Mathematics. Each module has a weighting of 20 credits. The modules which are offered in any academic year will depend on student demand and the availability of staff.

Students who take the Master's degree by a combination of a treatise and course work must take three approved courses from the list below. They may, with the approval of the Department, substitute up to 40 credits with courses offered in other Departments, provided that such courses are of an acceptable mathematical standard. Honours courses offered in the Department, which were not taken as part of the Honours curriculum, may also be included.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	MATH511	120

12.16 MASTER OF SCIENCE/MAGISTER SCIENTIAE: MICROBIOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22012 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS
BSc Honours: Microbiology.

Dissertation
- Project proposal seminar with defence to be delivered within the department.
- Dissertation on research.
- Examining will be done according to the rules of the Faculty of Science.
- Preparation of one article in the dissertation for publication in a recognised journal.

DURATION
The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	BM500	120

12.17 MASTER OF SCIENCE/MAGISTER SCIENTIAE: NANO SCIENCE (COURSE WORK AND RESEARCH): PART-TIME (QUALIFICATION CODE: 22050 – A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS
- The minimum admission requirement is a Bachelor of Science Honours Degree with a specialization in one **or more** of the following: Chemistry, Physics or Biotechnology/Medical Biosciences.
- Applications will only be considered from students with at least 65% for the Honours Degree.
- Applications from persons with equivalent qualifications will be considered by a constituted status committee in line with the University and Faculty regulations
- Only 10 new NMMU students can be enrolled per year.

RE-ADMISSION RULES
As per the General Rules listed in the Prospectus.

DURATION
The qualification shall extend over at least two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Part-time				
	Compulsory modules:			
	Central Concepts in Nanoscience	Semester 1	FSS501	4
	Management for Nanoscientists	Semester 2	FSS502	4
	Nanoscience Research Project	Year	FSS503	48
	Foundations of Nanobiomedical Sciences for Non-Biologists	Semester 1	FSS513	4
	Experimental Techniques in Nanobiomedical Science	Year	FSS512	16
	Advanced Nanobiomedical Science	Year	FSS511	48
	Foundations of Nanochemistry for Non-Chemists	Semester 1	FSS523	4
	Experimental Techniques in Nanochemistry	Year	FSS522	16
	Advanced Nanochemistry	Semester 2	FSS521	48
	Foundations of Nanophysics for Non-Physicists	Semester 1	FSS533	4
	Experimental Techniques in Nanophysics	Semester 2	FSS532	16
	Advanced Nanophysics	Year	FSS531	48
	Total Credits	**Minimum**		**120**

12.18 MASTER OF SCIENCE/MAGISTER SCIENTIAE: PHYSICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22008 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

BSc Honours: Physics.

After satisfactory completion of the Honours course, a candidate may complete his/her Master's degree by following a course which consists of the following:

- A dissertation, completed according to the General Rules for Masters Degree as published in the Prospectus of the NMMU.
- Seminars, which form an integral part of the MSc programme.
- It may be required of the student to register concurrently for one of the following modules for non- degree purposes:
  F405: Semiconductor physics
  F406: Electron Diffraction and Image-Contrast Theory
  F407: Module on topics in physics prescribed by the Department or taken in conjunction with other departments.

Please Note:

A candidate may be required to present him/herself for an oral examination on the contents of his/her dissertation.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	F500	120

12.19 MASTER OF SCIENCE/MAGISTER SCIENTIAE: TEXTILE SCIENCE (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22016 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Unless Senate decides otherwise, candidates shall be in possession of the following minimum qualifications in order to qualify for admission:

- BSc: Textiles obtained at a local or recognised overseas university; or
- A diploma in Textile Engineering obtained at a recognised overseas Technical High School or University, and recognised by the Department of National Education as being equivalent to a BSc Honours degree; or
- A BSc Honours degree in Chemistry, Physics, Mathematics or Mathematical Statistics.
- Candidates may be required to pass a qualifying test in one or more fields in Textile Science and/or Technology.
- All candidates should be employed by, or have access to, a well-established textile laboratory having the necessary research facilities.

FIELDS OF STUDY

One of the following fields may be selected for research:

- Textile Chemistry (protein, cotton, man-made fibre chemistry, detergency, dyeing, finishing).
- Textile Physics (Physics of fibres, yarns or fabrics).
- Textile Statistics.
- Mechanical Processing (carding, combing, spinning, knitting, weaving, non-wovens, etc).
- Textile Engineering (machine manufacture).
- Fire Composite Materials.
- The certificate for the degree shall bear an endorsement, signifying the field of study.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	TT500	120

12.20 MASTER OF SCIENCE/MAGISTER SCIENTIAE: ZOOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22010 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

After satisfactory completion of the Honours degree, a candidate may complete his Master's degree by:

- submitting a dissertation as approved by the Department on a subject chosen to satisfy the requirements and objectives of the Department;
- submitting at least one satisfactory manuscript for publication on the dissertation;
- presenting at least one formal research seminar on the dissertation;
- satisfactory participation in Departmental academic activities.
- A candidate may be required to present himself for an oral examination on the contents of his dissertation.

DURATION

The qualification shall extend over at least one year of full-time or two years of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and dissertation		Year	ZOO500	120

13 DOCTOR OF TECHNOLOGY/ DOCTOR TECHNOLOGIAE

13.1 DOCTOR OF TECHNOLOGY/ DOCTOR TECHNOLOGIAE: AGRICULTURE (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6451 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

Further studies in Agricultural Management are possible as the D Tech degree in Agricultural Management is available as a study option. This is a research-based qualification.

ADMISSION REQUIREMENTS

Master of Technology/Magister Technologiae: Agricultural Management or equivalent qualification.

DURATION

Full-time:
Minimum period: 2 years
Maximum period: 4 years
Part-time:
Minimum period: 2 years
Maximum period: 6 years

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	ADT6000	120

13.2 DOCTOR OF TECHNOLOGY/ DOCTOR TECHNOLOGIAE: CHEMISTRY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 7360 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

This qualification is awarded on completion of a comprehensive original research project in Applied Chemistry.

ADMISSION REQUIREMENTS
Master of Technology/Magister Technologiae: Chemistry or equivalent qualification.

DURATION
Full-time:
Minimum period: 2 years
Maximim period: 4 years
Part-time:
Minimum period: 2 years
Maximim period: 6 years

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	CDT6000	120

14 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR

The qualification shall be obtained by complying with the requirements set out in the General rules for Doctors' degrees.

14.1 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: APPLIED MATHEMATICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22513 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Mathematics.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	MAPM600	240

14.2 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: BIOCHEMISTRY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22511 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Biochemistry.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	BC600	240

14.3 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: BOTANY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22503 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Botany.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	BOT600	240

14.4 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: CHEMISTRY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22515 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Chemistry.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	CHD600	240

14.5 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: COMPUTER SCIENCE AND INFORMATION SYSTEMS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22504 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS

Unless Senate decides otherwise, candidates shall be admitted to the studies for the Doctor's degree in Computer Science and Information Systems only if they hold a Master's degree in Computer Science and Information Systems, at a level considered satisfactory by the Department, and have obtained a final mark of at least 65 for the Master's degree, as well as complying with such other selection criteria as laid down by the Department.

NOTE: All candidates shall be subject to selection.

Unless Senate decides otherwise, candidates shall only be re-admitted to the studies for the degree if at least two chapters of the thesis have been satisfactorily completed in the previous academic year.

DURATION

The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	WR600	240

14.6 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: GEOGRAPHY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22518 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS

Relevant MSc degree.

DURATION

The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	GEN600	240

14.7 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: GEOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22505 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Geology.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	GGL600	240

14.8 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: MATHEMATICAL STATISTICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22507 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Mathematical Statistics.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	WS600	240

14.9 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: MATHEMATICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22506 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Mathematics.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	W600	240

14.10 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: MICROBIOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22512 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Microbiology.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	BM600	240

14.11 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: PHYSICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22508 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Physics.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	F600	240

14.12 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: TEXTILE SCIENCE (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22516 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Unless Senate decides otherwise, candidates shall be in possession of the following minimum qualifications in order to qualify for admission:

- An MSc degree in Chemistry, Physics or Textile Engineering obtained at a local university or a recognised overseas university with at least two years' experience in the textile research field; or
- An MSc (Textiles) degree obtained at a local or recognised overseas university; or
- They must have passed the examinations on the grounds of which they will be awarded a Master's degree by the University or on the grounds of which the required status may later be granted to them by Senate.
- All candidates where necessary shall be required to pass a qualifying test in one or more fields in Textile Science and/or Technology.
- All candidates should be employed by, or have access to, a well-established textile laboratory, having the necessary research facilities.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	TT600	240

14.13 DOCTOR OF PHILOSOPHY/ PHILOSOPHIAE DOCTOR: ZOOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 22510 – A1/A2) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 240)

ADMISSION REQUIREMENTS
Master's degree in Zoology.

DURATION
The qualification shall extend over at least two years of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Research project and thesis		Year	ZOO600	240