NELSON MANDELA
METROPOLITAN UNIVERSITY

FACULTY OF ENGINEERING, THE BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

PROSPECTUS 2011

Enquiries:

Faculty of Engineering, the Built Environment and Information Technology
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NELSON MANDELA METROPOLITAN UNIVERSITY
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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 NMMU accept no responsibility for any errors or omissions. This Prospectus is applicable only to the 2011 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

TABLE OF CONTENTS

1 VISION AND MISSION

Our vision is to be the preferred provider of professional and career-oriented education and research in the fields of engineering, the built environment and information technology.

We are a people-centred Faculty offering internationally recognised academic programmes, delivering competent graduates and providing innovative solutions and services to industry and community.

WELCOMING MESSAGE FROM THE DEAN

Welcome to the Faculty of Engineering, the Built Environment and Information Technology. In this faculty we combine top facilities, state-of-the-art technology and stimulating training to produce highly sought-after graduates in the fields of Civil, Electrical, Industrial, Mechanical Engineering, Mechatronics, Information Technology, Quality and Operations Management, Quantity Surveying, and Construction Management. The Faculty comprises three schools which include the Schools of Engineering, the Built Environment and Information and Communication Technology. All programmes, where applicable, are accredited by relevant professional bodies, which is an indication of the quality of education in this faculty.

The BSc Construction Studies, BSc (Hons) Construction Management and MSc in Built Environment are accredited by the Chartered Institute of Building (CIOB-UK) and the South African Council for the Project and Construction Management Professions (SACPCMP). The BSc Construction Economics and BSc (Hons) Quantity Surveying are accredited by the Royal Institution of Chartered Surveyors (RICS). The two latter programmes as well as the National Diploma in Building and the BTech degrees (both Construction Management and Quantity Surveying) in the School of Built Environment are accredited by the South African Council for the Quantity Surveying Profession (SACQSP). The BEng Mechatronics and all the National Diplomas and BTech engineering programmes are accredited by the Engineering Council of South Africa (ECSA). The engineering qualifications are internationally recognised in terms of the Washington, Sydney and Dublin Accords. All the undergraduate and BTech programmes in the School of ICT, which hosts the Sub-Saharan Africa Cisco Academy Training Centre, contain a selection of Cisco-certified courses which allows us to provide internationally recognised IT specialists.

Apart from the academic departments, various institutes, centres and units are also housed in each school to promote their research, technology transfer, non-formal teaching, community service and outreach initiatives. The Faculty has established links with major industrial partners in the region, province and country. Industrial partners include major manufacturers and suppliers in the automotive and supplier industry, power utilities, large companies in the field of ICT, major construction companies, and large consulting businesses in South Africa. These partnerships provide a number of opportunities for contract research and collaborative research projects. World-class research is being conducted in this faculty, ranging from friction stir welding, manufacturing technology and automotive manufacturing, to information security, telecommunications, communication networks, and construction health and safety. There are strong links with a number of leading international partners which ensure active student exchange programmes abroad.

The Faculty welcomes you into this vibrant environment where you will be part of a diverse student body in which students are holistically developed as confident, innovative and knowledgeable professionals.
Enjoy your studies!
Prof Henk de Jager
Executive Dean

2 STAFF

OFFICE OF THE DEAN

Executive Dean	Prof H J de Jager BA (PU for CHE), DTE (UNISA), M Dip Tech Elec Eng (Vaal Triangle Technikon), D Tech Educ Mngt (TSA), Pr Tech (Eng), MSAIEE, MIPET
Executive Secretary	Ms C Dale
Faculty Research Administrator	Ms A Leonard
Faculty Experiential Training Administrator	Ms C I Hopgood

FACULTY ACADEMIC ADMINISTRATION

Senior Manager: Faculty Administration	Ms R Vosloo BA (UPE)
Summerstrand North Campus:	
Manager: Faculty Administration	Ms R Jappie N Dip Bus Comp (PET)
Faculty Administrators	Ms J Botha NDip Com Admin (PET)
	Ms N S Ngcayisa SED (Vista)
	Ms N Terblanche N Dip Bus Comp (PET)
	Ms L Thoba NDip Comm Admin (PET), BTech Mgt (NMMU)
Missionvale Campus:	
Manager: Faculty Administration	Ms D Blaauw BA (UPE), BA Hons (NMMU)
Faculty Administrator	Ms M Mazinyo BA (UPE), BA Hons (NMMU)

SCHOOL OF ENGINEERING

Director of School	Mr S Schoombie NDT, NH Dip Mgt Prac, M Dip Tech Elec Eng (PET), Pr Tech (Eng), SMSAIEE
Secretary	Ms L du Preez NH Dip PR and Comm (Varsity)
Project Co-ordinator	Ms N Ward N Dip PR Management (NMMU)

Department of Civil Engineering

Head of Department	Mr JP Barnard BSc, Hons Business Man. & Admin, MBA (US)
Principal Lecturer	Mr P H Butlion NHDT (Civ), SACPE II, CGLI, DIPL.ACT (UK), Pr Tech (Eng), MIPET, MICT (UK)
Senior Lecturer	Mr V Danoher MPA, BSc Eng(Civil), HD PSE, Pr Eng, C Eng
	Mr A Nagel NDT (Civ Eng), M Dip Tech Trans Eng (PET)
Lecturers	Mrs M Daniels ND Civ Eng, B Tech Water Eng (NMMU)

	Mr J van der Merwe ND Civ Eng (CT), NHD Civ Eng, M Dip Tech Water Eng (Pret Tech)
Associate Lecturer (pending)	Mr C Achouke HND (Building Tech) (Ghana), BTech QS (NMMU)
Contract Lecturer	Prof S S Long BA (UNISA), BSc, B Eng, M Eng (US), MEd (Rhodes), FSAICE, MSAll
Senior Laboratory Technician	Mr D Swanepoel NDT (Civ Eng – Material Testing) (Pret Tech)
Junior Laboratory Technician	Mr N Mzati Dip Constr (UFS)
TRAC Laboratory Manager	Ms B Slatcha HDE (UPE), BEd (NMMU)
TRAC Laboratory Assistant	Mrs TL Roberts BSc (UPE), PGCE (UPE)
Secretary	Ms L T Pienaar N Dip HRM, B Tech HRM (NMMU)

Department of Electrical Engineering

Head of Department	Mr A G Roberts NCT, NHCT, NDT, N Dip Tech (PET), NH Dip PSE, M Dip Tech Elec Eng (PET), Pr Tech (Eng), MSAIEE
Principal Lecturers	Mr S Grebe HED (Tech) (UNISA), NDT, M Dip Tech Elec Eng (PET), Pr Tech (Eng), MSAIEE
Senior Lecturers	Mr F Adlam N Dip, NH Dip PSE, M Tech Elec Eng (PET)
	Dr R T Harris N Dip, NH Dip Mgt Prac (TSA), HED (Tech) (UPE), B Tech, M Tech (PET), D Tech Elec Eng (NMMU), Pr Tech (Eng), MSAIEE
	Mr A Marks B Eng Elec (UP), B Tech Ed Post School (UJ), MEd (UP)
	Mr P Millroy NCT, NDT (Telecom), NH Dip PSE (PET), M Dip Tech Elec Eng (PET), Pr Tech (Eng), SMSAIEE
	Mr G V Phillips N Dip, B Tech Elec Eng, M Tech Elec Eng (PET), Pr Tech (Eng)
Lecturers	Mr A J McGillivray N Dip, NH Dip Elec Eng (PET)
	Mr P F R Swanepoel NCT, NDT, NH Dip Elec Eng, M Tech Elec Eng (PET)
	Mr A M Wynter NCT, NDT, NH Dip Elec Eng LC (PET), B Tech Bus Mgt (NMMU)
Contract Lecturer	Mr K Majara N Dip Elec Eng, B Tech Elec Eng (PET), M Tech (NMMU)
Technicians	Mr R Ehlers N Dip Elec Eng (PET)
	Mr A Ndimurwimo N Dip, B Tech Elec Eng (NMMU), Pr Tech (Eng)
	Mr P Vassen N Dip, N Dip Radio + TV Mechanism (PET), B Tech Eng (NMMU)
Technical Assistant	Mr N Manene
Secretary	Ms L du Preez NH Dip PR and Comm (Varsity College)

Department of Industrial Engineering

Head of Department	Ms A S Lourens N Dip Prod Mgt, NH Dip Prod Mgt, B Tech Bus Mgt, MBA (PET), MSAIIE
Senior Lecturers	Mr A T Murray N Dip Ind Eng, NH Dip Ind Eng, NH Dip Mgt Prac (PET), M Tech Ind Eng (NMMU), Pr Tech (Eng), SMSASQ, MSAIIE
	Mr K van der Merwe N Dip Ind Eng, NH Dip Ind Eng (PET), B Tech Operations Management, M Tech Industrial Eng (NMMU), Pr Tech (Eng), MSAIIE
Lecturers	Mr A Louw B Eng (Industrial) (UP), B Eng (Hons) (Industrial) (UP), MDP Dip (UPE), MSAIIE
	Mr J Snyders N Dip Ind Eng (PET), B Tech Ind Eng (NMMU)
Secretary	Ms C Koekemoer N Dip PRM (PET), B Tech PRM (NMMU)

Department of Mechanical Engineering

Honorary Professor	Prof M N James BSc (Eng), DSc (Eng) (Wits), D Tech (Honoris Causa) (NMMU), PhD (Cambridge), C Eng, FIM
Adjunct Professors	Prof JThM De Hosson BSc in Maths & Physical Science (Utrecht, Netherlands), PhD Physics (Groningen Netherlands)
	Prof A Steuwer MPhil in Physics, PhD in Materials Science (Cambridge, UK)
Head of Department	Prof P J McGrath NH Dip Mech Eng, M Dip Tech Mech Eng (PET), PhD (Plymouth, UK), Pr Tech (ECSA), MSAIMechE, MLIA (USA
Professor	Prof D G Hattingh N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), PhD (Plymouth), Reg Eng Tech, Pr Tech (Eng), MSAIMechE
Associate Professor	Prof A Els-Botes N Dip Met Eng, NH Dip Met Eng, M Tech Mech Eng (PET), D Tech Mech Eng (NMMU), Pr Tech (Eng), SAIMM
Principle Lecturer	Mr K H du Preez N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), Pr Tech (Eng), MSAIMechE, MSAIRAC
Senior Lecturers	Dr H Lombard BSc, HDE, BSc (Hons), MSc (UPE), PhD (Plymouth), ASAIRAC
	Dr R L Phillips N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), Reg Eng Tech,D Tech Mech Eng(NMMU) MSAIMechE
Lecturers	Mr G Gouws NH Dip Mech Eng, B Tech Mech Eng (PET)
	Mr C H Hands BSc, BSc (Hons) Mech Eng (Natal)
	Mr G Kleyn N Dip Mech Eng (PET), NH Dip Mech Eng (Tech Wits), MSAIRAC, MSAIMechE

	Mr W Rall N Dip Mech Eng, B Tech Mech Eng, M Tech Mech Eng (PET), MSAIMechE
	Mr H Theunissen N Dip Mech Eng, B Tech Mech Eng, M Tech Mech Eng (PET)
Senior Laboratory Technician	Mr M D Knoesen NTD Mech (PET)
Senior Artisans	Mr T Browning NTC III (Turning and Machining)
	Mr J N van der Mescht
Laboratory Technicians	Mr G Erasmus NDip Met Eng(PET)
	Mr W Nkholise N Dip Mech Eng, B Tech Mech Eng (NMMU) Reg Eng Tech
Laboratory Assistants	Mr ML Kani
	Mr E Sambu
Secretary	Mrs M Brown N6 Secretarial (Russell Road College)

Automotive Component Technology Station (ACTS)

Director	Prof D G Hattingh N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), PhD (Plymouth), Reg Eng Tech, Pr Tech (Eng), MSAIMechE
Deputy Director	Mr A Young N Dip Mech Eng, B Tech Mech Eng, M Tech Mech Eng (PET), MSAIMechE
Operations Manager	Ms L Lindsay N Dip Off Mngt (PE College), N Dip Mngt (NMMU), B Tech Management (NMMU)
Admin Assistant	Ms N Xoli
Engineers	Mr W Botha N Dip Mech Eng, B Tech Mech Eng (NMMU)
	Mr D Erasmus B Tech Mech Eng (NMMU)
	Mr S Grewar B Tech Mech Eng (NMMU)
	Mr M Hamed B Eng Mechatronics (NMMU)
	Dr T Hua D Tech Mech Eng (NMMU)
	Mr D Odendaal B Eng Mechatronics (US)
	Mr E Phillips BSc Eng (Elec)
	Mr L von Wielligh N Dip Mech Eng, B Tech Mech Eng (PET), M Tech Mech Eng (NMMU)
	Mr I Wedderburn N Dip Mech Eng, B Tech Mech Eng, M Tech Mech Eng (PET), MSAIMechE

Department of Mechatronics

Head of Department	Prof I A Gorlach N Dip Ed, NH Dip Ed (TWR), BSc Mech Eng, MSc Ind Eng (Wits), PhD Mech Eng (PU for CHE), Pr Eng, MSAIIE
Professor	Prof T T van Niekerk BSc Elec Eng (UCT), NH Dip CDP, M Tech IT, D Tech Elec Eng (PET), Pr Eng, MSAIEE
Associate Professor	Prof K Abou-El-Hossein, MSc Manufacturing (Ukraine), PhD Manufacturing (Ukraine), GCTT (Curtin)

Senior Lecturer	Dr F Smith Pr Eng, BSc (Physics), BSc Elec Eng, MSc Elec Eng (UCT), PhD Electronic Eng (Stellenbosch)
Lecturers	Mr B Roberts BSc Electro-Mechanical Eng (UCT), Pr Eng, MSAIRAC
	Mr C F Scheckle BSc Elec Eng(Wits), Pr Eng
Laboratory Technician	Mr R Herselman N Dip Elec Eng (NMMU), B Tech Elec Eng (NMMU)
Secretary	Ms C Koekemoer N Dip PRM(PET), B Tech

REGISTERED ENTITIES

Chair VWSA-DAAD International Chair in Automotive Engineering

Chair	Prof T T van Niekerk BSc Elec Eng (UCT), NH Dip CDP, M Tech IT, D Tech Elec Eng (PET), Pr Eng, MSAIEE
Marketing and Financial Manager	Mr L Grimbeek N Dip Marketing (NMMU), B Tech (Unisa)

GMSA Chair of Mechatronics

Chair	Prof I A Gorlach N Dip Ed, NH Dip Ed (TWR), BSc Mech Eng, MSc Ind Eng (Wits), PhD Mech Eng (PU for CHE), Pr Eng, MSAIIE
Project Engineer	Mr A R Norman BEng Mechatronics (NMMU)
Secretary	Ms M Snyders N Dip Tourism (PET)

Merseta

Manager	Mr K H du Preez N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), Pr Tech (Eng), MSAIMechE, MSAIRAC
Project Co-ordinator	Ms M Parshotam B Com (Eco and BM)

Automotive Component Technology Station (ACTS)

Director	Prof D G Hattingh N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), PhD (Plymouth), Reg Eng Tech, Pr Tech (Eng), MSAIMechE

Friction Processing Research Institute (FPRI)

Director	Prof A Els-Botes N Dip Met Eng, NH Dip Met Eng, M Tech Mech Eng (PET), D Tech Mech Eng (NMMU), Pr Tech (Eng), SAIMM

Manufacturing Technology Research Centre (MTRC)

Research Manager	Prof A Els-Botes N Dip Met Eng, NH Dip Met Eng, M Tech Mech Eng (PET), D Tech Mech Eng (NMMU), Pr Tech (Eng), SAIMM

Advanced Mechatronics Technology Centre (AMTC)

Manager	Mr K H du Preez N Dip Mech Eng, NH Dip Mech Eng, M Dip Tech Mech Eng (PET), Pr Tech (Eng), MSAIMechE, MSAIRAC
Project Co-ordinator	Ms E Nortje N Dip, B Tech PR Management (NMMU)

Administrative Assistant	Ms B Moodaley N Dip, B Tech PR Management (NMMU)

Research and Outreach Unit for Technology Education (ROUTE)

Manager	Dr R T Harris NHDip Mgt Prac (TSA), HED (Tech) (UPE), B Tech, MTech (PET), D Tech Elec Eng (NMMU), Pr Tech (Eng), MSAIEE.

Lean Processing Development Unit (LPDU)

Head	Vacant

Centre for Mechatronics and Manufacturing (CMM)

Director	Prof K Abou-El-Hossein, MSc Manufacturing (Ukraine), PhD Manufacturing (Ukraine), GCTT (Curtin)

South African Road Agency Limited Project (SANDRAL)

Manager	Ms R Slabbert
Laboratory Manager	Ms I Van Gend

SCHOOL OF THE BUILT ENVIRONMENT

Director of School	Mr D Vosloo BBuild Arts, BSc (QS), MSc BE (UPE), Pr QS, PMAQS, MRICS
Secretary	Ms N Sam N Dip Office Mgt & Tech (PET)
Laboratory Technician	Mr L Mahlangabeza NDip (Prd Mgt), B Tech (Prd Mgt) (NMMU)
Laboratory Assistant	Mr W Malgas N Dip Arch Draughting (Intec College)

Department of Building and Quantity Surveying

Head of Department	Prof N S Buys BBuild Arts, BSc (QS), MSc (QS), PhD (CE) (UPE), Pr QS, Pr Arch.Draught, PMAQS, MRICS
Professor	Prof J J van Wyk NDT (Civ Eng), BCom (UNISA), BEd (TerEd), BCom (Hons), MCom (UPE), D Phil (NMMU), Pr CPM, Pr Tech (Eng), MSAICE, MIPET, MIHSA, MPMI, MRSAI, MPMSA
Associate Professor	Prof G J Crafford BSc (QS), MSc (QS), PhD (CE) (NMMU)
Senior Lecturers	Mr J P Bekker N Dip (Bldg Surv), NH Dip (Bldg Surv) (PET), MSc BE (UPE), Pr CPM
	Mr R C Cumberlege BSc (QS) (UPE), MSc (CE) (NMMU), Pr QS, PMAQS
	Dr F L Geminiani N Dip (Constr Supervision) (PET), HED Technical (UNISA), NHD (Constr Supervision), M Dip Tech (CM) (PET), D Tech (CM) (NMMU), Pr CPM, AMISM, SACPCMP, ACHASM
Lecturers	Ms S Dent BSc (QS) (UPE)
	Mr W Draai N Dip (Bldg Surv), NH Dip (Bldg Surv) (PET), MDP (UNISA)

	Mr J M Slabber BSc (QS) (UPE), MRICS
	Mr J Terblanche N Dip (Bldg Surv), NH Dip (Bldg Surv) (PET), Pr CM
Contract Lecturers	Ms M N De Villiers CEA (Estate Agency Affairs Board), N Cert Real Estate (UNISA)
	Mr R Els BSc (QS) (UPE)
	Mr A Jorgensen N Dip (Elec. Eng) (Russell Rd Tech), CNE, MCSE, XPLEX Eng and MCP+I
	Mr J Swartz B Com (Accounting) (UPE)
	Mr H van der Kolf BSc (QS) (UPE), Pr QS, PMAQS
Secretary	Ms L Engelbrecht

Department of Construction Management

Head of Department	Prof J J Smallwood BSc (BM), MSc (CM), PhD (CM) (UPE), Pr CM, PPSAIB, FCIOB, MACPM, MESSA, MICOH, MloSM
Associate Professor	Prof M W Shakantu BSc (Building) (Copperbelt), MSc (CM) (Reading), PhD (CM) (Glasgow Caledonian), Pr (Construction Management), MCIOB (UK), AEIZ (Zambia), MSIZ (Zambia)
Senior Lecturers	Mr B Botha N Dip (Bldg), B Tech (QS), B Tech (CM) (PET), MSc BE (UPE), Pr CPM, MCIOB
	Mr A Malherbe BSc (Eng) (Civ) (Wits), PrEng, MSAICE
Lecturer	Vacant
Secretary	Vacant

REGISTERED ENTITIES

Unit for Building Research and Support

Head	Mr J P Bekker N Dip (Bldg Surv), NH Dip (Bldg Surv) (PET), MSc BE (UPE), Pr CPM

Unit for the Study of Construction Processes (USCP)

Head	Prof J J Smallwood BSc (BM), MSc (CM), PhD (CM) (UPE), Pr CM, PPSAIB, FCIOB, MACPM, MESSA, MICOH, MloSM

SCHOOL OF INFORMATION & COMMUNICATION TECHNOLOGY

Director of School	Prof D Pottas BSc, BSc (Hons) (PU for CHE), MSc, PhD (RAU), MCSSA
Secretaries	Ms G Kleinhans Secretarial Certificate (Terblanche College)
	Ms H Levack N Dip Office Mgt & Tech (PET)

Department of Applied Informatics

Head of Department	Mr M Thomson N Dip Electronic Data Processing, NH Dip Computer Systems, M Tech IT (PET)

Senior Lecturer	Ms A Petratos N Dip Comp Dat Proc, NH Dip Computer Systems, M Dip Tech IT (PET)
Lecturers	Ms A du Preez BCom (Ed) (UPE)
	Mr N Dyira N Dip IT, B Tech IT (PET)
	Mr R G Leppan BSc, BSc (Hons) (UPE), MSc (NMMU)
	Vacant Position
Associate Lecturer	Ms S Salie N Dip IT, B Tech IT (PET)

Department of Information Technology

Head of Department	Ms K A Church BSc, BSc (Hons), MSc (UPE), PMCSSA
Professors	Prof RA Botha BSc, BSc (Hons) (UPE), MSc, PhD (RAU), MCSSA
	Prof R von Solms BSc (UPE), NH Dip Electronic Data Processing (PET), HDE (UPE), BSc (Hons) (UNISA), MSc, PhD (RAU), PMCSSA, CISM
Associate Professor	Prof D van Greunen HDE, FDE, BA (Hons), MA (UPE), MCSSA, MICSIT, PhD (UNISA)
Senior Lecturers	Ms L Futcher BSc (UPE), HED (UNISA), B Tech IT (PET), M Tech IT (NMMU)
	Dr M Gerber N Dip IT, B Tech IT, M Tech IT (PET), PhD (NMMU), CISM
	Mr R G Harmse BCom (UPE), B Tech IT, M Tech IT (PET)
	Mr A J Rutherford N Dip IT, B Tech IT (PET), M Tech IT (NMMU)
	Ms C H Schröder BSc (UPE), NH Dip Computer Systems, M Tech IT (PET)
	Dr K Thomson N Dip IT, B Tech IT, M Tech IT (PET), D Tech IT (NMMU)
	Ms H A van de Haar BSc (UPE), NH Dip Comp Dat Proc, M Dip Tech Comp Dat Proc (PET)
	Ms D van Greunen HDE, FDE, BA (Hons), MA (UPE), MCSSA, MICSIT
	Mr J F van Niekerk BSc (UPE), B Tech IT (PET), M Tech IT (NMMU), MCSSA, MICSIT
Lecturers	Mr T Breetzke N Dip IT, B Tech IT, M Tech IT (PET)
	Mr B Haskins N Dip IT (TFS), B Tech (CUT, FS); M Tech IT (CUT, FS)
	Ms N Mostert-Phipps N Dip IT, B Tech IT (PET), M Tech IT (NMMU)
	Ms Y Moutzouris N Dip IT, B Tech IT, M Tech IT (PET)
	Mr D L Steenberg BCom IT, BCom (Hons) (PU for CHE), M Tech: BIS (NMMU)

	Mr S Vincent N Dip IT (PET), B Tech IT (TSA)
Laboratory Technicians	Ms T Campher N Dip IT (PET), B Tech IT (PET)
	Mr D P Müller N Dip IT (PET), B Tech IT (NMMU)
	Ms L Vincent N Dip IT (PET)
	Vacant Position

REGISTERED ENTITIES

Institute for Information and Communication Technology Advancement (IICTA)

Director	Prof R von Solms BSc (UPE), NH Dip Electronic Data Processing (PET), HDE (UPE), BSc (Hons) (UNISA), MSc, PhD (RAU), PMCSSA, CISM

Cisco Academy Training Centre (CATC)

Manager/Lecturer	Mr G Kudyachete Eng. (Electronics) Hons. (N.U.S.T., Zim), MSc.Tel. (University of Pittsburgh, USA)

Spatial Technologies Unit

Head of Unit	Prof D Pottas BSc, BSc (Hons) (PU for CHE), MSc, PhD (RAU), MCSSA
Course Administrator	Ms M Brittain

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 may 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 PROFESSIONAL STATUS AND RECOGNITION OF DEGREES

SCHOOL OF THE BUILT ENVIRONMENT

The School consists of the Department of Construction Management and the Department of Building & Quantity Surveying. The School offers various undergraduate and postgraduate study opportunities in the fields related to the construction and property environment, such as project management, facilities management, construction management, construction health & safety management, property economics & valuation, as well as programmes that develop the organisational and analytical skills, business management and research competencies relevant to the quantity surveying profession.

The School's programmes are highly acclaimed and received national and international accreditation. Quantity Surveying degrees and Building Diplomas from the NMMU are accredited by the South African Council for the Quantity Surveying Profession. The Quantity Surveying degrees are also accredited by the Royal Institution of Chartered Surveyors in the UK. The Construction Management qualifications receive not only accreditation from the professional Association for Construction Managers in South Africa, the Chartered Institute of Building (Southern Africa), but also from the Chartered Institute of Building (UK).

Institutes and professional bodies:

ACPM	Association for Construction Project Managers
ASAQS	Association of South African Quantity Surveyors
ASOCSA	Association of Schools of Construction of Southern Africa
CIOB (AFRICA)	Chartered Institute of Building (Africa)
ESSA	Ergonomics Society of South Africa
ISM	Institute of Safety Management
RICS	Royal Institute of Chartered Surveyors
SACPCMP	South African Council for the Project and Construction Management Professions
SACQSP	South African Council for the Quantity Surveying Profession
SAIB	South African Institute of Building

The programmes offered in the School are accredited by or affiliated to the following professional bodies:

Accreditation	Affiliation
• SA Council for the Quantity Surveying Profession (SACQSP) • Royal Institution of Chartered Surveyors (RICS)	• Association of Schools of Construction of Southern Africa (ASOCSA) • SA Institute of Building (SAIB)

• Chartered Institute of Building (CIOB) (Africa) • SA Council for the Project & Construction Management Professions (SACPCMP)	• Institute of Safety Management (ISM) • Ergonomics Society of South Africa (ESSA) • Association for Construction Project Managers (ACPM) • The Association of South African Quantity Surveyors (ASAQS)

SCHOOL OF ENGINEERING

The School of Engineering offers a continuum of academic programmes including National Diplomas, Bachelor, Master's and Doctoral degrees. Aspects of basic science, engineering science and mathematics are integrated with applied technologies in the respective fields to ensure well balanced qualifications to ensure maximum employability and to serve the needs of industry. The teaching, learning and research experience is enriched by practical and research work in excellent laboratories and active engagement with local, national and international universities.

The abovementioned programmes are offered in the full spectrum of engineering activities including Civil, Industrial, Electrical and Mechanical Engineering as well as Mechatronics and Operations Management. The relevance and quality of the programmes offered are closely managed with Advisory Board participation and regular self evaluation. External accreditation by the Engineering Council of South Africa (ECSA) on behalf of the Higher Education Quality Committee (HEQC) further ensures quality and international standards via the Sidney, Washington and Dublin accords.

Engineering is best defined by five distinguishing characteristics.
First, it encompasses initiatives, services and the solution of problems that are of importance to society and the economy.

Second, engineering activity brings benefits through effectively and sustainably utilising natural resources, harnessing energy, using materials with beneficial properties, using machinery and equipment, transferring, storing and processing information, constructing, operating and maintaining infrastructure and plant, and the organisation and control of systems or processes. These actions involve risks, requiring engineering activity to be conducted with due care for safety, health, the environment and sustainability.

Third, engineering functions include designing materials, components, systems or processes; planning the capacity and location of infrastructure; investigating, advising and reporting on engineering problems; improvement of materials, components, systems or processes; managing or operating plant and processes; managing implementation or construction projects; implementing designs or solutions; research, development and commercialisation of products.

Fourth, engineering activity requires a body of knowledge and distinctive competencies. The body of knowledge is based on mathematics, basic sciences, engineering sciences, information technology and contextual knowledge including legal, financial and regulatory aspects.

Distinctive competencies include identifying problems and designing solutions, managing activities, addressing impacts of solutions and activities on people and the environment, acting ethically, applying judgment and taking responsibility.

Fifth, the practice of engineering activities at professional level involves a number of roles, recognized in categories of registration under the Engineering Profession Act:

- Professional Engineer,
- Professional Engineering Technologist,
- Professional Engineering Technician, and
- Professional Certificated Engineer.

These form the engineering professional team.

WHAT ARE THE CHARACTERISTIC ROLES OF ENGINEERING TEAM MEMBERS?

Professional Engineers are characterised by the ability to solve problems, develop components, systems, services and processes through creativity, innovation and the application of fundamental and engineering principles.

They provide technical and commercial leadership through well-developed interpersonal skills. They work independently and responsibly, applying original thought and judgment to technical and risk-based decisions in complex situations. Professional Engineers have a broad, fundamentals-based appreciation of engineering sciences, with depth in specific areas, together with knowledge of financial, commercial, legal, social and health, safety and environmental matters. Professional Engineering Technologists are characterized by the ability to apply established and newly-developed engineering technology to solve problems, develop components, systems, services and processes.

They provide leadership in the application of technology and commercially and have well-developed interpersonal skills. They work independently and responsibly, applying judgment to decisions on the application of technology to problems and associated risks.

Professional Engineering Technologists have a focused understanding of engineering sciences underlying specific technologies, and financial, commercial, legal, social and health, safety and environmental matters.

Professional Engineering Technicians are characterized by the ability to apply proven, commonly understood techniques, procedures, practices and codes in support of engineering activities. They supervise engineering operations, construction and activities. They work independently and responsibly within an allocated area or under guidance of an engineer or technologist. Professional Engineering Technicians have a working understanding of engineering sciences underlying the techniques used, together with financial, legal and health, safety and environmental methodologies.

Professional Certificated Engineers apply current engineering technology and knowledge of health and safety legislation and practise creatively and innovatively to safe, effective operations in manufacturing and mining. They provide leadership in safe, technically and commercially effective operations and have well-developed management skills.

They work independently and responsibly, applying judgment to decisions arising in the application of technology and health and safety considerations. Professional Certificated Engineers have a focused understanding of engineering sciences underlying a manufacturing or mining plant and operations, together with financial, commercial, legal, social and health, safety and environmental matters.

HOW ARE ENGINEERING PROFESSIONALS DEVELOPED?

The process of professional development in engineering has three principal phases. First, engineering education leads to a qualification accredited for the category of registration. Meeting educational requirements is called Stage 1 of professional development.

Second, training and experience while employed develops the professional competencies to Stage 2, where the person becomes professionally registered. Demonstration of competency at Stage 2 is based on actual performance of engineering work.

Third, once registered, the professional must maintain and expand his or her competence.
This and other information is available at: **http://www.ecsa.co.za.**

After obtaining the Diploma or higher qualifications, students may join a number of institutes and professional bodies which will add additional status to their qualifications. More information is available from the Dean and the faculty website.

Table of institutes and professional bodies:

ICMEESA	Institution of Certified Mechanical & Electrical Engineers, SA
ILESA	Institute of Lighting Engineers of South Africa
IPET	Institute of Professional Engineering Technologists
SAACE	South African Association of Consulting Engineers
SAICE	South African Institute of Civil Engineering
SAIEE	South African Institute of Electrical Engineers
SAIETE	South African Institute of Electrical Technician Engineers
SAIIE	South African Institute of Industrial Engineers
SAIMC	South African Institute of Measurement and Control
SAIMechE	South African Institute of Mechanical Engineering
SAINT	South African Institute of Non-Destructive Testing
SAIRAC	South African Institute of Refrigeration and Air-conditioning
SAIW	South African Institute of Welding
SAWEK	Suid-Afrikaanse Akademie vir Wetenskap en Kuns: Ingenieursafdeling
SPE	South African Society for Professional Engineers
ECSA	Engineering Council of South Africa (Professional Registration Body for South Africa)

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

The School of ICT consists of two Departments, namely Information Technology and Applied Informatics. These Departments collectively offer an extensive range of undergraduate and postgraduate programmes in the computing discipline of Information Technology, which is endorsed by the Higher Education Information and Communication Technology Association (HEICTA). The vision of the School is to be the leading provider of state of the art Information and Communication Technology expertise in South Africa. The undergraduate programmes are designed to give students an adequate grounding in the fundamental principles underlying their chosen field of study, while at the same time emphasising the practical and applied nature of the subject matter.

A significant portion of the tuition time is spent in our modern, well-equipped computer laboratories. Students are prepared for an interesting and rewarding career.

At postgraduate level, students can specialize in various research focus areas including Information Security Management and Governance, Health Informatics, Usability and User Experience and Mobile and Workflow. The Institute for ICT Advancement (IICTA), which forms a part of the School, leads the School's postgraduate research programmes in these areas. Many students have acquired postgraduate degrees under the auspices of the School of ICT and IICTA and have acquired sought-after positions in industry.

3.2 DISTINGUISHED SCHOLARS IN THE FACULTY

2009
Faculty Researcher of the Year: Prof JJ Smallwood
Faculty Teacher of the Year: Mr KH du Preez
2008
Faculty Researcher of the Year: Prof JJ Smallwood
Faculty Teacher of the Year: Mr KH du Preez
2007
Faculty Researcher of the Year: Prof JJ Smallwood
Faculty Teacher of the Year: Ms K Church
2006
Faculty Researcher of the Year: Prof JJ Smallwood
Faculty Teacher of the Year: Mrs L Futcher

3.3 SPECIAL PRIZES AND AWARDS

SCHOOL OF THE BUILT ENVIRONMENT
There are several prizes for which students may compete and numerous other bursaries which are awarded annually. Merit awards are allocated to deserving students. The following prizes which may be awarded annually are offered to students for academic achievement:

Donors	**Prize awarded for**
AAAMSA	Best fourth-year student in Construction Management.
ABE Construction Chemicals	Student with the highest mark in Construction Management III.
Ace Solutions	Third-year student with highest potential to use one of the most versatile Quantity Surveying software packages in practice in South Africa.
Afri-Coast	Best Construction Management student: Property Economics.
ASAQS	Best student in Quantity Surveying I. Best student in Quantity Surveying II. Best student in Quantity Surveying III. Best student in Quantity Surveying IV.

Donors	Prize awarded for
Bell-John Prize ASAQS	Best all-round Quantity Surveying student in any year of study.
ASAQS	Best student in Quantities I. Best student in Quantities II. Best student in Quantities III. Best student in Quantities IV.
BTKM	Best fourth-year Quantity Surveying student.
Brink Botha Enterprises	Best Construction Management student with the highest overall mark in any year of study.
CBA	Best second-year student in Building Science (Materials and Methods). Best third-year student in Building Science (Environment and Services).
CIDB	Best Construction Management student with the highest overall mark in any year of study. Best first-year student in Building Science (Materials and Methods). Best fourth-year student in Construction Management. Best Construction Management treatise student.
Concrete 4 U	Best second-year student in Building Science (Structures). Best third-year student in Building Science (Materials and Methods).
Concrete Society of SA (EC Branch)	Student with highest mark in Structures & Concrete III.
Conradie Campher & Kemp	Best fourth-year student in combined subjects: Company Law & Commercial Law.
Décor Pro	Student with the highest mark in Construction Management I.
Dekon Projects (Pty) Ltd	Student with highest mark in Construction Technology II.
East Cape MBA	Best National Diploma: Building student.
Formscaff	Best second-year student in Building Science (Materials & Methods).
Grinaker LTA	Best student in all years of study for the subject: Building Science (Environment and Services).
Head of Department Building & Quantity Surveying	Best Student in Building Economics 4.
Hot Dip Galvanisers Association SA	Best student in all years of study for the subject: Building Science (Structures).
Jaco Rademeyer Estates	Best Construction Management student in the subject: Property Economics.
MBA (EC)	Best overall student in Construction Management.
Mitek	Best third-year student in Building Science (Structures).
Red Hat Construction	Best first-year Building student. Best third-year Building student.
Rousseau Probert Elliot	Outstanding Treatise which contributes to progressive and innovative approach to Quantity Surveying.

Donors	Prize awarded for
Spyers construction	Best first-year student in Building Science (Structures).
Sondor Industries Ltd	Student with highest mark in Construction Technology I.
Strydom Basson & Tait (Pty) Ltd	Best second-year Building student.
The Department of Building and Quantity Surveying	Student with highest mark in Construction Management II.
Trend Tap & Tile	Best first-year student in Building Science (Environment and Services).
WBHO	Best Construction Management treatise student.
Wiehanhn Formwork and Scaffolding	Student with the highest mark in Construction Technology III.

SCHOOL OF ENGINEERING

There are several prizes for which students may compete and numerous other bursaries which are awarded annually.

Merit awards are allocated to deserving students. The following prizes, which may be awarded annually, are offered to students for academic achievement:

Donors	Prize awarded for
PPC Cement	Best student: Construction Materials I.
Ninham Shand (Pty)Ltd	Best S1 Civil Engineering student.
Joint Structural Division of SAICE & ISE	Best S2 Civil Engineering student.
	Best Reinforced Concrete & Masonry Design III & Structural Steel & Timber Design III student.
South African Roads Federation	Best Transportation Engineering II student.
	Best Transportation Engineering III student.
BKS	Best Water Engineering III student.
KCS Consultants	Best S3Civil Engineering student.
Sibakhulu Constructions(Pty)Ltd	Best Geotechnical Engineering II student.
	Best Geotechnical Engineering III student.
Africon Engineering International (Pty)Ltd	Best S4 Civil Engineering student.
ULTRA LAB Engineering Services	Best NDip: Civil Engineering student.
Coastline (CAD solution)	Best BTech: Civil Engineering student.
4G Technology	Best Industrial Project IV Engineering student.
Microchip	Best Digital Electronic Engineering student.
Major Tech	Best Power Systems Engineering student.
Departmental Trophy	Best Electrical Engineering student.
Meterman Digital Multimeters	Top 3 Electrical Engineering Level III students.
FLUKE Digital Multimeters	(Overall) Top 3 Electrical Engineering students.
Cadbury	Best Project in Productivity Level I.

	Best Project in Productivity Level II.
Aberdare Cable	Best NDip: Industrial Engineering student.
SAIIEE	Best NDip: Industrial Engineering Honours Roll.
Festo Pneumatics Electronics	Best Pneumatics Control Systems student in Industrial Engineering.
Ford Motors	Best BTech: Operations Management student.
SABS	Best BTech: Quality student.
Barlow World Automotive Coatings	Best Industrial Project in Operations Management.
Department of Industrial Engineering	Best BTech: Industrial Engineering student.
SASOL	Best NDip: Mechanical Engineering student.
SAIRAC	Best student in Thermodynamics and Fluid Mechanics.
Festo Pneumatics Electronics	Best Pneumatic Control Systems student in Mechanical Engineering.
Arnschell Hydraulics	Best Hydraulics Control Systems student in Mechanical Engineering.
REGMA South Africa (Pty)Ltd	Best Design II student.
Micrographics	Best BTech: Design student in Mechanical Engineering.
Bearing Man Incorporating Fenner	Best Design III student.
Coastline (CAD Solutions)	Best S4 Engineering student.

Note: The above prizes are awarded subject to donor availability.

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

Special prizes for which students may compete and which are awarded annually for academic achievement in the School of ICT, are listed below. In addition to these prizes, merit awards are allocated to deserving students.

Donors	**Prize awarded for**
Korbitec	Top Programming Student
Cisco Systems	Top Networking Student
School of ICT	Top First Year IT Student Top Second Year IT Student Top NDip or BTech IT Graduate Top Higher Certificate Student
Executive Dean of the Faculty of Engineering, the Built Environment & Information Technology	The Dean's Award for Academic Accomplishment is given each year to the graduate who had the best diploma/degree performance in the School. The qualification (diploma, degree, honours degree or master's degree) must have been obtained cum laude.

Note: The above prizes are awarded subject to donor availability.

3.4 PART-TIME LECTURES

Where the day time-table cannot make provision for a module, students may have to attend evening classes.

Any student repeating a module may be required to attend at times other than those scheduled for first attendance students. Lecture periods scheduled for repeating full-time students will be during early evening or normal part-time slots.

It may be decided to offer modules on a part-time basis depending on the demand during the registration period.

3.5 RE-ADMISSION POLICY

The re-admission rule as outlined in the general prospectus will be applied, taking cognisance of the specific modules which have been failed and specific faculty rules or departmental rules.

3.6 EXPERIENTIAL LEARNING REQUIREMENTS (WHERE APPLICABLE)

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 practise 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 spheres of life and develop a greater confidence when working as part of a team.

To fulfill 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 Experiential Training Administrator of the Faculty. 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 Experiential Training Administrator of the Faculty.

Although the NMMU will help as far as possible to arrange, 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.

The experiential learning (part 1 and part 2) module, namely, Engineering Practice, is roughly 24 weeks in duration or a minimum of 800 notional hours. The learning differs in that level 1 focuses on developing hand skills by participating in physical work while level 2 requires a much higher level of synthesis, responsibility and accountability, as would be expected of an engineering technician. This, again, would be done under supervision of a mentor, but facilitating some independent work by the student.

IMPORTANT NOTES SPECIFIC TO EXPERIENTIAL LEARNING

The Department of Co-operative Education and Graduate Placement assists with student placements and provides the following services to students and potential employers or training institutions:

o Job adverts.
o Facilitating interviews.
o Assisting with contracts.

- The Head of Department (HOD) is responsible for the guidelines for experiential learning, monitoring, assessment and accrediting the training.
- Detailed guidelines are provided in the Logbook, which is available from the Experiential Training Administrator or an electronic copy may be found on the Internet at www.nmmu.ac.za.
- It is the student's responsibility to present and discuss the guidelines in the Logbook with the mentor or applicable company representative prior to engaging in any learning to ensure that the scope of learning proposed by the employer/training institute meets the guidelines in the Logbook.
- The HOD or Experiential Training Administrator may be consulted for any clarifications needed.
- Students must register for experiential learning on commencing their training using the document in appendix A in the Logbook. It may be posted or faxed to the experiential training administrator.
- The student must submit a complete logbook with applicable reports and assessments for each completed experiential learning program, on or before.
- Experiential learning not registered, will not be recognised for the Diploma.
- Students that have completed an apprenticeship or formal learnerships may apply for recognition towards experiential learning units. Please contact the relevant HOD for further information.
- Logbooks must be handed in directly after completion (before 15 August or 17 January).
- Learners can at any time apply for the recognitions of experience gained prior to the first enrolment for the qualification at this Institution. For available opportunities, please see the faculty notice boards.

Enquiries: Experiential Training Administrator
Tel: (041) 5043518
Fax: (041) 5049518
E-mail: Colleen.Hopgood@nmmu.ac.za

3.7 GENERAL ADMISSION REQUIREMENTS

Prospective students who **MATRICULATED PRIOR TO 2008** must please contact NMMU's Admissions Office to determine their admission requirements.
Tel: 041 5043911
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 below.
- 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%
4	50-59%	4	50-59%
3	40-49%	3	40-49%
2	30-39%	2	30-39%
1	0-29%	0	0-29%

3.8 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 NATIONAL DIPLOMA: ENGINEERING: ELECTRICAL (EXTENDED): FULL-TIME (QUALIFICATION CODE: 3369 – 07) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 396)

ADMISSION REQUIREMENTS

- Minimum NSC requirements for diploma entry must be met. In exceptional cases candidates who do not meet the statutory requirements for admission to a diploma, but perform satisfactorily in the NMMU Access Assessment Battery of tests, 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.
- NSC achievement rating of at least 3 (40-49%) for Physical Science.
- Candidates must perform satisfactorily in the NMMU Access Assessment Battery of tests.
- Only applicants with an Admission Points Score between 26 and 33 may be referred to write the Access Assessment Battery of tests before a decision is made on whether or not to admit the applicant to the course.

APPLICABLE RULES

Purpose statement

Persons achieving this qualification will be competent to apply engineering principles and problem-solving techniques in the field of electrical engineering by operating within relevant standards and codes.

Qualification objectives

The qualified diplomat must be able to:

- Demonstrate his ability to apply theory and practical hand skills in electrical engineering activities and applications.
- Install, assemble, commission and maintain electrical engineering equipment or functions within applicable standards and codes of practice.
- Apply technical knowledge and analytical skills to diagnose problems in electrical equipment or systems and develop appropriate solutions.
- Plan and supervise tasks and projects considering all the appropriate technical and non-technical aspects.
- Act independently and/or in a team, under supervision and, where appropriate, exhibiting professional integrity.
- Communicate effectively.
- Register with ECSA as a technician-in-training, in the field of electrical engineering.

RE-ADMISSION REQUIREMENTS

- 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 must have passed at least 50% of the credits prescribed in the first year of study in order to be allowed to re-register for the programme.
- Candidates who have not completed all the foundational modules in the programme after two (2) years of full-time study will not be allowed to re-register for the programme.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
YEAR 1:				
	Compulsory modules:			
	Academic & Life Skills Development I	Year	ALM1110	4
	Communication	Year	CCM11X0	9
	Concepts of Physics	Year	COP11X0	11
	Introduction to Engineering	Year	IES11X1	6
	Extended Computer Skills I	Year	ITCL1X0	12
	Pre Calculus I	Semester 1	MAT11X1	4
	Augmented Mathematics I	Semester 2	WIS10X2	12
FOUNDATION CREDITS YEAR 1				**58**
REGULAR CREDITS YEAR 1				**0**
TOTAL CREDITS YEAR 1				**58**
		Presented	**Module Code**	**Credit Value**
YEAR 2:				
	Compulsory modules:			
	Academic & Life Skills Development II	Year	ALM2110	2
	Digital Systems I	Semester 1 or Semester 2	EDS1111 or EDS1112	12
	Digital Systems II	Semester 1 or Semester 2	EDS2111 or EDS2112	12
	Electronics I	Semester 1 or Semester 2	EEL1011 or EEL1012	12
	Electronics II	Semester 1 or Semester 2	EEL2011 or EEL2012	12
	Electrical Engineering I	Semester 1 or Semester 2	ENG1311 or ENG1312	12
	Electrical Engineering II	Semester 1 or Semester 2	ENG2011 or ENG2012	12
	Project 1	Semester 1 or Semester 2	EPJ1011 or EPJ1012	12
	Mathematics II	Semester 1 or Semester 2	WIS2111 or WIS2112	12
FOUNDATION CREDITS YEAR 2				**2**
REGULAR CREDITS YEAR 2				**96**
TOTAL CREDITS YEAR 2				**98**

		Presented	Module Code	Credit Value
YEAR 3:				
	Compulsory module:			
	Electrical Engineering Practice I	Semester 1 or Semester 2	EEP1211 or EEP1212	60
	Select five of the following modules in consultation with the Head of Department:			
	Digital Systems III	Semester 1 or Semester 2	EDS3111 or EDS3112	12
	Electronic Communication II	Semester 1 or Semester 2	EEC2111 or EEC2112	12
	Electronics III	Semester 1 or Semester 2	EEL3011 or EEL3012	12
	Electrical Machines II	Semester 1 or Semester 2	EEM2111 or EEM2112	12
	Industrial Electronics II	Semester 1 or Semester 2	EIE2011 or EIE2012	12
	Electrical Engineering III	Semester 1 or Semester 2	ENG3111 or ENG3112	12
	Software Design II	Semester 1 or Semester 2	ESW2011 or ESW2012	12
	Mathematics III	Semester 1 or Semester 2	WIS3111 or WIS3112	12
TOTAL REGULAR CREDITS YEAR 3				**120**
		Presented	**Module Code**	**Credit Value**
YEAR 4:				
	Compulsory modules:			
	Design Project III	Semester 1 or Semester 2	EDP3011 or EDP3012	12
	Electrical Engineering Practice II or Electronic Engineering Practice II	Semester 1 or Semester 2 Semester 1 or Semester 2	EEP2211 or EEP2212 ELP2211or ELP2212	60
	Select four of the following modules in consultation with the Head of Department:			
	Control Systems III	Semester 1 or Semester 2	ECS2011 or ECS2012	12
	Digital Communication II	Semester 1 or Semester 2	EDC2011 or EDC2012	12
	Electronic Applications III	Semester 1 or Semester 2	EEA3011 or EEA3012	12
	Electrical Machines II	Semester 1 or Semester 2	EEM2111 or EEM2112	12

		Presented	Module Code	Credit Value
	Electrical Machines III	Semester 1 or Semester 2	EEM3011 or EEM3012	12
	Power Electronics III	Semester 1 or Semester 2	EPE3011 or EPE3012	12
	Electrical Protection III	Semester 1 or Semester 2	EPR3011 or EPR3012	12
	Radio Engineering III	Semester 1 or Semester 2	ERE3011 or ERE3012	12
	Software Design III	Semester 1 or Semester 2	ESW3011 or ESW3012	12
TOTAL REGULAR CREDITS YEAR 4				**120**
TOTAL FOUNDATION CREDITS				**60**
TOTAL REGULAR CREDITS				**336**
TOTAL CREDITS				**396**

4.2 NATIONAL DIPLOMA: INFORMATION TECHNOLOGY (EXTENDED): SOFTWARE DEVELOPMENT: FULL-TIME (QUALIFICATION CODE: 3229 – 07) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 383) (PHASING OUT - NO NEW INTAKE FROM 2010)

APPLICABLE RULES

Requirement for promotion

- Candidates shall only be permitted to register for any modules of the second year of study if they have passed ALM1110 and CEL1130 and at least four of the modules prescribed in the first year of study.
- 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.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:

Development Software III
Information Systems III

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year (phased out in 2009)				
	Compulsory modules:			
	Academic & Life Skills Development	Year	ALM1110	3
	English for Business & Technology	Year	CEL1130	3
	Introduction to Information Technology I	Year	IIT10F0	10
	IT Mathematics I	Year	ITM10F0	5
	Information Technology Skills I	Year	ITS1110	30
	Development Software IA	Year	ONT13F0	15
	Systems Software I (2 modules)		**WCI1700**	
	IT Essentials	Semester 1	WCI1731	15
	Information Systems I (2 modules)		**WIH1300**	
	Information Systems IB	Year	WIH1360	15
	Credits First Year			**96**
Second Year				
	Compulsory modules:			
	Academic & Life Skills Development II	Year	ALM2110	2
	Development Software IB	Year	ONT14F0	15
	Systems Software I		**WCI1700**	
	Networks I	Year	WCI1730	15
	Information Systems I		**WIH1300**	
	Information Systems IA	Year	WIH1350	15
	Credits Second Year			**47**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Development Software II	Year	ONT2000	30
	Technical Programming I	Year	PRT1000	30
	Information Systems II	Year	WIH2100	30
	Select one of the following modules:			
	Geographical Information Systems II*****	Year	GIS2110	30
	Internet Programming II	Year	ITP2000	30
	Communication Networks II	Year	SCN2000	30
	Systems Software II	Year	SSI2000	30
	Support Services II	Year	SSO2000	30
	Credits Third Year			**120**

***PLEASE NOTE:** The offering of the elective module GIS2110 will be determined by the availability of lecturers as well as sufficient student demand.

		Presented	Module Code	Credit Value
Fourth Year				
	Compulsory modules:			
	Development Software III (2 modules) ♦		**ONT3100**	
	C# III	Semester 1	ONT3251	15
	Project (Module B)	Year	ONT3210	15
	Technical Programming II	Year	PRT2110	30
	Information Systems III (3 modules) ♦		**WIH3020**	
	Systems Analysis & Design (Module A)	Semester 1	WIH3021	10
	Advanced Design B (Module B)	Semester 2	WIH3022	10
	Project Management (Module C)	Semester 1	WIH3031	10
	Select one of the following modules:			
	E-Commerce *	Year	BRJ1000	30
	Graphical User Interface Design I	Year	SGU1000	30
	Credits Fourth Year			**120**

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

*** PLEASE NOTE:** The offering of the elective module BRJ1000 will be determined by the availability of lecturers as well as sufficient student demand.

6 HIGHER CERTIFICATE: INFORMATION TECHNOLOGY IN USER SUPPORT SERVICES: FULL-TIME (QUALIFICATION CODE: 70003 – V1) (NQF LEVEL: 5, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Admission Points Score of 26.
- Minimum NSC requirements for certificate 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 25 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

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

DURATION

The qualification shall extend over a minimum of one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Information Technology Skills 1	Semester 1	ITS1011	30
	Technical Support	Semester 2	TSS1012	30
	User Support	Semester 2	USS1012	30
	Information Systems 1	Semester 1	WIH1011	30
	Credits First Year			**120**

6 NATIONAL DIPLOMAS

6.1 NATIONAL DIPLOMA: BUILDING: FULL-TIME (QUALIFICATION CODE: 3262 – 01) (NQF LEVEL: 6, 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 3 (40-49%) for Mathematics or 5 (60-69%) 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.
- Admission is subject to departmental selection.

Recommended NSC subjects
Engineering Graphics & Design
Physical Sciences

APPLICABLE RULES

Experiential training requirements

To fulfill the requirements of the National Diploma, a student must complete at least one year of applicable experiential training. During this experiential training period, students must register for both Building Practice modules as specified in the curriculum. Students will be required to gain practical experience in accordance with prescribed criteria as outlined in the Guide “Experiential Training”, which is made available to students at the end of their first year. In addition, students must register for and complete three modules which will each comprise projects that have to be completed in accordance with prescribed requirements.

Although the NMMU provides generous assistance in this regard, the onus still rests on the students to secure a suitable position for experiential training.

Class Attendance

Due to the practical content of the qualification, it is expected of students to attend a minimum of 80% of their lectures in a module in order to gain examination entrance and only in exceptional cases where they had special permission to be absent will this rule not be applied.

Promotion policy

The following rules apply in particular to the Building modules:

First year of study

Re-admission after the completion of the first year:
Students must pass at least two modules in order to be re-admitted. Students who fail five or less of their modules and want to repeat them the following year may only be re-admitted on merit and if vacancies exist in the qualification (preference is given to new applicants).

Second year of study

Promotion to the second year:
Students will be promoted to the second year provided that they have at least passed the modules Construction Technology I (DCT1010), Construction Management I (DCO1010) and Quantity Surveying I (DQS1010).

If a student passes all the major modules but fails one or more non-major module, the following concession may be considered:
The student is able to continue with the second-year program but the failed modules will have to be done before or during the third year (timetable clashes in third year will only allow one module from previous years to be repeated). (*Note*: If a student has to repeat too many modules while doing the second year, this may impact on the actual time available for practical experiential training).

If a student is doing the second-year modules (having passed all first-year modules) and is unable to find experiential training work, the student will still have to work for a full year, after completing the third year, before obtaining the diploma (this situation is thus not encouraged).

Third year of study

Promotion to the third year:
Students will only be promoted to the third year if they have passed all the first- and second-year modules and handed in their experiential training logbooks. There may be exception for non-major first-year modules. If students fail the same module more than three times they may not be allowed further registration on the grounds of "poor academic performance".

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus.

The following modules shall be regarded as the major modules:
Construction Management III
Construction Technology III
Quantity Surveying III

DURATION

The qualification shall extend over three years of full-time study. The Head of the Department may recommend that certain students (those that do not meet the minimum admission requirements as stated above) extend their first year of study over two academic years. (These students will register in their first year of study for Construction Management 1, Applied Building Science 1, Computer Applications 1 and Communication 1.)

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Applied Building Science I	Year	DBS1010	20
	Communication I	Semester 1	DCM1021	10
	Construction Management I	Year	DCO1010	20
	Computer Applications I	Semester 2	DCP1012	10
	Construction Technology I	Year	DCT1010	20
	Quantity Surveying I	Year	DQS1010	20
	Site Surveying I	Year	DSS1010	20
	Credits First Year			**120**
		Presented	**Module Code**	**Credit Value**
Second Year (Experiential training)				
	Compulsory modules:			
	Construction Management II	Year	DCO2010	20
	Construction Technology II	Year	DCT2010	20
	Building Practice I	Semester 1	DET1011	30
	Building Practice II	Semester 2	DET2012	30
	Quantity Surveying II	Year	DQS2010	20
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Construction Accounting III	Year	DCA3010	20
	Construction Management III ♦	Year	DCO3010	20
	Structures & Concrete III	Year	DCS3010	20
	Construction Technology III ♦	Year	DCT3010	20
	Price Analysis & Estimating III	Year	DPE3010	20
	Quantity Surveying III ♦	Year	DQS3010	20
	Credits Third Year			**120**

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

6.2 NATIONAL DIPLOMA: ENGINEERING: CIVIL: FULL-TIME (QUALIFICATION CODE: 3323 - 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 360)

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 4 (50-59%) for Mathematics.
- NSC achievement rating of at least 4 (50-59%) for Physical Sciences.
- Applicants with an Admission Points Score between 26 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.
- An N3 Certificate with a minimum of 60% in Mathematics and Engineering Science and two languages at senior certificate level.

Recommended NSC subjects
Engineering Graphics & Design

Other
If an applicant has not taken the optional Mathematics topics, additional modules may be added to the qualification, which might extend the length of the qualification.

APPLICABLE RULES

Purpose statement
Persons achieving this qualification will be able, independently as well as under supervision, to analyse and solve well-defined and lower-level open-ended Civil Engineering problems through the application of accepted Civil Engineering techniques. The qualification is intended for engineering practitioners in the Civil Engineering industry. The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a candidate Engineering Technician in the discipline of Civil Engineering. After a period of appropriate industry training, the qualified person will be able to register with ECSA as a Professional Engineering Technician.

Qualification objectives

- Enable students to solve well defined problems and improve systems in the design, construction, operation, maintenance and service sectors of the civil industry.
- Apply civil engineering techniques and principles to analyse a variety of simple structural and service-related operational problems.
- Develop and recommend alternatives for improving civil engineering service delivery problems.
- Communicate effectively in a technological environment.
- Apply management principles in manufacturing or service environment.

Rules for not re-admitting students on the grounds of poor academic performance
The re-admission policy as outlined in the General Prospectus will be applied, taking cognisance of the specific modules which have been failed.

The following guidelines will apply:

- In the case where a student has failed modules, the subsequent module enrolment will be determined by the following guidelines:
  - lower level modules will be completed before higher level modules;
  - failed modules will be repeated and no transfer of class mark is allowed;
  - the number of additional modules allowed will be at the discretion of the Head of Department;
  - **timetable clashes will not be permitted**;
  - no student may enrol for any module in semester 3 until all semester 1 modules have been passed, except at the discretion of the Head of Department.
- A student who progresses at a slower rate than that set out in the following table will not be re-admitted on the grounds of 'poor academic performance'.

Semester	Module Credits Attained
1	3
2	7
3	11
4	16
5	20
6	24

- If students fail the same module examination (including re-examinations) three or more times they will not be allowed further registration on the grounds of 'poor academic performance'.
- Students must pass a minimum of three modules in any one semester, except at the discretion of the Head of Department.

Prerequisite modules

A student will not be allowed to proceed to the following modules without first having passed the listed prerequisite modules or, in some cases, be simultaneously registered (at least) for the given co-requisite modules.

Module	**Prerequisites**	**Co-requisites**
S1: Drawing I		Survey I
Survey I		Drawing I
S2: Construction Methods I	Construction Materials I	
Drawing II	Drawing I, Computer Skills I	
Mathematics II	Mathematics I	
Surveying (Civil) II	Surveying I	
Theory of Structures II	Applied Mechanics I	
S3: Geotechnical Engineering II	Construction Materials I	
Hydraulics II	Applied Mechanics I	
Management (Civil) II	Management (Civil) I	
Reinforced Concrete and Masonry Design III	Theory of Structures II	Structural Analysis II
Structural Analysis II	Theory of Structures III	
Transportation Engineering II		Surveying II; Drawing II
S4: Civil Engineering Documentation III	Management (Civil) II	Civil Engineering Project III

Civil Engineering Project III	Transportation Engineering II and Drawing II	Stormwater Design III and Water and Sewage Reticulation III and Civil Engineering Documentation III
Geotechnical Engineering III	Geotechnical Engineering II	
Stormwater Design III	Hydraulics II	
Structural Analysis III	Structural Analysis II	
Structural Steel and Timber Design III	Structural Analysis II	Structural Analysis III
Transportation Engineering III		Geotechnical Engineering II
Water and Sewage Reticulation III	Hydraulics II	Civil Engineering Project III

CLASS ATTENDANCE

Minimum attendance

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

Recognition of modules done at other tertiary institutions

The Department will consider modules done at other tertiary institutions for exemption according to the General Prospectus and Rules of the NMMU, subject to the following criteria.

In all cases where exemptions are being contemplated, requests to do so must be lodged in writing with the HOD before registration at the other tertiary institution takes place. Where the applicants cannot meet the criteria below they will be advised to arrange for the diploma to be awarded through the other tertiary institution.

- A candidate may only be exempted from modules with a cumulative credit value of not more than half of the total credit value of the relevant qualification.
- Level III modules will not be exempted. However, in cases where a student has entered for all level III modules at the NMMU but has failed a limited number of these, and in the subsequent study period is employed in an area remote from Port Elizabeth, an exception may be made by the Faculty Management Committee. In such cases, the equivalent module done at the other tertiary institution may be exempted, but this will apply only to a maximum of half of the total credit value of the exit-level modules.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following module shall be regarded as the major module:

Civil Engineering Project 3

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Applied Mechanics I	Semester 1 or Semester 2	CAM1111 or CAM1112	10
	Communication Skills I	Semester 1 or Semester 2	CCM1111 or CCM1112	5
	Computer Skills I	Semester 1 or Semester 2	CCP1111 or CCP1112	10
	Drawing I	Semester 1 or Semester 2	CDR1111 or CDR1112	10
	Drawing II	Semester 1 or Semester 2	CDR2211 or CDR2212	10
	Management (Civil) I	Semester 1 or Semester 2	CMC1211 or CMC1212	10
	Construction Methods I	Semester 1 or Semester 2	CME1111 or CME1112	10
	Construction Materials I	Semester 1 or Semester 2	COM1111 or COM1112	10
	Surveying I	Semester 1 or Semester 2	CSU1111 or CSU1112	10
	Surveying (Civil) II	Semester 1 or Semester 2	CSU2211 or CSU2212	5
	Theory of Structures II	Semester 1 or Semester 2	CTS2211 or CTS2212	10
	Mathematics I	Semester 1 or Semester 2	WIC1101 or WIC1102	10
	Mathematics II	Semester 1 or Semester 2	WIC2301 or WIC2302	10
	Credits First Year			**120**
		Presented	**Module Code**	**Credit Value**
Second Year (one-year experiential training)				
	Compulsory modules:			
	Engineering Practice: Civil II	Semester 1 or Semester 2	CEP2311 or CEP2312	60
	Engineering Practice: Civil III	Semester 1 or Semester 2	CEP3311 or CEP3312	60
	Credits Second Year			**120**

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Documentation III		**CDO3422**	
	Civil Engineering Documentation III	Semester 1 or Semester 2	CDOA341 or CDOA342	5
	Civil Engineering Project III ♦	Semester 1 or Semester 2	CDOB341 or CDOB342	5
	Geotechnical Engineering II	Semester 1 or Semester 2	CGE2311 or CGE2312	10
	Geotechnical Engineering III	Semester 1 or Semester 2	CGE3411 or CGE3412	10
	Management (Civil) II	Semester 1 or Semester 2	CMC2311 or CMC2312	10
	Reinforced Concrete & Masonry Design II	Semester 1 or Semester 2	CRC3311 or CRC3312	10
	Structural Analysis II	Semester 1 or Semester 2	CSA2311 or CSA2312	5
	Structural Analysis III	Semester 1 or Semester 2	CSA3411 or CSA3412	5
	Structural Steel and Timber Design III	Semester 1 or Semester 2	CSS3411 or CSS3412	10
	Transportation Engineering II	Semester 1 or Semester 2	CTE2311 or CTE2312	10
	Transportation Engineering III	Semester 1 or Semester 2	CTE3411 or CTE3412	10
	Water Engineering II		**CWE2301**	
	Hydraulics II	Semester 1 or Semester 2	CWEA231 or CWEA232	7.5
	Water & Waste Water Treatment II	Semester 1 or Semester 2	CWEB231 or CWEB232	7.5
	Water Engineering III		**CWE3401**	
	Stormwater Design III	Semester 1 or Semester 2	CWEA341 or CWEA341	7
	Water & Sewage Reticulation III	Semester 1 or Semester 2	CWEB341 or CWEB342	8
	Credits Third Year			**120**

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

Admission to these offerings in an order different to that set out above is subject to approval by the Head of Department. No timetable clashes will be permitted. Due to limited lecturing capacity, the Department of Civil Engineering currently only has one intake of new S1 students during January of each year. This implies that all S1 modules are presented only during semester 1 and all S2 modules are presented only during semester 2. A special arrangement was made to present the S1 module, Applied Mechanics, and the S2 module, Theory of Structures, during both semester 1 and 2. All S3 and S4 modules are presented during both semesters (1 and 2).

6.3 NATIONAL DIPLOMA: ENGINEERING: ELECTRICAL: FULL-TIME (QUALIFICATION CODE: 3366 - 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 360)

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 4 (50-59%) for Mathematics.
- NSC achievement rating of at least 4 (50-59%) for Physical Sciences.
- Applicants with an Admission Points Score between 26 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.
- A 60% pass in N3 Engineering Mathematics and Engineering Science plus Grade 12 Languages.
- Testing includes Extended Diploma in Electrical Engineering.

Recommended NSC subjects
Engineering Graphics & Design and/or Information Technology

Other
If an applicant has not taken the optional Mathematics topics, additional modules may be added to the qualification, which might extend the length of the qualification.

APPLICABLE RULES

Purpose statement
Persons achieving this qualification will be competent to apply engineering principles and problem-solving techniques in the field of electrical engineering by operating within relevant standards and codes.

Qualification objectives
The qualified diplomat must be able to:

- Demonstrate his ability to apply theory and practical hand skills in electrical engineering activities and applications.
- Install, assemble, commission and maintain electrical engineering equipment or functions within applicable standards and codes of practice.
- Apply technical knowledge and analytical skills to diagnose problems in electrical equipment or systems and develop appropriate solutions.
- Plan and supervise tasks and projects considering all the appropriate technical and non-technical aspects.
- Act independently and/or in a team, under supervision and, where appropriate, exhibiting professional integrity.
- Communicate effectively.
- Register with ECSA as a technician-in-training, in the field of electrical engineering.

Re-admission policy
Students who cannot pass all five of the semester 1 modules listed in this Prospectus, within a period of two semesters, will not be allowed to re-register for the qualification until they have:

- undergone an aptitude test and counselling at the Department of Student Counselling, and

- obtained N5 credits acceptable to the Faculty Management Committee at a Technical College.

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following module shall be regarded as the major module:

Design Project III.

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Communication Skills I	Semester 1 or Semester 2	CCM1111 or CCM1112	6
	Computer Skills I	Semester 1 or Semester 2	CCP1111 or CCP1112	6
	Digital Systems I	Semester 1 or Semester 2	EDS1111 or EDS1112	12
	Digital Systems II	Semester 1 or Semester 2	EDS2111 or EDS2112	12
	Electronics I	Semester 1 or Semester 2	EEL1011 or EEL1012	12
	Electronics II	Semester 1 or Semester 2	EEL2011 or EEL2012	12
	Electrical Engineering II	Semester 1 or Semester 2	ENG2011 or ENG2012	12
	Electrical Engineering I	Semester 1 or Semester 2	ENG1311 or ENG1312	12
	Project I	Semester 1 or Semester 2	EPJ1011 or EPJ1012	12
	Mathematics I	Semester 1 or Semester 2	WIS1111 or WIS1112	12
	Mathematics II	Semester 1 or Semester 2	WIS2112 or WIS2112	12
	Credits First Year			**120**

		Presented	Module Code	Credit Value
Second Year				
	Compulsory module:			
	Design Project III ♦	Semester 1 or Semester 2	EDP3011 or EDP3012	12
	Select nine of the following modules in consultation with the Head of Department:			
	Control Systems II	Semester 1 or Semester 2	ECS2011 or ECS2012	12
	Digital Communication II	Semester 1 or Semester 2	EDC2011 or EDC2012	12
	Digital Systems III	Semester 1 or Semester 2	EDS3111 or EDS3112	12
	Electronic Applications III	Semester 1 or Semester 2	EEA3011 or EEA3012	12
	Electronic Communication II	Semester 1 or Semester 2	EEC2111 or EEC2112	12
	Electronics III	Semester 1 or Semester 2	EEL3011 or EEL3012	12
	Electrical Machines II	Semester 1 or Semester 2	EEM2111 or EEM2112	12
	Electrical Machines III	Semester 1 or Semester 2	EEM3011 or EEM3012	12
	Industrial Electronics II	Semester 1 or Semester 2	EIE2011 or EIE2012	12
	Electrical Engineering III	Semester 1 or Semester 2	ENG3111 or ENG3112	12
	Power Electronics III	Semester 1 or Semester 2	EPE3011 or EPE3012	12
	Electrical Protection III	Semester 1 or Semester 2	EPR3011 or EPR3012	12
	Radio Engineering III	Semester 2 or Semester 2	ERE3011 or ERE3012	12
	Software Design II	Semester 1 or Semester 2	ESW2011 or ESW2012	12
	Software Design III	Semester 2 or Semester 2	ESW3011 or ESW3012	12
	Mathematics III	Semester 1 or Semester 2	WIS3111 or WIS3112	12
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory module:			
	Electrical Engineering Practice I	Semester 1 or	EEP1211 or	60

		Presented	Module Code	Credit Value
		Semester 2	EEP1212	
	Select one of the following modules:			
	Electrical Engineering Practice II	Semester 1 or Semester 2	EEP2211 or EEP2212	60
	Electronic Engineering Practice II	Semester 1 or Semester 2	ELP2211 or ELP2212	60
	Credits Third Year			**120**

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

Please note:

- It is recommended that students complete at least the first year before attempting Electrical Engineering Practice I. Ideally, Electrical Engineering Practice I should be done during the second year.
- It is recommended that students complete at least the second year before attempting Electrical Engineering Practice II.
- The full curriculum on each of the three years is offered in each semester of every year.

SPECIALISATION AREAS

Power Systems; Industrial Automation Systems; Electronic Communication Systems; Computer Systems. These specialised areas will depend on your module combinations chosen in the second year.

6.4 NATIONAL DIPLOMA: ENGINEERING: INDUSTRIAL: FULL-TIME (QUALIFICATION CODE: 3706 - 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 360) (HEQC- AND ECSA-ACCREDITED)

ADMISSION REQUIREMENTS FOR CURRENT GRADE 12 LEARNERS

- 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 4 (50-59%) for Mathematics.
- NSC achievement rating of at least 4 (50-59%) for Physical Sciences.
- Applicants with an Admission Points Score between 26 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.
- An N3 Certificate with a minimum of 60% in Mathematics and Engineering Science and two languages at senior certificate level.

Other

- If an applicant has not taken the optional Mathematics topics, additional modules may be added to the programme, which might extend the length of the programme

APPLICABLE RULES

Purpose statement

Persons achieving this qualification will be able, independently as well as under supervision, to analyse and solve well-defined and lower-level open-ended manufacturing and service-related problems through the application of accepted Industrial Engineering techniques. They will be able to assess simple systems and calculate expected system performance. The qualification is intended for engineering practitioners in industry.

The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Technician-in-Training in the field of Industrial Engineering.

Qualification objectives

- To enable students to solve well defined problems and improve systems in both the manufacturing and service sectors of industry. This results in cheaper, better quality products and services for on-time delivery to customers.
- Apply industrial engineering techniques and principles to analyse manufacturing and service-related operational problems.
- Develop and recommend alternatives for improving manufacturing and service-related operational problems.
- Design and develop simple manufacturing and service-related systems.
- Communicate effectively in a technological environment.
- Apply management principles in manufacturing or service environment.

Re-admission policy

Terminology

Failed modules include modules cancelled without the approval of the Head of Department.

Semester 1 *(Refers to first enrolment of study)*

Promotion:

Students will be promoted provided that they have passed at least half of the prescribed level 1 modules.

Re-admission:

Students who have failed more than half of the prescribed level 1 modules may be referred to Student Counselling for testing and the Faculty Management Committee will make a decision with respect to re-admission or re-channelling.

Semester 2 *(Refers to first study of Semester 2 status)*

Requirements for level 2:

Category 1

Students who have passed half of the prescribed level 1 modules must repeat all the modules they have failed and must register for 1 level 2 module.

Category 2

Students who have passed 4 of the prescribed level 1 modules must repeat all the modules they have failed and must register for not more than 3 of the prescribed level 2 module.

Category 3

Students who have passed 5 of the prescribed level 1 modules must repeat all the modules they have failed and must register for not more than 5 of the prescribed level 2 modules.

Promotion of Students (Categories 1, 2 and 3)

Students will be promoted provided that they have passed all prescribed level 1 modules and 3 or more prescribed level 2 modules.

Note: In both Categories 1 and 2, students may be required to study for two consecutive semesters in order to attain the prescribed modules for promotion to level 3.

Re-admission (Students under Category 1)

A student who fails one or more of the outstanding prescribed level 1 modules and one or more of the prescribed level 2 modules, will be referred to Student Counselling for testing and the Faculty Management Committee will make a decision in respect of further registration or re-channelling.

Re-admission (Student under Category 2)

A student who fails one or more of the outstanding prescribed level 1 modules and two or more of the level 2 prescribed modules, will be refereed to Student Counselling for testing and the Faculty Management Committee will take a decision with respect to further registration or re-channelling.

Re-admission (Students under Category 3)

A student who fails one or more of the outstanding prescribed level 1 modules and two or more of the level 2 prescribed modules, will be refereed to Student Counselling for testing and the Faculty Management Committee will take a decision with respect to further registration or re-channelling.

Semester 3

Promotion:

Students will be promoted if they have passed all prescribed level 1 modules, all prescribed level 2 modules and 3 or more prescribed level 3 modules.

Re-admission:

Students who fail 5 of the offered/registered modules will be referred to Student Counselling for testing and the Faculty Management Committee will take a decision with respect to further registration or re-channelling.

Semester 4 *(Refers to level S4 of the prescribed modules)*

Re-admission:

A student who has not completed all the modules required for the diploma at the end of the eighth semester of the theoretical training will not be re-admitted.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following module shall be regarded as the major module:

Engineering Workstudy III

The qualification structure for the National Diploma consists of 2 years academic training and 1 year of experiential training.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Communication Skills I	Semester 1 or Semester 2	CCM1111 or CCM1112	5
	Computer Skills I	Semester 1 or Semester 2	CCP1111 or CCP1112	5
	Engineering Work Study I	Semester 1 or Semester 2	IEW1111 or IEW1112	10
	Engineering Work Study II	Semester 1 or Semester 2	IEW2211 or IEW2212	10
	Production Engineering: Industrial I	Semester 1 or Semester 2	IPI1111 or IPI1112	10
	Qualitative Techniques I	Semester 1 or Semester 2	IQT1211 or IQT1212	10
	Computer Aided Draughting I	Semester 1 or Semester 2	MCD1311 or MCD1312	10
	Mechanics I	Semester 1 or Semester 2	MEC1111 or MEC1112	10
	Mechanical Engineering Drawing I	Semester 1 or Semester 2	MED1111 or MED1112	10
	Mechanical Manufacturing Engineering I	Semester 1 or Semester 2	MNE1111 or MNE1112	10
	Mechanical Manufacturing Engineering II	Semester 1 or Semester 2	MNE2211 or MNE2212	10
	Mathematics I	Semester 1 or Semester 2	WIS1111 or WIS1112	10
	Select one of the following modules:			
	Motor Vehicle Engineering I	Semester 1 or Semester 2	MVE1111 or MVE1112	10
	Mathematics II	Semester 1 or Semester 2	WIS2111 or WIS2112	10
	Credits First Year			**120**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Automation III	Semester 1 or Semester 2	IAT3111 or IAT3112	10
	Engineering Workstudy III ♦	Semester 1 or Semester 2	IEW3311 or IEW3312	10
	Industrial Accounting III	Semester 1 or Semester 2	IIB3111 or IIB3112	10

		Presented	Module Code	Credit Value
	Costing II	Semester 1 or Semester 2	IKM2111 or IKM2112	10
	Industrial Leadership III	Semester 1 or Semester 2	ILS3111 or ILS3112	10
	Facility, Layout And Materials Handling II	Semester 1 or Semester 2	IMH2111 or IMH2112	10
	Manufacturing Relations II	Semester 1 or Semester 2	IMR2111 or IMR2112	10
	Operational Research III	Semester 1 or Semester 2	ION3111 or ION3112	10
	Production Engineering: Industrial II	Semester 1 or Semester 2	IPI2211 or IPI2212	10
	Quality Assurance II	Semester 1 or Semester 2	IQA2111 or IQA2112	10
	Select two of the following modules:			
	Software Design II	Semester 1 or Semester 2	ESW2011 or ESW2012	10
	Mechanical Manufacturing Engineering III	Semester 1 or Semester 2	MNE3311 or MNE3312	10
	Strength Of Materials II	Semester 1 or Semester 2	MSM2211 or MSM2212	10
	Strength Of Materials III	Semester 1 or Semester 2	MSM3211 or MSM3212	10
	Mathematics III	Semester 1 or Semester 2	WIS3301 or WIS3302	10
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Industrial Engineering Practice I	Semester 1 or Semester 2	IIE1211 or IIE1212	60
	Industrial Engineering Practice II	Semester 1 or Semester 2	IIE2211 or IIE2212	60
	Credits Third Year			**120**

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

Please note:

- The modules listed above are required for entrance to the Baccalaureus Technologiae: Industrial Engineering and meet the standards laid down for registration with the Engineering Council of South Africa (ECSA). Other options are available and can be discussed with the relevant Head of Department.
- The full curriculum on each of the three years is offered in each semester of every year.

6.5 NATIONAL DIPLOMA: ENGINEERING: MECHANICAL: FULL-TIME (QUALIFICATION CODE: 3718 - 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 360) (HEQC- AND ECSA-ACCREDITED)

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 4 (50-59%) for Mathematics.
- NSC achievement rating of at least 4 (50-59%) for Physical Sciences.
- Applicants with an Admission Points Score between 26 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.
- An N3 Certificate with a minimum of 60% in Mathematics and Engineering Science and 50% for any other electives.

Recommended NSC subjects
Engineering Graphics & Design

Other
If an applicant has not taken the optional Mathematics topics, additional modules may be added to the qualification, which may extend the duration of study.

APPLICABLE RULES

Purpose statement
Diplomats achieving this qualification will be able to, independently as well as under supervision, integrate analytical and practical engineering techniques and engineering knowledge to solve well-defined and open-ended engineering problems. They will also be able to select criteria to judge processes and outcomes. This qualification is intended for engineering practitioners in industry.

The diplomats will be able to register with the Engineering Council of South Africa (ECSA) as a Technician-in-Training in the field of Mechanical Engineering.

Qualification objectives

- Apply mechanical engineering principles to diagnose and solve engineering problems.
- Demonstrate mechanical engineering knowledge and skills in one or more specialised areas.
- Engage in mechanical engineering design work individually and as part of a team.
- Communicate effectively in a technological environment.
- Apply management principles in an engineering environment.

Re-admission policy
Terminology
Failed modules include: Modules cancelled without the approval of the Head of Department.
Semester 1 *(Refers to first enrolment of study)*
Promotion:
Students will be promoted provided that they have passed at least half of the prescribed level 1 modules.

Re-admission:
A student who has failed more than half of the prescribed level 1 modules will be referred to Student Counselling for testing and the Faculty Management Committee will make a decision with respect to re-admission or re-channelling.

Semester 2 *(Refers to first study of Semester 2 status)*
Requirements for level 2:
Category 1
Students who have passed half of the prescribed level 1 modules must repeat all the modules they have and must register for 1 level 2 module.
Category 2
Students who have passed 4 of the prescribed level 1 modules must repeat all the modules they have failed and must register for not more than 3 of the prescribed level 2 module.
Category 3
Students who have passed 5 of the prescribed level 1 modules must repeat all the modules they have failed and must register for not more than 5 of the prescribed level 2 modules.
Promotion of Students (Categories 1, 2 and 3)
Students will be promoted provided that they have passed all prescribed level 1 modules and 3 or more prescribed level 2 modules.
Note: In both Categories 1 and 2, students may be required to study for two consecutive semesters in order to attain the prescribed modules for promotion to level 3.
Re-admission (Students under Category 1)
Students who fail one or more of the outstanding prescribed level 1 modules and one or more of the prescribed level 2 modules, will be referred to Student Counselling for testing and the Faculty Management Committee will make a decision in respect of further registration or re-channelling.
Re-admission (Student under Category 2)
A student who fails one or more of the outstanding prescribed level 1 modules and two or more of the level 2 prescribed modules, will be referred to Student Counselling for testing and the Faculty Management Committee will take a decision with respect to further registration or re-channelling.
Re-admission (Students under Category 3)
A student who fails one or more of the outstanding prescribed level 1 modules and two or more of the level 2 prescribed modules, will be referred to Student Counselling for testing and the Faculty Management Committee will take a decision with respect to further registration or re-channelling.

Semester 3
Promotion:
Students will be promoted if they have passed all prescribed level 1 modules, all prescribed level 2 modules and 3 or more prescribed level 3 modules.
Re-admission:
A student who fails 5 of the offered/registered modules will be referred to Student Counselling for testing and the Faculty Management Committee will take a decision with respect to further registration or re-channelling.

Semester 4 *(Refers to level S4 of the prescribed modules)*
Re-admission:
A student who has not completed all the modules required for the diploma at the end of the eighth semester of the theoretical training will be excluded from further studies.

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:

- Applied Strength of Materials III
- Hydraulic Machines III
- Steam Plant III
- Mechanical Engineering Design III

The qualification structure for the National Diploma consists of 2 years of academic training and 1 year of work-integrated learning (WIL). A minimum of 360 credits are required for a diploma.

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Communication Studies (2 modules 'A' & 'B')		**CCM1420**	
	Communication Principles: Module A	Semester 1 or Semester 2	CCM1221 or CCM1222	5
	Computer-aided Draughting I	Semester 1 or Semester 2	MCD1311 or MCD1312	10
	Mechanics I	Semester 1 or Semester 2	MEC1111 or MEC1112	10
	Mechanical Engineering Drawing I	Semester 1 or Semester 2	MED1111 or MED1112	10
	Engineering Materials and Science I	Semester 1 or Semester 2	MEM1111 or MEM1112	10
	Electrotechnology I	Semester 1 or Semester 2	MET1111 or MET1112	10
	Fluid Mechanics II	Semester 1 or Semester 2	MFL2211 or MFL2212	10
	Mechanical Manufacturing Engineering I	Semester 1 or Semester 2	MNE1111 or MNE1112	10
	Strength of Materials II	Semester 1 or Semester 2	MSM2211 or MSM2212	10
	Thermodynamics II	Semester 1 or Semester 2	MTH2211 or MTH2212	10
	Mathematics I	Semester 1 or Semester 2	WIS1111 or WIS1112	10
	Mathematics II	Semester 1 or Semester 2	WIS2111 or WIS2112	10
	Credits First Year			**115**

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Communication in Practice: Module B (coupled to MDE3211/2)	Semester 1 or Semester 2	CCM1421 or CCM1422	5
	Computer and Programming Skills I	Semester 1 or Semester 2	CCP1411 or CCP1412	10
	Mechanical Engineering Design II	Semester 1 or Semester 2	MDE2211 or MDE2212	10
	Mechanical Engineering Design III ♦	Semester 1 or Semester 2	MDE3211 or MDE3212	10
	Fluid Mechanics III	Semester 1 or Semester 2	MFM3211 or MFM3212	10
	Hydraulic Machines III ♦	Semester 1 or Semester 2	MHM3111 or MHM3112	10
	Mechanics of Machines II	Semester 1 or Semester 2	MMB2211 or MMB2212	10
	Mechanics of Machines III	Semester 1 or Semester 2	MMB3211 or MMB3212	10
	Strength of Materials III	Semester 1 or Semester 2	MSM3211 or MSM3212	10
	Applied Strength of Materials III ♦	Semester 1 or Semester 2	MST3111 or MST3112	10
	Steam Plant III ♦	Semester 1 or Semester 2	MTD3111 or MTD3112	10
	Thermodynamics III	Semester 1 or Semester 2	MTH3211 or MTH3212	10
	Mathematics III	Semester 1 or Semester 2	WIS3111 or WIS3112	10
	Credits Second Year			**125**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Mechanical Engineering Practice I	Semester 1 or Semester 2	MEP1211 or MEP1212	60
	Mechanical Engineering Practice II	Semester 1 or Semester 2	MEP2321 or MEP2322	60
	Credits Third Year			**120**
A maximum of 90 credits at level 1 are allowed.				

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

Note:

- The full curriculum on each of the three years is offered in each semester of every year.
- With regards to Mechanical Engineering Practice I and II, please refer to the logbook for detailed guidelines and other criteria.

PREREQUISITE MODULES FOR BACCALAUREUS TECHNOLOGIAE: ENGINEERING: MECHANICAL

- Applied Strengths of Materials III
- Electrotechnology I
- Hydraulic Machines III
- Mathematics III
- Mechanical Engineering Design III
- Steam Plant III

6.6 NATIONAL DIPLOMA: OPERATIONS MANAGEMENT: PART-TIME (QUALIFICATION CODE: 3584 – 21) (NQF LEVEL: 6, 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 3 (40-49%) for Mathematics or 5 (60-69%) 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.
- Must be in full-time employment in a related field.
- If an applicant presents with Mathematical Literacy instead of Mathematics, modules may be added which may extend the length of the programme.

APPLICABLE RULES

Purpose statement

Persons achieving this qualification will be able to plan, organise and control the production, operations and related activities. Globally, the possible positions of individuals with this type of qualification include production planners, operations managers, supervisors, a foreman, work study practitioners, quality practitioners and operations analysts.

Qualification objectives

Provide students with skills and knowledge to develop as managers in all spheres of production and operations.

Re-admission policy

First year *(Refers to first enrolment of study)*

Promotion:

Student will be promoted provided that they have passed at least half of the prescribed level 1 modules.

Re-admission:

A student who has failed more than half of the prescribed level 1 modules will be referred to Student Counselling for testing and the Faculty Management Committee will make a decision with respect to re-admission or re-channelling.

Second year *(Refers to first study of second year)*
Promotion:
Students will be promoted provided that they have passed 3 or more prescribed first year modules and 2 or more of the second year prescribed modules.
Re-admission:
A student who has failed 3 or more of the offered/registered modules shall be referred to Student Counselling for testing and the Faculty Management Committee will make a decision with respect to re-admission or re-channelling.

Third year *(Refers to first study of third year)*
Promotion:
Students will be promoted provided that they have passed all the required modules for the diploma.
Re-admission:
A student who has not completed all the modules required for the diploma at the end of the fifth year will be referred to Student Counselling for testing and the Faculty Management Committee will make a decision with respect to re-admission or re-channelling.

Note: Promotion is subject to prerequisite stipulations approved by the Faculty Board. Any student repeating a module may be required to attend lectures at times other than those scheduled for first attendance students.

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following module shall be regarded as the major module:
Operations Management III

DURATION
The qualification shall extend over at least three years of part-time study. (This diploma is offered on a **part-time basis only.**)

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Organisational Effectiveness I	Semester 1 or Semester 2	BOE1111 or BOE1112	30
	Organisational Effectiveness II	Semester 1 or Semester 2	BOE2111 or BOE2112	30
	Operations Management I	Semester 1 or Semester 2	BPJ1311 or BPJ1312	30
	Operations Management II	Semester 1 or Semester 2	BPJ2321 or BPJ2322	30
	Credits First Year			**120**

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Communication I	Semester 1 or Semester 2	BCN1111 or BCN1112	23
	Operations Management Techniques II	Semester 1 or Semester 2	BPI2321 or BPI2322	30
	Operations Management Techniques III	Semester 1 or Semester 2	BPI3421 or BPI3422	30
	Select one of the following modules:			
	Labour Law (2 modules)		**BAH1000**	
	Common Law and Social Legislation	Semester 1	BAH1101	12
	Labour Relations Act	Semester 2	BAH1202	12
	Management Principles & Practice I	Semester 1 or Semester 2	BBM1121 or BBM1122	23
	Workplace Dynamics I	Semester 1 or Semester 2	BWD1111 or BWD1112	23
	Motor Vehicle Engineering I	Semester 1 or Semester 2	MVE1111 or MVE1112	23
	Credits Second Year			**106**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Operations Management Practice I	Semester 1 or Semester 2	BAI1311 or BAI1312	30
	End-User Computing I	Year	BEU1110	23
	Operational Research III	Semester 1 or Semester 2	BOA3211 or BOA3212	30
	Operations Management III ♦	Semester 1 or Semester 2	BPJ3411 or BPJ3412	30
	Select one of the following modules:			
	Personnel Function	Semester 1 or Semester 2	BDA1111 or BDA1112	23
	Costing and Estimating	Semester 1 or Semester 2	BKM1111 or BKM1112	23
	Credits Third Year			**136**

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

Please note:

- The diploma is issued subject to the candidate having passed the eleven compulsory modules and a minimum of 2 additional optional modules.
- The full curriculum on each of the three years is offered in each semester of every year.

- The specified time-table arrangements will be adhered to as far as possible, but unforeseen circumstances, such as non-availability of lecturers, may force unavoidable changes.

6.7 NATIONAL DIPLOMA: INFORMATION TECHNOLOGY: COMMUNICATION NETWORKS: FULL-TIME (QUALIFICATION CODE: 3227 – 01) (NQF LEVEL: 6, 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 3 (40-49%) for Mathematics.
- 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
Computer Applications Technology
AND/OR
Information Technology

APPLICABLE RULES

Requirements for promotion

- Where students have failed modules, they will not be allowed to register for the modules that will have timetable clashes with the modules that they are repeating.
- Students are promoted from the first year to the second year if they obtain credits in the two major modules;
  OR
  Any three of the prescribed first-year modules (one of which must be a major module).
  Note: Students who do not comply with the above-mentioned promotion regulation, will not be allowed to re-register.
- Students are promoted from the second to the third year if they obtain credits in the two major modules;
  OR
  Any three of the prescribed second-year modules.

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:
Distributed Systems III
Communication Networks III

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Information Technology Skills I	Year	ITS1110	30
	Development Software I	Year	ONT1000	30
	Systems Software I		**WCI1700**	
	IT Essentials	Semester 1	WCI1731	15
	Networks I	Year	WCI1730	15
	Information Systems I		**WIH1300**	
	Information Systems IA	Year	WIH1350	15
	Information Systems IB	Year	WIH1360	15
	Credits First Year			**120**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	IT Electronics II		**CII2000**	
	Mathematics	Semester 1	CII2011	15
	Digital Systems I	Semester 2	CII2002	15
	Distributed Systems II	Year	CNW2110	30
	Development Software II	Year	ONT2000	30
	Communication Networks II	Year	WCN2110	30
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	IT Electronics III		**CII3000**	
	Digital Systems II	Semester 1	CII3001	15
	Digital Systems III	Semester 2	CII3002	15
	Distributed Systems III ♦		**CNW3000**	
	Distributed Systems III A: Network Operating Systems	Semester 1	CNW3001	15
	Distributed Systems III B: Project	Semester 2	CNW3002	15
	Support Services II	Year	SSO2000	30
	Communication Networks III ♦		**WCN3000**	
	Communication Networks III A	Semester 1	WCN3001	15
	Communication Networks III B	Semester 2	WCN3002	15
	Credits Third Year			**120**

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

6.8 NATIONAL DIPLOMA: INFORMATION TECHNOLOGY: SOFTWARE DEVELOPMENT: FULL-TIME (QUALIFICATION CODE: 3224 – 01) (NQF LEVEL: 6, 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 4 (50-59%) 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
Computer Applications Technology
OR
Information Technology

APPLICABLE RULES
Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus.

The following modules shall be regarded as the major modules:
Development Software III
Information Systems III

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Information Technology Skills I	Year	ITS1110	30
	Development Software I	Year	ONT1000	30
	Systems Software I		**WCI1700**	
	IT Essentials	Semester 1	WCI1731	15
	Networks I	Year	WCI1730	15
	Information Systems I		**WIH1300**	
	Information Systems IA	Year	WIH1350	15
	Information Systems IB	Year	WIH1360	15
	Credits First Year			**120**

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Development Software II	Year	ONT2000	30
	Technical Programming I	Year	PRT1000	30
	Information Systems II	Year	WIH2100	30
	Select one of the following modules:			
	Geographical Information Systems II*****	Year	GIS2110	30
	Internet Programming II	Year	ITP2000	30
	Communication Networks II	Year	SCN2000	30
	Systems Software II	Year	SSI2000	30
	Support Services II	Year	SSO2000	30
	Credits Second Year			**120**

***PLEASE NOTE:** The offering of the elective module GIS2110 will be determined by the availability of lecturers as well as sufficient student demand.

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Development Software III ♦		**ONT3100**	
	C# III	Semester 1	ONT3251	15
	Project (Module B)	Year	ONT3210	15
	Technical Programming II	Year	PRT2110	30
	Information Systems III ♦		**WIH3020**	
	Systems Analysis & Design (Module A)	Semester 1	WIH3021	10
	Advanced Design B (Module B)	Semester 2	WIH3022	10
	Project Management (Module C)	Semester 1	WIH3031	10
	Select one of the following modules:			
	E-Commerce *	Year	BRJ1000	30
	Graphical User Interface Design I	Year	SGU1000	30
	Credits Third Year			**120**

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

***PLEASE NOTE:** The offering of the elective module BRJ1000 will be determined by the availability of lecturers as well as sufficient student demand.

6.9 NATIONAL DIPLOMA: INFORMATION TECHNOLOGY: SUPPORT SERVICES: FULL-TIME (QUALIFICATION CODE: 3228 – 01) (NQF LEVEL: 6, 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 4 (50-59%) 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.
  OR
- Higher Certificate: ICT (User Support Services) with an average of 60% or above.

Recommended NSC subjects
Computer Applications Technology
OR
Information Technology.

APPLICABLE RULES
Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:
Information Systems III
Support Services III

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Development Software I	Year	SDS1000	30
	Information Technology Skills I	Year	SIS1000	30
	Systems Software I		**WCI1700**	
	IT Essentials	Semester 1	WCI1731	15
	Networks I	Year	WCI1730	15
	Information Systems I		**WIH1300**	
	Information Systems IA	Year	WIH1350	15
	Information Systems IB	Year	WIH1360	15
	Credits First Year			**120**

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Communication Networks II	Year	SCN2000	30
	Systems Software II	Year	SSI2000	30
	Support Services II	Year	SSO2000	30
	Information Systems II	Year	WIH2100	30
	Credits Second Year			**120**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Graphical User Interface Design I	Year	SGU1000	30
	Information Systems III ♦	Year	SIH3000	30
	Installation Management III	Year	SIM3000	30
	Support Services III ♦	Year	SSO3000	30
	Credits Third Year			**120**

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

6.10 NATIONAL DIPLOMA: INFORMATION TECHNOLOGY: TECHNICAL APPLICATIONS: FULL-TIME (QUALIFICATION CODE: 3225 – 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 360) (PHASING OUT – NO NEW INTAKE FROM 2008)

As from 2008, the Technical Application stream has merged with the Software Development stream where the Technical Application modules are offered as elective modules.

Awarding the qualification *cum laude*

The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:
Technical Programming III
Systems Software III

CURRICULUM

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Information Technology Skills I	Year	ITS1110	30
	Technical Programming II	Year	PRT2120	30

		Presented	Module Code	Credit Value
	Systems Software II	Year	WCI2200	30
	Information Systems II	Year	WIH2100	30
	Select one of the following modules:			
	Geographical Information Systems II*****	Year	GIS2110	30
	Communication Networks II	Year	SCN2000	30
	Support Services II	Year	SSO2000	30
	Credits Second Year			**150**

*** PLEASE NOTE:** The offering of the elective module GIS2110 will be determined by the availability of lecturers as well as sufficient student demand.

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Technical Programming III ♦		**PRT3020**	
	C# III A (Module A)	Semester 1	PRT3201	12
	Project (Module B)	Year	PRT3220	15
	Project Management (Module C)	Semester 1	PRT3211	3
	Systems Software III ♦		**WCI3000**	
	Web Technology (Module A)	Semester 1	WCI3101	15
	Operating Systems III (Module B)	Semester 2	WCI3202	15
	Communication Networks		**WCN2000**	
	Networks III B (Module B)	Semester 1	WCN2201	15
	Credits Third Year			**75**

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

7 BACCALAUREUS SCIENTIAE

7.1 BACCALAUREUS SCIENTIAE IN CONSTRUCTION ECONOMICS: QUANTITY SURVEYING WITH FINANCIAL MANAGEMENT AND BUSINESS MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 47002 – 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 364)

ADMISSION REQUIREMENTS

- Admission Points Score of 36.
- 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.
- Applicants with an Admission Points Score between 26 and 35 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.
- Admission is subject to departmental selection.

Recommended NSC subjects
Engineering Graphics & Design
Physical Sciences

APPLICABLE RULES

Promotion

Candidates shall be admitted to the following year of study only if they have passed prescribed modules with a total credit value of at least 70 per cent of the total credits prescribed for the particular year of study. A pass mark in Quantities shall be a prerequisite for promotion. Senate may allow candidates who have failed to qualify for admission to a following year of study, to take a maximum of three year-modules prescribed for such following year, with the exception of Quantities. The Head of the Department of Building and Quantity Surveying shall determine which modules may be taken.

Candidates shall be admitted to the third year of study or to any module prescribed for the third year of study, only after having completed all the modules prescribed for the first year of study. For the purposes of this rule, the following modules shall not be taken into account; these modules must nevertheless be completed for the qualification to be awarded, provided that no concessions may be made in respect of timetable clashes:
ECS101
ECS102
JHA121
JHY101

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:

Quantities 301
Building Economics 301
Quantity Surveying 301

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Introduction to Micro-economics (Special)	Semester 1	ECS101	7
	Introduction to Macro-economics (Special)	Semester 2	ECS102	7
	Commercial Law 121	Semester 1	JHA121	12
	Commercial Law (Building Disciplines)	Semester 2	JHY101	6
	Building Science (Environment & Services) 1A	Semester 1	KES111	7
	Building Science (Environment & Services) 1B	Semester 2	KES112	7
	Basic Surveying 1A	Semester 1	KLS110	6
	Building Science (Materials & Methods) 1A	Semester 1	KMM111	7
	Building Science (Materials & Methods) 1B	Semester 2	KMM112	7
	Information Technology for Building Disciplines 101	Year	QIT101	2
	Quantities 101	Year	QQH101	16
	Quantity Surveying 101	Year	QQS101	12
	Computing Fundamentals 1.1	Semester 1	WRFC101	8
	Computing Fundamentals 1.2	Semester 2	WRFC102	8
	Credits First Year			**112**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Introduction to Business Management and Entrepreneurship	Semester 1	EB101	12
	Introduction to the Business Functions	Semester 2	EB102	12
	Building Science (Environment & Services) 2A	Semester 1	KES211	7
	Building Science (Environment & Services) 2B	Semester 2	KES212	7
	Building Science (Materials & Methods) 2A	Semester 1	KMM211	7
	Building Science (Materials & Methods) 2B	Semester 2	KMM212	7
	Building Economics 201	Year	QBE201	20
	Information Technology for Building Disciplines 201	Year	QIT201	2
	Quantities 201	Year	QQH201	16
	Quantity Surveying 201	Year	QQS201	12

		Presented	Module Code	Credit Value
	Accounting (Special) 101	Semester 1	RS101	10
	Accounting (Special) 102	Semester 2	RS102	5
	Credits Second Year			**117**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Marketing Management	Semester 1	EBM201	14
	Logistics and Purchasing Management	Semester 2	EBM202	14
	Building Science (Environment & Services) 3A	Semester 1	KES311	7
	Building Science (Environment & Services) 3B	Semester 2	KES312	7
	Building Science (Materials & Methods) 3A	Semester 1	KMM311	7
	Building Science (Materials & Methods) 3B	Semester 2	KMM312	7
	Mathematics for Accounting	Semester 1	MACC101	12
	Building Economics 301 ♦	Year	QBE301	22
	Information Technology for Building Disciplines 301	Year	QIT301	4
	Quantities 301 ♦	Year	QQH301	16
	Quantity Surveying 301 ♦	Year	QQS301	13
	Research Methodology & Techniques 303 (attendance module)	Term 3	QRT303	-
	Business Statistics 102	Semester 2	STAE102	12
	Credits Third Year			**135**

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

7.2 BACCALAUREUS SCIENTIAE IN CONSTRUCTION ECONOMICS: QUANTITY SURVEYING WITH COMPUTER SCIENCE: FULL-TIME (QUALIFICATION CODE: 47022 – 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 384)

ADMISSION REQUIREMENTS

- Admission Points Score of 36.
- 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.
- Applicants with an Admission Points Score between 26 and 35 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.
- Admission is subject to departmental selection.

Recommended NSC subjects
Engineering Graphics & Design
Physical Sciences

APPLICABLE RULES

Promotion
Candidates shall be admitted to the following year of study only if they have passed prescribed modules with a total credit value of at least 70 per cent of the total credits prescribed for the particular year of study. A pass mark in Quantities shall be a prerequisite for promotion. Senate may allow candidates who have failed to qualify for admission to a following year of study, to take a maximum of three year-modules prescribed for such following year, with the exception of Quantities. The Head of the Department of Building and Quantity Surveying shall determine which modules may be taken.

Candidates shall be admitted to the third year of study or to any module prescribed for the third year of study, only after having completed all the modules prescribed for the first year of study. For the purposes of this rule, the following modules shall not be taken into account; these modules must nevertheless be completed for the qualification to be awarded, provided that no concessions may be made in respect of timetable clashes:
ECS101
ECS102
JHA121
JHY101

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
The qualification shall be awarded *cum laude* if students comply with the requirements as stipulated in the General Prospectus. The following modules shall be regarded as the major modules:
Quantities 301
Building Economics 301
Quantity Surveying 301

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Building Science (Environment & Services)	Semester 1	KES111	7
	Building Science (Environment & Services)	Semester 2	KES112	7
	Basic Surveying 1A	Semester 1	KLS110	6
	Building Science (Materials & Methods) 1A	Semester 1	KMM111	7
	Building Science (Materials & Methods) 1B	Semester 2	KMM112	7
	Mathematics Special A	Semester 1	MATA101	8
	Mathematics Special B	Semester 2	MATA102	8
	Information Technology for Building Disciplines 101	Year	QIT101	2
	Quantities 101	Year	QQH101	16
	Quantity Surveying 101	Year	QQS101	12
	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
	Credits First Year			**112**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Building Science (Environment & Services) 2A	Semester 1	KES211	7
	Building Science (Environment & Services) 2B	Semester 2	KES212	7
	Building Science (Materials & Methods) 2A	Semester 1	KMM211	7
	Building Science (Materials & Methods) 2B	Semester 2	KMM212	7
	Building Economics 201	Year	QBE201	20
	Information Technology for Building Disciplines 201	Year	QIT201	2
	Quantities 201	Year	QQH201	16
	Quantity Surveying 201	Year	QQS201	12
	Accounting (Special) 101	Semester 1	RS101	10
	Accounting (Special) 102	Semester 2	RS102	10
	Data Structures & Algorithms 2.1	Semester 1	WRA201	8
	Data Structures & Algorithms 2.2	Semester 2	WRA202	8
	Computer Architecture & Networks 2.1	Semester 1	WRC201	6
	Computer Architecture & Networks 2.2	Semester 2	WRC202	6

		Presented	Module Code	Credit Value
	Information Systems 2.1	Semester 1	WRI201	6
	Information Systems 2.2	Semester 2	WRI202	6
	Credits Second Year			**133**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Introduction to Micro-economics (Special)	Semester 1	ECS101	7
	Introduction to Macro-economics (Special)	Semester 2	ECS102	7
	Commercial Law 121	Semester 1	JHA121	12
	Commercial Law (Building Disciplines)	Semester 2	JHY101	6
	Building Science (Environment & Services) 3A	Semester 1	KES311	7
	Building Science (Environment & Services) 3B	Semester 2	KES312	7
	Building Science (Materials & Methods) 3A	Semester 1	KMM311	7
	Building Science (Materials & Methods) 3B	Semester 2	KMM312	7
	Mathematics for Accounting	Semester 1	MACC101	12
	Building Economics 301 ♦	Year	QBE301	22
	Information Technology for Building Disciplines 301	Year	QIT301	4
	Quantities 301 ♦	Year	QQH301	16
	Quantity Surveying 301 ♦	Year	QQS301	13
	Research Methodology & Techniques 303 (attendance module)	Term 3	QRT303	-
	Business Statistics 102	Semester 2	STAE102	12
	Credits Third Year			**139**

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

7.3 BACCALAUREUS SCIENTIAE IN CONSTRUCTION STUDIES: FULL-TIME (QUALIFICATION CODE: 45603 – 01) (NQF LEVEL: 6, TOTAL NQF CREDITS FOR QUALIFICATION: 383)

ADMISSION REQUIREMENTS

- Admission Points Score of 36.
- 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.
- Applicants with an Admission Points Score between 26 and 35 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
Engineering Graphics & Design
Physical Sciences

APPLICABLE RULES
Study excursions
Candidates are required to attend two study excursions, each of one week's duration, the first during the second to third year of study and the second during the Honours year of study.

Promotion
The promotion rules shall be read in conjunction with the schedule of prerequisites. To be promoted to the year listed in Column A, candidates must comply with the requirements listed in Column B:

Column A	Column B
Year 2	A total first-year credit value of at least 90, of which at least 28 must be in respect of Building Science modules.
Year 3	A total second-year credit value of at least 95, of which at least 28 must be in respect of Building Science modules.

Senate may allow candidates who have failed to qualify for admission to a following year of study, to take modules prescribed for such following year, subject to being suitably accommodated on the lecture and examination timetables, as no special arrangements are possible. The Department of Construction Management shall determine which modules may be taken. Candidates shall be admitted to the third year of study only after having completed all the modules prescribed for the first year of study. For the purposes of this rule, the module AM101 shall not be taken into account.

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate. Before the qualification of Bachelor of Science in Construction Studies is awarded, candidates must be in possession of a valid First Aid certificate issued by a recognised First Aid organisation. Candidates shall make their own arrangements to obtain a First Aid certificate in their own time and to complete the necessary examinations.

Awarding the qualification *cum laude*
Unless Senate decides otherwise the qualification shall be awarded *cum laude* if candidates comply with the requirements of the general rule concerned, provided that:

The following shall be regarded as the major modules:
- Construction Management 3
- Building Science (Materials and Methods) 3
- Building Science (Environment and Services) 3
- Building Science (Structures) 3
- Production Analysis 3
- Building Economics 201

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Geometric Drawing 101	Semester 1	AM101	8
	Mechanics and Thermodynamics	Semester 1	FBB101	7
	Electricity, Optics and Atomics	Semester 2	FBB102	7
	Building Science (Structures) 1A	Semester 1	KBS111	7
	Building Science (Structures) 1B	Semester 2	KBS112	7
	Building Science (Environment & Services) 1A	Semester 1	KES111	7
	Building Science (Environment & Services) 1B	Semester 2	KES112	7
	Basic Surveying 1A	Semester 1	KLS110	6
	Basic Surveying 1B	Semester 2	KLS120	6
	Building Science (Materials & Methods) 1A	Semester 1	KMM111	7
	Building Science (Materials & Methods) 1B	Semester 2	KMM112	7
	Production Analysis 101	Year	KPA101	16
	Mathematics (Special) A	Semester 1	MATA101	8
	Mathematics (Special) B	Semester 2	MATA102	8
	Information Technology for Building Disciplines 101	Year	QIT101	2
	Computing Fundamentals 1.1	Semester 1	WRFC101	8
	Computing Fundamentals 1.2	Semester 2	WRFC102	8
	Credits First Year			**126**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Business Management 101 (for CM students only)	Semester 1	EBC101	7
	Business Management 102 (for CM students only)	Semester 2	EBC102	7
	Introduction to Micro-economics (Special)	Semester 1	ECS101	7
	Introduction to Macro-economics (Special)	Semester 2	ECS102	7
	Organisational Behaviour Special	Semester 1	EZGS201	12
	Building Science (Structures) 2A	Semester 1	KBS211	7
	Building Science (Structures) 2B	Semester 2	KBS212	7
	Building Science (Environment & Services) 2A	Semester 1	KES211	7
	Building Science (Environment & Services) 2B	Semester 2	KES212	7
	History of the Construction Industry 101	Semester 2	KH101	4
	Building Science (Materials & Methods) 2A	Semester 1	KMM211	7
	Building Science (Materials & Methods) 2B	Semester 2	KMM212	7

		Presented	Module Code	Credit Value
	Production Analysis 201	Year	KPA201	16
	Mathematics for Accountancy	Semester 1	MACC101	12
	Information Technology for Building Disciplines 201	Year	QIT201	2
	Business Statistics 102	Semester 2	STAE102	12
	Credits Second Year			**128**
		Presented	**Module Code**	**Credit Value**
Third Year				
	Compulsory modules:			
	Construction Management 3A ♦	Semester 1	KBM311	12
	Construction Management 3B ♦	Semester 2	KBM312	12
	Building Science (Structures) 3A ♦	Semester 1	KBS311	7
	Building Science (Structures) 3B ♦	Semester 2	KBS312	7
	Building Science (Environment & Services) 3A ♦	Semester 1	KES311	7
	Building Science (Environment & Services) 3B ♦	Semester 2	KES312	7
	Building Science (Materials & Methods) 3A ♦	Semester 1	KMM311	7
	Building Science (Materials & Methods) 3B ♦	Semester 2	KMM312	7
	Production Analysis 3A ♦	Semester 1	KPA311	12
	Production Analysis 3B ♦	Semester 2	KPA312	12
	Building Economics 201 ♦	Year	QBE201	20
	Information Technology for Building Disciplines	Year	QIT301	4
	Accounting (Special) 101	Semester 1	RS101	10
	Accounting (Special) 102	Semester 2	RS102	5
	Credits Third Year			**129**

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

8 BACCALAUREUS TECHNOLOGIAE

8.1 BACCALAUREUS TECHNOLOGIAE: CONSTRUCTION MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 4281 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- The minimum admission requirement is the National Diploma: Building or a similar qualification (subject to departmental approval).
- Students may be required to complete an oral entrance examination.
- It is further expected of students to comply with any one of the following requirements before being allowed entry to the qualification:
  - An average of 60% for all the modules in the final year of study in the diploma (if diplomats wish to proceed directly to the Baccalaureus Technologiae qualification the next year).

  AND
  - The student must obtain at least 60% for the major module (Construction Management III) in the final year of study in the diploma for entry into the Baccalaureus Technologiae qualification.

  OR
  - One year proven post-diploma experience in the building industry.

  OR
  - The submission of a detailed breakdown of any previous experience gained in the building industry as well as periods of employment, which will be considered on merit.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over at least one year of full-time study. Studies may also be completed over two academic years in consultation with the Head of the Department.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Appropriate Construction IV	Year	DAC4010	20
	Building Entrepreneurship IV	Year	DBE4010	20
	Construction Economics IV	Year	DCE4010	20
	Construction Management IV	Year	DCO4010	20

		Presented	Module Code	Credit Value
	Construction Law and Procedures IV	Year	DLP4010	20
	Select either option A or option B:			
	A: Research Methodology IV (2 modules)		**BNV4210**	
	Research Methods and Techniques	Semester 1	BNV4221	10
	Project	Semester 2	BNV4232	10
	B: Maintenance Management IV	Year	DMA4010	20
	Total Credits			**120**

8.2 BACCALAUREUS TECHNOLOGIAE: ENGINEERING: CIVIL: TRANSPORTATION ENGINEERING DISCIPLINE: PART-TIME (QUALIFICATION CODE: 4333 – 21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the National Diploma: Engineering: Civil; or
- 55% average for the National Diploma: Engineering: Civil with proof of registration with the Engineering Council of South Africa; or
- 60% average for the National Diploma: Engineering: Civil and two years' post-diploma working experience;
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

APPLICABLE RULES

Purpose Statement

Persons achieving this qualification will be able to independently and competently apply an integration of theory, principles, proven techniques, practical experience and appropriate skills to the solution of open-ended and ill-defined problems in the field of Civil Engineering while operating within the relevant standards and codes. The qualification is intended for engineering practitioners in the Civil Engineering industry. The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Candidate Engineering Technologist in the discipline of Civil Engineering. After a period of appropriate industry experience, the qualified person will be able to register with ECSA as a Professional Engineering Technologist.

Qualification objectives

- This qualification provides the academic component required to register as a Professional Technologist in training at the Engineering Council of SA.
- The qualification also serves as the academic admission requirement for further postgraduate studies in Civil Engineering at the NMMU.

Disciplines

The following four disciplines are offered at the NMMU:
Environmental Engineering (4336) (not offered currently)
Transportation Engineering (4333)
Urban Engineering (4335)
Water Engineering (4334) (not offered currently)
The offering of these disciplines is subject to sufficient student numbers and the availability of sufficient resources.

Format of offering

This qualification is offered on a block format, which broadly entails short periods of concentrated study at the NMMU, the so-called contact sessions, alternating with longer periods of self-study away from the NMMU. Generally, two modules (or one) will be offered per discipline per semester.

Qualification of offerings

The qualification aims to offer all the modules over a two-year cycle. For each module, the prerequisite knowledge will be documented and made available to prospective students. Students will thus be allowed into a qualification at any point in the cycle of offering of the qualification, but the onus will be on them to ensure that they gain the prerequisite knowledge.

The next two-year cycle of offerings will be scheduled as follows:

Sem/Year	Transport	Urban
1/2011	CMPM410 – Project Management IV	CMPM410 – Project Management IV
	CUUP410 – Urban Planning & Design IV	CUUP410 – Urban Planning & Design IV
2/2011	CTGD410 – Geometric Design IV	CTGD410 – Geometric Design IV
	CEEM410 – Environmental Management for Engineers IV	CEEM410 – Environmental Management for Engineers IV
1/2012	CTTT410 – Transportation Technology IV	CTTT410 – Transportation Technology IV
	CTTE410 – Traffic Engineering IV	CWRD410 – Reticulation Design & Management IV
2/2012	CTPT410 – Pavement Technology IV	CTPT410 – Pavement Technology IV
	CTTP410 – Transportation Planning IV	CUSW410 – Solid Waste Management IV

The provisional dates for 2011 are as follows:

Semester 1: 2011

SUBJECT	DISCIPLINE	SESSION 1	SESSION 2	SESSION 3	FINAL EVALUATION
CMPM410	T, U	31 Jan - 02 Feb	11 – 13 Apr	27 – 29 Jun	14 Jul
CUUP410	T, U	03 – 05 Feb	14 – 16 Apr	30 Jun – 02 Jul	15 Jul

Semester 2: 2011

SUBJECT	DISCIPLINE	SESSION 1	SESSION 2	SESSION 3	FINAL EVALUATION
CTGD410	T, U	18 – 20 Jul	03 – 05 Oct	28 – 30 Nov	26 Jan 2012
CEEM410	T, U	21 – 23 Jul	06 – 08 Oct	01 – 03 Dec	27 Jan 2012

The specified arrangements and qualifications will be adhered to as far as possible, but unforeseen circumstances, such as non-availability of lecturers or a low student entry, may force unavoidable changes.

Evaluation procedures

All the B Tech modules are classified as 100% class mark modules. There are no formal examinations in these modules. In general, the evaluation for the theory module of each main module will be based on three tests and two assignments and the project module will be evaluated separately. The final mark will be a weighted average of these evaluation components.

The weighting of each of these evaluation components will be conveyed to students at the beginning of a qualification. In order to pass the main module, a student needs to obtain at least 50% for the final mark of each of the modules, and at least 40% for each of the evaluation components of the theory module. Should a student not meet the minimum pass requirements for any of the modules of the main module, the result for the main module will be indicated as "Studies not yet completed".

If a student, for reasons beyond his/her control, is absent from a test, a request for special consideration may be lodged in writing with the Head of Department, within three days after the date of the test. Each case will be treated on its merits, with the general performance of the applicant being taken into account as well. If a special evaluation is granted, a fee may be charged to cover the expenses involved.

Re-admission policy

A student who progresses at a slower rate than that set out in the following table, will be refused registration on the grounds of "poor academic performance".

Semester	Module Credits Attained
1	1
2	2
3	4
4	6
5	7

Recognition of modules done at other HE institutions

The Department will recognise modules done at other HE institutions for exemption, according to the General Prospectus of the NMMU, subject to the following criteria:

a. Generally, no modules in the fourth-year curriculums will be recognised for exemption. However, exemptions may be considered for the theory modules provided that the student has registered at least once for the said module at the NMMU but has been unsuccessful in passing the module.

b. The theory modules to be exempted according to (a) must appear in the curriculums offered by the NMMU.

c. No more than two such B Tech theory modules may be thus exempted.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over at least one year of full-time study (not being offered at present) or two years of part-time study (block format).

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Environmental Management for Engineers IV		**CEEM410**	
	Environmental Management for Engineers IV (Theory)	Semester 1 or Semester 2	CEEM4A1 or CEEM4A2	7.5
	Environmental Management for Engineers IV (Project)	Semester 1 or Semester 2	CEEM4B1 or CEEM4B2	7.5
	Project Management IV		**CMPM410**	
	Project Management IV (Theory)	Semester 1 or Semester 2	CMPM4A1 or CMPM4A2	7.5
	Project Management IV (Project)	Semester 1 or Semester 2	CMPM4B1 or CMPM4B2	7.5
	Geometric Design IV		**CTGD410**	
	Geometric Design IV (Theory)	Semester 1 or Semester 2	CTGD4A1 or CTGD4A2	7.5
	Geometric Design IV (Project)	Semester 1 or Semester 2	CTGD4B1 or CTGD4B2	7.5
	Urban Planning & Design IV		**CUUP410**	
	Urban Planning & Design IV (Theory)	Semester 1 or Semester 2	CUUP4A1 or CUUP4A2	7.5
	Urban Planning & Design IV (Project)	Semester 1 or Semester 2	CUUP4B1 or CUUP4B2	7.5
	Credits First Year			**60**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Pavement Technology IV ♦		**CTPT410**	
	Pavement Technology IV (Theory)	Semester 1 or Semester 2	CTPT4A1 or CTPT4A2	7.5
	Pavement Technology IV (Project)	Semester 1 or Semester 2	CTPT4B1 or CTPT4B2	7.5
	Transportation Planning IV ♦		**CTTP410**	
	Transportation Planning IV (Theory)	Semester 1 or Semester 2	CTTP4A1 or CTTP4A2	7.5
	Transportation Planning IV (Project)	Semester 1 or Semester 2	CTTP4B1 or CTTP4B2	7.5
	Transportation Technology IV ♦		**CTTT410**	
	Transportation Technology IV (Theory)	Semester 1 or Semester 2	CTTT4A1 or CTTT4A2	7.5

		Presented	Module Code	Credit Value
	Transportation Technology IV (Project)	Semester 1 or Semester 2	CTTT4B1 or CTTT4B2	7.5
	Traffic Engineering IV ♦		**CTTE410**	
	Traffic Engineering IV (Theory)	Semester 1 or Semester 2	CTTE4A1 or CTTE4A2	7.5
	Traffic Engineering IV (Project)	Semester 1 or Semester 2	CTTE4B1 or CTTE4B2	7.5
	Credits Second Year			**60**

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

8.3 BACCALAUREUS TECHNOLOGIAE: ENGINEERING: CIVIL: URBAN ENGINEERING DISCIPLINE: PART-TIME (QUALIFICATION CODE: 4335 – 21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the National Diploma: Engineering: Civil; or
- 55% average for the National Diploma: Engineering: Civil with proof of registration with the Engineering Council of South Africa; or
- 60% average for the National Diploma: Engineering: Civil and two years' post-diploma working experience;
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

APPLICABLE RULES

Purpose Statement

Persons achieving this qualification will be able to independently and competently apply an integration of theory, principles, proven techniques, practical experience and appropriate skills to the solution of open-ended and ill-defined problems in the field of Civil Engineering while operating within the relevant standards and codes. The qualification is intended for engineering practitioners in the Civil Engineering industry. The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Candidate Engineering Technologist in the discipline of Civil Engineering. After a period of appropriate industry experience, the qualified person will be able to register with ECSA as a Professional Engineering Technologist.

Qualification objectives

- This qualification provides the academic component required to register as a Professional Technologist in training at the Engineering Council of SA.
- The qualification also serves as the academic admission requirement for further postgraduate studies in Civil Engineering at the NMMU.

Disciplines

The following four disciplines are offered at the NMMU:
Environmental Engineering (4336) (not offered currently)

Transportation Engineering (4333)
Urban Engineering (4335)
Water Engineering (4334) (not offered currently)

The offering of these disciplines is subject to sufficient student numbers and the availability of sufficient resources.

Format of offering
This qualification is offered on a block format, which broadly entails short periods of concentrated study at the NMMU, the so-called contact sessions, alternating with longer periods of self-study away from the NMMU. Generally, two modules (or one) will be offered per discipline per semester.

Qualification of offerings
The qualification aims to offer all the modules over a two-year cycle. For each module, the prerequisite knowledge will be documented and made available to prospective students. Students will thus be allowed into a qualification at any point in the cycle of offering of the qualification, but the onus will be on them to ensure that they gain the prerequisite knowledge.

The next two-year cycle of offerings will be scheduled as follows:

Sem/Year	Transport	Urban
1/2011	CMPM410 – Project Management IV	CMPM410 – Project Management IV
	CUUP410 – Urban Planning & Design IV	CUUP410 – Urban Planning & Design IV
2/2011	CTGD410 – Geometric Design IV	CTGD410 – Geometric Design IV
	CEEM410 – Environmental Management for Engineers IV	CEEM410 – Environmental Management for Engineers IV
1/2012	CTTT410 – Transportation Technology IV	CTTT410 – Transportation Technology IV
	CTTE410 – Traffic Engineering IV	CWRD410 – Reticulation Design & Management IV
2/2012	CTPT410 – Pavement Technology IV	CTPT410 – Pavement Technology IV
	CTTP410 – Transportation Planning IV	CUSW410 – Solid Waste Management IV

The provisional dates for 2011 are as follows:

Semester 1: 2011

SUBJECT	DISCIPLINE	SESSION 1	SESSION 2	SESSION 3	FINAL EVALUATION
CMPM410	T, U	31 Jan - 02 Feb	11 – 13 Apr	27 – 29 Jun	14 Jul
CUUP410	T, U	03 – 05 Feb	14 – 16 Apr	30 Jun – 02 Jul	15 Jul

Semester 2: 2011

SUBJECT	DISCIPLINE	SESSION 1	SESSION 2	SESSION 3	FINAL EVALUATION
CTGD410	T, U	18 – 20 Jul	03 – 05 Oct	28 – 30 Nov	26 Jan 2012
CEEM410	T, U	21 – 23 Jul	06 – 08 Oct	01 – 03 Dec	27 Jan 2012

The specified arrangements and qualifications will be adhered to as far as possible, but unforeseen circumstances, such as non-availability of lecturers or a low student entry, may force unavoidable changes.

Evaluation procedures

All the B Tech modules are classified as 100% class mark modules. There are no formal examinations in these modules. In general, the evaluation for the theory module of each main module will be based on three tests and two assignments and the project module will be evaluated separately. The final mark will be a weighted average of these evaluation components.

The weighting of each of these evaluation components will be conveyed to students at the beginning of a qualification. In order to pass the main module, a student needs to obtain at least 50% for the final mark of each of the modules, and at least 40% for each of the evaluation components of the theory module. Should a student not meet the minimum pass requirements for any of the modules of the main module, the result for the main module will be indicated as "Studies not yet completed".

If a student, for reasons beyond his/her control, is absent from a test, a request for special consideration may be lodged in writing with the Head of Department, within three days after the date of the test. Each case will be treated on its merits, with the general performance of the applicant being taken into account as well. If a special evaluation is granted, a fee may be charged to cover the expenses involved.

Re-admission policy

A student who progresses at a slower rate than that set out in the following table, will be refused registration on the grounds of "poor academic performance".

Semester	Module Credits Attained
1	1
2	2
3	4
4	6
5	7

Recognition of modules done at other HE institutions

The Department will recognise modules done at other HE institutions for exemption, according to the General Prospectus of the NMMU, subject to the following criteria:

a. Generally, no modules in the fourth-year curriculums will be recognised for exemption. However, exemptions may be considered for the theory modules provided that the student has registered at least once for the said module at the NMMU but has been unsuccessful in passing the module.

b. The theory modules to be exempted according to (a) must appear in the curriculums offered by the NMMU.

c. No more than two such B Tech theory modules may be thus exempted.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *Cum Laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over at least one year of full-time (not being offered at present) or two years of part-time study (block format).

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Environmental Management for Engineers IV		**CEEM410**	
	Environmental Management for Engineers IV (Theory)	Semester 1 or Semester 2	CEEM4A1 or CEEM4A2	7.5
	Environmental Management for Engineers IV (Project)	Semester 1 or Semester 2	CEEM4B1 or CEEM4B2	7.5
	Project Management IV		**CMPM410**	
	Project Management IV (Theory)	Semester 1 or Semester 2	CMPM4A1 or CMPM4A2	7.5
	Project Management IV (Project)	Semester 1 or Semester 2	CMPM4B1 or CMPM4B2	7.5
	Geometric Design IV		**CTGD410**	
	Geometric Design IV (Theory)	Semester 1 or Semester 2	CTGD4A1 or CTGD4A2	7.5
	Geometric Design IV (Project)	Semester 1 or Semester 2	CTGD4B1 or CTGD4B2	7.5
	Urban Planning & Design IV		**CUUP410**	
	Urban Planning & Design IV (Theory)	Semester 1 or Semester 2	CUUP4A1 or CUUP4A2	7.5
	Urban Planning & Design IV (Project)	Semester 1 or Semester 2	CUUP4B1 or CUUP4B2	7.5
	Credits First Year			**60**

		Presented	Module Code	Credit Value
Second Year				
	Compulsory modules:			
	Pavement Technology IV ♦		**CTPT410**	
	Pavement Technology IV (Theory)	Semester 1 or Semester 2	CTPT4A1 or CTPT4A2	7.5
	Pavement Technology IV (Project)	Semester 1 or Semester 2	CTPT4B1 or CTPT4B2	7.5
	Transportation Technology IV ♦		**CTTT410**	
	Transportation Technology IV (Theory)	Semester 1 or Semester 2	CTTT4A1 or CTTT4A2	7.5
	Transportation Technology IV (Project)	Semester 1 or Semester 2	CTTT4B1 or CTTT4B2	7.5
	Solid Waste Management IV		**CUSW410**	
	Solid Waste Management IV	Semester 1 or Semester 2	CUSW4A1 or CUSW4A2	7.5
	Solid Waste Management IV	Semester 1 or Semester 2	CUSW4B1 or CUSW4B2	7.5

		Presented	Module Code	Credit Value
	Reticulation Design & Management IV		**CWRD410**	
	Water Reticulation Systems IV	Semester 1 or Semester 2	CWRD4A1 or CWRD4A2	5
	Sewerage Reticulation Systems IV	Semester 1 or Semester 2	CWRD4B1 or CWRD4B2	5
	Stormwater Reticulation Systems IV	Semester 1 or Semester 2	CWRD4C1 or CWRD4C2	5
	Credits Second Year			**60**

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

APPLICABLE RULES

Qualification objectives

This qualification provides the academic component required to register as a Professional Technologist at the Engineering Council of SA. Certain experiential requirements are also set by ECSA. This in turn also leads to international recognition.

8.4 BACCALAUREUS TECHNOLOGIAE: ENGINEERING: ELECTRICAL: FULL-TIME/PART-TIME (QUALIFICATION CODE: 4365 – 01/21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120) (HEQC- AND ECSA-ACCREDITED)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the National Diploma: Engineering: Electrical; or
- 55% average for the National Diploma: Engineering: Electrical with proof of registration with the Engineering Council of South Africa; or
- 60% average for the National Diploma: Engineering: Electrical and two years post-diploma working experience.
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

APPLICABLE RULES

Purpose statement

Persons achieving this qualification will be competent to apply electrical engineering principles, innovative skills, advanced problem solving techniques and managerial skills professionally in the field of electrical engineering.

Qualification objectives

The qualified person must be able to:

- Demonstrate a high level of theoretical knowledge for the purpose of applied research and innovative problem solving.
- Plan and manage projects with due cognisance of all related codes of practice, professional ethics and the Labour Relations Act.

- Demonstrate technical managerial skills required for financial decision making and negotiating.
- Demonstrate the high level of theoretical and practical knowledge required to act professionally.
- Communicate effectively at high levels.
- Register with ECSA as a Professional Technologist in training in the field of Electrical Engineering.

Obtaining the qualification
The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*
Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION
The qualification shall extend over a two-year continuous cycle of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First and Second Year				
	Compulsory Module:			
	Industrial Project IV	Year	EIP4010	36
	Select seven of the following modules:			
	On offer in 2011:			
	Audio Engineering IV	Semester 1	EAE4011	12
	Computer Networks IV	Semester 1	ECN4011	12
	Electrical Machines IV	Semester 1	EEM4011	12
	Engineering Management IV	Semester 2	EMM4112	15
	Opto Electronics IV	Semester 2	EOE4012	12
	Process Control IV	Semester 2	EPC4012	12
	Power Systems IV	Semester 2	EPS4012	12
	Protection Technology IV	Semester 1	EPT4011	12
	Engineering Mathematics IV	Semester 2	WIS4012	12
	On offer in 2012:			
	Electronic Communication Systems IV	Semester 1	EES4011	12
	High Voltage Engineering IV	Semester 1	EHV4011	12
	Micro Systems Design IV	Semester 1	EMD4011	12
	Engineering Management IV	Semester 2	EMM4012	12
	Microcontroller Systems IV	Semester 2	EMS4012	12
	Electrical Protection IV	Semester 1	EPR4011	12
	Protection Technology IV	Semester 2	EPT4012	12
	Satellite Communications IV	Semester 2	ESC4112	12
	Electrical Machines IV	Semester 2	EEM4012	12
	Engineering Mathematics IV	Semester 2	WIS4012	12

		Presented	Module Code	Credit Value
	Total Credits			**120**

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

8.5 BACCALAUREUS TECHNOLOGIAE: ENGINEERING: INDUSTRIAL: FULL-TIME/PART-TIME (QUALIFICATION CODE: 4702 – 01/21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120) (HEQC- AND ECSA-ACCREDITED)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the National Diploma; or
- 55% average for the National Diploma with proof of registration with the Engineering Council of South Africa; or
- A 60% average for the National Diploma and two years post diploma working experience.
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

APPLICABLE RULES

Purpose statement

Persons achieving this qualification will be able to analyse and solve independently complex open-ended manufacturing and service-related problems through the application of accepted Industrial Engineering techniques. They will be able to assess complex systems and calculate expected system performance. The qualification is intended for engineering practitioners in industry.

The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Professional Technologist-in-Training in the field of Industrial Engineering.

Qualification objectives

- Analyse, design and improve manufacturing and related services.
- Apply industrial engineering techniques and principles to analyse complex manufacturing and service-related operational problems.
- Develop and recommend alternatives for improving complex manufacturing and service-related operational problems.
- Design and develop complex manufacturing and service-related systems.
- Research related industrial engineering topics in a structured manner.
- Demonstrate theoretical and practical knowledge of specialized industrial engineering techniques.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First and Second Year				
	Compulsory modules:			
	Information Systems IV ♦	Semester 1	IIS4111	15
	Logistics Engineering IV ♦	Semester 2	ILE4112	15
	Project Engineering IV ♦	Semester 1	IPE4111	15
	Entrepreneurship IV ♦	Semester 2	IPP4112	15
	Project Research IV ♦	Semester 1	IPR4111	15
	Production Technology IV ♦	Semester 2	IPT4112	15
	Quality Assurance IV ♦	Semester 2	IQA4112	15
	Systems Dynamics IV ♦	Semester 1	ISD4111	15
	Total Credits			**120**

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

8.6 BACCALAUREUS TECHNOLOGIAE: ENGINEERING: MECHANICAL: FULL-TIME/PART-TIME (QUALIFICATION CODE: 4712 – 01/21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120) (HEQC- AND ECSA-ACCREDITED)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the National Diploma; or
- 55% average for the National Diploma with proof of registration with the Engineering Council of South Africa; or
- 60% average for the National Diploma and two years post diploma working experience.
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

PREREQUISITE MODULES

- Applied Strengths of Materials III
- Electrotechnology I
- Hydraulic Machines III
- Mathematics III
- Mechanical Engineering Design III
- Steam Plant III

APPLICABLE RULES

Purpose statement

Persons achieving this qualification will be able to integrate mechanical engineering principles independently, apply these to determine appropriate ways of approaching activities and establish and use criteria to judge processes and outcomes. This qualification is intended for engineering practitioners in industry. The qualified person will be able to register with the Engineering Council of South Africa (ECSA) as a Professional Technologist-in-training in the field of Mechanical Engineering.

Qualification objectives

- Apply mechanical engineering principles to diagnose and solve engineering problems.
- Apply management principles in an engineering environment.
- Demonstrate knowledge of mechanical engineering in one or more specialized fields.
- Communicate effectively in a technological environment.
- Engage in mechanical engineering design work individually and as part of a team.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over a minimum one-year continuous cycle (afternoons or evenings) of full-time or a two-year continuous cycle (evenings) of part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
First and Second Year				
	Compulsory modules:			
	Engineering Design Project IV	Year	MDM4110	30
	Strengths of Materials IV	Semester 1	MSL4111	15
	Stress Analysis IV	Semester 2	MSS4112	15
	Thermodynamics IV	Semester 1	MTD4111	15
	Refrigeration and Air Conditioning IV	Semester 2	MTR4112	15
	Select two of the following modules:			
	Turbo Machines IV	Semester 1	MFT4111	15
	Automatic Control IV	Semester 1	MMC4111	15
	Mathematics IV	Semester 1 or Semester 2	WIS4011 or WIS4012	15
	Total Credits			**120**

8.7 BACCALAUREUS TECHNOLOGIAE: INFORMATION TECHNOLOGY: COMMUNICATION NETWORKS: FULL-TIME (QUALIFICATION CODE: 4213 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

National Diploma: Information Technology: Communication Networks or any equivalent qualification.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over a minimum of one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Computer Security IV	Semester 2	CPS4002	12
	Information & Technology Management IV	Semester 1	ITC4001	12
	Networks IV	Semester 1	NEW4001	12
	Communication Networks IV	Semester 1	WCN4001	12
	Advanced Communication Networks IV	Semester 2	WCN4102	12
	Project (2 Credits)	Year	WCN4300	24
	Select three of the following modules:			
	Research Methodology IV	Semester 1	BNV4521	12
	Operating Systems IV	Semester 2	BOS4002	12
	Support Services IV	Semester 2	CSO4002	12
	Information Security IV	Semester 1	ISC4001	12
	Total Credits			**120**

8.8 BACCALAUREUS TECHNOLOGIAE: INFORMATION TECHNOLOGY: SOFTWARE DEVELOPMENT: FULL-TIME (QUALIFICATION CODE: 4206 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

National Diploma: Information Technology: Software Development or any equivalent qualification.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over a minimum of one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Information & Technology Management IV	Semester 1	ITC4001	12
	Development Software IV	Semester 1	ONT4101	12
	Advanced Development Software IV	Semester 2	ONT4202	12
	Project IV (2 Credits)	Year	ONT4300	24
	Select five of the following modules:			
	Artificial Intelligence IV	Semester 2	AIN4002	12
	Research Methodology IV	Semester 1	BNV4521	12
	Operating Systems IV	Semester 2	BOS4002	12
	Information Security IV	Semester 1	ISC4001	12
	Knowledge Management IV	Semester 2	KNM4002	12
	User Interfaces IV	Semester 2	UIF4002	12
	Total Credits			**120**

8.9 BACCALAUREUS TECHNOLOGIAE: INFORMATION TECHNOLOGY: TECHNICAL APPLICATIONS: FULL-TIME (QUALIFICATION CODE: 4209 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

National Diploma: Information Technology: Technical Applications or any equivalent qualification.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over a minimum of one year of full-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Information & Technology Management IV	Semester 1	ITC4001	12
	Technical Programming IV	Semester 1	PRT4101	12
	Advanced Technical Programming IV	Semester 2	PRT4202	12
	Project (2 Credits)	Year	PRT4300	24
	Select five of the following modules:			
	Artificial Intelligence IV	Semester 2	AIN4002	12
	Research Methodology IV	Semester 1	BNV4521	12
	Operating Systems IV	Semester 2	BOS4002	12
	Computer Security IV	Semester 2	CPS4002	12
	Information Security IV	Semester 1	ISC4001	12
	Knowledge Management IV	Semester 2	KNM4002	12
	Networks IV	Semester 1	NEW4001	12
	User Interfaces IV	Semester 2	UIF4002	12
	Total Credits			**120**

8.10 BACCALAUREUS TECHNOLOGIAE: OPERATIONS MANAGEMENT: PART-TIME (QUALIFICATION CODE: 4584 – 21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the National Diploma; or
- 55% average for the National Diploma with proof of registration with the Engineering Council of South Africa; or
- A 60% average for the National Diploma and two years post diploma working experience.
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

APPLICABLE RULES

Purpose Statement

Persons achieving this qualification will acquire dynamic management skills which would ensure smooth operation within manufacturing and service concerns. They will be able to independently analyse and solve complex, open-ended manufacturing and service-related problems through the application of accepted operations management techniques.

Qualification objectives

To enable students to acquire dynamic management aspects which would ensure smooth operation within manufacturing service concerns.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Part-time				
	Compulsory modules:			
	Financial Planning And Control III	Semester 2	BFA3112	30
	Introduction To Marketing Management I	Semester 1	BIG1111	24
	Research Methodology	Semester 1	BNR1111	6
	Operations Management IV	Semester 2	BPJ4412	30
	Operations Management Techniques IV	Semester 1	BPM4111	30
	Total Credits			**120**

8.11 BACCALAUREUS TECHNOLOGIAE: QUALITY: PART-TIME (QUALIFICATION CODE: 4731 – 21) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have a 65% average for a National Diploma;
- A 60% average for a National Diploma and two years post-diploma working experience.
- Other and non-South African qualifications will be considered based on SAQA reports and merit and may require the submission of curricula and learning material. These applicants may be required to complete a language proficiency module.

APPLICABLE RULES

Purpose Statement

Persons achieving this qualification will acquire dynamic quality management skills which would ensure smooth operation within manufacturing and service concerns. They will be able to independently analyse and solve complex, open-ended manufacturing and service quality and other related problems through the application of accepted quality management techniques.

Qualification objectives

To enable students to determine the effectiveness of the quality system, appraising the current quality problem areas or potential areas, as well as to assist in the correction or minimisation of the problem areas concerned. Students will also have the ability to improve product/service quality in cooperation with the respective department in organisations.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

Prerequisite modules

	Module Code	**Prerequisite Module**
Statistical Quality Techniques IV	QST4212	QST3111
Quality Auditing Techniques IV	QAT4112	QMS3112 and QIP3111

DURATION

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

CURRICULUM

Please note: New intake restricted to the start of each year. The six compulsory modules are contact modules (formal classes) while Project IV is a project done in industry.

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	TQM Improvement and Business Processes III	Semester 1	QIP3111	18
	Quality Management Systems III	Semester 2	QMS3112	18
	Statistical Quality Techniques III	Semester 1	QST3111	18
	Statistical Quality Techniques IV	Semester 2	QST4212	18
	Credits First Year			**72**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Quality Auditing Techniques IV	Semester 2	QAT4112	18
	Quality Planning and Implementation IV	Semester 1	QPI4111	12
	Project IV	Year	QPR4110	18
	Credits Second Year			**48**

8.12 BACCALAUREUS TECHNOLOGIAE: QUANTITY SURVEYING: FULL-TIME (QUALIFICATION CODE: 4261 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- The minimum admission requirement is the National Diploma: Building or similar qualification (subject to departmental approval).
- Students may be required to complete an oral entrance examination.
- It is further expected of students to comply with any one of the following requirements before being allowed entry to the qualification:
  o An average of 60% for all modules in the final year of study in the diploma (if students wish to proceed directly to the Baccalaureus Technologiae qualification the next year.)
  AND
  o The student must obtain at least 60% for the major module (Quantity Surveying III) in the final year of study in the diploma for entry into the Baccalaureus Technologiae qualification.
  OR
  o One year proven post-diploma experience in the building industry.
  OR
  o The submission of a detailed breakdown of any previous experience gained in the building industry as well as periods of employment, which will be considered on merit.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for the Baccalaureus Technologiae qualifications.

DURATION

The qualification shall extend over at least one year of full-time study. Studies may also be completed over two academic years in consultation with the Head of the Department.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Research Methodology IV		**BNV4210**	
	Research Methods and Techniques	Semester 1	BNV4221	10
	Project	Semester 2	BNV4232	10
	Building Entrepreneurship IV	Year	DBE4010	20
	Construction Economics IV	Year	DCE4010	20
	Construction Law and Procedures IV	Year	DLP4010	20
	Market Valuation IV	Year	DMV4010	20
	Quantity Surveying IV	Year	DQS4010	20
	Total Credits			**120**

9 BACHELOR OF ENGINEERING IN MECHATRONICS: FULL-TIME (QUALIFICATION CODE: 4722 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 570)

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 5 (60-69%) for Mathematics.
- NSC achievement rating of at least 4 (50-59%) for Physical Sciences.
- Only those applicants who meet the direct entry criteria will be considered for this course.
- Adults from engineering-related job/occupations and fields of activity with appropriate prior learning can also apply for admission.

Recommended NSC subjects

Engineering Graphics & Design and/or
Information Technology

Other

- The requirements with regards to the language of learning and teaching at the NMMU must be met.
- Adults from engineering-related jobs/occupations and fields of activity with appropriate prior learning may also apply for admission.

APPLICABLE RULES

The qualification shall be awarded on completion of the modules prescribed by Senate.

Purpose Statement

The purpose of the qualification is to build the necessary knowledge, understanding, abilities and skills required for further learning towards becoming a competent practising engineer, and to provide graduates with:

1. A thorough grounding in mathematics, basic sciences, engineering sciences, engineering modelling, and engineering design together with the abilities to enable applications in fields of emerging knowledge;
2. Preparation for careers in engineering and related areas, for achieving technical leadership and to make a contribution to the economy and national development;
3. The educational requirement towards registration as a Professional Engineer with the Engineering Council of South Africa as well as to allow the graduate to make careers in engineering and related fields;
4. For graduates with an appropriate level of achievement in the programme, the ability to proceed to postgraduate studies in both course-based and research masters programmes.

Vacation work

Vacation work is a requirement for the Bachelor of Engineering (Mechatronics) qualification and it may prove necessary to complete vacation work without remuneration. Engineering candidates are required to complete the vacation work modules at their own expense. These modules (MWS1000 and MWS2000) are normally attended during winter and/or summer recesses.

Candidates will not be allowed to take certain third-year modules without having completed the workshop training.

A Bachelor's degree in Engineering in the field of Mechatronics is recognized as a qualifying degree for registration as a professional engineer under the Professional Engineers' Act (Act No 46 2000).

The Bachelor of Engineering (Mechatronics) qualification was accredited by the Engineering Council of South Africa (ECSA) in 2009.

The Bachelor of Engineering (Mechatronics) degree is designed in accordance with the outcomes-based model as required by the South African Qualification Authority (SAQA). The learning outcomes and content of the qualifications have been compiled in accordance with the latest accreditation standards (E-02-PE) of ECSA, and HEQC.

Learning outcomes of the Bachelor of Engineering Mechatronics qualification
A graduate in engineering should be able to apply the following skills on the advanced level:

- Problem Solving: Demonstrate competence to identify, assess, formulate and solve convergent and divergent engineering problems creatively and innovatively.
- Application of Scientific and Engineering Knowledge: Demonstrate competence to apply knowledge of mathematics, basic science and engineering sciences from first principles to solve engineering problems.
- Engineering Design: Demonstrate competence to perform creative, procedural and non-procedural design and synthesis of components, systems, engineering works, products or processes.
- Investigations, Experiments and Data Analysis: Demonstrate competence to design and conduct investigations and experiments.
- Engineering methods, skills and tools, including Information Technology: Demonstrate competence to use appropriate engineering methods, skills and tools, including those based on information technology.
- Professional and technical communication: Demonstrate competence to communicate effectively, both orally and in writing, with engineering audiences and the community at large.
- Impact of Engineering Activity: Demonstrate critical awareness of the impact of engineering activity on the social, industrial and physical environment.
- Individual, Team and Multi-disciplinary Working: Demonstrate competence to work effectively as an individual, in teams and in multi-disciplinary environments.
- Independent Learning Ability: Demonstrate competence to engage in independent learning through well developed learning skills.
- Engineering Professionalism: Demonstrate critical awareness of the need to act professionally and ethically and to exercise judgment and take responsibility within own limits of competence.

Learning content of the Bachelor of Engineering Mechatronics qualification includes six essential knowledge areas

- Mathematical sciences.
- Basic sciences.
- Engineering sciences.
- Engineering design and synthesis.
- Computing and information technology.
- Complementary studies.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Physics I			
	Mechanics & Thermodynamics	Semester 1	F101	15
	Physics for Mechatronics	Semester 2	FME102	15
	Applied Mathematics I			
	Mechanics 113	Term 3	MAPM113	8
	Numerical Methods 114	Term 4	MAPM114	8
	Material Science I	Semester 2	MAS1122	16
	Mathematics I			
	Algebra 101	Semester 1	MATH101	8
	Differential Calculus 102	Semester 1	MATH102	8
	Calculus 103	Semester 2	MATH103	8
	Algebra 104	Semester 2	MATH104	8
	Engineering Drawing I	Semester 1	MEW101	16
	Computer Science for Engineers I	Semester 1	MSE101	16
	Credits First Year	**Minimum**		**126**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Electronics II	Semester 2	EEL2112	16
	Applied Mathematics II			
	Differential Equations 211	Term 1	MAPM211	10
	Transform Theory 213	Term 3	MAPM213	10
	Mathematics II			
	Vector Analysis 202	Semester 1	MATH202	10
	Linear Algebra 203	Semester 2	MATH203	10
	Digital Electronics II	Semester 1	MDG2111	16
	Electrotechnology IIA	Semester 1	MET2111	10
	Electrotechnology IIB	Semester 2	MET2122	10
	Machine Design II	Semester 2	MMD2112	12
	Strength of Materials II	Semester 1	MSM2111	16
	Thermo-fluids II	Semester 2	MTF2112	16
	Dynamics II	Semester 1	MTH2111	12
	Credits Second Year	**Minimum**		**148**

		Presented	Module Code	Credit Value
Third Year				
	Compulsory modules:			
	Communications Systems III	Semester 2	ECC3112	12
	Control Systems IIIA	Semester 1	ECS3211	16
	Control Systems IIIB	Semester 2	ECS3312	16
	Electric Machines III	Semester 1	EEM3111	16
	Power Electronics and Drives III	Semester 2	EPE3122	16
	Mechanical Design III	Semester 2	MGN3112	16
	Machine Design III	Semester 1	MMD3111	16
	Microprocessors III	Semester 2	MMX3112	20
	Strength of Materials III	Semester 1	MSM3011	16
	Data Structures and Algorithms 2.1	Semester 1	WRA201*****	8
	Credits Third Year	**Minimum**		**152**
		Presented	**Module Code**	**Credit Value**
Fourth Year				
	Compulsory modules:			
	Advanced Manufacturing Systems IV	Semester 1	EAM4111	16
	Professional Communication IV	Semester 1	ECC4111	12
	Process Control and Instrumentation IV	Semester 1	ECI4111	16
	Environmental Engineering IV	Semester 2	EEN4112	15
	Mechatronics Project IV	Year	EMP4110	50
	Project Management: Engineering IV	Semester 1	EPM4111	9
	Human Rights ******	Term 2	SSS310	15
	Evolutionary Computing IV	Semester 2	WRCI411	11
	Credits Fourth Year			**144**

***** Students must attend lectures and practicals preceding the commencement of lectures; contact the Department of Mechatronics for further details.

****** Elective: any other module from the humanities or social sciences with the minimum of 15 credits, approved by the Head of the Department, may be taken.

10 POSTGRADUATE DIPLOMA IN THE BUILT ENVIRONMENT: FULL-TIME/PART-TIME (QUALIFICATION CODE: 47550 – 01/21)

Candidates who registered for a Magister Scientiae in the Built Environment (47650, 47651, 47652, 47653, 47654) qualification and who have not complied with the research component thereof by failing to complete the treatise, may be awarded a Postgraduate Diploma in the Built Environment, endorsed with the specific field of study, if applicable. The rules of the relevant coursework masters programme are mutatis mutandis applicable to the postgraduate diploma.

11 BACCALAUREUS SCIENTIAE HONORES

11.1 BACCALAUREUS SCIENTIAE HONORES IN CONSTRUCTION MANAGEMENT: FULL-TIME (QUALIFICATION CODE: 45601 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 242)

Note: The qualification of Baccalaureus Scientiae Honores in Construction Management is recognised by the Chartered Institute of Building (UK) as a qualification for membership.

ADMISSION REQUIREMENTS

Candidates shall be admitted to the study for the postgraduate qualification of Baccalaureus Scientiae Honores in Construction Management only if they hold the qualification Baccalaureus Scientiae (Construction Studies) or a qualification deemed by Senate to be equivalent thereto, or a Baccalaureus qualification in one of the engineering or construction disciplines, or if they otherwise qualify for admission in the opinion of Senate.

Candidates may be required to undertake a selection procedure which may include written evaluations and/or an interview. If deemed necessary, candidates may be required to complete certain prescribed supplementary modules prior to commencing with the Baccalaureus Scientiae Honores in Construction Management qualification.

APPLICABLE RULES

Treatise

A treatise of between 12000 and 15000 words on an approved topic shall be required. A date in April for the submission of research proposals shall be determined by the Department. Candidates who have not progressed satisfactorily by the end of the first semester, shall not be permitted to continue with the treatise in the second semester. The candidate must submit a final draft of the treatise by not later than a date in November determined by the Department.

Three bound copies of the treatise must be submitted by not later than a date in January determined by the Department. The treatise (KRS401) and the modules Construction Management 4 (KBM441 and KBM442) must be completed concurrently.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the relevant General Rules for Honours' qualifications.

DURATION

The qualification, which is partially offered on a modular basis, shall extend over a period of 42 full-time academic weeks, commencing during the 2nd half of January and ending during early February the following year. The Department of Construction Management may permit candidates to spread the qualification over two calendar years, if cogent reasons exist.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Commercial Law 121	Semester 1	JHA121	12
	Introduction to Labour Law 102	Semester 1	JHL102	12
	Company Law 121	Semester 2	JHM121	12
	Commercial Law (Building Disciplines) 101	Semester 2	JHY101	6
	Construction Management 4A	Semester 1	KBM441	40
	Construction Management 4B	Semester 2	KBM442	40
	Project Management 4	Semester 2	KBP412	18
	Building Science (Materials & Methods) 4A	Semester 1	KMM415	12
	Building Science (Materials & Methods) 4B	Semester 2	KMM416	12
	Professional Practice for Construction Management 401	Semester 1	KPP401	9
	Professional Practice for Construction Management 402	Semester 2	KPP402	9
	Construction Management Treatise 4	Year	KRS401	36
	Building Economics Special 301	Semester 1	QBES301	8
	Property Economics 401	Year	QPE401	16
	Total Credits			**242**

11.2 BACCALAUREUS SCIENTIAE HONORES IN QUANTITY SURVEYING: FULL-TIME (QUALIFICATION CODE: 47003 – 01) (NQF LEVEL: 7, TOTAL NQF CREDITS FOR QUALIFICATION: 186)

ADMISSION REQUIREMENTS

Baccalaureus Scientiae in Construction Economics or a Baccalaureus Scientiae degree in a related field approved by Senate.

APPLICABLE RULES

Treatise

A treatise of between 12000 and 15000 words on an approved topic shall be required. Candidates must submit a research topic for approval by the end of the first term of the academic year. The candidate must submit one draft copy of the completed treatise by not later than 31 August. Three final copies of the treatise must be submitted for the purpose of examination by the end of November.

Obtaining the qualification

The qualification shall be obtained by completing the modules prescribed by Senate.

Awarding the qualification *cum laude*

Unless Senate decides otherwise, the qualification shall be awarded *cum laude* if candidates comply with the requirements stipulated in the General Prospectus, provided that the following shall be regarded as the major modules:

Quantities 401
Quantity Surveying 401
Building Economics 401
Property Economics 401

DURATION

The qualification shall extend over at least one year of full-time study. The qualification can also be completed over two academic years in consultation with the Head of Department.

CURRICULUM

		Presented	Module Code	Credit Value
Full-time				
	Compulsory modules:			
	Professional Practice 501	Semester 1	AC501	9
	Professional Practice 502	Semester 2	AC502	9
	Business Management: Financial Management 301	Semester 1	EBM301	24
	Business Management: General & Strategic Management 302	Semester 2	EBM302	24
	Building Economics 401	Year	QBE401	30
	Information Technology for Building Disciplines 401	Year	QIT401	4
	Property Economics 401	Year	QPE401	16
	Quantities 401	Year	QQH401	24
	Quantity Surveying 401	Year	QQS401	10
	Treatise 401	Year	QRS401	36
	Total Credits			**186**

12 MAGISTER TECHNOLOGIAE

12.1 MAGISTER TECHNOLOGIAE: CONSTRUCTION MANAGEMENT (RESEARCH): FULL-TIME/PART-TIME QUALIFICATION CODE: 5281 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Unless Senate decides otherwise, candidates shall be registered for the Magister Technologiae qualification if they have obtained the Baccalaureus Technologiae: Construction Management; or have obtained an equivalent qualification in a related field approved by Senate.
- The qualification is research-based and candidates are required to do a dissertation.
- Candidates are required to do a recognised module in "Research Methodology" before registration of the research proposal.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by complying with the requirements set out in the General Rules for magister qualifications.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	MCM5000	120

12.2 MAGISTER TECHNOLOGIAE: ENGINEERING: CIVIL (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 5332 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have a 65% average for the Baccalaureus Technologiae: Engineering: Civil or equivalent.
- The research proposal should preferably be aligned with the faculty research themes.

APPLICABLE RULES

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	CRE5000	120

12.3 MAGISTER TECHNOLOGIAE: ENGINEERING: ELECTRICAL (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6352 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have an average of 65% for the Baccalaureus Technologiae: Engineering: Electrical or equivalent.
- The research proposal should preferably be aligned with the faculty research themes.

APPLICABLE RULES

Qualification objectives

In their dissertations, students must prove that they understand a particular problem in the industry and are able to set it out logically, are able to arrive at logical conclusions or a diagnosis, and are then able to make proposals for the improvement/elimination of the problem. The dissertation must comply with the normal requirements and rules with regard to scope, quality and layout.

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	EMT5000	120

12.4 MAGISTER TECHNOLOGIAE: ENGINEERING: INDUSTRIAL (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6731 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have an average of 65% for the Baccalaureus Technologiae: Engineering: Industrial or equivalent.
- The research proposal should preferably be aligned with the faculty research themes.

APPLICABLE RULES

Qualification objectives

Students must prove that they understand a particular problem in industry and can set it out logically, are able to arrive at coherent conclusions or diagnosis, and are able to make proposals for the improvement/elimination of the problem. The dissertation must comply with the normal general technical requirements and rules with regard to scope, quality and layout.

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	T673110	120

12.5 MAGISTER TECHNOLOGIAE: ENGINEERING: MECHANICAL (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6721 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have an average of 65% for the Baccalaureus Technologiae: Engineering: Mechanical or equivalent.
- The research proposal should preferably be aligned with the faculty research themes.

APPLICABLE RULES

Qualification objectives

In their dissertations students must prove that they understand a particular problem in mechanical engineering and are able to set it out logically, are able to arrive at logical conclusions or a diagnosis, and are then able to make proposals for their improvement/the elimination of the problem. The dissertation must comply with the normal requirements and rules with regard to scope, quality and layout.

Obtaining the qualification
See General Rules for Masters' Degrees in the General Prospectus.

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	T672110	120

12.6 MAGISTER TECHNOLOGIAE: INFORMATION TECHNOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6203 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Baccalaureus Technologaie: Information Technology with an average of at least 60% and including credits for the modules Research Methodology IV and Project IV.
  OR
- An equivalent M + 4 qualification in an Information Technology-related area with an average of at least 60%. The suitability of the qualification is subject to the discretion of the Faculty Management Committee.
  AND
- Refer to the General Rules for Master's and Doctoral degrees in the NMMU General Prospectus.

APPLICABLE RULES
Qualification objectives

- To provide students with the opportunity to practice research skills in order to prepare themselves for their role as technologists;
- To provide students with the opportunity to correlate theory with actual information technology practice;
- To afford students the opportunity to make contributions to both the theory and practice of information technology through the products of their research.

Obtaining the qualification
See General Rules for Masters' Degrees in the General Prospectus.

DURATION
The qualification shall extend over a minimum of two years or a maximum of four years of full-time or part-time study.

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	T620300	120

12.7 MAGISTER TECHNOLOGIAE: OPERATIONS MANAGEMENT (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 6582 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have an average of 65% for the Baccalaureus Technologiae: Operations Management or equivalent.
- The research proposal should preferably be aligned with the faculty research themes.

APPLICABLE RULES

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	MTD5000	120

12.8 MAGISTER TECHNOLOGIAE: OPERATIONS: QUALITY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 5731 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Students must have an average of 65% for the Baccalaureus Technologiae: Quality or equivalent.
- The research proposal should preferably be aligned with the faculty research themes.

APPLICABLE RULES

Qualification objectives

Students must prove that they understand a particular quality problem or situation in industry and are able to set it out logically, are able to arrive at coherent conclusions or diagnosis, and are able to make proposals for the improvement/elimination of the problem or situation. The dissertation must comply with the normal general technical requirements and rules regarding scope, quality and layout.

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	QMT5110	120

12.9 MAGISTER TECHNOLOGIAE: QUANTITY SURVEYING (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 5261 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Unless Senate decides otherwise, candidates shall be registered for the Magister Technologiae qualification if they have obtained the Baccalaureus Technologiae: Quantity Surveying or have obtained an equivalent qualification in a related field approved by Senate.
- The qualification is research-based and candidates are required to do a dissertation.
- Candidates are required to do a recognised module in "Research Methodology" before registration of the research proposal.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by complying with the requirements set out in the General Rules for magister qualifications.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	MQS5000	120

13 MASTER OF ENGINEERING IN MECHATRONICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 75001 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Candidates shall be admitted to the study for the qualification of Master of Engineering in Mechatronics only if they hold the qualification of Bachelor of Engineering or Bachelor of Science in Engineering or a qualification deemed by Senate to be equivalent thereto, or if they otherwise qualify for admission in the opinion of Senate.
- Candidates who have completed Bachelor of Technology in a relevant field may be eligible, at the discretion of the Faculty Management Committee. Additional coursework may, however, be prescribed.
- All candidates shall be subject to selection criteria as laid down by the department.

APPLICABLE RULES

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	EMP500	120

14 MAGISTER SCIENTIAE

14.1 MAGISTER SCIENTIAE IN CONSTRUCTION ECONOMICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 47101 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Candidates shall be admitted to the study for the qualification of Magister Scientiae in Construction Economics only if they hold the qualification of Baccalaureus Scientiae Honores in Quantity Surveying or a qualification deemed by Senate to be equivalent thereto.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be awarded to a person who has been a candidate for the qualification for at least one year and who has completed a dissertation on an approved topic, and who has passed the following:

- An oral examination on a prescribed topic in the field of Quantity Surveying in a case where the research for the dissertation was carried out independently; or
- A written examination on the module of the dissertation and/or any other prescribed topic in the field of Quantity Surveying in a case where the research for the dissertation consisted of a building project or building-system prepared by the candidate as leader of a team of related specialists.

See General Rules for Master's degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	Q505	120

14.2 MAGISTER SCIENTIAE IN CONSTRUCTION MANAGEMENT (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 47600 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Candidates shall be admitted to the study for the qualification of Magister Scientiae in Construction Management only if they hold the qualification of Baccalaureus Scientiae Honores in Construction Management, or
- a qualification deemed by Senate to be equivalent thereto, or
- if they hold at least a four-year Baccalaureus Scientiae qualification in one of the engineering or building disciplines and have had at least two years' appropriate postgraduate practical experience, or
- if they otherwise qualify for admission in the opinion of Senate.
- All students shall be subject to a selection process as laid down by the department and approved at the Faculty Management Committee.

APPLICABLE RULES

Obtaining the qualification

See General Rules for Masters' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Dissertation		Year	KRA505	120

14.3 MAGISTER SCIENTIAE IN THE BUILT ENVIRONMENT: CONSTRUCTION MANAGEMENT: FULL-TIME/PART-TIME (QUALIFICATION CODE: 47653 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 225)

(Offered jointly by the Departments of Building & Quantity Surveying and Construction Management.)

ADMISSION REQUIREMENTS

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

- A Bachelor of Science Honours qualification in Quantity Surveying or Construction Management;
- A Master of Architecture (Professional) qualification;
- A four-year Bachelor's qualification in a building discipline;
- A Bachelor of Technology qualification in Quantity Surveying, Construction Management or Architecture obtained from a technikon or technical university, together with a minimum of five years of relevant working experience;
- A professional diploma in Quantity Surveying (RQS or ARICS), Construction Management or Architecture, together with a minimum of seven years' relevant working experience.
- All students shall be subject to a selection process as laid down by the department and approved at the Faculty Management Committee.

APPLICABLE RULES

Except if otherwise provided, the qualification of Magister Scientiae in the Built Environment shall be awarded in accordance with the *General Rules for Masters' Qualifications*.

Integrated assessment

In all modules, assessment is continuous and supplemented by end-of-semester and/or year-end examinations. Assignments are submitted for evaluation within the overall qualification. A mark of at least 50% for the assignment is a prerequisite for admission to the examination in any module. Re-assessments will be scheduled at the end of the block following the block in which the examination was written. No more than two re-assessments will be permitted in the qualification.

Obtaining the qualification

The qualification shall be obtained on completion of a course work programme (prescribed and elective modules), a supervised research programme and the submission of a treatise for examination.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Accounting and Project Finance	Block offering	KAF510	15
	Health and Safety A		KHS510	15
	Corporate Strategy		QCS510	15
	Management Information System for Construction & IT Applications		QIT510	15
	Research Methodology		QRT510	15
	Credits First Year			**75**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Construction Marketing	Block offering	KCM510	15
	International Construction		KPM510	15
	Risk Management		KRM510	15
	Treatise		KRT510	75
	Human Resources Management (including Leadership & Communication)		QHR510	15
	Select one of the following modules or any other module approved by the programme director:			
	Environmental Management	Block offering	KEM510	15
	Project Strategy & PMBOK		KPS510	15
	Total Quality Management		KTQ510	15
	Construction Contracts & Procurement		QLL510	15
	Credits Second Year			**150**

14.4 MAGISTER SCIENTIAE IN THE BUILT ENVIRONMENT: CONSTRUCTION HEALTH AND SAFETY MANAGEMENT: FULL-TIME/PART-TIME (QUALIFICATION CODE: 47654 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 225)

(Offered jointly by the Departments of Building & Quantity Surveying and Construction Management.)

ADMISSION REQUIREMENTS

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

- A Bachelor of Science Honours qualification in Quantity Surveying or Construction Management;
- A Master of Architecture (Professional) qualification;
- A four-year Bachelor's qualification in a building discipline;
- A Bachelor of Technology qualification in Quantity Surveying, Construction Management or Architecture obtained from a technikon or technical university, together with a minimum of five years of relevant working experience;
- A professional diploma in Quantity Surveying (RQS or ARICS), Construction Management or Architecture, together with a minimum of seven years' relevant working experience.
- All students shall be subject to a selection process as laid down by the department and approved at the Faculty Management Committee.

APPLICABLE RULES

Except if otherwise provided, the qualification of Magister Scientiae in the Built Environment shall be awarded in accordance with the *General Rules for Masters' Qualifications*.

Integrated assessment

In all modules, assessment is continuous and supplemented by end-of-semester and/or year-end examinations. Assignments are submitted for evaluation within the overall qualification. A mark of at least 50% for the assignment is a prerequisite for admission to the examination in any module. Re-assessments will be scheduled at the end of the block following the block in which the examination was written. No more than two re-assessments will be permitted in the qualification.

Obtaining the qualification

The qualification shall be obtained on completion of a course work programme (prescribed and elective modules), a supervised research programme and the submission of a treatise for examination.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Accounting and Project Finance	Block offering	KAF510	15
	Health and Safety		KHS510	15
	Corporate Strategy		QCS510	15
	Management Information System for Construction & IT Applications		QIT510	15
	Research Methodology		QRT510	15
	Credits First Year			**75**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Environmental Management	Block offering	KEM510	15
	Health & Safety Management (B)		KHS511	15
	Risk Management		KRM510	15
	Treatise		KRT510	75
	Design Management		QDM510	15
	Select one of the following modules or any other module approved by the programme director:			
	Project Strategy & PMBOK	Block offering	KPS510	15
	Human Resources		QHR510	15
	Credits Second Year			**150**

14.5 MAGISTER SCIENTIAE IN THE BUILT ENVIRONMENT: FACILITIES MANAGEMENT: FULL-TIME/PART-TIME (QUALIFICATION CODE: 47650 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 210)

(Offered jointly by the Departments of Building & Quantity Surveying and Construction Management.)

ADMISSION REQUIREMENTS

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

- A Bachelor of Science Honours qualification in Quantity Surveying or Construction Management;
- A Master of Architecture (Professional) qualification;
- A four-year Bachelor's qualification in a building discipline;
- A Bachelor of Technology qualification in Quantity Surveying, Construction Management or Architecture obtained from a technikon or technical university, together with a minimum of five years of relevant working experience;
- A professional diploma in Quantity Surveying (RQS or ARICS), Construction Management or Architecture, together with a minimum of seven years' relevant working experience.
- All students shall be subject to a selection process as laid down by the department and approved at the Faculty Management Committee.

APPLICABLE RULES

Except if otherwise provided, the qualification of Magister Scientiae in the Built Environment shall be awarded in accordance with the *General Rules for Masters' Qualifications*.

Integrated assessment

In all modules, assessment is continuous and supplemented by end-of-semester and/or year-end examinations. Assignments are submitted for evaluation within the overall qualification. A mark of at least 50% for the assignment is a prerequisite for admission to the examination in any module. Re-assessments will be scheduled at the end of the block following the block in which the examination was written. No more than two re-assessments will be permitted in the qualification.

Obtaining the qualification

The qualification shall be obtained on completion of a course work programme (prescribed and elective modules), a supervised research programme and the submission of a treatise for examination.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Accounting and Project Finance	Block offering	KAF510	15
	Corporate Strategy		QCS510	15
	Management Information System for Construction & IT Applications		QIT510	15
	Research Methodology		QRT510	15
	Strategic Asset & Facilities Management		QSM510	15
	Credits First Year			**75**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Building Energy Analysis & Management	Block offering	KBE510	15
	Facilities Operations Management		QFM510	15
	Property Investment & Portfolio Analysis		QPI510	15
	Treatise		QRS510	75
	Select one of the following modules or any other module approved by the programme director:			
	Facilities Management: Contracts & Procurement	Block offering	QFC510	15
	Human Resources Management		QHR510	15
	Credits Second Year			**135**

14.6 MAGISTER SCIENTIAE IN THE BUILT ENVIRONMENT: PROJECT MANAGEMENT: FULL-TIME/PART-TIME (QUALIFICATION CODE: 47652 - 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 225)

(Offered jointly by the Departments of Building & Quantity Surveying and Construction Management.)

ADMISSION REQUIREMENTS

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

- A Bachelor of Science Honours qualification in Quantity Surveying or Construction Management;
- A Master of Architecture (Professional) qualification;
- A four-year Bachelor's qualification in a building discipline;
- A Bachelor of Technology qualification in Quantity Surveying, Construction Management or Architecture obtained from a technikon or technical university, together with a minimum of five years of relevant working experience;
- A professional diploma in Quantity Surveying (RQS or ARICS), Construction Management or Architecture, together with a minimum of seven years' relevant working experience.
- All students shall be subject to a selection process as laid down by the department and approved at the Faculty Management Committee.

APPLICABLE RULES

Except if otherwise provided, the qualification of Magister Scientiae in the Built Environment shall be awarded in accordance with the *General Rules for Masters' Qualifications*.

Integrated assessment

In all modules, assessment is continuous and supplemented by end-of-semester and/or year-end examinations. Assignments are submitted for evaluation within the overall qualification. A mark of at least 50% for the assignment is a prerequisite for admission to the examination in any module. Re-assessments will be scheduled at the end of the block following the block in which the examination was written. No more than two re-assessments will be permitted in the qualification.

Obtaining the qualification

The qualification shall be obtained on completion of a course work programme (prescribed and elective modules), a supervised research programme and the submission of a treatise for examination.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Accounting and Project Finance	Block offering	KAF510	15
	Business and Construction Economics		QBE510	15
	Corporate Strategy		QCS510	15
	Management Information System for Construction & IT Applications		QIT510	15
	Research Methodology		QRT510	15
	Credits First Year			**75**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Management Science and Project Control		KMS510	15
	Project Strategy and PMBOK		KPS510	15
	Treatise		KRT510	75
	Design Management	Block offering	QDM510	15
	Human Resources Management		QHR510	15
	Select one of the following modules or any other module approved by the programme director:			
	Capital Equipment Purchasing	Block offering	KEP510	15
	International Construction		KPM510	15
	Technology Management		KTM510	15
	Construction Contracts & Procurement		QLL510	15
	Credits Second Year			**150**

14.7 MAGISTER SCIENTIAE IN THE BUILT ENVIRONMENT: PROPERTY ECONOMICS AND VALUATION: FULL-TIME/PART-TIME (QUALIFICATION CODE: 47651 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 210)

(Offered jointly by the Departments of Building & Quantity Surveying and Construction Management.)

ADMISSION REQUIREMENTS

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

- A Bachelor of Science Honours qualification in Quantity Surveying or Construction Management;
- A Master of Architecture (Professional) qualification;
- A four-year Bachelor's qualification in a building discipline;
- A Bachelor of Technology qualification in Quantity Surveying, Construction Management or Architecture obtained from a technikon or technical university, together with a minimum of five years of relevant working experience;
- A professional diploma in Quantity Surveying (RQS or ARICS), Construction Management or Architecture, together with a minimum of seven years' relevant working experience.
- All students shall be subject to a selection process as laid down by the department and approved at the Faculty Management Committee.

APPLICABLE RULES

Except if otherwise provided, the qualification of Magister Scientiae in the Built Environment shall be awarded in accordance with the General Rules for Masters' Qualifications.

Integrated assessment

In all modules, assessment is continuous and supplemented by end-of-semester and/or year-end examinations. Assignments are submitted for evaluation within the overall qualification. A mark of at least 50% for the assignment is a prerequisite for admission to the examination in any module. Re-assessments will be scheduled at the end of the block following the block in which the examination was written. No more than two re-assessments will be permitted in the qualification.

Obtaining the qualification

The qualification shall be obtained on completion of a course work programme (prescribed and elective modules), a supervised research programme and the submission of a treatise for examination.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
First Year				
	Compulsory modules:			
	Accounting and Project Finance	Block offering	KAF510	15
	Corporate Strategy		QCS510	15
	Management Information System for Construction & IT Applications		QIT510	15
	Research Methodology		QRT510	15
	Strategic Asset & Facilities Management		QSM510	15
	Credits First Year			**75**
		Presented	**Module Code**	**Credit Value**
Second Year				
	Compulsory modules:			
	Property Development Planning and Appraisal	Block offering	QPD510	15
	Property Investment & Portfolio Analysis		QPI510	15
	Property Valuation		QPV510	15
	Treatise		QRS510	75
	Select one of the following modules or any other module approved by the programme director:			
	Construction Marketing	Block offering	KCM510	15
	Property Legal and Institutional Framework		QLF510	15
	Credits Second Year			**135**

15 DOCTOR TECHNOLOGIAE

15.1 DOCTOR TECHNOLOGIAE: ENGINEERING: ELECTRICAL (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 7350 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Magister Technologiae: Engineering: Electrical or an equivalent qualification.
- A detailed CV must be presented in the case of equivalent qualifications.

APPLICABLE RULES

Qualification objectives

To enable students to attain an advanced level of research competence. The thesis produced by a student must provide proof of original and creative thinking and problem solving and make a real contribution to the solving of a particular problem in the industry to which their research applies.

Obtaining the qualification

See General Rules for Doctors' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Thesis		Year	EDT6000	120

15.2 DOCTOR TECHNOLOGIAE: ENGINEERING: MECHANICAL (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 7721 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Magister Technologiae: Engineering: Mechanical or an equivalent qualification.

APPLICABLE RULES

Qualification objectives

To enable students to attain an advanced level of research competence. The thesis produced by a student must provide proof of original and creative thinking and problem-solving and make a real contribution to the solving of a particular problem in the industry to which their research applies.

Obtaining the qualification

See General Rules for Doctors' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Thesis		Year	T772110	120

15.3 DOCTOR TECHNOLOGIAE: OPERATIONS MANAGEMENT (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 7581 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Magister Technologiae: Operations Management or equivalent qualification.

APPLICABLE RULES

Qualification objectives

To enable students to attain an advanced level of research competence. The dissertation produced by a student must provide proof of original and creative thinking and problem-solving and make a real contribution to the solving of the particular problem in the industry to which their research applies.

Obtaining the qualification

See General Rules for Doctors' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Thesis		Year	MDT6000	120

16 PHILOSOPHIAE DOCTOR

16.1 PHILOSOPHIAE DOCTOR IN CONSTRUCTION ECONOMICS (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 47201 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

Candidates shall be admitted to the study for the qualification of Philosophiae Doctor in Construction Economics only if they hold the qualification of Baccalaureus Scientiae Honores in Quantity Surveying with seven years' appropriate postgraduate practical experience, or if they hold the qualification of Magister Scientiae in Construction Economics, or if they hold a Master's qualification in a related discipline.

APPLICABLE RULES

Obtaining the qualification

The qualification shall be obtained by complying with the requirements set out in the General Rules for doctors' qualifications, or presenting a thesis which complies with the requirements set out in the General Rules for doctors' qualifications, based on the candidates' research publications, work in practice and/or research work, which shows that they are authorities in their field.

Special examination arrangements

External examiners, who are recognised authorities in the specific field, shall be appointed by the Faculty Management Committee.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Thesis		Year	Q605	120

16.2 PHILOSOPHIAE DOCTOR IN CONSTRUCTION MANAGEMENT (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 47700 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

One of the following:

- BScHons in Construction Management with seven years' appropriate postgraduate experience;
- MSc in Construction Management or a qualification deemed by Senate to be equivalent thereto;
- a Master's degree in a related discipline; or
- if they otherwise qualify for admission in the opinion of Senate; and
- students shall be subject to a selection process as laid down by the department and approved at Faculty Management Committee.

APPLICABLE RULES

Special examination arrangements

External examiners, who are recognised authorities in the specific field, shall be appointed by the Faculty Management Committee.

Obtaining the qualification

The qualification shall be obtained by complying with the requirements set out in the General Rules for Doctors' qualifications, or presenting a thesis which complies with the requirements set out in the General Rules for Doctors' qualifications, based on the candidates' research publications, work in practice and/or research work, which shows that they are authorities in their field.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Thesis		Year	KRA605	120

16.3 PHILOSOPHIAE DOCTOR IN INFORMATION TECHNOLOGY (RESEARCH): FULL-TIME/PART-TIME (QUALIFICATION CODE: 76001 – 01/21) (NQF LEVEL: 8, TOTAL NQF CREDITS FOR QUALIFICATION: 120)

ADMISSION REQUIREMENTS

- Magister Technologiae: Information Technology with a pass mark of at least 65%.
- Alternatively a suitably equivalent qualification, which is subject to the discretion of the Faculty Management Committee.
  AND
- Refer to the General Rules for Master's and Doctoral degrees in the NMMU General Prospectus.

APPLICABLE RULES

Obtaining the qualification

See General Rules for Doctors' Degrees in the General Prospectus.

DURATION

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

CURRICULUM

		Presented	Module Code	Credit Value
Compulsory module:				
Thesis		Year	IT600	120