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**CURRICULUM
BACHELOR OF QUANTITY SURVEYING
SENATE APPROVED**

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NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

PART A: PROGRAMME DOCUMENTATION

BACHELOR OF QUANTITY SURVEYING

(NEW PROGRAMME)

1. Awarding Institution:

Namibia University of Science and Technology (NUST)

2. Faculty and Department:

Faculty of Natural Resources and Spatial Sciences,

Department of Architecture and Spatial Planning

3. Programme / Qualification Title:

Bachelor of Quantity Surveying

4. NQF Level of Qualification:

Level 7

5. NQF Credits of Qualification:

Total credits available: 392 credits

Minimum credits required: 392 credits

	Compulsory
NQF Level 4 credits:	10
NQF Level 5 credits:	162
NQF Level 6 credits:	120
NQF Level 7 credits:	100
Minimum Total Credits Required:	392

6. Field and Subfield of Learning:

Field: Physical Planning and Construction

Sub-field: Quantity Surveying

7. Programme Aims / Purpose:

The Bachelor of Quantity Surveying was developed for students who intend to pursue careers in quantity surveying and related fields. The programme is designed to provide students with comprehensive and systematic knowledge and skills in the field of quantity surveying using the principles, theories and methodologies of the profession.

Through this programme, students will be able to acquire cognitive/intellectual skills, practical skills and key transferable skills in relation to the various aspects and interdisciplinary nature of quantity surveying at all levels. The programme also intends to provide a diverse range of skills and competencies that are both discipline specific and job related and facilitate the development of generic cognitive and intellectual skills, enabling a graduate to adapt to a continuously changing

environment. Additionally, the skills acquired enable students to absorb a wider range of knowledge, adapt to various conditions, and to solve problems creatively and innovatively. The programme includes a Work Integrated Learning (WIL) component through which students are expected to work in industry and build up a portfolio according to criteria set by the Department.

The principal purposes of this qualification are to:

- Provide students with professional / technical competencies related to professional practice in quantity surveying, the construction industry and property development projects;
- Equip students with a foundation for further intellectual development and opportunities for gainful employment and rewarding contributions to society;
- Provide the construction industry with qualified, employable construction management graduates who possess contextually specific technological as well as problem-solving and financial management skills;
- Produce students who are prepared for and demonstrate understanding of the principles of
 - Life-long learning,
 - Critical citizenship,
 - A wide range of issues which are crucial to the welfare of society, for example upliftment, empowerment and transformation;
- Contribute towards a learner's personal career path development by affording opportunities to gain additional qualifications in quantity surveying and / or related fields.

On successful completion of the Bachelor of Quantity Surveying, graduates will be eligible for registration as Quantity Surveyor in Training with the Namibia Council for Architects and Quantity Surveyors (NCAQS) in terms of Acts 13 of 1979, and Act 11 of 1992.

This programme has been endorsed by members of the Programme Advisory Committee (attached, please find evidence of consultation, benchmarking and support).

8. Programme Rationale:

The rate of economic growth in Africa, south of the Sahara, is acknowledged as one of the highest in the world. The countries of the continent are equally high in the list of those, where urbanisation process is uncontrollable with rural urban migration resulting in the proliferation of shanty, informal urban communities. The problems of housing and infrastructural development are endemic. Namibia is one of those few African countries able to manage and exploit the healthy polit-economic dispensation to the benefit of its construction industry, recognised as in a state of boom.

As a result, the country continues to experience scarcity of built environment professionals such as quantity surveyors, architects, project managers, contractors/subcontractors and construction economists. Currently the services of these professionals are hired from all over the world, resulting in high overheads and consequent escalation of development project costs on the Government and private developers. Accordingly, the built environment disciplines of architecture and quantity surveying in particular, have since been recognised as one of those fields to be urgently established in local institutions of education for human resource development, and subsequently to enhance the sustainability of human settlement development intentions enshrined in the NDP 4. At this stage of its socio-cultural transformation, Namibia needs home-grown built environment professionals to take charge of the human settlement development future of the country. It is therefore understandable that the outcomes of the recently conducted needs assessment survey amongst the generality of the country's stakeholders demonstrate overwhelming support for the mounting of a Bachelor of Quantity Surveying (BQS) programme at NUST.

Indeed, the Department of Architecture at NUST was established to fill this demand gap of professional skills urgently needed for the various sectors of the national economy. The proposed

Quantity Surveying programme is therefore aligned with such national economic programmes as the NDP 4 and Vision 2030.

At the individual level, members of the quantity surveying and architectural professions enjoy due recognition and financial reward in terms of their specialised skills and competence, and are eligible for employment in numerous spheres of the economy which, as stated earlier, include the private sector consultancies and professional firms, public sector employment (State, Provincial and Local Authorities), tertiary education and training, financial institutions, property development enterprises, construction companies and research organisations. The skills and knowledge acquired by holders of this qualification also afford opportunities for entry into many other fields, such as urban, interior or industrial design, conservation/restoration/maintenance of buildings, construction materials production and retailing.

The proposed programme is fully compliant with requirements of the Namibia Qualifications Framework and the NUST curriculum framework.

9. Exit Programme Outcomes (Qualification Outcomes):

Upon completing the Bachelor of Quantity Surveying, graduates will be able to:

- Demonstrate in-depth understanding of the concepts and principles of quantity surveying practice in Namibia and the region;
- Demonstrate understanding of the economic, environmental, social, legal, political, commercial and non-commercial contexts within which the development, management and use of land and buildings occurs;
- Assess, plan, measure and estimate proposed capital costs;
- Recommend, prepare and complete construction contracts;
- Manage and ascertain costs, valuations and final accounts;
- Contribute to the resolution of contractual disputes;
- Demonstrate understanding of the process of architectural design and its relation to construction;
- Demonstrate understanding of the health and safety issues and their place in the social, operational and economic context of design, construction, maintenance and disposal / reuse of built assets;
- Use advanced techniques of computer-based technology and tools applicable to execute work in accordance with quantity surveying industry standards;
- Achieve the generic graduate outcomes of problem-solving, critical thinking, responsible citizenship and good communication.

10. Criteria for Admission:

Candidates are to be assessed on academic merit only. Candidates apply with their latest Grade 12 / NSSC Ordinary Level (NSSCO) and / or NSSC Higher Level (NSSCH) results. Candidates are required to meet the following minimum academic criteria to be considered:

- At least 12 points on the NUST evaluation scale for English and Mathematics using a combination of NSSCH and / or NSSCO, provided that no symbol lower than a C on NSSCO will be accepted.
- A minimum of 18 points on the NUST evaluation scale for any three other subjects out of the following (or their equivalent): Technical Drawing, Physical Science, Physics, Chemistry, Biology, and Economics, using a combination of NSSCH and NSSCO, provided that no symbol lower than a C on NSSCO will be accepted. An advanced Diploma in any of the building trades could be considered favourably by the selection committee.

11. Articulation Arrangements:

Transfer of credits will be dealt with according to the NUST regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50% of the credits for a qualification.

Students who complete the Bachelor of Quantity Surveying successfully will ordinarily be able to undertake further studies in Quantity Surveying or related disciplines at NQF Level 8.

12. Mode of Delivery:

This programme is offered on the full-time mode in accordance with NUST rules and regulations.

13. Requirements for Qualification Award:

The Bachelor of Quantity Surveying will be awarded to candidates credited with a minimum of 392 NQF credits, and who have met the detailed requirements set out below. In addition, students should meet the administrative and financial requirements in accordance with Yearbook Part 1 of the NUST Yearbook, General Information and Regulations.

This programme has one major subject/cognate area of learning, i.e. Quantity Surveying, which is developed in increasing complexity across relevant NQF levels in accordance with NQF principles as follows:

Courses	NQF Level	NQF Credits
Applied Building Science	5	16
Theory of Quantity Surveying	5	16
Construction Technology 1	5	10
Construction Legislation and Regulations	5	10
Principles of Management	5	10
Building and Engineering Law	6	10
Construction Economics	6	10
Construction Technology 2	6	16
Measurement 1	5	20
Building Structures	6	16
Computer Applications for Quantity Surveying	6	10
Construction Accounting	6	10
Environment and Services	6	16
Measurement 2	6	20
Work Integrated Learning: Quantity Surveying	7	60
Construction Project Management	7	10
Measurement 3	7	10
Quantity Surveying Project	7	20
		Total Credits: 290

The proposed curriculum outline is as follows:

Semester 1		Semester 2	
Course Title	Compulsory or Elective (C or E)	Course Title	Compulsory or Elective (C or E)
Applied Building Science	C	Business Accounting A	C
Mathematics & Statistics for Spatial Sciences	C	Construction Technology 1	C
Principles of Architectural Design	C	Construction Legislation and Regulations	C
Principles of Microeconomics	C	Principles of Management	C
Theory of Quantity Surveying	C	English for Academic Purposes	C
		Computer User Skills	C
Semester 3		Semester 4	
Course Title	Compulsory or Elective (C or E)	Course Title	Compulsory or Elective (C or E)
Building and Engineering Law	C	Building Structures	C
Construction Economics	C	Computer Applications for Quantity Surveying	C
Construction Technology 2	C	Introduction to Survey and Mapping	C
Measurement 1	C	Environment and Services	C
Information Competence	C	Measurement 2	C
Semester 5		Semester 6	
Course Title	Compulsory or Elective (C or E)	Course Title	Compulsory or Elective (C or E)
Work Integrated Learning: Quantity Surveying	C	Construction Project Management	C
		Measurement 3	C
		Quantity Surveying Project	C
		Contemporary Issues	C
		Construction Accounting	C

The detailed Curriculum requirements for the Bachelor of Quantity Surveying (NQF Level 7) programme are as follows:
(Course codes for new courses will be created by the Faculty Officer following Senate approval of the programme)

YEAR 1: SEMESTER 1 COURSES

Course Code	Course Title	Comprehensive Learning Outcome	Prerequisites	Compulsory or Elective	NQF Level	Notional Hours	NQF Credits	
ABS511S	Applied Building Science	Evaluate and apply building material properties and basic physical and mathematic concepts related to building design.	None	Compulsory	5	160	16	
MSS511S	Mathematics & Statistics for Spatial Sciences	Apply basic knowledge of mathematics and statistics in a spatial orientated context.	None	Compulsory	5	120	12	
PAD511S	Principles of Architectural Design	Demonstrate broad general understanding of the principles of architectural design process, graphic representation and communication.	None	Compulsory	5	100	10	
PMI511S	Principles of Microeconomics	Analyse and apply the principles of microeconomics to the individual, household, firm and government institutions.	None	Compulsory	5	120	12	
TQS511S	Theory of Quantity Surveying	Analyse and apply the theories of quantity surveying in various sectors of the built environment.	None	Compulsory	5	160	16	
Total							Credits:	66

YEAR 1: SEMESTER 2 COURSES

Course Code	Course Title	Comprehensive Learning Outcome	Prerequisites	Compulsory or Elective	NQF Level	Notional Hours	NQF Credits	
BAC1100	Business Accounting A	Apply the general principles of financial accounting in a sole trader enterprise for use by non-financial managers.	None	Compulsory	5	100	10	
CST521S	Construction Technology 1	Outline basic building solutions common in Namibia in relation to environmental context, building design, and construction detailing.	None	Compulsory	5	100	10	
CLR521S	Construction Legislation and Regulations	Demonstrate broad general understanding of Namibian construction legislation and regulations with special emphasis on health and safety.	None	Compulsory	5	100	10	
POM521S	Principles of Management	Display an understanding of the principles of management, management processes and its functions.	None	Compulsory	5	100	10	
EAP511S	English for Academic Purposes	Communicate accurately, appropriately and effectively in academic speech and writing within academic contexts.	English in Practice	Compulsory	5	140	14	
CUS411S	Computer User Skills	Demonstrate and apply various technical and practical skills to effectively use basic functionalities of a Personal Computer (PC), as well as widely used application software, as tools to solve problems and improve personal and organisational productivity.	None	Compulsory	4	100	10	
Total							Credits:	64

YEAR 2: SEMESTER 3 COURSES

Course Code	Course Title	Comprehensive Learning Outcome	Prerequisites	Compulsory or Elective	NQF Level	Notional Hours	NQF Credits	
BEL611S	Building and Engineering Law	Analyse the legal and contractual implications contained in building and civil engineering contracts relevant to Namibia and the Southern African region.	Construction Legislation and Regulations	Compulsory	6	100	10	
CSE611S	Construction Economics	Identify and evaluate cost estimating and control methods including pricing of construction work.	None	Compulsory	6	100	10	
CST611S	Construction Technology 2	Demonstrate knowledge of and apply construction methods of framed structures in the design of buildings.	Construction Technology 1	Compulsory	6	160	16	
MSM511S	Measurement 1	Demonstrate ability to prepare bills of quantities for building works of a single storey building.	None	Compulsory	5	200	20	
ICT521S	Information Competence	Search effectively for information using search engines on the Internet and Web 2.0 technologies to solve given problems and critically evaluate information obtained.	None	Compulsory	5	100	10	
Total							Credits:	66

YEAR 2: SEMESTER 4 COURSES

Course Code	Course Title	Comprehensive Learning Outcome	Prerequisites	Compulsory or Elective	NQF Level	Notional Hours	NQF Credits
BDS621S	Building Structures	Analyse existing and new structures and apply the knowledge to realise effective building design.	None	Compulsory	6	160	16
CAQ621S	Computer Applications for Quantity Surveying	Apply knowledge of quantity surveying software required to efficiently produce documents to acceptable standards.	None	Compulsory	6	100	10
ISM520S	Introduction to Survey and Mapping	Analyse the basic principles of land surveying and apply various technical skills to plot surveying outputs.	* None	Compulsory	5	120	12
EAS621S	Environment and Services	Evaluate environmental and sustainable technologies and apply theoretical knowledge of building services to building design.	None	Compulsory	6	160	16
M5M621S	Measurement 2	Demonstrate ability to prepare bills of quantities for civil works and multi storey building works with full descriptions and specifications.	Measurement 1	Compulsory	6	200	20
<i>* DASP received Senate approval to exempt Quantity Surveying students from the prerequisite for ISM520S.</i>							Total Credits: 74

YEAR 3: SEMESTER 5 COURSES

Course Code	Course Title	Comprehensive Learning Outcome	Prerequisites	Compulsory or Elective	NQF Level	Notional Hours	NQF Credits
WQS 711S	Work Integrated Learning: Quantity Surveying	Apply acquired competencies in a professional quantity surveying work environment.	Measurement 2	Compulsory	7	600	60
							Total Credits: 60

YEAR 3: SEMESTER 6 COURSES

Course Code	Course Title	Comprehensive Learning Outcome	Prerequisites	Compulsory or Elective	NQF Level	Notional Hours	NQF Credits
CPM721S	Construction Project Management	Plan and schedule construction projects.	None	Compulsory	7	100	10
MSM721S	Measurement 3	Prepare bills of quantities from technical drawings and specifications for mechanical and electrical installations.	Measurement 2	Compulsory	7	100	10
QSP721S	Quantity Surveying Project	Demonstrate competence in various aspects of preparation of bills of quantities and pricing.	Work Integrated Learning: QS	Compulsory	7	200	20
CSA621S	Construction Accounting	Prepare financial accounts for construction projects.	None	Compulsory	6	100	10
CIS610S	Contemporary Issues	Evaluate the impact of contemporary issues on society and develop strategies to mitigate / harness their negative / positive impacts on society.	None	Compulsory	6	120	12
							Total Credits: 62

14. Special Arrangements:

14.1. Teaching / Learning Strategies:

The requirements of the NQF underline the acquisition of cognitive skills and competencies exceeding the knowledge and understanding of subject specific knowledge items and professional / technical competencies. Thus, the qualification focuses on the engagement of students in an interactive learning process in order to provide for the development of generic cognitive and intellectual skills, key transferable skills, and, as the case may be, subject specific and / or professional / technical practical skills. This learning process will be facilitated both in and outside the classroom, requiring specific tasks to be carried out by students. This facilitation will make use of a variety of appropriate methods, including lectures, practical classes, workshops and seminars, site visits and Work Integrated Learning. The progress of learning embedded in such tasks will be monitored, recorded and assessed.

14.2. Assessment Strategies:

Learning and assessment are integrated throughout the programme. Diversified continuous assessment is applied to ensure that students receive feedback on their progress towards the achievement of specific learning outcomes. This will normally apply to practical assignments to be carried out individually or in groups, tests, class seminars, as well as technical and project site reports.

The brief for the assignment must clearly explain the aim of the assignment as well as the expected learning competencies relative to the course. In accordance with NUST policy on diversified continuous assessment, each course will have a minimum of six assessment events.

Assignments, designed to meet the requirements of integrated assessment, accomplish / deliver:

- Integration of qualification outcomes in a way that demonstrates that the purpose of the qualification as a whole has been achieved, either totally or within the components of the study programme;
- Demonstration of student competence through evaluation;
- Criterion-referenced assessment, which has been clearly explained to and is understood by students.

In the assessment of whether the desired outcomes have been achieved (or not), recognition is given to criteria and evaluation methods that adequately and appropriately achieve such assessment.

14.3. Quality Assurance of Assessment:

Each course will have one or more examiner and one moderator. Moderators will be identified both internally and externally. The required minimum qualification of the moderator should be a Bachelor Honours degree in a related field of studies or the person must be a well-respected expert in the field. Lecturing staff will set and mark tests and / or examinations which will, together with relevant study material of that particular course and other material containing course learning outcomes in the context of the qualification learning outcomes, be forwarded to the moderator for moderation purpose, therefore, ensuring quality of the assessment and the qualification as a whole. All courses at exit level (NQF Level 7) will be externally moderated as per NUST regulations.

Assessment of competence of students by external organisations, in particular the Namibia Council for Architects and Quantity Surveyors, established in terms of the Architects' Act, 1979 (Act 13 of 1979 and Act 11 of 1992), will normally be done through scheduled, mutually arranged periodic validation visitations of frequency not more than 5 years.

15. Transition Arrangements:

This is a new programme, which does not replace any existing programme(s). Transition arrangements are, therefore, not applicable.

16. Career Opportunities:

Career possibilities for graduates completing and leaving the programme at the exit level are bright and diverse as follows:

- Graduates can take up careers in a wide range of areas in the built environment industry. Specifically they have opportunities in professional quantity surveying firms as Quantity Surveyor in Training. They may also seek employment in professional firms for construction management, commercial trading, production of construction materials and equipment or specialize as subcontractors in a building project. Furthermore they may seek employment with local and municipal authorities and Government.
- Graduates who wish to pursue professional careers as Quantity Surveyors can apply for entry into higher degree programmes in quantity surveying.
- In addition, graduates of the programme may join academia to impart knowledge and skill and or be involved in research for development.

17. Programme Director / Coordinator

Prof. S. Umenne

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18. Intended Date of First intake

January 2017

19. Date of Approval of this Version

TBC

20. Intended date of Review

2021

PART B: COURSE SPECIFICATION

SEMESTER 1 COURSES

Course Title	APPLIED BUILDING SCIENCE
Course Code	ABS511S
NQF Level	5
Notional Hours	160 Contact: 60 hours; Directed self-learning and Self-Directed Learning: 88 hours; Assessment: 12 hours
NQF Credits	16
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 1
Course Aims	The aim of this course is to provide students with the necessary theoretical background to the sciences relating to buildings.
Specific Learning Outcomes	On completing the course students will, through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Demonstrate understanding of scientific concepts related to building; • Analyse the role of the architect and Quantity Surveyor in interpreting scientific knowledge for effective building design and cost management • Demonstrate knowledge of basic scientific principles in design and cost management • Apply building science principles and theoretical concepts to building design and cost control • Evaluate concepts and apply them in new problematic situations.
Comprehensive Learning Outcome	Evaluate and apply building material properties and basic physical and mathematic concepts related to building design.
Course Content	<ol style="list-style-type: none"> 1. Basic Mathematics 2. Basic Sciences <ul style="list-style-type: none"> • Heat, building design and construction • Natural and Artificial Ventilation • Natural and Artificial Lighting • Electricity • Hydraulics-fluids and gases;

	<p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be</p> <p>Internet facilities available</p> <p>Prescribed text book:</p> <ul style="list-style-type: none"> • McMullen, R., & Seeley, I. H. (2007). <i>Environmental science in building</i>. Basingstoke: Palgrave Macmillan. • Morrison K. & Dunne L (2013), <i>Cambridge IGCSE Mathematics Extended Practice Book</i>, Cambridge: Cambridge University Press <p>Recommended reading:</p> <ul style="list-style-type: none"> • Burberry, P. (2005). <i>Environment and services</i>. S.I.: Addison Wesley.
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Course Title	MATHEMATICS AND STATISTICS FOR SPATIAL SCIENCE
Course Code	MSS511S
NQF Level	5
Notional Hours	120 hours; 60 hours contact; 46 hours directed self-learning and self-directed learning, 14 hours assessment
NQF Credits	12
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	1
Course Aims	To consolidate the basic knowledge of mathematics and statistics relevant for land management and spatial science.
Specific Learning Outcomes	On completion the course students will, through assessment activities, show evidence of their ability to: <ol style="list-style-type: none"> 1. Use negative numbers, decimals, fractions, ratio and percentage and calculate areas and perimeters;

	<p>2. Use algebraic equations, formulae and trigonometric functions;</p> <p>3. Solve simultaneous algebraic equations;</p> <p>4. Perform basic interpolation and extrapolation;</p> <p>5. Calculate areas from dimensions and coordinates;</p> <p>6. Calculate volumes of solid figures;</p> <p>7. Perform basic compounding and discounting calculations;</p> <p>Calculate mean, median, standard errors, variance, correlation coefficient;</p> <p>Present data in graphs; scatter diagram and pie chart, bar charts and histograms.</p>
Comprehensive Learning Outcome	Apply basic knowledge of mathematics and statistics in a spatial orientated context.
Course Content	<ul style="list-style-type: none"> • Basic Mathematics for Land Management and Spatial Science; • Basic Statistics for Land Management and Spatial Science.
Methods of Facilitating Learning	The course will be facilitated through the following learning activities: Classroom lectures, individual assignments and tutorial.
Assessment Strategies	<p>40% Diversified Continuous Assessment,</p> <p>60% Written Examination (3 hours).</p> <p>A minimum Final Mark of 50% is required to pass the course.</p>
Quality Assurance Arrangements	Moderation will be done in accordance with NUST rules and guidelines on moderation.
Student Support and Learning Resources	<p>Institutional level: The Library and Student Services.</p> <p>Departmental level: Individual tutoring.</p> <p>Prescribed Study Material:</p> <p>Polytechnic course reader/study guide.</p>

Course Title	PRINCIPLES OF ARCHITECTURAL DESIGN
Course Code	PAD511S
NQF Level	5
Notional Hours	100 Contact: 30 hours; Directed self-learning: 30 hours; Self-Directed Learning: 30 hours; Assessment: 10 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory

Semester Offered	Semester 1
Course Aims	The course is designed to enable students to understand the basic principles of architectural design and drawing.
Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> • Demonstrate understanding of the basic architectural design principles and graphic communication; • Use graphic communication techniques effectively; • Produce basic good quality architectural drawings with correct line hierarchy, line quality and lettering; • Discuss the relationship between design and different means of architectural communication.
Comprehensive Learning Outcome	Demonstrate broad general understanding of the principles of architectural design process, graphic representation and communication.
Course Content	<ul style="list-style-type: none"> • Definition of design • Architectural design principles • Architectural design elements • Design methodology • Drawing tools and equipment • Conventional representation in architectural drawing • Drawing basics • Types of drawings • Three dimensional representations • Principles of computer aided drafting
Methods of Facilitating Learning	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and solid understanding of manual drafting and detailing principles. Instructional strategies / approaches will aim at student participation as individuals as well as group-based interaction. The following instructional strategies / approaches will be employed:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Studio work: practical demonstration of projects to be presented during formal teaching events; • Individual assignments based on case studies of strategic plans and implementation procedures; • Individual projects as assessment tasks.

Course Title	PRINCIPLES OF MICROECONOMICS
Course Code	PMI511S
NQF Level	5
Notional Hours	120 hours; 56 hours contact, 48 hours directed self-learning and self-directed learning, 16 hours assessment
NQF Credits	12
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	1
Course Aims	The course aims to: Provide an overview of economics and an introduction to the most important economic issues. Apart from the introduction, it focuses on basic microeconomic concepts, topics and issues such as demand, supply, elasticity, consumer choice and the decisions firms make and their interaction in specific markets and industries.
Specific Learning Outcomes	On completion the course students will, through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Define economics and analyse the scarcity problem; • Analyse the basic economic systems; • Apply the concept of demand, supply and elasticity in product markets; • Explain how marginal utility accounts for the law of demand; • Specify and calculate production costs in the long and short run; • Determine the profit maximising output in perfectly competitive and monopoly markets.
Comprehensive Learning Outcome	Analyse and apply the principles of microeconomics to the individual, household, firm and government institutions.
Course Content	<ul style="list-style-type: none"> • Scarcity, choice and opportunity cost; • The main economic systems; • The four sectors of the economy and the circular flow of income; • The price mechanism of demand and supply; • Price elasticity of demand and supply; • Marginal utility theory; • Production and cost of production; • Perfect competition and monopoly.

Methods of Facilitating Learning	<p>The course will be facilitated through the following learning activities:</p> <p>Lectures in which students are expected to take notes, assigned readings, discussions (all students are expected to participate), assignments and tests.</p>
Assessment Strategies	<p>Full/Part time: 50% Continuous Assessment, 50% Written Examination.</p> <p>Distance: 30% Continuous Assessment, 70% Written.</p> <p>A minimum Final Mark of 50% is required to pass the course.</p>
Quality Assurance Arrangements	<p>Moderation will be done in accordance with NUST rules and guidelines on moderation.</p>
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Mostert, J.W., Oosthuizen, A.G., Smit, P.C. and Van der Vyver, T.C. (2002). <i>Microeconomics: A Southern African Perspective</i>. Juta & Co. ISBN 0702156930. <p>Recommended reading:</p> <ul style="list-style-type: none"> • Mohr, P. Fourie, L. and Associates. (2006). <i>Economics for South African Students</i>. (3rd ed.). Van Schaik. ISBN 0627025544. • Sheraton, M. (2004). <i>Economics: X-Kit Undergraduate</i>. Pearson/Maskew Miller Longman. ISBN 1868912825. • Sunde T. (2011). <i>Principles of Economics Notes</i>, Lambert Academic Publishing. ISBN 978-38443-1243-0

Course Title	THEORY OF QUANTITY SURVEYING
Course Code	TQS511S
NQF Level	5
Notional Hours	160 Contact: 60 hours; Directed self-learning and Self-Directed Learning: 88 hours; Assessment: 12 hours
NQF Credits	16
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 1
Course Aims	The course aims at equipping students with the necessary theoretical knowledge of the quantity surveying profession.
Specific Learning Outcomes	On completing the course students will, through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Demonstrate knowledge and understanding of the quantity surveying profession and its methods; • Compare different types of procurements and select the one best suited to a particular project; • Evaluate and apply basic theoretical knowledge of feasibility studies; • Identify and apply the methods and principles of tendering.
Comprehensive Learning Outcome	Analyse and apply the theories of quantity surveying in various sectors of the built environment.
Course Content	<ul style="list-style-type: none"> • Clients needs / requirement and feasibility studies • Historical development of quantity surveying. • Development of the profession; • Its expanding role in the contemporary and dynamic social-economic environment; • Functions performed by the quantity surveyor in relation to construction works; • Evolution of standard methods of measurement for construction Works; • Roles and responsibilities of contracting parties in the building industry; • Basic concepts of quantity surveying; • Methods of aggregating construction resources; • Theories of costing;

	<ul style="list-style-type: none"> • The theory of pricing of the factors of construction; • Different forms of bills of quantities; • Theoretical processes of building contract from inception to completion; • Procurement and tender procedures; • Opportunities and challenges facing the quantity surveying profession; • Changing methods of measurement including introduction of computer based software. 								
Methods of Facilitating Learning	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 								
Assessment Strategies	<table> <tr> <td>Diversified continuous assessment mode:</td> <td>Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td>50%</td> </tr> <tr> <td>Tests</td> <td>40%</td> </tr> <tr> <td>Class attendance / participation</td> <td>10%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	50%	Tests	40%	Class attendance / participation	10%
Diversified continuous assessment mode:	Recommended weight:								
Assignments	50%								
Tests	40%								
Class attendance / participation	10%								
Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.								
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p>								

	<p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Standard systems of Measuring Building works. (6th Edition) ASAQS. • Lee, S., Trench, W., & Willis, A. (2011). <i>Willis's elements of quantity surveying</i>. Chichester, West Sussex, UK: Wiley-Blackwell. <p>Recommended reading:</p> <ul style="list-style-type: none"> • Ashworth, V., Hogg K., & Higg, C. (2013). <i>Willis's Practice and Procedure for the quantity surveyor</i>. Chichester, West Sussex, UK: Wiley-Blackwell. • Ramus, J.W., & Birchall, S. (2007). <i>Contract Practice for Surveyors</i>. Oxford, UK: Butterworth Heinemann. • Brook, M. (2012). <i>Estimating & Tendering for Construction Work</i>. Oxford: Butterworth Heinemann.
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SEMESTER 2 COURSES

Course Title	BUSINESS ACCOUNTING A
Course Code	BAC1100
NQF Level	5
Notional Hours	TBC
NQF Credits	TBC
Prerequisites	none
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 2
Course Aims	The aim of this course is to provide students with the necessary theoretical background to the principles of business accounting.
Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> • Outline the role and principles of financial accounting and reporting • Record, handle and summarize accounting data

	<ul style="list-style-type: none"> • Prepare financial statements for a sole trader • Prepare a bank reconciliation statement
Comprehensive Learning Outcome	Evaluate and apply basic financial accounting concepts to businesses and other financial transactions
Course Content	<ol style="list-style-type: none"> 1. Accounting and Accounting Framework <ul style="list-style-type: none"> • Define accounting • Branches of Accounting • Types of Financial Statements • Users of financial statements • Basic accounting concepts • Types of businesses 2. Source Documents and the accounting cycle <ul style="list-style-type: none"> • Invoice, credit notes • Debit notes, cash receipts • Bank deposit slip, cheque counterfoil • Petty cash voucher • The Bank Statement • The accounting cycle 3. Books of Original Entry and Value Added Tax <ul style="list-style-type: none"> • Theory on the books of original entry • Theory of Value Added Tax (VAT) • VAT rates • Computation of VAT • Double entry for VAT 4 Accounting Equation <ul style="list-style-type: none"> • Introducing accounting equation • Practical accounting equation 5 Basic Book keeping <ul style="list-style-type: none"> • General ledger T- Accounts • Preparing a Trial Balance 6 Financial Statements and Accounting adjustments <ul style="list-style-type: none"> • Preparing the Statement of Profit or Loss (Sole trader) • Preparing the Statement of Financial Position (Sole trader) 7 Accounting Adjustments <ul style="list-style-type: none"> • Accounting adjustments • Prepayments, accruals, bad debts, provision for bad debts • Depreciation • Journal entries, for Accounting adjustments 8. Financial Statements and Accounting adjustments <ul style="list-style-type: none"> • Preparing statement of profit or loss (incorporating adjustments) • Preparing the Statement of Financial Position (incorporating adjustments) 9. Bank reconciliation

	<ul style="list-style-type: none"> • Control over cash • The Bank records • Reconciliation • Ratio Analysis 						
Methods of Facilitating Learning	<p>The course will be facilitated through the following learning activities:</p> <ul style="list-style-type: none"> • Lectures to be the main method of teaching. External resource persons to be invited to lecture on specific topics; • Group work: students will be divided into groups to discuss topics, interact with each other, share ideas and draw conclusions and recommendations together; • Assignments: students will be writing assignments regularly to account for part of the final mark; 						
Assessment Strategies	<table> <tr> <td>Diversified continuous assessment mode:</td> <td>Recommended weight:</td> </tr> <tr> <td>Examination marks</td> <td>60%</td> </tr> <tr> <td>Semester marks</td> <td>40%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Examination marks	60%	Semester marks	40%
Diversified continuous assessment mode:	Recommended weight:						
Examination marks	60%						
Semester marks	40%						
Quality Assurance Arrangements	<p>Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.</p>						
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Prescribed text book:</p> <ul style="list-style-type: none"> • Schutte M. (2013), <i>Accounting for All</i>, London: Juta Publishers <p>Recommended reading:</p> <ul style="list-style-type: none"> • Wood, F., & Robinson, S. (2012). <i>Book Keeping and Accounts</i>. New York: Pearson Education Limited 						

	<ul style="list-style-type: none"> Dempsey A., & Pieters, H. (2011). <i>Introduction to Financial Accounting</i>. London: LexisNexis.
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Course Title	CONSTRUCTION TECHNOLOGY 1
Course Code	CST521S
NQF Level	5
Notional Hours	100 Contact: 30 hours; Directed Self-learning: 30 Hours; Self-directed Learning: 28 hours; Assessment: 12 hours.
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 2
Course Aims	This course aims to introduce students to the fundamentals of construction technology, relating to simple structures.
Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> Demonstrate understanding of the methods used in constructing simple brickwork structures; Discuss the role of the architect and quantity surveyor in the construction process; Demonstrate an understanding of construction processes, the role players involved and the methods employed; Analyse the factors that influence a given construction problem; Devise solutions to solve construction related problems.
Comprehensive Learning Outcome	Outline basic building solutions common in Namibia in relation to environmental context, building design, and construction detailing.
Course Content	<p>Site and setting out:</p> <ul style="list-style-type: none"> Principal aspects of site investigation Effect of topography on the site Legislative conditions Effect of soil conditions on construction Basics of site establishment Setting out

Substructure:

- Foundations (types and method of construction)
- Concrete: functional requirements, types of concrete, properties of concrete, materials for concrete, methods of concreting in construction
- Rock foundations
- Floors

Superstructure:

- Walls
- Basic functions of walls
- Various types of monolithic wall construction materials
- Clay brickwork
- Concrete block work
- Principles of solid walls
- Principles of internal walls
- Principles of cavity walls
- Principles of block work walls
- Piers and lateral restraint

Earth as a building material:

- Nature of earth as a building material
- Soil blocks
- Rammed earth walls
- Alternative blocks

Retaining walls & basements

- Principles of retaining walls & basements
- Application of various methods of making retaining walls
- Water management & tanking
- Gabions
- Boundary walls

Fittings:

- Openings
- Residential door and window types and their construction
- Basic requirements of doors & windows
- Windows: standard types and sections
- Doors: standard types and sections

Staircases:

- Basic types of staircases

	<ul style="list-style-type: none"> • Requirements of staircases (functional & legislative) • The construction of staircases • Handrails and balustrades <p>Fireplaces & chimneys:</p> <ul style="list-style-type: none"> • Basic elements of fireplaces • Requirements of fireplaces (functional & legislative) • Types of fireplaces <p>Roofs:</p> <ul style="list-style-type: none"> • Basic functions of roofs • Basic roof types and elements of a roof • Rainwater management <p>Finishes:</p> <ul style="list-style-type: none"> • Basic requirements of finishes • Wall finishes • Ceiling finishes
<p>Methods of Facilitating Learning</p>	<p>The course is to be facilitated through the following learning activities:</p> <ul style="list-style-type: none"> • Lecturing will be the main method of teaching and will be conducted in such a way as to promote maximum interaction between the lecturer and the students through frequent questioning and commenting. • External resource persons will be invited on a regular basis to teach specific topics in the course • Group work and group assignments at various levels of delivery, modules will form part of the teaching methods so that students can interact and share ideas. • Site visits will be made to places of construction interests, where students can see, observe, experiment or carry out any relevant exercises. These shall culminate in by-weekly site visit reports to be submitted for evaluation. • Workshops and field practical exercises shall be carried to appreciate common trades such as brick laying, carpentry and joinery, painting and decorating etc. • Students will be given design and detailing assignments addressing solutions to single storey building construction problems such as roof trusses, floor construction, foundation details, etc. • A portfolio of reports and detail drawings is to be submitted at the end of the semester for internal and external moderation and evaluation.

Assessment Strategies	<p>Diversified continuous assessment mode: Recommended weight:</p> <p>Assignments 60%</p> <p>Tests 40%</p> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. <p>Final assessment weights are at discretion of the lecturer.</p>
Quality Assurance Arrangements	<p>Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.</p>
Student Support and Learning Resources	<p>Course Resources:</p> <p>NUST library: student services, internet facilities, architecture portal</p> <p>Departmental Data base</p> <p>Input Lectures</p> <p>Public Lectures</p> <p>Student Handbook</p> <p>Prescribed Reading:</p> <ul style="list-style-type: none"> • Ching, F. (2008). Building construction illustrated. Hoboken, N. J: John Wiley & Sons. <p>Recommended Reading:</p> <ul style="list-style-type: none"> • Chudley R. & Greeno R. (2005) Construction Technology, Pearson Prentice Hall • Osbourn, D. & Greeno, R. (2006) Mitchell's Introduction to Building. Pearson Education • Stroud Forster, J. & Greeno, R. (2007) Mitchell's Structure & Fabric Pt. 1. Pearson Prentice Hall • Stroud Forster, J. & Greeno, R. (2007) Mitchell's Structure & Fabric Pt. 2. Pearson Prentice Hall

Course Title	CONSTRUCTION LEGISLATION AND REGULATIONS
Course Code	CLR521S
NQF Level	5
Notional Hours	100 Contact: 30 hours; Directed self-learning and Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 2
Course Aims	The course is designed to assist students acquire thorough knowledge and understanding of the legal implications of local building law, regulations and byelaws.
Specific Learning Outcomes	On completing the course students will through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Apply the legal aspects contained within the Namibian building law; • Identify and evaluate safety procedures on construction sites; • State and explain the importance of statutory acts, byelaws and regulations.
Comprehensive Learning Outcome	Demonstrate broad general understanding of Namibian construction legislation and regulations with special emphasis on health and safety.
Course Content	<p>1. Health and safety regulations;</p> <ul style="list-style-type: none"> • Requirements of the National or Local Health Building Regulations; • Accident prevention on construction sites; • Public welfare; • Environmental law; • Safety clothing; <p>2. Building regulations;</p> <ul style="list-style-type: none"> • National Building Regulations (NBR); • Local building bye-laws; <p>3. Statutory Acts;</p> <ul style="list-style-type: none"> • Labour act; • Acts applicable to the erection of buildings.
Methods of Facilitating Learning	The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional

	<ul style="list-style-type: none"> • Namibia Building Regulations • Namibia Government Gazette <p>Recommended reading:</p> <ul style="list-style-type: none"> • Hughes, P., & Ferrett, E. (2011), <i>Introduction to Health and Safety in Construction</i>. Oxon, UK: Routledge. • Galbraith, A., & Stockdale, M. (2005). <i>Building & Land Management Law for students</i>. London: Elsevier Butterworth-Heinemann. • Ramsey, V., Minogue, A., Baster, J., O'Reilly, M. (2000), <i>Construction Law Handbook</i>. London: Thomas Telford.
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Course Title	PRINCIPLES OF MANAGEMENT
Course Code	POM521S
NQF Level	5
Notional Hours	100 Contact: 30 hours; Directed self-learning and Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 2
Course Aims	The aim of the course is to expose students to different management schools of thought and the fundamental functions of management.
Specific Learning Outcomes	On completing the course students will through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Appreciate the importance of good leadership; • Analyse effective management strategies; • Appreciate the span of control, delegation, accountability and organisation principles; • Appreciate the value of effective communications within an organisation.
Comprehensive Learning Outcome	Display an understanding of the principles of management, management processes and its functions.
Course Content	<ul style="list-style-type: none"> • Nature and function of management • Development of management thought

Arrangements	general rules and guidelines on moderation.
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Ramesh B. Rudan (2013), <i>Principles of Management</i>, Mc Graw- Hill, London • Sampat Mukherjee. (2005), <i>Organization & Management and Business communication</i>. New Delhi, India. <p>Recommended reading:</p> <ul style="list-style-type: none"> • Drucker, P.F. (2011), <i>The Practice of Management</i>. Oxon, UK: Routledge.

SEMESTER 3 COURSES

Course Title	BUILDING AND ENGINEERING LAW
Course Code	BEL611S
NQF Level	6
Notional Hours	100 Contact: 30 hours; Directed Self-Learning and Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	Construction Legislation and Regulations
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 3

Course Aims	The aim of the course is to assist students acquire a thorough knowledge and understanding of the legal and contractual implications contained in building and engineering contracts.
Specific Learning Outcomes	<p>On completing the course students will through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> • Discuss the responsibilities of parties in a contract and how one’s actions can amount to tort; • Analyse tortious liability and their remedies; • Advise on the type of contract to be used in a building project; • Identify and analyse standard forms of contract for civil engineering and building projects; • Analyse and discuss the clauses contained in the JBCC, and Agreement & schedule of conditions of building contract; • Resolve contractual dispute.
Comprehensive Learning Outcome	Analyse the legal and contractual implications contained in building and civil engineering contracts relevant to Namibia and the Southern African region.
Course Content	<ul style="list-style-type: none"> • Introduction to law of tort and contract; • Contract documentation – the basic requirements; • Types of contracts; • Standard forms of contract for building projects; • Analysis of the JBCC and Agreement and schedule of conditions of building contract clauses; • Standard forms of contract for civil engineering projects; • Dispute resolution: <ul style="list-style-type: none"> • Litigation • Mediation • Arbitration • Adjudication • Case studies
Methods of Facilitating Learning	The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and

	<p>methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 								
Assessment Strategies	<table> <tr> <td>Diversified continuous assessment mode:</td> <td>Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td>60%</td> </tr> <tr> <td>Class attendance / participation</td> <td>10%</td> </tr> <tr> <td>Tests</td> <td>30%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	60%	Class attendance / participation	10%	Tests	30%
Diversified continuous assessment mode:	Recommended weight:								
Assignments	60%								
Class attendance / participation	10%								
Tests	30%								
Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.								
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Murdoch, J. R., & Hughes, W. (2008). <i>Construction contracts: Law and management</i>. London: Taylor & Francis • Lee, S., Trench, W., & Willis, A. (2011). <i>Willis's elements of quantity surveying</i>. Chichester, West Sussex, UK: Wiley-Blackwell 								

	<p>Recommended reading:</p> <ul style="list-style-type: none"> Galbraith, A., & Stockdale, M. (2005). <i>Building & Land Management Law for students</i>. London: Elsevier Butterworth-Heinemann.
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Course Title	CONSTRUCTION ECONOMICS
Course Code	CSE611S
NQF Level	6
Notional Hours	100 Contact: 30 hours; Directed self-learning and Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semesters 3
Course Aims	The aim of the course is to equip students with the knowledge and skills required for pricing, cost estimating, analyses and control.
Specific Learning Outcomes	On completing the course students will through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> Apply cost estimating and cost control methods; Demonstrate understanding of the project life-cycle costing; Price construction work.
Comprehensive Learning Outcome	Identify and evaluate cost estimating and control methods including pricing of construction work.
Course Content	<ul style="list-style-type: none"> Principles and basic techniques used in economic comparison of various investment options, project appraisals, cost analyses of equipment and facility, property ownership, retirement and replacement; Time value for money, inflation, depreciation, maintenance and other related costs; Principles of engineering/technological economics including compound interest, present worth, annuity, sinking fund, capital recovery, equivalence and uniform gradient series; Principles of approximate estimating and various methods and uses of approximate estimates; Cost implications of design variable;

	<ul style="list-style-type: none"> • Factors affecting development; • Cost implication of constructional methods; • Cost control of construction project; • Role of the QS during the design stage; • Pricing of construction work. 								
Methods of Facilitating Learning	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 								
Assessment Strategies	<table> <tr> <td>Diversified continuous assessment mode:</td> <td>Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td>40%</td> </tr> <tr> <td>Tests</td> <td>50%</td> </tr> <tr> <td>Class attendance / participation</td> <td>10%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	40%	Tests	50%	Class attendance / participation	10%
Diversified continuous assessment mode:	Recommended weight:								
Assignments	40%								
Tests	50%								
Class attendance / participation	10%								
Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.								
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p>								

	<p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Lee, S., Trench, W., Willis, A. (2011). <i>Willis's Elements of Quantity Surveying</i>. Oxford, UK: Blackwell Science. • Pratt, D. (2011). <i>Fundamentals of Construction Estimating</i>. New York, USA: Delmar, Cengage Learning. <p>Recommended reading:</p> <ul style="list-style-type: none"> • Greenhalgh, B. (2013). <i>Introduction to Estimating for Construction</i>. Oxon, UK: Routledge. • Holm, L. (2005). <i>Construction Cost Estimating; Process and Practices</i>. London: Pearson/Prentice Hall.
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Course Title	CONSTRUCTION TECHNOLOGY 2
Course Code	CST611S
NQF Level	6
Notional Hours	160 Contact: 45 hours; Directed Self-learning: 45 hours; Self-directed Learning: 58 hours; Assessment: 12 hours.
NQF Credits	16
Prerequisites	Construction Technology 1
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 3
Course Aims	This course aims to provide students with knowledge of framed structures.
Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> • Apply the theory of framed structures to solve specific construction problems. • Assess the impact of material choices in relation to framed structures • Discuss the construction process of framed structures.

	<ul style="list-style-type: none"> • Resolve constructive problems relating to the interaction of frame, floor and roof. • Analyse construction problems and be able to provide solutions to these.
Comprehensive Learning Outcome	Demonstrate knowledge of and apply construction methods of framed structures in the design of buildings.
Course Content	<ul style="list-style-type: none"> • Introduction to framed structures • Timber frame types • Timber framed construction • Cladding & infill, internal & external • Alternative frame construction • Timber framed roof construction • Regulatory requirements • Steel framed construction • Floors & facades • Stairways and stairway detailing • Regulatory framework • Introduction to concrete frame • Concrete substructure & foundations • Principles of casting concrete • Concrete columns, beams & slabs • Concrete staircases • Remedial measures for concrete works • Concrete finishes • Waterproofing
Methods of Facilitating Learning	<p>The course is to be facilitated through the following learning activities</p> <ul style="list-style-type: none"> • Lecturing will be the main method of teaching and will be conducted in such a way as to promote maximum interaction between the lecturer and the students through frequent questioning and commenting. • External resource persons will be invited on a regular basis to teach specific topics in the course • Group work and group assignments at various levels of delivery, modules will form part of the teaching methods so that students can interact and share ideas. • Site visits will be made to places of construction interests, where students can see, observe, experiment or carry out any relevant

	<p>exercises. These shall culminate in by-weekly site visit reports to be submitted for evaluation.</p> <ul style="list-style-type: none"> • Workshops and field practical exercises shall be carried to appreciate common trades such as brick laying, carpentry and joinery, painting and decorating etc. • Students will be given design and detailing assignments addressing solutions to single storey building construction problems such as roof trusses, floor construction, foundation details, etc. • Students are encouraged to do additional research based on recommended literature in the library as well as research on the Internet. • A portfolio of reports and detail drawings is to be submitted at the end of the semester for internal and external moderation and evaluation. 				
Assessment Strategies	<p>Diversified continuous assessment mode: Recommended weight:</p> <table data-bbox="544 891 1457 981"> <tr> <td>Assignments</td> <td>60%</td> </tr> <tr> <td>Tests</td> <td>40%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. <p>Final assessment weights are at discretion of the lecturer.</p>	Assignments	60%	Tests	40%
Assignments	60%				
Tests	40%				
Quality Assurance Arrangements	<p>Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.</p>				
Student Support and Learning Resources	<p>NUST library: student services, internet facilities, architecture portal Departmental Data base Input Lectures Public Lectures Student Handbook</p> <p>Prescribed Reading:</p> <ul style="list-style-type: none"> • Chudley R. & Greeno R. (2005) Construction Technology, Pearson Prentice Hall <p>Recommended Reading:</p>				

	<ul style="list-style-type: none"> • Ching, F. (2008). Building construction illustrated. Hoboken, N. J: John Wiley & Sons. • Osbourn, D. & Greeno, R. (2006) Mitchell's Introduction to Building. Pearson Education • Everett, A., & Barritt, C. M. H. (1998). Mitchell's Materials. Harlow: Longman. • Stroud Forster, J. & Greeno, R. (2007) Mitchell's Structure & Fabric Pt. 1. Pearson Prentice Hall • Stroud Forster, J. & Greeno, R. (2007) Mitchell's Structure & Fabric Pt. 2. Pearson Prentice Hall
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Course Title	MEASUREMENT 1
Course Code	MSM511S
NQF Level	5
Notional Hours	200 Contact: 60 hours; Directed Self-Learning: 60; Self-Directed Learning: 68 hours; Assessment: 12 hours
NQF Credits	20
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 3
Course Aims	The aim of the course is to enable the students to translate technical drawings of single storey buildings into quantifiable work items as per the standard method of measurements.
Specific Learning Outcomes	On completing the course students will through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Interpret technical drawings; • Measure and thus take off quantities for building works from technical drawings; • Outline the clauses for the measurement of works in the Standard Systems of Measurement.
Comprehensive Learning Outcome	Demonstrate ability to prepare bills of quantities for building works of a single storey building.
Course Content	1. Mensuration; 2. Introduction to the principles, processes and methods of measurement

	<p>and documentation of builders' work;</p> <p>3. Measurement and description of the following elements of a single-storey building:</p> <ul style="list-style-type: none"> • Foundations, including site clearance and simple demolitions; • Superstructure brickwork; • Solid floor construction; • Roofs; • Finishes, comprising plaster, paint and tiling on walls; • Conventional floors; • Plastered and boarded ceilings on brandering; • Steel, timber and aluminium windows; • Flush and hard-wood doors, including timber and metal frames; • Adjustments for windows, doors and plain openings; <p>4. Working up by squaring, abstracting and billing.</p>						
<p>Methods of Facilitating Learning</p>	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 						
<p>Assessment Strategies</p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 60%;">Diversified continuous assessment mode:</td> <td style="text-align: right;">Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td style="text-align: right;">70%</td> </tr> <tr> <td>Tests</td> <td style="text-align: right;">30%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	70%	Tests	30%
Diversified continuous assessment mode:	Recommended weight:						
Assignments	70%						
Tests	30%						

Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.
Student Support and Learning Resources	<p>NUST level: The library, student services, internet facilities, architecture portal</p> <p>Department level: Internet facilities available Public lectures</p> <p>Course level: Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course Students will be provided with a study guide that will also clearly define what the final performance requirements will be. Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Seeley, I.H., & Winfield, R. (2009). <i>Seeley and Winfield Building Quantities Explained</i>. UK: MacMillan. • Standard System for Measuring Building Work (6th Edition). <p>Recommended reading:</p> <ul style="list-style-type: none"> • Willis, A.J., & Willis, C.J. (1998). <i>Elements of Quantity Surveying</i>. Oxford, UK: Blackwell Science.

SEMESTER 4 COURSES

Course Title	BUILDING STRUCTURES
Course Code	BDS621S
NQF Level	6
Notional Hours	160 Contact: 45 hours; Directed self-learning and Directed Self-Learning: 45 hours; Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	16
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 4

Course Aims	The course aims to introduce students to the principles of structures as related to building design and building cost in different soil and climatic conditions.
Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> • Demonstrate understanding of the theories of structures related to building design and building cost • Apply knowledge of structures to create functional and cost effective buildings • Apply methods of managing forces in building design to avoid structural failure at optimum cost • Analyse various ways in which structures affect building design and cost • Analyse existing buildings in structural terms with the aim creating safe, functional and cost effective interventions
Comprehensive Learning Outcome	Analyse existing and new structures and apply the knowledge to realise effective building design.
Course Content	<ul style="list-style-type: none"> • Introduction to strength and stability • Bending moments and shear force diagrams • Stress and strain • Soil as a building material • Substructure • Superstructure • Roof structure • External works • Temporary work structures • Fire protection (in relation to structural sizes and peripheral treatment)
Methods of Facilitating Learning	<p>The course will be facilitated through the following methods:</p> <ul style="list-style-type: none"> • Lecturing will be the main method of teaching. It will be conducted in such a way as to promote maximum interaction between lecturer and students through frequent questioning and commenting; • External resource persons will be invited on a regular basis to teach on specific topics in the course; • Group work will also form part of the teaching method so that students can interact and share ideas; • Site visits will be made to places of structural interests i.e. where

	<p>students can see, observe, experiment or carryout any relevant exercises;</p> <ul style="list-style-type: none"> Students will also be expected to carry out experiments and practical exercises either in laboratories, workshops, studio or in the open air i.e. learning by discovery method.
Assessment Strategies	<p>Diversified continuous assessment mode: Recommended weight:</p> <p>Assignments 40%</p> <p>Tests 60%</p> <p>Notes:</p> <ul style="list-style-type: none"> Students need to acquire a minimum final mark of 50% to pass the course. A portfolio of works will be required at the end of the semester for internal and external moderation. For second opportunities refer to Departmental Regulations. Final assessment weights are at discretion of the lecturer.
Quality Assurance Arrangements	<p>Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.</p>
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Prescribed text book:</p> <ul style="list-style-type: none"> Seward, D. (2009). Understanding structures: Analysis, materials, design. Basingstoke: Palgrave Macmillan. <p>Recommended reading:</p> <ul style="list-style-type: none"> Morgan, W. (1981). W. Morgan's the elements of structure: An introduction to the principles of building and structural engineering. London: Pitman.

Course Title	COMPUTER APPLICATION IN QUANTITY SURVEYING
Course Code	CAQ621S
NQF Level	6
Notional Hours	100 Contact: 15 hours; Directed Self-Learning (Computer Lab) 45 hours; Self-Directed Learning: 28 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 4
Course Aims	The course aims to enable students to comprehend the and utilise computer software to produce bills of quantities and reports. Several software programs will be examined to create productive solutions to quantity surveying practice.
Specific Learning Outcomes	On completing the course students will, through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Apply basic operations on files and folders under contemporary Operating Systems; • Use application packages for Word-processing and Spread sheets; • Apply their knowledge of quantity surveying software; • Use conventions, methodologies and terminology of the software system appropriately.
Comprehensive Learning Outcome	Apply knowledge of quantity surveying software required to efficiently produce documents to acceptable standards.
Course Content	<ul style="list-style-type: none"> • Uses of word processors, • Application of spread sheets, • Types of databases; • Presentation software; • Quantity surveying software; • Application of quantity surveying software; <ul style="list-style-type: none"> • Production of Bill of quantities; • Estimating
Methods of Facilitating Learning	Theoretical lectures will immediately be applied in practical studies. Individual practical exercises based on lectures. Students to present individual assignments, which emphasise students'

Course Title	INTRODUCTION TO SURVEY AND MAPPING
Course Code	ISM520S
NQF Level	5
Notional Hours	5 hours per week. 3 Hours theory and 2 hours practical per week.
NQF Credits	12 Credits
Prerequisites	Introduction to Geospatial Data (B. Arch students to be exempted from prerequisite)
Options (compulsory or elective)	Compulsory
Semester Offered	4
Course Aims	On successful completion of this course, students should understand basic plane surveying principles, techniques, technology and calculations, and should be able to manually plot coordinates and contours using surveyed data.
Specific Learning Outcomes	<p>On completion of this course, the students should be able to:</p> <ul style="list-style-type: none"> • Define Surveying and distinguish between the different branches of Surveying • Explain grid reference systems used in Namibia and regional countries • Plot positions of survey points on a grid system at various map scales; • Perform basic survey calculations: Polar, join, intersection, reverse polar, areas and volumes; • Handle and use, with extreme care, survey equipment such as theodolites, total stations, steel tapes, ranging rods, tripods and GPS's; • Apply corrections to observations; • Describe and carry out the field procedures for levelling; • Describe and carry out the field procedures for polars; • Describe and carry out the field procedures for measuring a closed traverse; • Describe the different methods for using GPS and demonstrate a RTK survey; • Perform basic setting out of points
Comprehensive Learning Outcome	Analyse the basic principles of land surveying and apply various technical skills to plot surveying outputs.
Course Content	<ul style="list-style-type: none"> • Types of Surveying • Chain Surveying

	<ul style="list-style-type: none"> • Manual Drafting • Manual drafting and contour interpolation • Basic survey theory (coordinate geometry) • Calculation of joins and polars • Introduction to intersection, resection and traverse • Basic Differential Levelling • Basic field survey methods (Total Station and Theodolite): Fixing and staking of points • Introduction to GNSS (GPS, GLONASS, Galileo) 																					
Methods of Facilitating Learning	Classroom lectures, individual assignments and projects, guided tutorials and fieldwork.																					
Assessment Strategies	<p>Assessment of this course is based on continuous evaluation of group and individual work. The final mark for the course will be the weighted average of the following marks:</p> <table data-bbox="547 815 1098 1167"> <tr> <td>Test 1</td> <td>=</td> <td>20%</td> </tr> <tr> <td>Test 2</td> <td>=</td> <td>20%</td> </tr> <tr> <td>Test 3</td> <td>=</td> <td>20%</td> </tr> <tr> <td>Practical Assignment 1</td> <td>=</td> <td>15%</td> </tr> <tr> <td>Practical Assignment 2</td> <td>=</td> <td>15%</td> </tr> <tr> <td>Practical Assignment 3</td> <td>=</td> <td>10%</td> </tr> <tr> <td>Total</td> <td>=</td> <td>100%</td> </tr> </table> <p>The pass mark for the course is 50%.</p> <p>There are no final examinations or second opportunities for this course. A student, who obtains a final mark of less than 50% for this course, will have to repeat the whole course during the following year.</p> <p>All fieldwork (group and individual) is compulsory. A student who misses any fieldwork or excursion without permission (from the course coordinator) or a valid excuse (supported by documentary evidence, e.g. a medical certificate), will fail this course.</p> <p>A special test or assignment may be arranged for a candidate who, for good reason supported with documentary evidence, missed a class test or assignment. No candidate will be allowed more than one (1) special test and one (1) assignment.</p>	Test 1	=	20%	Test 2	=	20%	Test 3	=	20%	Practical Assignment 1	=	15%	Practical Assignment 2	=	15%	Practical Assignment 3	=	10%	Total	=	100%
Test 1	=	20%																				
Test 2	=	20%																				
Test 3	=	20%																				
Practical Assignment 1	=	15%																				
Practical Assignment 2	=	15%																				
Practical Assignment 3	=	10%																				
Total	=	100%																				

Quality Assurance Arrangements	The course outline, material and assessments are moderated by an internal moderator.
Student Support and Learning Resources	<p>Prescribed Reading:</p> <p>NUST study guide, Slides</p> <p>Recommended Reading:</p> <p>Landman K, Hunter T, Jackson J. <i>An Introduction to Engineering Surveying</i>. ISBN 978-0-70218-872-5</p>

Course Title	ENVIRONMENT AND SERVICES
Course Code	EAS621S
NQF Level	6
Notional Hours	160 Contact: 60 hours; Directed Self-Learning and Self-Directed Learning: 88 hours; Assessment: 12 hours
NQF Credits	16
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 4
Course Aims	The aim of this course is to equip students with a sufficient working knowledge of building services and environmental technologies applicable to the building design and construction.
Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> • Evaluate environmental and sustainable technologies and apply such knowledge to new situations in building design; • Analyse environmental problems and recommend effective solutions internal building environmental control; • Evaluate the principles that underlay the proper functioning of a building services installation as an integral whole; • Synthesise services and draw conclusions that can be applied in new situations in building design.
Comprehensive Learning Outcome	Evaluate environmental and sustainable technologies and apply theoretical knowledge of building services to building design.
Course Content	<ul style="list-style-type: none"> • Sustainable design and design for energy efficiency: orientation, winter sun, summer sun, thermal mass, prevailing winds, water, trees; • Active and Passive methods of internal environmental control;

	<ul style="list-style-type: none"> • Students will be provided with a study guide that will also clearly define what the final performance requirements will be. • Texts as prescribed by Lecturer from time to time. <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Burberry P. (1997), 5th edition, <i>Environment and Services</i>: BT Batsford, London <p>Recommended reading:</p> <ul style="list-style-type: none"> • Gallo, C., Sala, M., & Sayigh, A. A. M. (1998). <i>Architecture: Comfort and energy</i>. New York: Elsevier Science. • Behling, S., Behling, S., Schindler, B., & Foster, N. (1996). <i>Sol power: The evolution of solar architecture</i>. Munchen: Prestel. • Napier, A., & Arch, B. (1999). <i>Enviro-friendly methods in small building design for South Africa</i>. Durban, South Africa: Alaric Napier.
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Course Title	MEASUREMENT 2
Course Code	MSM621S
NQF Level	6
Notional Hours	200 Contact: 45 hours; Directed Self-Learning: 45; Self-Directed Learning: 98 hours; Assessment: 12 hours
NQF Credits	20
Prerequisites	Measurement 1
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 4
Course Aims	The aim of the course is to enable students to translate technical drawings of civil works and multi storey building works into quantifiable work items as per the standard method of measurements.
Specific Learning Outcomes	On completing the course students will through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Interpret technical drawings of multi storey buildings and civil engineering works; • Measure and thus take off quantities for civil works and multi storey building works from technical drawings; • Demonstrate understanding of the preambles of trade for building

	works.						
Comprehensive Learning Outcome	Demonstrate ability to prepare bills of quantities for civil works and multi storey building works with full descriptions and specifications.						
Course Content	<ol style="list-style-type: none"> 1. Measuring, abstracting and billing of projects based on load-bearing structures; 2. Reference to manufacturer catalogues and the ASAQS Model Preambles regarding the following: <ul style="list-style-type: none"> • Precast and pre-stressed concrete beams and floors; • Standard metal doors and windows; • Standard timber doors and windows; • Glass; • Prefabricated timber trusses; • Roof coverings, eaves, flashing and rainwater goods; • Floor, wall and ceiling finishes; • Drainage and plumbing detail; • Paint; • External works. 3. Procedure for the measurement and drawing up of civil engineering bills of quantities. 						
Methods of Facilitating Learning	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 						
Assessment Strategies	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Diversified continuous assessment mode:</td> <td style="width: 40%;">Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td style="text-align: right;">70%</td> </tr> <tr> <td>Tests</td> <td style="text-align: right;">30%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	70%	Tests	30%
Diversified continuous assessment mode:	Recommended weight:						
Assignments	70%						
Tests	30%						

	<ul style="list-style-type: none"> • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer.
Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.
Student Support and Learning Resources	<p>NUST level: The library, student services, internet facilities, architecture portal</p> <p>Department level: Internet facilities available Public lectures</p> <p>Course level: Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course Students will be provided with a study guide that will also clearly define what the final performance requirements will be. Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Standard System for Measuring Building Work (6th Edition). • Seeley, I.H., & Winfield, R. (2009). Seeley and Winfield Building Quantities Explained. UK: Palgrave MacMillan. <p>Recommended reading:</p> <ul style="list-style-type: none"> • Willis, A.J., & Willis, C.J. (1998). <i>Elements of Quantity Surveying</i>. Oxford, UK: Blackwell Science.

SEMESTER 5 COURSES

Course Title	WORK INTEGRATED LEARNING: QUANTITY SURVEYING
Course Code	WQS711S
NQF Level	7
Notional Hours	600 hours
NQF Credits	60
Prerequisites	Measurement 2
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 5
Course Aims	This course aims for students to acquire thorough knowledge in quantity

	<p>performance in accordance with the Logbook requirements.</p> <ul style="list-style-type: none"> • Students placed in the field will be appointed to an industry mentor. • A member of staff will visit students and meet with their supervisors to get a feedback on the attachment on a regular basis. • Students will present a feedback report / portfolio to the internal jury of the department comprising of departmental staff. • Students need to acquire a minimum final mark of 50% to pass the course. • For second opportunities refer to Departmental Regulations.
<p>Quality Assurance Arrangements</p>	<p>Quality Assurance Arrangements are based on Assessment Policies and Rules as formulated in the NUST Assessment and Quality Assurance Policies for work integrated learning (WIL).</p>
<p>Student Support and Learning Resources</p>	<p>NUST level: The library, student services, internet facilities, architecture portal</p> <p>Department level: Internet facilities available Public lectures</p> <p>Course level: Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course Students will be provided with a study guide that will also clearly define what the final performance requirements will be. Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Namibia Institute of Quantity Surveyors Practice Manual <p>Recommended reading: None</p>

SEMESTER 6 COURSES

Course Title	CONSTRUCTION PROJECT MANAGEMENT
Course Code	CPM721S
NQF Level	7
Notional Hours	100 Contact: 30 hours; Directed Self-Learning and Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 6
Course Aims	The course aims to develop students' understanding of the various aspects of construction project management.
Specific Learning Outcomes	On completing the course students will, through assessment activities, show evidence of their ability to: <ul style="list-style-type: none"> • Implement construction project management theory from commencement to completion of the project; • Co-ordinate the various resources pertaining to construction; • Apply various methods of Network Analysis to schedule project activities and resources, and also estimate project durations.
Comprehensive Learning Outcome	Plan and schedule construction projects.
Course Content	<ol style="list-style-type: none"> 1. Planning; <ul style="list-style-type: none"> • Construction materials procurement, delivery and storage; • Construction equipment procurement, delivery, positioning and storage; 2. Scheduling <ul style="list-style-type: none"> • Queuing, • Linear Programming, • Network Analysis, • Project Work Breakdown • Work Scheduling • Critical Path Method of Analysis • Precedence Network Analysis

	<ul style="list-style-type: none"> • Manpower Scheduling • Assignment models. <p>3. Simulation;</p> <p>4. Project Evaluation and Review Technique</p>						
Methods of Facilitating Learning	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 						
Assessment Strategies	<table> <tr> <td>Diversified continuous assessment mode:</td> <td>Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td>60%</td> </tr> <tr> <td>Tests</td> <td>40%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	60%	Tests	40%
Diversified continuous assessment mode:	Recommended weight:						
Assignments	60%						
Tests	40%						
Quality Assurance Arrangements	<p>Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.</p>						
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p>						

	<p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> Dykstra, A. (2011). <i>Construction Project Management</i>. San Francisco, USA: Kirshner Publishing Company. <p>Recommended reading:</p> <ul style="list-style-type: none"> Peurifoy, R. L. (2006). <i>Construction planning, equipment & Methods</i>. UK: McGraw -Hill book company, Ltd. Donald S.B., & Boyd C.P (2001). <i>Professional construction Management</i>. New York, USA: McGraw Hill International.
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Course Title	MEASUREMENT 3
Course Code	MSM721S
NQF Level	7
Notional Hours	100 Contact: 30 hours; Directed Self-Learning: 15; Self-Directed Learning: 49 hours; Assessment: 6 hours
NQF Credits	10
Prerequisites	Measurement 2
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 6
Course Aims	The aim of the course is to enable the students to translate technical drawings of electrical installations and mechanical installations into quantifiable work items as per the standard method of measurements.
Specific Learning Outcomes	<p>On completing the course students will through assessment activities, show evidence of their ability to:</p> <ul style="list-style-type: none"> Interpret electrical and mechanical engineering technical drawings and specifications; Measure and thus take off quantities for electrical and mechanical installations; Prepare bills of quantities for mechanical and electrical installations.
Comprehensive Learning	Prepare bills of quantities from technical drawings and specifications for

Outcome	mechanical and electrical installations.						
Course Content	<ul style="list-style-type: none"> • Introduction to the principles, processes and methods of measurement and documentation of mechanical and electrical installations; • Measurement and description of the following installations: <ul style="list-style-type: none"> • Small power reticulation; • Bulk electricity supply; • Data and Communication Installations; • Lightning protection; • Air-conditioning installations; • Lift and Escalator Installations. • Drawing up of bills of quantities. 						
Methods of Facilitating Learning	<p>The course content will be delivered via methods that will ensure maximum intrinsic knowledge and understanding acquisition. Instructional strategies will aim at student participation on individual as well as group base interaction. Group-based learning is regarded as a major strategy to develop within individuals' professional research competencies. The course will be facilitated through the following instructional strategies and methods:</p> <ul style="list-style-type: none"> • Lectures: to be employed to properly ground the theoretical concepts that underlie a learning domain; • Individual assignments based on demonstrated studies of strategic plans and implementation procedures; • Individual projects will be used as assessment tasks. 						
Assessment Strategies	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Diversified continuous assessment mode:</td> <td style="text-align: right;">Recommended weight:</td> </tr> <tr> <td>Assignments</td> <td style="text-align: right;">80%</td> </tr> <tr> <td>Tests</td> <td style="text-align: right;">20%</td> </tr> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • A portfolio of works will be required at the end of the semester for internal and external moderation. • For second opportunities refer to Departmental Regulations. • Final assessment weights are at discretion of the lecturer. 	Diversified continuous assessment mode:	Recommended weight:	Assignments	80%	Tests	20%
Diversified continuous assessment mode:	Recommended weight:						
Assignments	80%						
Tests	20%						
Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.						
Student Support and	NUST level:						

Learning Resources	<p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Ding, A. (2008). <i>Electrical Estimating Professional Reference</i>. Boston, USA.: Dewalt Cengage Learning • Del Pico, W.J. (2014). <i>Electrical Estimating Methods</i>. London: John Wiley & Sons. <p>Recommended reading:</p> <p>Raina, K.B., & Bhattacharya, S.K. (2005). <i>Electrical Design Estimating and Costing</i>. New Delhi, India: New Age International (P) Limited Publishers.</p>
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Course Title	CONSTRUCTION ACCOUNTING
Course Code	CSA621S
NQF Level	6
Notional Hours	100 Contact: 30 hours; Directed Self-Learning and Self-Directed Learning: 58 hours; Assessment: 12 hours
NQF Credits	10
Prerequisites	None
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 4
Course Aims	The course is designed to equip students with the knowledge and skills in preparing interim valuations, final accounts and professional fee claims.
Specific Learning	On completing the course students will through assessment activities, show

Arrangements	general rules and guidelines on moderation.
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p> <p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Texts as prescribed by Lecturer from time to time.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none"> • Trench, L.S. & Willis, A. W. (2011). <i>Willis's elements of quantity surveying</i>. Chichester, West Sussex, UK: Wiley-Blackwell. • Ramus, J.W., & Birchall, S. (2007). <i>Contract Practice for Surveyors</i>. Oxford, UK: Butterworth Heinemann. <p>Recommended reading:</p> <ul style="list-style-type: none"> • Ashworth, V., Hogg K., & Higg, C. (2013). <i>Willis's Practice and Procedure for the quantity surveyor</i>. Chichester, West Sussex, UK: Wiley-Blackwell.

Course Title	QUANTITY SURVEYING PROJECT
Course Code	QSP721S
NQF Level	7
Notional Hours	200 hours
NQF Credits	20
Prerequisites	Work Integrated Learning: QS
Options (compulsory or elective)	Compulsory
Semester Offered	Semester 6
Course Aims	This course aims to provide students with the opportunity to complete the series of undergraduate quantity surveying practice and application of quantity surveying theory.

Specific Learning Outcomes	<p>On completing the course students will, through assessment activities, show evidence of the ability to:</p> <ul style="list-style-type: none"> • Take off quantities from technical drawings and specifications; • Abstract from takeoff sheets; • Prepare a bills of quantities using recommended software; • Price all items in the bills of quantities. 										
Comprehensive Learning Outcome	Demonstrate competence in various aspects of preparation of bills of quantities and pricing.										
Course Content	<ol style="list-style-type: none"> 1. Integrate technology, construction and services with the bills of quantities production; <ul style="list-style-type: none"> • Take off quantities; • Abstracting; • Billing. 2. Conduct market survey to obtain prices of various building materials; 3. Build-up the rates using information obtained from market survey; 4. Price-up the bill of quantities. 										
Methods of Facilitating Learning	<p>The method of course delivery is a combination of theory seminars / input lectures, analytical case and precedent studies.</p> <p>Note: The increased notional hours are in view of the innovativeness and professionalism of the expected outcome as a culmination of all the quantity surveying theory learning experience of students through the programme.</p>										
Assessment Strategies	<p>Course assessment mode is continuous.</p> <table> <tr> <td>Quality of taking off quantities</td> <td>20%</td> </tr> <tr> <td>Quality of abstracting</td> <td>10%</td> </tr> <tr> <td>Quality and conformity of Bill of quantities</td> <td>35%</td> </tr> <tr> <td>Quality of pricing</td> <td>25%</td> </tr> <tr> <td>Presentation</td> <td>10%</td> </tr> </table> <ul style="list-style-type: none"> • Students need to acquire a minimum final mark of 50% to pass the course. • The work will be orally presented before a jury of internal and external moderators for the award of the B.QS. Degree. 	Quality of taking off quantities	20%	Quality of abstracting	10%	Quality and conformity of Bill of quantities	35%	Quality of pricing	25%	Presentation	10%
Quality of taking off quantities	20%										
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Quality Assurance Arrangements	Moderation of assessment will be done in accordance with the NUST's general rules and guidelines on moderation.										
Student Support and Learning Resources	<p>NUST level:</p> <p>The library, student services, internet facilities, architecture portal</p>										

	<p>Department level:</p> <p>Internet facilities available</p> <p>Public lectures</p> <p>Course level:</p> <p>Students will be provided with a detailed course outline which will clearly define the purpose, aims and objectives of the course</p> <p>Students will be provided with a study guide that will also clearly define what the final performance requirements will be.</p> <p>Prescribed Textbook:</p> <ul style="list-style-type: none">• Standard systems of Measuring Building works. (6th Edition) ASAQS.• Travor.M. Holroyd (2000). <i>Principles of Estimating</i>. London, UK: Thomas Telford <p>Recommended reading:</p> <ul style="list-style-type: none">• Lee, S., Trench, W., & Willis, A. (2011). <i>Willis's elements of quantity surveying</i>. Chichester, West Sussex, UK: Wiley-Blackwell.
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