MUT

MANGOSUTHU
UNIVERSITY OF TECHNOLOGY

FACULTY OF
ENGINEERING

DEPARTMENT OF

CONSTRUCTION MANAGEMENT AND QUANTITY SURVEYING

shape your own future

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2025

CONTACT DETAILS

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IMPORTANT NOTICE

The department rules in this handbook must be read in conjunction with the Mangosuthu University of Technology's General Handbook Rules.

The department is commencing a new amended programme in 2025 namely Diploma in Construction Management and Quantity Surveying. All qualifying new students will be registered for first time into in this course.

Existing students will continue with the old programme namely Diploma Building (no new intake into this programme as of 2025). Existing students will be given till the end of 2027 to complete this course and should they still be in the system after this period will have to migrate to the new programme.

NOTE TO ALL REGISTERED STUDENTS

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

CONDUCT OF STUDENTS

1. Attendance of lectures is very important and therefore compulsory
2. Students should be on time for lectures
3. No eating, smoking (including e-cigarettes) or drinking in lecture venues.
4. The use of mobile phones is not permitted during lecture times unless otherwise directed by the individual facilitator
5. Important announcement is given in class during contact session
6. All students must regularly visit the department's notice board for important notices
7. Keep note that a class attendance register will be kept by the lecturer for future reference
8. Rules of conduct pertaining to practicals and site visits, as instituted by the head of department, shall apply to all students
9. The onus is on the student to ensure that no clashes exist between the modules for which the student has registered. Should there be clashes, the student is to inform the department immediately and de-register modules timeously.

SPECIAL TESTS

1. A special test may be granted to a student who has been prevented from taking a test:
2. A student submits a medical certificate on the prescribed form on which a medical practitioner, registered by Health Profession Council of SA, on the day of the test or immediately before it, provided that the homoeopath or chiropractor, registered with the Allied Health Professions Council of South Africa.
3. The medical practitioner should specify the nature and duration of the illness and that for health reasons, it was impossible or undesired for a student to sit for test,
4. The student submits such a certificate to the Head of Department on the day as determined by the practitioner. The student should return to lectures immediately following such illness, or on one of the two following working days.

5. Or by circumstances which, in the opinion of the Head of Department, were beyond the student's control at the time of the test provided that satisfactory evidence of such circumstances is provided. Such circumstance shall not include:
6. Any misinterpretation by the student of the date, time or venue of the test.
7. Transportation difficulties, where the student's residential term time address is within the area serviced by the scheduled bus or commuter train service to the Umlazi /Durban area and provided otherwise that the student informs the Head of Department of such difficulty prior to the time of commencement of the test.
8. Failure by the student to bring to the test venue any equipment normally required for that module as specified in the study guide for the module.

To this rule "test" shall mean any written, oral, or practical test, set for the purpose of determining or contributing towards a course mark for a module, and shall include tests set for a module which are evaluated by the continuous evaluation.

Any student who misses a test and who does not qualify for a special test, and any student who qualifies for a special test, but fails to write it, shall be awarded a zero mark for the missed test.

Pre-Tech – Bridging Course in Construction Management & Quantity Surveying

1. Access Course (Pre-Tech)

1.1 Admission Requirements

1. National Senior Certificate (NSC) with rating codes:
   English Home Language (3)
   English First Additional Language (3)
   Mathematics/Technical Mathematics (3)
   Physical Science/ Technical Science (3)
2. Satisfactory achievement rating code in their Home Language (4)
3. A minimum of 130 total credits, with a maximum of 60 credits with "Partial", at NQF Level 4 **or**
4. The candidate must hold a National Senior Certificate (Standard 10) E (SG)/ F (HG) **or** equivalent with a minimum E (SG)/ F (HG) English, Mathematics and Science E (SG)/ F (HG)
5. **or** an appropriate N3 Engineering Certificate (Mathematics & Building/Engineering Science with minimum of 50% pass) and a minimum E (SG) symbol in English

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

Applicants who satisfy the minimum requirements will be subjected to a selection process. Applicants will be ranked based on their academic results and selected for admission accordingly. Mathematical Literacy will not be considered.

1.2 **Duration of Study**
Study will be for a period of 1 year.

1.3 **Subjects, Curriculum Compilation, Course Codes**

BUILD: Building Access Course/ Pre-Tech				
Code	**Subjects**	***C/O**	**Semester /Year**	**Assessment Method**
ACOMB11	English Communication Skills	C	S	Examination
ACOMP11	Computation in Quantity Surveying	C	S	Examination
ACOTE11	Construction Technology	C	S	Continuous Assessment
ACUAN11	Introduction to Quantity Surveying	C	S	Examination
APHYS11	Physics	C	S	Examination
ASITM11	Site Works and Materials	C	S	Examination
C= Compulsory; O= Optional				

1.4 **Examination Regulations**
Refer to General Handbook Rule 22.

1.5 **Pass Requirements**
Students should pass ALL subjects at 50%. This course may not be repeated.

OLD PROGRAMME (NO NEW INTAKE FOR FIRST YEAR)

- ✓ **All existing students in year 2 and 3 to complete this course in year 2027. Any students still completing the course after 2027 will migrate to new programme.**

Diploma Building ECP

CIVBUE	**BUENEC**	**Diploma: Building (ECP)**						
National Diploma: Building Old Codes	**Diploma: Building New Codes**	**Subjects**	**Semester /Year**	**Assessment Method**	**NQF Level**	**Prerequisites**	**Co-requisites**	**Credit Value**
YEAR 2 (ECP)								

ERAB101	ABUS100	Applied Building Science I	Y2	Examination	5	BUSC000		10
ERCS101	ECOS100	Communication Skills I	Y2	Examination	5	IECS000		5
ERCA101	COAP100	Computer Applications I	Y2	Examination	5	INSY000		5
ERCM101	CONM100	Construction Management I	Y2	Examination	5	BUEI000		10
ERCT101	CONT100	Construction Technology I	Y2	Examination	5	BADR000		10
ERQS101	QUAS100	Quantity Surveying I	Y2	Examination	5	BACE000		10
ERSS101	SITS100	Site Surveying I	Y2	Continuous Assessment	5	BUEI000		20
YEAR 3 (ECP) – consist of 3 subjects that are completed on a semester basis together with Building Practice:								
ERCM202	CONM200	Construction Management II	Y3	Examination	6	CONM100		20
ERCT202	CONT200	Construction Technology II	Y3	Continuous Assessment	6	CONT100		20
ERQS202	QUAS200	Quantity Surveying II	Y3	Examination	6	QUAS100	CONT100	20
ERBP200	BUIP200	Building Practice (WIL)	Y3	Practical	6	-		60
YEAR 4 (ECP)								
ERCA303	CONA300	Construction Accounting III	Y4	Examination	6	-		20
ERCM303	CONM300	Construction Management III	Y4	Examination	6	CONM200		20
ERCT303	CONT300	Construction Technology III	Y4	Continuous Assessment	6	CONT200		20
EERPA303	PANE300	Price Analysis and Estimating III	Y4	Examination	6		CONT200 QUAS200	20
ERQS303	QUAS300	Quantity Surveying III	Y4	Examination	6	QUAS200		20
-	-	Structures and Concrete III	Y4	Examination	6		ABUS100	20
		C= Compulsory; O= Optional						

Note: Students are not permitted to register for a course unless the pre-requisite course(s) has/have been passed.

PART II (ECP)

QUANTITY SURVEYING 1 (QUAS100)

Subject Custodian: Dept. CM & QS

Interpretation of drawings as well as coordinate schedules from the different professional teams, step to step procedure of preparing a Bill of Quantities and measuring principles, including squaring, abstracting and billing as well as measurement of the relevant super structure trades including superstructure brickwork with face brick and gable ends, timber roof

truss construction finishes to eaves as well as rainwater goods and roof coverings. Basic finishes including wall plaster, paint and tiling, floor finishes with screed and various floor coverings. Ceiling finishes with plastered board ceilings on brandering as well as stock steel, timber and aluminum windows; stock hollow core and hardwood doors along with timber and metal door frames and ironmongery. Adjustments for door and window openings are included along with sanitary fittings under plumbing.

CONSTRUCTION TECHNOLOGY 1 (CONT100)
Subject Custodian: Dept. CM & QS

Understanding of composition of the superstructure and building procedures followed as well as manufacture, use and erection of various types of materials, manufacture, use and erection of various types of doors and door frames; windows and window cills, lintels and arches as well as different types of roofs and roof coverings. Timber and concrete staircases as well as different types of timber and scaffolding erection and use.

COMPUTER APPLICATION I (COAP100)
Subject Custodian: Department of Information and Communication Technology

This is a continuation of the ECP Part 1 course that uses practical techniques for the efficient use of computer and computer software applications. Presentation, email, and Internet commands are taught. A continuation of theoretical concepts of ICT making up a computing system are explained. Protocols involved in the electronic transmission of data via a computer-based network are also explained.

CONSTRUCTION MANAGENENT I (CONN 100)
Subject Custodian: Dept. CM & QS

Elasticity utility and demand efficiency and equity, production and costs, price determination under different market structures, perfect competition as well as monopoly, management process, organisation structures, personal management, materials management, plant and equipment management, productivity and work study, energy efficient building, contract law and principles.

ENGLISH COMMUNICATION SKILLS I (ECOS100)
Subject Custodian: Department of Communication

Basic principles of communication, verbal and non-verbal communication. Barriers to communication and organizational communication. Oral presentation skills, listening, reading skills and language. Meetings and interviews. Business correspondence and technical reports. Leadership skills and effective participation.

APPLIED BUILDING SCIENCE (ABUS100)
Subject Custodian: Dept. CM & QS

Mass, volume densities and units of measurements, Forces, resultants and equilibria, beam supports and simple beam reactions, stress, strain and elasticity. Expansion and Contraction. Convection, Conduction and radiation of heat in buildings. Heat Energy and units of measurements. Thermal conductivities and resistances. Sound: Sound propagation and units of measurements in buildings, Sound Insulations, sound reflections, reverberations and acoustics. Reticulations and electricity consumption in buildings. Definition of basic electricity terms. Direct and Indirect currents. Serial and parallel circuits. Three-phase supply lines and power consumptions of household appliances, pumps and lifts. Lighting in buildings: light propagation, photometry, basic units of measurements in lighting. Artificial light. Basic

concepts of hydrology, pressure in liquids, hydraulic jacks. Flow of liquids in pipes. Different types of pumps.

SITE SURVEYING I (SITS100)
Subject Custodian: Dept. Civil Engineering & Surveying

Basic theory on types of surveys and branches in the surveying industry. Introduction to map usefulness, map scales, map projections, and co-ordinate systems. Theory, principles and practical tasks for height determination applying spirit levelling method and observation reduction using the Rise 'n Fall & Collimation methods. Introduction to SA Co-ordinate systems including basic calculations for co-ordinate positions. Theory of fixing point positions using traverse calculation method. Reduction of field observations for angle measurements.

Theory and principles of tape distance measurements and applying necessary corrections to measured distances. Introduction to EDM measured distances and calculations associated with reducing those distances. Basic theory on Topographical surveys and calculations associated with such surveys. Plotting tacheometery points and interpolating contours. Introduction to cadastral surveys: types of cadastral surveys and diagrams and area calculations for land parcels. Building setting out theory and calculations.

PART III (ECP)

CONSTRUCTION MANGEMENT II (ERCM202/CONM200)
Subject Custodian: Dept. CM & QS

Assignments and tests are based on relevant site operations, which covers the following topics: Communication on and off site, Co-ordination of subcontractors, Principles of Industrial Psychology, defining public relations, Construction Plant, Programming using network techniques (such as PERT and Critical Path analysis), Induction and conflict procedures, Employment contracts and Quality control. Introduction to Building Information Modeling (BIM) in project management.

CONSTRUCTION TECHNOLOGY II (ERCT202/CONT200)
Subject Custodian: Dept. CM & QS

The following elements of multi-storey and residential buildings. Glass and its properties. Fixing methods, fastenings and adhesives. Floor, wall and ceiling finishes. Drainage and plumbing detail. Paint to metal, plaster and timber. Electricity.

QUANTITY SURVEYING II (ERQS202/QUAS200)
Subject Custodian: Dept. CM & QS

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Mensuration in Quantities**;** Measurements: Substructure: site clearance; excavations to reduced levels; column bases; sub structure concrete and reinforcement; solid floor construction **;** Superstructure concrete and formwork to walls: Flat slab roof construction including waterproofing; simple concrete frame structure comprising columns, beams & slabs; Plumbing: simple residential plumbing installation; Working Up: explanation on all the work done with regard to the process of compiling the Bills of Quantities example: squaring, explaining abstracting and introducing examples of Bills of Quantities.

BUILDING PRACTICE (ERBP200/BUIP200)
Subject Custodian: Dept. CM & QS

Productivity in the workplace; Workplace skills; Developing employability skills; Skills Improvement; Skills Innovation; Transferable Skills; Skills Inventory; CV writing; Interviews skills.

PART IIII (ECP)

CONSTRUCTION ACCOUNTING III (ERCA303/CONA300)
Subject Custodian: Dept. Accounting & Law

Three formative assessment and one summative assessment which will cover the following topics, Introduction to financial accounting (forms of ownership i.e. sole owners, partnerships, limited companies and close corporation accounts), Basic financial Statements, Accounting equation, Classify items as either Assets (*current or non-current assets*), Liabilities (*current or non-current liabilities*) or owners' Equity), Budgetary control, Overheads and Job costing, Contract costing, Cost volume profit analysis and Application of a construction accounting Computer program.

CONSTRUCTION TECHNOLOGY III (ERCT303/CONT300)
Subject Custodian: Dept. CM & QS

The following technology and elements of multi-storey buildings: Framed and load-bearing structures, multi-floor concepts. Use of shoring and strutting for lateral support of adjacent property. Piling and underpinning to multi-storey structures. Types of soil. Testing of ground pressure resistance. Types of excavations. Dewatering. Planking and strutting in excavations. Foundation: piles, raft foundations. Basements: wall construction and waterproofing. Formwork and concrete: in situ concrete, pre-stress and post tension concrete. Steel structures. Cladding of buildings. Installation of services such as airconditioning, lifts, escalators, fire fittings and inspection trap doors. Special finishes on walls, ceilings and floors.

QUANTITY SURVEYING III (ERQS303/QUAS300)
Subject Custodian: Dept. CM & QS

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Measurements: Multi storey buildings comprising complex concrete framed structures; Bulk Earthworks: excavations to reduced levels including basements; column bases; Superstructure: staircases; suspended ceilings; reinforcing to concrete frame structure; structural steelwork; introduction to elemental estimates and final accounts.

STRUCTURES AND CONCRETE III (STRU300/STRU300)
Subject Custodian: Dept. CM & QS

Structural Analysis

Calculation of area, centroids, moment of inertia and radius of gyration for rolled steel sections and simple built-up sections. Calculation of beam reactions, bending moments and shear forces in simply supported beams. Draw bending moment and shear force diagrams. Determine the position of the maximum bending moment. Design of concrete beams and columns. Determine forces of framework and analysis of trusses. Calculate Factor of Safety against sliding and overturning for retaining walls.

Concrete

Sustainability of concrete, manufacturing process of cement, understand different types of aggregates, mixing of water, identify different types of admixtures, curing of concrete, grading analysis of sand sample. Complete a mix design, manufacture concrete cubes and determine the crushing strength of cubes. Understand the function of reinforcement in concrete. Know the use of formwork and materials used.

CONSTRUCTION MANAGEMENT III (ERCM303/CONM300)
Subject Custodian: Dept. CM & QS

Contract interpretation – JBCC documentation, Policy and Planning. Pre-tender planning. Contract planning. Perspectives on estimating and valuations. Cost Control. Office and Site Administration. Documentation. Quality control. Human Resources management. Labour relations and Labour Legislations. Occupational Health and Safety, Introduction to Law of Contracts. Principles of construction law. Insurance Law. Dispute Resolution. Tender documentation. Introduction to building Entrepreneurship.

PRICE ANALYSIS & ESTIMATING III (ERPA303/PANE300)
Subject Custodian: Dept. CM & QS

Methods of Estimating. Specification of Building materials for analysis of unit rates in Bill of Quantities. Compilation of unit rate, Material, labour, Plant, Profit and overheads. Factors that influence the estimate. Cost calculation procedure. Storage and wastage of material. Different methods of pricing. Analysis of costs of plant. Analysis of unit rates. Provisional sums and prime cost items. Subcontractors and suppliers. Pricing of Preliminaries in accordance with standard systems of Building. Pricing of specialist items.

OLD PROGRAMME (NO NEW INTAKE FOR FIRST YEAR)

- ✓ **All existing students in year 2 and 3 to complete this course in year 2027. Any students still completing the course after 2027 will migrate to new programme.**

Diploma: Building

Diploma in Building (3202016)

NQF Level	:	6
SAQA Credits	:	360
Duration	:	3 years

Statement of Purpose

The purpose of the qualification is to build the knowledge, understanding and skills required for the learner's progression towards becoming competent registered practicing Quantity Surveyor/Construction Manager. This will empower the candidate to demonstrate his/her ability to apply his/her acquired knowledge, understanding, skills, attitude and values in the built environment industry in South Africa. The qualification is also structured to add value to the diplomat in terms of personal enrichment, as well as status and recognition.

A person possessing this qualification can do the following:

1. Competently apply an integration of theory, principles, proven techniques, practical experiences and appropriate skills towards solving well-defined problems in the field of Construction Management/Quantity Surveying.
2. Gather evidence from the primary sources and journals using advanced retrieval skills, and also organise, synthesis and present the information professionally in a mode to the audience;
3. Apply the acquired knowledge to new situations, both concrete and abstract, in the workplace/community.
4. Identify, analyse, conduct, and manage a building construction project.
5. Make independent decisions/judgments taking into account the relevant technical, economic, social and environment factors;
6. Work both independently and as a member of a team, and as a team leader.
7. Relate Construction Management/Quantity Surveying activity to health and safety, as well as environmental, cultural and economic sustainability;
8. Meet the requirements to register as a candidate for the professional bodies in the field of Construction Management/Quantity Surveying.

Admission Requirements

Entry in Year 1

1. Attend a Bridging Course and obtain a minimum of 50% for all subjects **or**
2. The candidate must hold a National Senior Certificate (NSC) with level 4 ratings for

   Mathematics, Physics and English **or**

iii) The candidate must hold a National Senior Certificate / Standard 10, Matric or equivalent with

minimum E (HG) for Mathematics and Science and a minimum E (SG) for English

or

iv) Appropriate N4 with a minimum 50% for Mathematics and Engineering Science/Building Science plus E (SG) for English.

v) **NCV Requirements**

National Certificate Vocational level 4 minimum of 50% pass in the following Subjects: 3 fundamentals: English, Maths & Physical Science and a minimum of 60% in: 3 Compulsory:
Drawing, Setting out, Quantities & Costing
Construction Management
Civil & Construction Technology

vi) **Transfer from Technical / FET Colleges**

Educational programme affected by the agreement. Candidates who studied at Technical / FET Colleges and who comply with the following requirements shall be admitted to the second year of the above-mentioned instructional programme at Mangosuthu University of Technology.

Candidates must have passed the following courses with a minimum of 50% in each course on N6 level.

Technical / FET College Subjects Passed	University Credit (Annual courses for the National Diploma: Building)
Quantity Surveying N6	Quantity Surveying I
Building and Structural Construction N6	Construction Technology I
Building Administration N6	Construction Management I

Note: Students who enrolled for Pre-Tech (Bridging Course) and ECP do not qualify for credits or exemptions as depicted above:

Plus: A student having passed all the N6 subjects mentioned above will have to enter for, and attend, the following level 1 subjects:

Applied Building Science I
Communication I
Computer Applications I

Accreditation of Subjects – Building

New course subjects will be credited for subjects in the old course as follows:

Old Diploma Course – 3202068	New Diploma Course - 3202001
Construction Administration and Organisation T1 and T2	Construction Management I
Construction Technology T1 and T2	Construction Technology I
Construction Science T1 + Construction Mathematics T1	Applied Science I
Communication T1	Communication I
Quantity Surveying T2 + Price Analysis and Estimating T2	Quantity Surveying I

A student who has all T1 and T2 subjects will automatically qualify to register for year 2.

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

Applicants who satisfy the minimum requirements will be subjected to a selection process. Applicants will be ranked based on their academic results and selected for admission accordingly. Mathematical Literacy will not be considered.

Duration of study
Two and half years of attendance at the University together with 6 months of structured work integrated learning (In-service Training).

CIVBUA	BUENDI	Diploma: Building (3202016)						
National Diploma: Building Old Codes	**Diploma: Building New Codes**	**Subjects**	**Semester /Year**	**Assessment Method**	**NQF Level**	**Prerequisites es**	**Co-requisites**	**Credit Value**
	YEAR 2 – consist of 3 subjects that are completed on a semester basis together with Building Practice:							
CMAN020	COMA200	Construction Management II	Y2	Examination	6	COMA100		20
COTE120	COTE200	Construction Technology II	Y2	Continuous Assessment	6	COTE100		20
QUAN120	QUSU200	Quantity Surveying II	Y2	Examination	6	QUSU100	COTE100	20
BPRC010	BUPR200	Building Practice	Y2	Practical	6			60
YEAR 3								
COAC130	COAC300	Construction Accounting III	Y3	Examination	6			20
CMAN030	COMA300	Construction Management III	Y3	Examination	6	COMA200		20
COTE130	COTE300	Construction Technology III	Y3	Continuous Assessment	6	COTE200		20
PRAE130	PAAE300	Price Analysis and Estimating III	Y3	Examination	6		COTE200 QUSU100	20
QUAN130	QUSU300	Quantity Surveying III	Y3	Examination	6	QUSU200		20
STCO030	STAC300	Structures and Concrete III	Y3	Examination	6		APBS100	20
		C= Compulsory; O= Optional						

Subjects, Curriculum Compilation, Course Codes

YEAR II

CONSTRUCTION MANGEMENT II (C0MA200 & CONM200)
Subject Custodian: Dept. CM & QS

Assignments and tests are based on relevant site operations, which covers the following topics: Communication on and off site, Co-ordination of subcontractors, Principles of Industrial Psychology, defining public relations, Construction Plant, Programming using network techniques (such as PERT and Critical Path analysis), Induction and conflict procedures, Employment contracts and Quality control. Introduction to Building Information Modeling (BIM) in project management.

CONSTRUCTION TECHNOLOGY II (COTE200 & CONT200)
Subject Custodian: Dept. CM & QS

Plumbing; sanitary fittings and appliances, pipework – hot and cold, domestic water supply, geyser, soil and water removal, grey water recycling, stormwater and rainwater harvesting. Finishes; Wall and ceiling finishes, floor finishes, timber floor construction, concrete floor construction, reinforced concrete floors. Electrical Installation. Glass and its properties. Fixing methods, fastenings and adhesives. Paint to metal, plaster and timber. Electricity.

QUANTITY SURVEYING II (QUSU200 & QUAS200)
Subject Custodian: Dept. CM & QS

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Mensuration in Quantities**;** Measurements: Substructure: site clearance; excavations to reduced levels; column bases; sub structure concrete and reinforcement; solid floor construction **;** Superstructure concrete and formwork to walls: Flat slab roof construction including waterproofing; simple concrete frame structure comprising columns, beams & slabs; Plumbing: simple residential plumbing installation; Working Up: explanation on all the work done with regard to the process of compiling the Bills of Quantities example: squaring, explaining abstracting and introducing examples of Bills of Quantities.

BUILDING PRACTICE (BPRC010 & BUPR200)
Subject Custodian: Dept. CM & QS

Productivity in the workplace; Workplace skills; Developing employability skills; Skills Improvement; Skills Innovation; Transferable Skills; Skills Inventory; CV writing; Interviews skills.

YEAR III

CONSTRUCTION ACCOUNTING III (COAC130/COAC300)
Subject Custodian: Dept. Accounting & Law

Three formative assessment and one summative assessment which will cover the following topics, Introduction to financial accounting (forms of ownership i.e. sole owners, partnerships, limited companies and close corporation accounts), Basic financial Statements, Accounting equation, Classify items as either Assets (*current or non-current assets*), Liabilities (*current or non-current liabilities*) or owners' Equity), Budgetary control, Overheads and Job costing, Contract costing, Cost volume profit analysis and Application of a construction accounting Computer program.

CONSTRUCTION TECHNOLOGY III (COTE130/COTE300)
Subject Custodian: Dept. CM & QS

The following technology and elements of multi-storey buildings: Framed and load-bearing structures, multi-floor concepts. Use of shoring and strutting for lateral support of adjacent property. Piling and underpinning to multi-storey structures. Types of soil. Testing of ground pressure resistance. Types of excavations. Dewatering. Planking and strutting in excavations. Foundation: piles, raft foundations. Basements: wall construction and waterproofing. Formwork and concrete: in situ concrete, pre-stress and post tension concrete. Steel structures. Cladding of buildings. Installation of services such as air-conditioning, lifts, escalators, fire fittings and inspection trap doors. Special finishes on walls, ceilings and floors. Form-work materials. Precast Concrete beams and floors.

QUANTITY SURVEYING III (QUAN130/QUSU300)
Subject Custodian: Dept. CM & QS

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Measurements: Multi storey buildings comprising complex concrete framed structures; Bulk Earthworks: excavations to reduced levels including basements; column bases; Superstructure: staircases; suspended ceilings; reinforcing to concrete frame structure; structural steelwork; introduction to elemental estimates and final accounts.

STRUCTURES AND CONCRETE III (STCO030/STAC300)
Subject Custodian: Dept. CM & QS

Structural Analysis

Calculation of area, centroids, moment of inertia and radius of gyration for rolled steel sections and simple built-up sections. Calculation of beam reactions, bending moments and shear forces in simply supported beams. Draw bending moment and shear force diagrams. Determine the position of the maximum bending moment. Design of concrete beams and columns. Determine forces of framework and analysis of trusses. Calculate Factor of Safety against sliding and overturning for retaining walls.

Concrete

Sustainability of concrete, manufacturing process of cement, understand different types of aggregates, mixing of water, identify different types of admixtures, curing of concrete, grading analysis of sand sample. Complete a mix design, manufacture concrete cubes and determine the crushing strength of cubes. Understand the function of reinforcement in concrete. Know the use of formwork and materials used.

CONSTRUCTION MANAGEMENT III (CMAN030/COMA300)
Subject Custodian: Dept. CM & QS

Contract interpretation – JBCC documentation, Policy and Planning. Pre-tender planning. Contract planning. Perspectives on estimating and valuations. Cost Control. Office and Site Administration. Documentation. Quality control. Human Resources management. Labour relations and Labour Legislations. Occupational Health and Safety, Introduction to Law of Contracts. Principles of construction law. Insurance Law. Dispute Resolution. Tender documentation. Introduction to building Entrepreneurship.

PRICE ANALYSIS & ESTIMATING III (PRAE130/PAAE300)
Subject Custodian: Dept. CM & QS

Methods of Estimating. Specification of Building materials for analysis of unit rates in Bill of Quantities. Compilation of unit rate, Material, labour, Plant, Profit and overheads. Factors that influence the estimate. Cost calculation procedure. Storage and wastage of material. Different methods of pricing. Analysis of costs of plant. Analysis of unit rates. Provisional sums and prime cost items. Subcontractors and suppliers. Pricing of Preliminaries in accordance with standard systems of Building. Pricing of specialist items.

Restrictions on Courses

Before a student can continue with a course on second- or third- year, the previous year course of the relevant subject must be passed.

Examination Regulations

Refer to the General Handbook: Rule G22

Examinations in semester courses will be conducted in June/July and October/November. Examinations in year courses will be conducted during October/November.

Pass Requirements

A candidate passes a subject if a final mark of at least 50% is obtained. The final mark consists of 40% of the year mark and 60% of the examination mark for examination subjects. A candidate must obtain a sub-minimum of 40% in the examination to pass a course. Where the examination in a course consists of two or more papers, a sub-minimum of 40% must be obtained in each paper.

Practical's / Laboratory

Practical work is done in the following subject and forms part of the assessment:
Site Surveying I
Details of the assessment of the practicals are given in the relevant Study Guide.

Diploma: Construction Management & Quantity Surveying (Extended Curriculum Programme)

Duration: 4 years full-time.

Admission criteria

Admission for selection to the four-year programme will be granted to those applicants who meet the minimum admission requirements for the corresponding regular programme. Candidates shall have obtained a valid National Senior Certificate or Senior Certificate or NQF Level 4 or NCV Level 5 with the following minimum rating codes:

Table 1: Minimum admission requirements for applicants with National Senior Certificate

Programme	English Home Language	Mathematics/Technical Mathematics	Physical Science/ Technical Science
ECP	4	4	4
RP	4	4	4

Table 2: Minimum admission requirements for applicants with Senior Certificate

Programme	English	Mathematics	Physical Science
ECP	HG(D)/SG(C)	HG (D)/SG(C)	HG(D)/SG(C)
RP	HG(D)/SG(C)	HG (D)/SG(C)	HG(D)/SG(C)

In addition, candidates are required to have a minimum total of 25 points excluding Life Orientation (LO).

Table 3: Minimum admission requirements for applicants with NQF Level 4 and NCV

ECP: Extended Curriculum Programme **RP**: Regular Programme
HG: Higher Grade **SG:** Standard Grade
NQF: National Qualifications Framework **NCV:** National Certificate: (Vocational)

Note: Even if a candidate satisfies the stated admission requirements, he/she will not automatically be accepted. Admission is based on applicants passing an entrance test, on merit and the number of available spaces.

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

Applicants who satisfy the minimum requirements will be subjected to a selection process. Applicants will be ranked based on their academic results and selected for admission accordingly. Mathematical Literacy will not be considered.

Regulations for the qualification

(a) Duration

The duration of the qualification is a minimum of four years. In years 1, 2 and 4 students will be required to attend lectures full-time and all courses will be on an annual basis. In year 3, during the first semester, students will be required to attend lectures full-time, courses will be on a module basis and in the second semester, students will be required to complete work integrated learning (WIL) in an appropriate Built environment.

(b) Pass Requirements

1. Students are given a course mark for tests written, practicals completed and/or assignments submitted during the year.

2. Students must attain a sub-minimum course mark of at least 40% in order to gain entry to sit for an examination.

3. The final mark comprises 40% of the course mark and 60% of the examination mark.

4. In order to pass a subject, a sub-minimum of 40% must be obtained in the examination and a final mark of at least 50% is required.

(c) Work integrated learning

1. All students are required to complete one semester of work integrated learning (WIL) in an appropriate built environment.

2. Students requiring more than one subject per year to complete the theoretical portion of the qualification may not register for work integrated learning.

3. On registration a student will receive, a work integrated learning manual outlining the tasks and assignments to be completed during the work integrated learning phase.

Table 4: Courses/modules taken in each year of study

YEAR 1(ECP)

Diploma: CM&QS Codes	Subjects	Semester /Year	Assessment Method	NQF Level	Prerequisites	Co-requisit es	Credit Value
YEAR 1							
EBTE000	Building Technology 1	Y1	Examination	5			20
ECSS000	Construction Sciences & Statistics	Y1	Examination	5			20
ECSK000	Communications Skills 1	S1/2	Examination	5			10
EIDS000	Information & Digital Systems 1	S1/2	Examination	5			10
TOTAL							**60**
NOTE: Students can register a maximum of 3 subjects per a semester							
YEAR 2 (ECP)							

EBUE100	Built Environment 1	Y2	Examination	5			20
EQUS100	Quantity Surveying 1	Y2	Examination	5			20
ECSU100	Construction Surveying	S1/2	Examination	5			10
EPME100	Principals of Micro-economics	S1/2	Examination	5			10
TOTAL							**60**
Note: Students can register a maximum of 3 subjects per a semester							
YEAR 3 (ECP)							
EBTE200	Building Technology 2	S1/2	Examination	5	Building Technology 1		10
EBUE200	Built Environment 2	S1/2	Examination	5	Built Environment 1		10
EQUS200	Quantity Surveying 2	S1/2	Examination	5	Quantity Surveying 1	Construction Technology 1	10
ELAW200	Principals of Law	S1/2	Examination	5		Communication Skills 1	10
EPME200	Principals of Macro-Economics	S1/2	Examination	5	Principals of Micro-Economics		10
ESTD200	Structural Design 2	S1/2	Examination	5	Construction Sciences & Statistics 1		10
EWIL200	Building Practice (WIL)	S1/2	Practical	5	-		60
TOTAL							**120**
Note: Students cannot register Building Practice and any other subject in the same semester							
YEAR 4 (ECP)							
ECAC300	Construction Accounting III	S1/2	Examination	6	-		10
EBUE300	Built Environment III	Y4	Examination	6	Built Environment 2		20
EBTE300	Building Technology III	Y4	Continuous Assessment	6	Building Technology 2		20
ECCE300	Construction Costing & Estimation	Y4	Examination	6		Quantity Surveying 2	20
EQUS300	Quantity Surveying III	Y4	Examination	6	Quantity Surveying	Building Technology 2	20
ECMD300	Construction Materials & Design	Y4	Examination	6	Structural Design 2		20
EESK300	Entrepreneurship Skills.	S1/2	Continuous Assessment	6			10

TOTAL	120

Note: Students are not permitted to register for a course unless the pre-requisite course(s) has/have been passed.

DIPLOMA: CONSTRUCTION MANAGEMENT & QUANTITY SURVEYING YEAR I (ECP)

COMMUNICATION SKILLS I (6)

Communication theory, listening skills, report writing, business correspondence, presentation skills, organisational communication, interviews, models of communication

INFORMATION AND DIGITAL SYSTEMS I (6)

This course uses practical techniques for the efficient use of computers and computer software applications to accomplish common workplace tasks. Application of word processing, spreadsheet, presentation, email and Internet are covered. The basic concepts of ICT making up a computing system are explained together with the protocols involved in the electronic transmission of data via a computer-based network.
The course is continuous assessment and students are expected to pass four assessments.

BUILDING TECHNOLOGY I (12)

Interpretation of drawings; instrument practice, isometric drawings, free hand drawing, orthographic drawings and drawing symbols. Levelling and setting out. Concrete testing. Sub-structure; foundations, damp roofing, brickwork – brick cut/jointing/bonding. Superstructure; lintels and arches, door frames and doors, windows and window cills. Roof; types of trusses/construction and covering. Stair Construction; timber and concrete. Scaffolding; materials – bricks and timber.

CONSTRUCTION SCIENCES AND STATISTICS (12)

Basic Mathematics, Basic Algebra, Geometry, Mensuration, Trigonometry, Calculus, Basic Applied Mechanics as applicable to concretes, steel and timber constructions in the building industry. Financial Mathematics: ratios, proportions and ratios, Simple and Compound interests, annuities, depreciations. Building Services in building, Expansion and Contraction. Convection, Conduction and radiation of heat in buildings. Heat Energy and units of measurements. Thermal conductivities and resistances. Sound: Sound propagation and units of measurements in buildings, Sound Insulations, sound reflections, reverberations and acoustics. Reticulations and electricity consumption in buildings. Definition of basic electricity terms. Direct and Indirect currents. Serial and parallel circuits. Three-phase supply lines and power consumptions of household appliances, pumps and lifts. Lighting in buildings: light propagation, photometry, basic units of measurements in lighting. Artificial light. Basic concepts of hydrology, pressure in liquids, hydraulic jacks. Flow of liquids in pipes. Different types of pumps. Basic probability and statistics, data analysis, methods of organizing and graphing data, Mass, volume densities and units of measurements, Forces, resultants and equilibria, beam supports and simple beam reactions, stress, strain and elasticity.

DIPLOMA: CONSTRUCTION MANAGEMENT & QUANTITY SURVEYING
YEAR 2 (ECP)

QUANTITY SURVEYING I (12)

Introduction to a broad spectrum of the duties of a Q.S; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Mensuration in Quantities**;** Measurements: Substructure: site clearance; excavations to strip foundations; sub structure brickwork; solid floor construction (including filling& preparation)**;** Superstructure Brickwork: walls (including face bricks & gable ends)**;** Timber roof construction: finishes to eaves and rainwater goods; roof coverings; Finishes: Walls: including plaster; paint; tiling; Floors: including screed & floor covering; Ceilings: including plastered board ceilings on brandering; Windows: stock steel; timber and aluminium windows. Doors: stock hollow core and hardwood doors including timber and metal frames and ironmongery; adjustments for windows and door openings; Plumbing: sanitary fittings; Working Up: explanation on all the work done with regard to the process of compiling the Bills of Quantities example: squaring, explaining abstracting and introducing examples of Bills of Quantities.

BUILT ENVIRONMENT I (12)

Associations in the construction industry in South Africa, Construction Education and Training Authority (CETA), property related organisations, functions of professional persons within the built environment, building enterprises and their structures, procurement of work and types of contracts site meetings, principles and applications of microeconomics, scarcity, choice. Elasticity utility and demand efficiency and equity, production and costs, price determination under different market structures, perfect competition as well as monopoly, management process, organisation structures, personal management, materials management, plant and equipment management, productivity and work study, energy efficient building.

CONSTRUCTION SURVEYING I (6)

Basic theory on types of surveys and branches in the surveying industry. Introduction to map usefulness, map scales, map projections, and co-ordinate systems. Theory, principles and practical tasks for height determination applying spirit levelling method and observation reduction using the Rise ‘n Fall & Collimation methods. Introduction to SA Co-ordinate systems including basic calculations for co-ordinate positions. Theory of fixing point positions using traverse calculation method. Reduction of field observations for angle measurements.

Theory and principles of tape distance measurements and applying necessary corrections to measured distances. Introduction to EDM measured distances and calculations associated with reducing those distances. Basic theory on Topographical surveys and calculations associated with such surveys. Plotting tacheometery points and interpolating contours. Introduction to cadastral surveys: types of cadastral surveys and diagrams and area calculations for land parcels. Building setting out theory and calculations.

PRINCIPLES OF MICRO-ECONOMICS (6)

Introductory economic concepts including the principles of supply and demand, the efficient production of goods, market structures under perfect competition and monopoly. The markets for labour, capital and land are analysed and the manner in which income and wealth is distributed.

YEAR 3 (ECP)

BUILT ENVIRONMENT II (6)

Assignments and tests are based on relevant site operations, which covers the following topics: Communication on and off site, Co-ordination of subcontractors, Principles of Industrial Psychology, defining public relations, Construction Plant, Programming using network techniques (such as PERT and Critical Path analysis), Induction and conflict procedures, Employment contracts and Quality control. Introduction to Building Information Modelling (BIM) in project management.

BUILDING TECHNOLOGY II

Plumbing; sanitary fittings and appliances, pipework – hot and cold, domestic water supply, geyser, soil and water removal, grey water recycling, stormwater and rainwater harvesting. Finishes: Wall and ceiling finishes, floor finishes, timber floor construction, concrete floor construction, reinforced concrete floors. Electrical Installation. Glass and its properties. Fixing methods, fastenings and adhesives. Paint to metal, plaster and timber. Electricity.

QUANTITY SURVEYING II (6)

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Mensuration in Quantities**;** Measurements: Substructure: site clearance; excavations to reduced levels; column bases; sub structure concrete and reinforcement; solid floor construction **;** Superstructure concrete and formwork to walls: Flat slab roof construction including waterproofing; simple concrete frame structure comprising columns, beams & slabs; Plumbing: simple residential plumbing installation; Working Up: explanation on all the work done with regard to the process of compiling the Bills of Quantities example: squaring, explaining abstracting and introducing examples of Bills of Quantities.

PRINCIPLES OF LAW (6)

Introduction to Law will provide students with a basic background to law and the legal system in South Africa. Students will acquire an understanding of: -Some legal philosophies and be able to apply these philosophies to current legal situations. -The structure of the legal system and be able to identify the correct tribunal and procedure. –The sources and classifications of South African Law. -The basic principles of criminal law and be able to apply these principles to a factual scenario.

PRINCIPLES OF MACRO ECONOMICS (6)

An introduction to macroeconomics. The operation of the money market is examined, and the main components of expenditure (consumption, investment, government spending and net exports) are used to build simple macroeconomic models. Fiscal and monetary policy tools and their ability to influence key macroeconomics concerns of inflation, unemployment and growth are assessed.

STRUCTURAL DESIGN 2 (6)

Calculation of area, centroids, moment of inertia and radius of gyration for rolled steel sections and simple built-up sections. Calculation of beam reactions, bending moments and shear forces in simply supported beams. Draw bending moment and shear force diagrams. Determine forces of framework and analysis of trusses. Calculate Factor of Safety against sliding and overturning for retaining walls.

BUILDING PRACTICE

Productivity in the workplace; Workplace skills; Developing employability skills; Skills Improvement; Skills Innovation; Transferable Skills; Skills Inventory; CV writing; Interviews skills.

YEAR 4 (ECP)

CONSTRUCTION ACCOUNTING III (12)

Three formative assessment and one summative assessment which will cover the following topics, Introduction to financial accounting (forms of ownership i.e. sole owners, partnerships, limited companies and close corporation accounts), Basic financial Statements, Accounting equation, Classify items as either Assets (*current or non-current assets*), Liabilities (*current or non-current liabilities*) or owners' Equity), Budgetary control, Overheads and Job costing, Contract costing, Cost volume profit analysis and Application of a construction accounting Computer program.

BUILDING TECHNOLOGY III (12)

The following technology and elements of multi-storey buildings: Framed and load-bearing structures, multi-floor concepts. Use of shoring and strutting for lateral support of adjacent property. Piling and underpinning to multi-storey structures. Types of soil. Testing of ground pressure resistance. Types of excavations. Dewatering. Planking and strutting in excavations. Foundation: piles, raft foundations. Basements: wall construction and waterproofing. Formwork and concrete: in situ concrete, pre-stress and post tension concrete. Steel structures. Cladding of buildings. Installation of services such as air-conditioning, lifts, escalators, fire fittings and inspection trap doors. Special finishes on walls, ceilings and floors. Form-work materials. Precast Concrete beams and floors.

QUANTITY SURVEYING III (12)

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Measurements: Multi storey buildings comprising complex concrete framed structures; Bulk Earthworks: excavations to reduced levels including basements; column bases; Superstructure: staircases; suspended ceilings; reinforcing to concrete frame structure; structural steelwork; introduction to elemental estimates and final accounts.

BUILT ENVIRONMENT III

Contract interpretation – JBCC documentation, Policy and Planning. Pre-tender planning. Contract planning. Perspectives on estimating and valuations. Cost Control. Office and Site Administration. Documentation. Quality control. Human Resources management. Labour relations and Labour Legislations. Occupational Health and Safety, Introduction to Law of Contracts. Principles of construction law. Insurance Law. Dispute Resolution. Tender documentation. Introduction to building Entrepreneurship.

CONSTRUCTION COSTING & ESTIMATION III (12)

Methods of Estimating. Specification of Building materials for analysis of unit rates in Bill of Quantities. Compilation of unit rate, Material, labour, Plant, Profit and overheads. Factors that influence the estimate. Cost calculation procedure. Storage and wastage of material. Different methods of pricing. Analysis of costs of plant. Analysis of unit rates. Provisional sums and prime cost items. Subcontractors and suppliers. Pricing of Preliminaries in accordance with standard systems of Building. Pricing of specialist items.

CONSTRUCTION MATERIALS & DESIGN III (12)

Sustainability of concrete, manufacturing process of cement, understand different types of aggregates, mixing of water, identify different types of admixtures, curing of concrete, grading analysis of sand sample. Complete a mix design, manufacture concrete cubes and determine the crushing strength of cubes. Understand the function of reinforcement in concrete. Know the use of formwork and materials used. The study of steel, building materials and finishes

Elementary loading and resistance for reinforced concrete and steel components. Elementary Limit state design and analysis for reinforced concrete and steel components. Design of structural members (Beams, slabs, columns and foundations). Bolted and welded connection design. Element design (grade of structural steel, axial tension, axial compression, bending and deflection).

ENTREPRENEURSHIP SKILLS III (6)

Introduction to entrepreneurial skills, business calculations as well as business information systems and economic principals related to entrepreneurship. A major entrepreneurial project will put theoretical aspects into a practical perspective.

Diploma: CONSTRUCTION MANAGEMENT & QUANTITY SURVEYING

Diploma in Construction Management & Quantity Surveying

NQF Level : 6
SAQA Credits : 360
Duration : 3 years

Statement of Purpose

The purpose of the qualification is to build the knowledge, understanding and skills required for the learner's progression towards becoming competent registered practicing Quantity Surveyor/Construction Manager. This will empower the candidate to demonstrate his/her ability to apply his/her acquired knowledge, understanding, skills, attitude, and values in the built environment industry in South Africa. The qualification is also structured to add value to the diplomat in terms of personal enrichment, as well as status and recognition.

A person possessing this qualification can do the following:

1. Competently apply an integration of theory, principles, proven techniques, practical experiences, and appropriate skills towards solving well-defined problems in the field of Construction Management/Quantity Surveying.
2. Gather evidence from the primary sources and journals using advanced retrieval skills, and also organise, synthesis and present the information professionally in a mode to the audience;
3. Apply the acquired knowledge to new situations, both concrete and abstract, in the workplace/community.
4. Identify, analyse, conduct, and manage a building construction project.
5. Make independent decisions/judgments taking into account the relevant technical, economic, social and environment factors;
6. Work both independently and as a member of a team, and as a team leader.
7. Relate Construction Management/Quantity Surveying activity to health and safety, as well as environmental, cultural and economic sustainability;

8. Meet the requirements to register as a candidate for the professional bodies in the field of Construction Management/Quantity Surveying.

Admission Requirements
Entry in Year 1

1. Attend a Bridging Course and obtain a minimum of 50% for all subjects **or**
2. The candidate must hold a National Senior Certificate (NSC) with level 4 ratings for Mathematics, Physics and English **or**
3. The candidate must hold a National Senior Certificate / Standard 10, Matric or equivalent with minimum E (HG) for Mathematics and Science and a minimum E (SG) for English **or**
4. Appropriate N4 with a minimum 50% for Mathematics and Engineering Science/Building Science plus E (SG) for English.

NCV Requirements

National Certificate Vocational level 4 minimum of 50% pass in the following
Subjects: 3 fundamentals: English, Maths & Physical Science and a minimum of 60% in: 3 Compulsory:
Drawing, Setting out, Quantities & Costing
Construction Management
Civil & Construction Technology

Transfer from Technical / FET Colleges

Educational programme affected by the agreement. Candidates who studied at Technical / FET Colleges and who comply with the following requirements shall be admitted to the second year of the above-mentioned instructional programme at Mangosuthu University of Technology.

Candidates must have passed the following courses with a minimum of 50% in each course on N6 level.

Technical / FET College Subjects Passed	**University Credit (Annual courses for the Diploma : CM & QS)**
Quantity Surveying N6	Quantity Surveying I
Building and Structural Construction N6	Building Technology I
Building Administration N6	Built Environment I

Note: Students who enrolled for Pre-Tech (Bridging Course) and ECP do not qualify for credits or exemptions as depicted above:

Applicants who satisfy the minimum requirements will be subjected to a selection process. Applicants will be ranked based on their academic results and selected for admission accordingly. Mathematical Literacy will not be considered.

Duration of study

Two and half years of attendance at the University together with 6 months of structured work integrated learning (In-service Training).

Subjects, Curriculum Compilation, Course Codes

1ST YEAR (MAIN STREAM)							
Code	**Subject**	**Offering**	**Duration**	**Level**	**DHET Credit**	**Prerequisites**	**Co-requisites**
COSK1OO	Communication skills I	1st / 2nd semester	Semester	5	10		
INDS100	Information and Digital Systems I	1st / 2nd semester	Semester	5	10		
BUEN100	Built Environment I	Annual	Annual	5	20		
BTEC100	Building Technology I	Annual	Annual	5	20		
QSUR100	Quantity Surveying I	Annual	Annual	5	20		
CSUR100	Construction Surveying I	1st /2nd semester	Semester	5	10		
COST100	Construction Sciences & Statistics I	Annual	Annual	5	20		
PRME100	Principles of Micro - Economics	1st /2nd semester	Semester	5	10		
TOTAL					**120**		

Note: Students can register for a maximum of 6 subject per semester							
2nd Year							
Code	**Subject**	**Offering**	**Duration**	**Level**	**DHET Credits**	**Prerequisites**	**Co-requisites**
BUEN200	Built Environment II	1st /2nd semester	Semester	5	10	Built Environment I	
BTEC200	Building Technology II	1st /2nd semester	Semester	5	10	Building Technology I	
QSUR200	Quantity Surveying II	1st /2nd semester	Semester	5	10	Quantity Surveying I	Building Technology 1
PLAW200	Principles of Law	1st /2nd semester	Semester	5	10		Communication skills 1
PRME200	Principles of Macro Economics	1st /2nd semester	Semester	5	10	Principles of Micro Economics	
STDE200	Structural Design II	1st /2nd semester	Semester	5	10	Construction Sciences & Statistics I	

BWIL200	Building Practice	1st /2nd semester	Semester	5	60		
TOTAL					**120**		

Note: Students cannot register Building Practice and any other subject in the same semester

3rd year							
Code	**Subject**	**Offering**	**Duration**	**Level**	**DHET Credit**	**Prerequisites es**	**Co-requisites**
COAC300	Construction Accounting III	1st / 2nd semester	Semester	6	10		
ENSK300	Entrepreneurship Skills III	1st / 2nd semester	Semester	6	10		
BUEN300	Built Environment III	Annual	Annual	6	20	Built Environment II	
BTEC300	Building Technology III	Annual	Annual	6	20	Building Technology II	
COCE300	Construction Costing & Estimation III	Annual	Annual	6	20		Quantity Surveying II
QSUR300	Quantity Surveying III	Annual	Annual	6	20	Quantity Surveying II	
COMD300	Construction Materials & Design II	Annual	Semester	6	20	Structural Design II	
TOTAL					**120**		

Note: Students can register for a maximum of 6 subject per semester

DIPLOMA: CONSTRUCTION MANAGEMENT & QUANTITY SURVEYING YEAR I

COMMUNICATION SKILLS I (6)

Communication theory, listening skills, report writing, business correspondence, presentation skills, organisational communication, interviews, models of communication.

INFORMATION AND DIGITAL SYSTEMS I (6)

This course uses practical techniques for the efficient use of computers and computer software applications to accomplish common workplace tasks. Application of word processing, spreadsheet, presentation, email and Internet are covered. The basic concepts of ICT making up a computing system are explained together with the protocols involved in the electronic transmission of data via a computer-based network.
The course is continuous assessment and students are expected to pass four assessments.

BUILDING TECHNOLOGY I (12)

Interpretation of drawings; instrument practice, isometric drawings, free hand drawing, orthographic drawings and drawing symbols. Levelling and setting out. Concrete testing. Sub-structure; foundations, damp roofing, brickwork – brick cut/jointing/bonding. Superstructure; lintels and arches, door frames and doors, windows and window cills. Roof; types of

trusses/construction and covering. Stair Construction; timber and concrete. Scaffolding; materials – bricks and timber.

CONSTRUCTION SCIENCES AND STATISTICS (12)

Basic Mathematics, Basic Algebra, Geometry, Mensuration, Trigonometry, Calculus, Basic Applied Mechanics as applicable to concretes, steel and timber constructions in the building industry. Financial Mathematics: ratios, proportions and ratios, Simple and Compound interests, annuities, depreciations. Building Services in building, Expansion and Contraction. Convection, Conduction and radiation of heat in buildings. Heat Energy and units of measurements. Thermal conductivities and resistances. Sound: Sound propagation and units of measurements in buildings, Sound Insulations, sound reflections, reverberations and acoustics. Reticulations and electricity consumption in buildings. Definition of basic electricity terms. Direct and Indirect currents. Serial and parallel circuits. Three-phase supply lines and power consumptions of household appliances, pumps and lifts. Lighting in buildings: light propagation, photometry, basic units of measurements in lighting. Artificial light. Basic concepts of hydrology, pressure in liquids, hydraulic jacks. Flow of liquids in pipes. Different types of pumps. Basic probability and statistics, data analysis, methods of organizing and graphing data, Mass, volume densities and units of measurements, Forces, resultants and equilibria, beam supports and simple beam reactions, stress, strain and elasticity.

QUANTITY SURVEYING I (12)

Introduction to a broad spectrum of the duties of a Q.S; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Mensuration in Quantities**;** Measurements: Substructure: site clearance; excavations to strip foundations; sub structure brickwork; solid floor construction (including filling& preparation)**;** Superstructure Brickwork: walls (including face bricks & gable ends)**;** Timber roof construction: finishes to eaves and rainwater goods; roof coverings; Finishes: Walls: including plaster; paint; tiling; Floors: including screed & floor covering; Ceilings: including plastered board ceilings on brandering; Windows: stock steel; timber and aluminium windows. Doors: stock hollow core and hardwood doors including timber and metal frames and ironmongery; adjustments for windows and door openings; Plumbing: sanitary fittings; Working Up: explanation on all the work done with regard to the process of compiling the Bills of Quantities example: squaring, explaining abstracting and introducing examples of Bills of Quantities.

BUILT ENVIRONMENT I (12)

Associations in the construction industry in South Africa, Construction Education and Training Authority (CETA), property related organisations, functions of professional persons within the built environment, building enterprises and their structures, procurement of work and types of contracts site meetings, principles and applications of microeconomics, scarcity, choice. Elasticity utility and demand efficiency and equity, production and costs, price determination under different market structures, perfect competition as well as monopoly, management process, organisation structures, personal management, materials management, plant and equipment management, productivity and work study, energy efficient building.

CONSTRUCTION SURVEYING I (6)

Basic theory on types of surveys and branches in the surveying industry. Introduction to map usefulness, map scales, map projections, and co-ordinate systems. Theory, principles and practical tasks for height determination applying spirit levelling method and observation reduction using the Rise 'n Fall & Collimation methods. Introduction to SA Co-ordinate systems including basic calculations for co-ordinate positions. Theory of fixing point positions using traverse calculation method. Reduction of field observations for angle measurements.

Theory and principles of tape distance measurements and applying necessary corrections to measured distances. Introduction to EDM measured distances and calculations associated with reducing those distances. Basic theory on Topographical surveys and calculations associated with such surveys. Plotting tacheometery points and interpolating contours

.Introduction to cadastral surveys: types of cadastral surveys and diagrams and area calculations for land parcels. Building setting out theory and calculations.

PRINCIPLES OF MICRO ECONOMICS (6)

Introductory economic concepts including the principles of supply and demand, the efficient production of goods, market structures under perfect competition and monopoly. The markets for labour, capital and land are analysed and the manner in which income and wealth is distributed.

YEAR 2

BUILT ENVIRONMENT II (6)

Assignments and tests are based on relevant site operations, which covers the following topics: Communication on and off site, Co-ordination of subcontractors, Principles of Industrial Psychology, defining public relations, Construction Plant, Programming using network techniques (such as PERT and Critical Path analysis), Induction and conflict procedures, Employment contracts and Quality control. Introduction to Building Information Modeling (BIM) in project management.

BUILDING TECHNOLOGY II

Plumbing; sanitary fittings and appliances, pipework – hot and cold, domestic water supply, geyser, soil and water removal, grey water recycling, stormwater and rainwater harvesting. Finishes; Wall and ceiling finishes, floor finishes, timber floor construction, concrete floor construction, reinforced concrete floors. Electrical Installation. Glass and its properties. Fixing methods, fastenings and adhesives. Paint to metal, plaster and timber. Electricity.

QUANTITY SURVEYING II (6)

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Mensuration in Quantities**;** Measurements: Substructure: site clearance; excavations to reduced levels; column bases; sub structure concrete and reinforcement; solid floor construction **;** Superstructure concrete and formwork to walls: Flat slab roof construction including waterproofing; simple concrete frame structure comprising columns, beams & slabs; Plumbing: simple residential plumbing installation; Working Up: explanation on all the work done with regard to the process of compiling the Bills of Quantities example: squaring, explaining abstracting and introducing examples of Bills of Quantities.

PRINCIPLES OF LAW (6)

Introduction to Law will provide students with a basic background to law and the legal system in South Africa. Students will acquire an understanding of: -Some legal philosophies and be able to apply these philosophies to current legal situations. -The structure of the legal system and be able to identify the correct tribunal and procedure. –The sources and classifications of South African Law. -The basic principles of criminal law and be able to apply these principles to a factual scenario.

PRINCIPLES OF MACRO ECONOMICS (6)

An introduction to macroeconomics. The operation of the money market is examined, and the main components of expenditure (consumption, investment, government spending and net exports) are used to build simple macroeconomic models. Fiscal and monetary policy tools and their ability to influence key macroeconomics concerns of inflation, unemployment and growth are assessed.

STRUCTURAL DESIGN II (6)

Calculation of area, centroids, moment of inertia and radius of gyration for rolled steel sections and simple built-up sections. Calculation of beam reactions, bending moments and shear forces in simply supported beams. Draw bending moment and shear force diagrams. Determine forces of framework and analysis of trusses. Calculate Factor of Safety against sliding and overturning for retaining walls.

BUILDING PRACTICE

Productivity in the workplace; Workplace skills; Developing employability skills; Skills Improvement; Skills Innovation; Transferable Skills; Skills Inventory; CV writing; Interviews skills.

YEAR 3

CONSTRUCTION ACCOUNTING III (12)

Three formative assessment and one summative assessment which will cover the following topics, Introduction to financial accounting (forms of ownership i.e. sole owners, partnerships, limited companies and close corporation accounts), Basic financial Statements, Accounting equation, Classify items as either Assets (*current or non-current assets*), Liabilities (*current or non-current liabilities*) or owners' Equity), Budgetary control, Overheads and Job costing, Contract costing, Cost volume profit analysis and Application of a construction accounting Computer program.

BUILDING TECHNOLOGY III (12)

The following technology and elements of multi-storey buildings: Framed and load-bearing structures, multi-floor concepts. Use of shoring and strutting for lateral support of adjacent property. Piling and underpinning to multi-storey structures. Types of soil. Testing of ground pressure resistance. Types of excavations. Dewatering. Planking and strutting in excavations. Foundation: piles, raft foundations. Basements: wall construction and waterproofing. Formwork and concrete: in situ concrete, pre-stress and post tension concrete. Steel structures. Cladding of buildings. Installation of services such as air-conditioning, lifts, escalators, fire fittings and inspection trap doors. Special finishes on walls, ceilings and floors. Form-work materials. Precast Concrete beams and floors.

QUANTITY SURVEYING III (12)

Introduction of new terminology and technology; Source of Information and Interpretation of Drawings**;** Preparation of Bills of Quantities; Dimension Preparation; Measurements: Multi storey buildings comprising complex concrete framed structures; Bulk Earthworks: excavations to reduced levels including basements; column bases; Superstructure: staircases; suspended ceilings; reinforcing to concrete frame structure; structural steelwork; introduction to elemental estimates and final accounts.

BUILT ENVIRONMENT III

Contract interpretation – JBCC documentation, Policy and Planning. Pre-tender planning. \Contract planning. Perspectives on estimating and valuations. Cost Control. Office and Site

Administration. Documentation. Quality control. Human Resources management. Labour relations and Labour Legislations. Occupational Health and Safety, Introduction to Law of Contracts. Principles of construction law. Insurance Law. Dispute Resolution. Tender documentation. Introduction to building Entrepreneurship.

CONSTRUCTION COSTING & ESTIMATION III (12)

Methods of Estimating. Specification of Building materials for analysis of unit rates in Bill of Quantities. Compilation of unit rate, Material, labour, Plant, Profit and overheads. Factors that influence the estimate. Cost calculation procedure. Storage and wastage of material. Different methods of pricing. Analysis of costs of plant. Analysis of unit rates. Provisional sums and prime cost items. Subcontractors and suppliers. Pricing of Preliminaries in accordance with standard systems of Building. Pricing of specialist items.

CONSTRUCTION MATERIALS & DESIGN III (12)

Sustainability of concrete, manufacturing process of cement, understand different types of aggregates, mixing of water, identify different types of admixtures, curing of concrete, grading analysis of sand sample. Complete a mix design, manufacture concrete cubes and determine the crushing strength of cubes. Understand the function of reinforcement in concrete. Know the use of formwork and materials used. The study of steel, building materials and finishes

Elementary loading and resistance for reinforced concrete and steel components. Elementary Limit state design and analysis for reinforced concrete and steel components. Design of structural members (Beams, slabs, columns and foundations). Bolted and welded connection design. Element design (grade of structural steel, axial tension, axial compression, bending and deflection).

ENTREPRENEURSHIP SKILLS III (6)

Introduction to entrepreneurial skills, business calculations as well as business information systems and economic principals related to entrepreneurship. A major entrepreneurial project will put theoretical aspects into a practical perspective.

Restrictions on Courses

Before a student can continue with a course on second- or third- year, the previous year course of the relevant subject must be passed.

Examination Regulations

Refer to the General Handbook: Rule G22

Examinations in semester courses will be conducted in June/July and October/November. Examinations in year courses will be conducted during October/November.

Pass Requirements

A candidate passes a subject if a final mark of at least 50% is obtained. The final mark consists of 40% of the year mark and 60% of the examination mark for examination subjects. A candidate must obtain a sub-minimum of 40% in the examination to pass a course. Where the examination in a course consists of two or more papers, a sub-minimum of 40% must be obtained in each paper.

Practical's / Laboratory

Practical work is done in the following subject and forms part of the assessment:
Construction Surveying I
Details of the assessment of the practicals are given in the relevant Study Guide.

INDEMNITY CLAUSE

Mangosuthu University of Technology is not liable to the learner or any third party for any demands, loss of life or amenities caused in whatever manner to the learner at the workplace where the Work Integrated Learning takes place. Despite the aforementioned, it is the responsibility of the learner to inform Mangosuthu University of Technology in writing of an unsafe or unhealthy conditions in the workplace where the student is receiving the training. Whilst every effort will be made to provide assistance to students in securing placement for Work Integrated Learning the University does not guarantee such placements.