

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

Yearbook

2018/19

FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION

A/Dean

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Senior Assistant Registrar

Mrs C V Ngwenya, MEd (MSU), PGDSSM (Stellenbosch), BEd (UZ), CE (UCE)

Chief Secretary

M Moyo, HND Office Management, ND Secretarial Studies, Diploma in Management, NC Secretarial Studies

Chief Technician

Mr C Masango, BSc (BUSE)

FACULTY REGULATIONS

1.0 PREAMBLE

- 1.1 The Faculty of Science and Technology Education seeks to offer world-class programmes in identified areas of science, technology, engineering, mathematics (STEM) and design education. The Faculty aims to prepare quality practitioners, educators and professionals for the secondary and post-secondary school education sector, suitable for serving in a wide variety of environments for teaching, training and skills development. The Master's and Doctoral programmes offered in the Faculty shall prepare technologically-inclined senior professionals for leadership in raising the level of scientific and technological appreciation among the general populace.
- 1.2 These regulations should be read in conjunction with the General Academic Regulations for Undergraduate Degrees of the University, and the General Academic Regulations for Postgraduate Diplomas, Masters Degrees by Coursework, Master of Philosophy Degrees and Higher Doctorate degrees (both hereinafter referred to as the **General Academic Regulations**).

2.0 PROGRAMMES OFFERED IN THE FACULTY

The Faculty of Science and Technology Education at NUST is made up of three departments which offer the programmes listed below:

- 2.1 Department of Art, Design and Technology Education (ADTE)
- 2.1.1 Undergraduate
- 2.1.1.1 Bachelor of Design Education Honours (BDesEd Hons)
- 2.1.2 **Postgraduate**
- 2.1.2.1 Master of Design Education (MDesEd)
- 2.2 Department of Science, Mathematics and Technology Education (SMTE)
- 2.2.1 **Undergraduate**
- 2.2.1.1 Bachelor of Science Education Honours (BScEd Hons) (in Specialist subject)
- 2.2.2 **Postgraduate**
- 2.2.2.1 Postgraduate Diploma in Science and Technology Education (PGDSTE)
- 2.2.2.2 Master of Science Education (MScEd)
- 2.3 Department of Technical and Engineering Education and Training (TEET)
- 2.3.1 Undergraduate
- 2.3.1.1 Bachelor of Technology Education Honours (BTechEd Hons) (in Specialist subject)
- 2.3.1.2 Short Modules in Engineering and technology

2.3.2 **Postgraduate**

- 2.3.2.1 Postgraduate Diploma in Higher Education (PGDHE)
- 2.3.2.2 Master of Technology Education (MTechEd)
- 2.3.2.3 Diploma in Engineering and Technology Education (Short modules)

2.4 Faculty Higher Degree Programmes

In addition, the Faculty offers the following faculty-wide and cross-disciplinary higher degrees by research:

- 2.4.1 Master of Philosophy (MPhil)
- 2.4.2 Doctor of Philosophy (PhD)

3.0 FACULTY REGULATIONS FOR UNDERGRADUATE DEGREES

3.1 Entry Qualifications

- 3.1.1 Applicants for all programmes in the Faculty must have at least five 'O' level passes including English Language and Mathematics.
- 3.1.2 Applicants for normal entry must have a minimum of two 'A' level passes including the subject intended for study.
- 3.1.3 Applicants for special entry in undergraduate programmes must have an approved post-secondary school diploma or certificate in the subject of their specialization and in education. They must also normally have a minimum of **two** years teaching or related experience.

3.2 **Programmes and mode of study**

- 3.2.1 All undergraduate programmes consist of taught modules, Industrial Attachment/Work-based experience (work-based learning) and a final year project.
- 3.2.2 Programmes shall be delivered in any of the following modes: full-time, block-release, part time or parallel sessions and shall include one or more of face-to-face, online and blended learning approaches.
- 3.2.3 Where appropriate, bridging modules shall be offered to candidates prior to embarking on a programme.

3.3 Assessment

3.3.1 Undergraduate programmes

- 3.3.1.1 Unless specified otherwise, all theory taught modules, Industrial Attachment/Work-based experience and the final year project shall bear a continuous assessment component (40%) and an examination (60%).
- 3.3.1.2 Assessment of modules with a practical component, unless specified otherwise, shall be weighted as follows: continuous assessment 20%; practical 20% and examination 60%.
- 3.3.1.3 The continuous assessment component must normally consist of at least **two** distinct and appropriately weighted pieces of work

- submitted by the students including assignments, tests, presentations, reports, projects, portfolios, etc.
- 3.3.1.4 The practical component shall normally consist of at least **two** separate and appropriately weighted submissions of laboratory/workshop/studio/fieldwork reports, tests, assignments, products, artifacts, portfolios, etc.
- 3.3.1.5 In order to pass a module, a candidate must attain a score of at least 35% in all the components of assessment, i.e. the continuous assessment, the practical assessment and in the examination, whichever applies to him/her.
- 3.3.1.6 Assessment of the Industrial Attachment/Work-based experience (WBE) shall consist of continuous assessment (assessment reports from university and the candidates' workplace) and the examination component (work-based experience file, log book, and analytical report)
- 3.3.1.7 The minimum overall pass mark in each module and in aggregated part or programme marks shall be 50%.
- 3.3.1.8 The grading system for each module and part aggregate shall be as stated in the General Regulations.
- 3.3.1.9 Except where it is specified otherwise, the General Regulations of the University concerning pass and fail, proceeding to the next part, carry over modules, repeat, withdrawal and discontinue shall apply.
- 3.3.1.10 For degree classification, the programme part weightings and credit allocations shall be as follows:

 Part I
 10%

 Part II
 20%

 Part III
 20%

 Part IV
 50%

 Total
 100%

3.4 Award of the degree

- 3.4.1 Candidates for each degree programme must satisfy the examiners in all the prescribed modules and in all requirements for the programmes in which they seek to be awarded the degree.
- 3.4.2 For the degree to be awarded, the total number of credits must be satisfied i.e. 480 credits for the honours Bachelor degree and 288 credits for the Masters degree.
- 3.4.3 The classification of the degree programmes shall be as in the General Academic Regulations.
- 3.4.4 Higher degrees by research only shall not be classified.

4.0 FACULTY REGULATIONS FOR TAUGHT POSTGRADUATE DEGREES

4.1 Entry Requirements

- 4.1.1 Applicants for postgraduate study programmes must have, in addition to the basic requirements for admission into the University, the minimum qualifications required by the appropriate programmes.
- 4.1.2 These qualifications normally comprise a relevant first degree in a specified study area and a specified period of work experience.

4.2 Programmes and Mode of Study

- 4.2.1 The programmes on offer include Postgraduate Diplomas and Masters by Coursework.
- 4.2.2 The programmes will be offered on any of these modes: full time, part time and block release sessions.
- 4.2.3 Masters by coursework programmes shall consist of a dissertation component whose weighting shall normally be 25% of the overall degree aggregate.
- 4.2.4 The taught component of the Masters by coursework shall consist of common modules in education and professional studies, as well as specialist teaching subject modules.
- 4.2.5 The mode of study for programmes by research only shall be guided by the University's General Academic Regulations for Postgraduate programmes.

4.3 Assessment

- 4.3.1 Assessment of the taught masters programmes by coursework and dissertation shall normally follow the provisions of the General Regulations.
- 4.3.2 All taught modules shall bear a continuous assessment component (40%) and an examination (60%).
- 4.3.3 To proceed from Part I to Part II, a candidate must pass at least six (75%) of the modules studied.
- 4.3.4 The determination of the overall degree aggregate and credit allocation for a taught Masters programme with a dissertation component shall be:

Part I Taught modules 50%

Part II Taught modules 25%
Dissertation 25%

4.4 Award of the degree

- 4.4.1 Candidates for each degree programme must satisfy the examiners in all the prescribed modules and in all requirements for the programmes in which they seek to be awarded the degree.
- 4.4.2 For the Masters degree to be awarded, candidates must obtain 288 credits.

- 4.4.3 The classification of the degree programmes shall be as in the General Academic Regulations.
- 4.4.4 Higher degrees by research only shall not be classified.

5.0 KEY TO MODULE CODES

The following code ranges shall be used for creating and identifying all modules in the Faculty:

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00-19	Education and professional studies
20-24	Art and Design
25-29	Design and Technology
30-34	Mathematics
36-39	Biological Science
40-44	Chemistry
45-49	Mechanical Engineering
50-54	Electrical and Electronic Engineering
55-59	Civil and Construction Engineering
60-64	Accounting, Business Management, Economics
65-69	Hotel, Tourism and Wildlife management
70-74	Physics
75-79	Computer Science and Engineering
80-84	Technical graphics
85-89	Wood science & Technology
90-94	Clothing, Textile & Fashion Design

6.0 REGULATIONS FOR HIGHER DEGREES

Environmental Science

6.1 Introduction

95-99

These regulations apply to the research degrees of Master of Philosophy (MPhil) and Doctor of Philosophy (PhD) degrees offered by the faculty. The regulations should be read in conjunction with the university's general regulations for postgraduate programmes, and the relevant faculty and/or university guidelines for higher degrees.

6.2 Faculty Research focus areas

The Faculty encourages inter-disciplinary and cross-departmental research. Candidates may select research topics which interlace with one or more of the following current themes and focus areas of the Faculty:

- 6.2.1 Science, technology, engineering and mathematics (STEM) education curricula and assessment processes (from early childhood to tertiary and higher education).
- 6.2.2 Technical and vocational education and training (TVET), design and technology (D&T) education, policy, planning, theory and practice, implementation and evaluation.
- 6.2.3 STEM, TVET, D&T pedagogy, teacher-student interaction, student engagement, learning outcomes.

- 6.2.4 Teacher and student emotional development, motivation, discipline, learning styles, self-efficacy and epistemological beliefs.
- 6.2.5 Leadership, management, supervision, policy, standards and quality in science and technology (S&T) education planning, delivery and evaluation.
- 6.2.6 Quantitative and qualitative research, design-based research, research-based practice in STEM education.
- 6.2.7 Work-integrated learning, industrial attachment, experiential learning, service to community.
- 6.2.8 Information and communication technologies (ICTs) in STEM education, Mobile learning, E-learning, digital pedagogies, Technology-enhanced learning.
- 6.2.9 Gender, inclusiveness, social support, science and technology literacy, group learning, student support and help-seeking, learning environments, resources and the digital divide.

6.3 Learning outcomes for research candidates

6.3.1General outcomes

In general, the expectations of the Faculty for research candidates are that they go through an independent but properly guided process of enquiry and intellectual engagement in which they acquire critical and relevant skills relating to problem-solving and competent application of innovative and cutting-edge knowledge. Such skills may be summarized in the following sub-headings:

- Systematic, scientific research capability
- Communication and interactive engagement
- Personal organization and efficiency
- Depth of knowledge

The guidance provided to the candidate will be through one or more Supervisors suitably qualified and preferably more experienced in the area of research than the candidate. The guidance may also include customized lectures, seminars, workshops, conferences, laboratory and field work.

6.3.1 Academic outcomes

All candidates for research degrees should be able to identify a research or design problem or opportunity, develop and defend a research proposal, carry out scientifically approved data collection procedures, systematically analyse results and make necessary conclusions and recommendations on their findings. Competence in research skills and scholarly engagement will be measured primarily through a written dissertation or thesis, an oral defence of the research, and supported by conference presentations and/or journal publications, practical designs and products.

6.4 Master of Philosophy (MPhil)

6.4.1 **Admission**

- 6.4.1.1 In addition to the general requirements for admission into the university, all applicants to the research degree must be in possession of:
 - 6.4.1.1.1 a relevant honours degree awarded in the first or upper second class division, or
 - 6.4.1.1.2 the relevant postgraduate diploma awarded with a distinction or merit
- 6.4.1.2 Applicants must submit a research proposal together with their application for consideration in determining their acceptance into the degree programme.
- 6.4.1.3 Admission into the programme will be subject to the availability of suitable Supervisors.

6.4.2 **Programme of Study**

- 6.4.2.1 The duration of the programme will be a minimum of 12 months full-time or 18 months on part-time. Normally the programme will not exceed three years in duration.
- 6.4.2.2 Candidates will be expected to pursue a mini-research project in a study area selected from Section 2.0 above or any related topic.
- 6.4.2.3 Candidates will normally be guided by two supervisors, at least one of whom should be a full or part-time academic staff member in the faculty.
- 6.4.2.4 Candidates will be expected to attend research-related sessions provided for master's students as part of their research training.
- 6.4.2.5 The study programme will be composed of the following units:
 - PST6311 Advanced Research Methods and Practice
 - PST6411 Tools for Basic and Applied Research
 - PST7000 Dissertation

Exemption to the taught components, PST6311 and PST6411, will be negotiated and granted to candidates with approved equivalent qualifications.

6.4.2.6 The dissertation will be of specified length as agreed between the candidate and the Supervisor(s), but will generally be expected to be no less than 75000 words.

6.4.3 Assessment

- 6.4.3.1 Candidates will be expected to pass both the taught courses and the dissertation before being awarded the degree.
- 6.4.3.2 Assessment of the thesis will be determined by progress and competence in accomplishing all stages of the research project, to the satisfaction of the candidate's supervisors, the Faculty Higher Degrees Committee and the appointed examiners of the dissertation.
- 6.4.3.3 The stages of a research project will consider, but not be limited to, the following:
 - Research proposal development and defence,
 - sourcing, presentation and analysis of relevant literature,
 - developing an appropriate research design,
 - data collection, analysis and interpretation,

- generation of new knowledge,
- oral examination and/or defence of study outcomes,
- and production of a written dissertation report of approved standard.
- 6.4.3.4 Appointment of examiners for the dissertation will be done in accordance with the University General regulations.

6.5 **Doctor of Philosophy (PhD)**

6.5.1 Admission

- 6.5.1.1 Candidates must:
 - 6.5.1.1.1 have successfully completed, or about to complete, the Master of Philosophy degree, or
 - 6.5.1.1.2 possess a relevant Master's degree in approved areas of study relevant to the faculty's requirements.

6.5.2 **Programme of Study**

- 6.5.2.1 The duration of the programme will be a minimum of 2 years on full-time study and a maximum of 5 years part time study. The candidate will be expected to complete the degree within 7 years.
- 6.5.2.2 The programme will be composed of two units:

PST7000 Thesis

PST7001 Research colloquium

- 6.5.2.3 The thesis will be a scientific report of minimum 120 000 words, and at least one journal article, developed in close liaison with the appointed supervisors.
- 6.5.2.4 The research colloquium will consist of a variety of research-related professional engagements in general or in the candidate's research area including but not limited to the following: attendance and participation in faculty-supported workshops, seminars, lectures, conferences, funded and unfunded projects, publications, designs, patents, etc.

6.5.3 Assessment

- 6.5.3.1 Assessment of the degree will be determined by progress and competence in accomplishing all stages of the research project, to the satisfaction of the candidate's supervisors, the Faculty Higher Degrees Committee, external examiners and Academic Board.
- 6.5.3.2 Internal assessment of a research project will consider, among others, the following processes: Research proposal development and defence, sourcing, presentation and analysis of relevant literature, developing an appropriate research design, data collection, analysis and interpretation, generation of new knowledge or product, oral examination and/or defence of findings and conclusions, and production of a written thesis report of approved quality and standard.
- 6.5.3.3 At least three External Examiners will be appointed to examine the thesis report in accordance with the University General regulations.

6.5.4 **Award of the degree**

- 6.5.4.1 The award of the degree will be subject to the successful and satisfactory completion of the research colloquium, the thesis report and the journal article.
- 6.5.4.2 The degree shall be awarded in the fail or pass grade.

DEPARTMENT OF ART DESIGN AND TECHNOLOGY EDUCATION

Lecturer and Chairperson

M. Dlodlo (Nxumalo), Bed. (University of Zimbabwe), MA in Education Studies University of Surrey

Lecturer

F.N. Tlou, BA Ed (University of Sierra Leone), MED CA (University of Zimbabwe), PhD (University of Fort Hare)

Secretary

P. Dube, NC Secretarial Studies, ND Secretarial Studies, HND- Office Management – (Bulawayo Poly).

APPLIED ART & DESIGN

PROGRAMME SUMMARY

YEAR I

Module Code	Module Description	Credits
PDT1120	History of Design	10
PDT1121	Traditional & Contemporary Art	10
PDT1123	Modelling & Materials	10
	3 Education Modules	30
PDT1220	Drawing & Anthropometrics	10
PDT1221	Design Analysis	10
PDT1222	Fine Art Studio	10
	3 Education Modules	30
YEAR II		
PDT2122	Electronic Imaging	10
PDT2124	Practical Development of Designs	10
PDT2127	Design Processes	10
	3 Education Modules	30
PDT2222	Fine Art Studio II	10
PDT2223	Set Designs	10
PDT2224	Product Development	10
	3 Education Modules	30
YEAR III		
PST	Industrial Attachment	120
YEAR IV		
PDT4122	Design Media	10
PDT4123	Visual Inquiry	10
PDT4121	Principles of Marketing	10
	Education Courses	20
PST4020	Final Year Project	20
PDT4221	Design Enquiry	10
PDT4224	Personal Development	10
PDT4227	Graphics Designs	10
	3 Education Modules	20
Total		480

CLOTHING TEXTILES & FASHION DESIGN

PROGRAMME SUMMARY

YEAR I

Module Code	Module Description	Credits
PDT1190	Fibres Yarns & Fabrics	10
PDT1191	Textile & Fabric Design	10
PDT1193	Fabric Production	10
	3 Education Modules	30
PDT1290	Testing of Yarns & Fabrics	10
PDT1291	Finishing & Finishes	10
PDT1294	Preparation Processes	10
	3 Education Modules	30
YEAR II		
PDT2190	Life Style and Fashion Design	10
PDT2192	Textile Modelling	10
PDT2195	Fashion Modelling	10
	3 Education Modules	30
PDT2290	Clothing Factory Practice	10
PDT2291	Fashion Design	10
PDT2292	Textile Design Techniques	10
	3 Education Modules	30
YEAR III		
PST	Industrial Attachment	120
YEAR IV		
PDT4191	Principles of Marketing	10
PDT4192	Textile Designs	10
PDT4194	Research in Clothing & Textiles	10
	2 Education Courses	20
PST4020	Final Year Project	20
PDT42292	Textiles & Fashion Products	10
PDT4224	Personal Development	10
PDT4222	Fashion Graphic Designs	10
	2 Education Courses	20
Total		480

DESIGN AND TECHNOLOGY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PDT1126	Foundations of Design & Technology	10
PTE1145	Engineering Drawing I	10
PDT1147	Modelling & Materials	10
	3 Education Modules	30
PDT1225	Design Proposals	10
PTE1253	Electronic Eng. Circuits & Devices	10
PTE1256	Workshop Technology & Safety	10
	3 Education Modules	30
YEAR II		
PDT2126	Development of Designs	10
PDT2127	Design Processes	10
PDT2128	Theories of Design & Technology	10
	3 Education Modules	30
PDT2224	Product Development	10
PDT2226	Contemporary Designs & Technology	10
PDT2227	Aesthetics, Ergonomics & Energy	10
	3 Education Modules	30
YEAR III		
PST	Industrial Attachment	120
YEAR IV		
PDT4126	Tool Technology	10
PDT4127	Practical Technology	10
PDT4129	Design & Technology Products	10
	2 Education Courses	20
PST4020	Final Year Project	20
PDT4227	Graphic Designs	10
PDT4228	Mechanisms Structures & Designs	10
PDT4229	Power Sources & Control	10
	2 Education Courses	20
Total Credits		480

TOTAL CREDITS FOR EACH UNDERGRADUATE PROGRAMME

Year II 120 Year III 120 Year III 120 Year IV 120

Total Minimum Credits: 480

MODULE SYNOPSES

PDT1120 History of Design

10 Credits

The module is a survey of art, architectural, fashion, textile and graphic designs, a historical study of design techniques, development of designs from Industrial Revolution, contribution of the art movements and industrial revolution to design, a history of portrait, fashion photography and textile designing and a contribution of art to design.

PDT1121 Traditional and Contemporary Issues 10 Credits

The module is a study and exploration of the critical theory and its application in design, art movements and their role in the development of designs, critical thinking, creativity, innovation and inventions as well as evaluation of contemporary works of designs.

PDT1126 Foundations of Design and Technology 10 Credits

The module looks at issues of definition and scope, nature of design and technology activity, capability and creativity, action knowledge, cognitive processes, development of skills and personal qualities, learning by researching, sustaining learning through motivation and engagement of the learner, contexts: breadth, depth, balance and relevance, transferability of knowledge to design situations and a frame work for progression from one level to another.

PDT1147 Modelling and Materials

10 Credits

The module examines materials classification and their structure, atomic bonding in materials, crystallisation, dislocations, plastic deformation, temperature measurement, phase diagrams, solidification, liquidification, vaporization, alloy formation, types of material, composite, selection and their applications i.e. wood, plastics, ceramics and other alloys. It also looks at materials for Modelling, theories of models and model making, imagination, creativity, innovation and invention, image formation, model making and realization, problem solving, visual patterns, models, prototypes and artifacts. The module also looks at material selection for designs, experimentation with a range of materials, costs of models for designs, classification of properties and analysis of materials for design models and product development, testing and evaluating materials, directory of design materials as well as an analysis of design case studies.

PDT1190 Fibres, Yarns and Fabrics

10 Credits

The module examines the classification of textile fibres; broad outline of production methods of the main man-made fibres; physical and behavioural characteristics, fibres to Yarns, Fibres preparatory processes, carding, intermediate stage-processing and spinning within the various systems, filaments and their preparation and classification.

PDT1191 Textile and Fabric Design

10 Credits

In this module students should develop a critical appreciation of design through the study of contemporary, historical and multicultural design sources and processes as well as explore a range of traditional, contemporary and experimental textile and fabric design processes and

techniques such as design principles, contemporary fashion design, home based and industrial. It also looks at clothing manufacturing processes, textile applications, designing to specification, application of colour and environmental issues.

PDT1193 Fabric Production

10 Credits

The module looks at woven, knitted and non-woven structures, their production, processes, design and analysis advances and future trends, selection of fabrics as well as product design and development.

PDT1220 Drawing and Anthropometrics

10 Credits

The module looks at drawing through perception, importance of drawing skills, mark and image making, principles and skills of drawing: observation, still life drawing and analysis of drawings. There is also an exploration of drawing techniques; pen, pencil and wash, anatomy and anthropometrics principles of anthropometric drawing, importance of anthropometrics in design, drawing from models and the importance of measurements in anthropometrics.

PDT1221 Design Analysis

10 Credits

The module is about analyzing a design into: design brief, search and order information on a design problem. There is also an appraisal of situations with specific requirements taking into account human needs, aesthetic, technical and environmental factors. Students generate and explore ideas and concepts, evaluate ideas, selection and modelling of a design proposal develop a design proposal, design techniques, technology and technology processes as well as historical & contextual, cultural contexts relativity.

PDT1222 Fine Art Studio I

10 Credits

This module articulates fine art ideas to give students an opportunity to work imaginatively in painting, drawing, sculpture printmaking and photography. Students should develop subject knowledge through fine art activities and contemporary art. Line drawing, life drawing and free hand sketching, intermediate line drawing, life drawing and sketching, perception and application in use of colour in a variety of media are also examined.

PDT1225 Design Proposals

10 Credits

The module is about identifying needs through practical design activity, design concepts, design case studies, preparing design brief, investigating, writing specification and modelling.

PDT1290 Testing Of Yarns and Products

10 Credits

This module focuses on yarns- linear density, count, twist, regularity, strength, effects of moisture; fabrics-physical analysis for mass and unit production as well as fabric sett; ends and picks and modules per unit length, count of yarn from fabrics, Fabric products-abrasion, resistance / piling, air water and moisture/ vapour permeability.

PDT1291 Finishing and Finishes

10 Credits

The module is about the finishing processes for various textile materials, application of finishes for enhancement and performance; product and garment after care-labelling and applied finishes selection of laundering processes.

PDT1293 Preparation Processes

10 Credits

The module explores the preparation processes for various textile applications of colour, printing, fastness and principles of colouration.

PDT2122 Electronic Imaging

10 Credits

The module looks at constructivist theory of design, electronic imaging and designing, corel draw, computer Aided Drawing, digital imaging, digital drawing and photography and scanning, uploading and down loading electronic images as well as combing digital images and colour for imaging.

PDT2124 Practical Development of Designs

10 Credits

This module provides students with a professional context to study and put into practice art and design skill. Students undertake activities such as painting, drawing, sculpture, printmaking and photography. Students develop skills through project work in fine art, textiles, graphic design, photography, sculpture or ceramics.

PDT2126 Development of Designs

10 Credits

The module is about generating and recording possible solutions and assessing possible solutions through a variety of techniques. Students will develop a detailed project proposal for production of final product as well as identifying resources needed for the realization of a solution and costing together with implementation: organizing resources, making the product using appropriate hand tools and machines tools/ equipment. The module also looks into testing and evaluation, efficient use of materials, energy and other resources for production, testing and evaluation: Devise appropriate tests for assessing products as well as suggesting possible solutions.

PDT2127 Design Processes

10 Credits

Students apply the design process considering its application in identification of a need or opportunity leading to a design brief, analysis of and research into the design brief which results in a specification. There is also generation and appraisal of design ideas, modelling of ideas, product development and planning, realization, testing and evaluation. The design process stages: Identifying need, Conception, sketching and drawing, design brief, specification, research, generating possible solutions, modelling, review design, improve and make, present for testing and evaluation are also looked at. Methods are also examined step by step working from conception to final production as well as problem solving.

PDT2128 Theories of Design and Technology

10 Credits

The module looks at theories: Socio-cultural learning theories, Constructivist theory, critical theory, institutional theories. Also it looks at the nature of knowledge and its place in education,

meanings and areas of design & technology and their justification, components of design & technology, and curriculum content and experiences for the learner, technological literacy and capability as well as STEM and Professional Development of teachers on delivery.

PDT2190 Life Style and Fashion Design

10 Credits

The module is about people's life styles; the psychology of clothing, comfort in dress and clothing and has an analysis and characteristics of sports and dress textiles and fabrics; sports fashion.

PDT2192 Textile Modelling

10 Credits

The course is about textile design techniques; colour theory, colour media, colour separation and there will be exercises in designing textiles for fashion wear.

PDT2195 Fashion Modelling

10 Credits

The module has a history of costumes, fashion designs, art movements that influence fashion design as well as images for fashion modelling, fashion drawing, pattern making using ICT and clothing vs. fashion.

PDT2222 Fine Art Studio II (Visual Communication) 10 Credits

The module explores the principles and elements of design; Perception; texture, line, harmony, rhythm, motion; Principles of design and perception; texture, line, form, harmony, rhythm, motion style; The concept of form and style; Elements of design; colour theory, painting, variety of visual media, processing and identifying and understanding properties of colour, use of colour as a tool for designs, impact of colour upon the viewer; Visual literacy: cultural and environmental factors; Advanced line drawing, life drawing and sketching, incorporating any one of the following electives calligraphy, photography, theatre design, and interior decoration.

PDT2223 Set Designs

10 Credits

The module looks at spatial designs and approaches in interior design, stage design and exhibitions; commissioned designs, major design projects: planning specific site designs, producing installations and designing environments.

PDT2224 Product Development

10 Credits

The module looks at the application of the design process in the development of design products; development of drawing skills through imagination, origination, creativity and realizing of own ideas through products; Mini design projects and production of designs.

PDT2226 Contemporary Design and Technology

10 Credits

The module recognises and examines rational approaches to design; Conservation of resources, obsolesce and the role of recycling; Effects of designs upon society, Differences between individual, small batch and mass production and how each affects means of production, products and the people involved.

PDT2227 Aesthetics, Ergonomics and Energy

10 Credits

The module examines aesthetics; use of design elements, effects of light and shade and rendering on solid forms, surface finishes; Aesthetic sensibility and vocabulary: harmony, conflict, static & dynamic; Significance of style and influence of fashion and design on designs; Ergonomics: Understand the influence of ergonomics in design; Interpreting and applying anthropometric data in designs; Energy: sources of energy, influence of infinite supplies; fossil fuels, regenerative forms of energy, storage of energy, methods of conservation and transmission and mechanisms; Control and control techniques: basic principles, semi-automatic and automatic control, input and output, feedback & amplification and the principles employed in CAD/CAM.

PDT2290 Clothing Factory Practice

10 Credits

In this module students shall be exposed to standard fashion practice during clothing production; Safety management systems; factory operations; factory practice; effects of practice and factory equipment.

PDT2291 Fashion Design

10 Credits

This module outlines the concept of fashion, fashion trends, contemporary fashion, National, regional and international fashion designers and their collection; Emerging artists and their collection; Studio practice in fashion design and application of design principles.

PDT2292 Textile Design Techniques

10 Credits

The module focuses on visual research and drawing techniques, innovation, creativity design techniques; printing, knitting, embroidery and appliqué. Students are encouraged to develop personal ideas.

PDT4122 Design Media

10 Credits

The module highlights contemporary design practice. It is a project based module to offer students the opportunity to explore and experience with some of the visual effects of information communication technology; apply the design process in developing visual designs; define objectives, identify constraints through synthesis of design solutions, a presentation of designs using ICT; producing still and animated electronic designs; evaluation of design work and digital images in galleries, museums, electronic devices and other art and design centres.

PDT4123 Visual Inquiry

10 Credits

This module is on visual research; Approaches in visual research; Concepts, testing and evaluation of visual objects and images; Types of research in design; Developing own designs; Research strategy in design; Involving the consumer in designing and design research; Research methods in design and an inquiry by design.

PDT4124 Design Marketing

10 Credits

The module looks at combining design skills, creative ability and analytical skills. Hence students will carry out market research and develop new products; Study consumer behaviour in selling and advertising design products; Design management and the role of competition in design; Textile Design and Fashion Marketing, Textile and fabric merchandizing; visual

merchandizing, retail merchandizing and their effects; Merchandising techniques; Sales, fashion shows, exhibitions of textiles and fashion designs.

PDT4126 Tool Technology

10 Credits

This module helps students in understanding the cutting action of lathe, end milling, drilling, sawing and hand cutting; Maintenance of hand and machine tool cutting edges, cutting action of drills, lathe tools and hand tools; Tool technology, selecting tools and materials; Processes: marking, cutting shaping, joining and assembling methods; Temporary and permanent fixing; Applying finishes according to material use; Testing: non-destructive testing, including strain gauges and photo elasticity; Understanding tensile, compressive, shear, bending, torsion and impact.

PDT4127 Practical Technology

10 Credits

The module explores technological Design and Production; Effect of developments on designs and manufacture of artifacts; Terms: invention, innovation and evolution; Use of CAD (computer aided design) for the storage of and retrieval of data and manipulation of images to aid design production and management and features of CAM (computer aided manufacture) in the control of machines.

PDT4129 Design and Technology Products

10 Credits

This module gives students experience in carrying out design research in their special areas. Students should take leading position in conducting mini research on a topic of interest to produce a product or system.

PDT4192 Textile Designs

10 Credits

The project offers a critical evaluation of African textiles designs and styles; fashion designs function and dress; Ornamentation, use of colour, embroidery, appliqué ornamentation and equipment for ornamentation.

PDT4194 Research In Clothing, Textiles And Fashion 10 Credits

This is a project based enquiry that shall provide students with an opportunity to critically evaluate emerging technologies in textile, clothing and fashion design. Research shall be conducted and presentations made on a topic selected from either clothing, textiles or fashion design. Focus shall provide the means to examine the parameters of each aspect and technologies used in detail. Students shall acquire understanding of the design process and develop in-depth drawing and colour expertise alongside technical skills.

PDT4221 Design Enquiry

10 Credits

This is a design enrichment module in Research & Development (R&D). It provides students with an opportunity to investigate, designs and design concepts; Testing and evaluating designs; Design co-operation, meaning of, activities and side effects; Research strategy formulation; approaches to designs and design settings, research quality and research methods in designing.

PDT4227 Graphics Designs

10 Credits

The module looks at the nature and history of graphic design, Fundamental of computer graphics Two dimensional drawing (2-D), Three dimensional drawing (3-D) in graphic design; ICT for designing; photo realism, retracing radiosity and particle tracing Digital drawing, digital photography; Developing designs from digital images; Computer design software and tools for graphic design;; Advertizing designs and print media; Development of graphic products, magazines, packing and posters; Designing using software e g; CorelDraw, Publisher, Photoshop and other software: Color, textures, human visual system; Design influences and methodology; Marketing methods in the commercial world; Practice in the use of CAD and Corel Draw; Production of graphical products; Costing, storage, retrieval, modification, of drawings and integration of data for costing, stock control; Drawing conventions for engineering, electrical and architectural designs; Recording information: Techniques, for recording, and manipulation of design information ideas, and processing; Free-hand sketching and drawing, annotation, recording information: bar charts, pie charts, 2D & 3D charts, graphs, tables, pictograms, ideograms etc and analyzing data and other information.

PDT4224 Personal Development

10 Credits

The module involves studying the environment, identifying design problems in specialist areas of study and coming up with solutions to the problems. The module draws together previous, relevant subject experience and provides a context within which a student can work at a level of a professional designer. Students are expected to analyze a brief and translate it into a detailed specification based on investigations on existing competitor products and produce a model or prototype as a solution to the problem.

PDT4228 Mechanisms, Structures and Designs

10 Credits

The module examines terms and their meaning: load, effort, mechanical advantage, velocity; Methods of converting linear to rotary motion, use of cams, cranks and ratchets; Converting and transiting methods; Friction and lubrication, hydraulic and pneumatic systems for linear motion; Structures: frame and mono structures, on buildings, bridges, cranes, furniture etc; Problem solving, problem solving, forces of equilibrium; Bow's notation for the resolution by graphical means and presentation drawings.

PDT4229/PTE4253 Power Sources & Control

10 Credits

The module focuses on the characteristics of AC and DC; Principles of step down/up; Voltage and current regulation; Application of Ohm's Law, Measuring voltage, current and resistance; Electronics and Control; Types of switches, transistors, Darlington Pair, capacitors, diodes, sneers, LEDs photodiodes, resistors, transducers; Calculating resistance of series and parallel resistors.

PDT4292 Textiles and Fashion Products

10 Credits

The module looks at textiles and leather products;; Images and imaging of textile products; Industrial Products; Oriental, Western and African textile products; Quality, purposes and prices; Fashion involvement, emotions, Impulse buying and Hedonic consumption tendency.

MASTERS PROGRAMME

APPLIED ART AND DESIGN

PROGRAMME SUMMARY

YEAR I

Module Code	Module Description	Credits
PDT6120	Design and Human Culture	18
PDT6122	Materials & Technologies	18
	2 Education Courses	36
PDT6223	Advanced Visual Communication	18
PDT6224	Product Design	18
	2 Education Courses	36
YEAR II		
PDT6320	Design Project I	18
PDT6323	Law & Intellectual Property	18
	Mini Dissertation	18
	1 Education Course	18
PDT6420	Design Project II	18
PDT6424	Assessment in Design Projects	18
	Mini Dissertation	18
	1 Education Course	18
TOTAL CREDITS		288

CLOTHING TEXTILES & FASHION DESIGN

PROGRAMME SUMMARY

YEARI		
Module Code	Module Description	Credits
PDT6191	Dress Culture and Human Behaviour	18
PDT6193	Visual Merchandising and Display	18
	2 Education Courses	36
PDT6290	Contemporary Issues in Textile & Apparel Des	18
PDT6294	Textile performance Evaluation	18
	2 Education Courses	36
YEAR II		
PDT6320	Design Project I	18
PDT6394	Textile and Apparel Product Design	18
	1 Education Course	18
	Mini Dissertation	18
PDT6420	Design Project II	18
PDT6424	Assessment in Design Projects	18
	Mini Dissertation	18
	1 Education Course	18
TOTAL CREDITS		288

DESIGN AND TECHNOLOGY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PDT6126	Nature of Design and Technology	18
PDT6128	Graphic Products	18
	2 Education Courses	36
PDT6225	Workshop Technology & Management	18
PTE6253	Electrical Power Sources	18
	2 Education Courses	36
YEAR II		
PDT6320	Design Project I	18
PDT6329	CAD/CAM Applications	18
	Mini Dissertation	18
	Education Module	18
PDT6420	Design Project I	18
PDT6424	Assessment in Design Projects	18
	Mini Dissertation	18
	1 Education Course	18
TOTAL CREDITS		288

TOTAL CREDITS FOR EACH MASTERS PROGRAMME

Year I 144 Year II 144

Total Minimum Credits 288

MODULE SYNOPSES

PDT6120 Design and Human Culture

18 Credits

The module is designed to build in the students, an awareness of cross-cultural issues that inform and affect the production, consumption and perception of design and its products. In this module students explore and analyze the reciprocal influence between design and human culture. Topics to be covered include: design as culture embodiment, design and cultural determinism, cultural fundamentalism in design, bio-mimicry and human design culture, multiculturalism and mono culturalism in design, cultural nostalgia and archaism in design, trans cultural fusion and hybridization, and cultural diversity and globalization in design practice. This, it is hoped, shall empower the students to be able to design socially compatible and emotionally rewarding designs that fit in the context of the diverse cultures of the global consumer market.

PDT6122 Design Materials and Technologies

18 Credits

This module explores the materials, tools and technologies used for design production in art and design studios and workshop. The module encourages familiarisation with the traditional use of these materials and technologies as well as exploration of new or improvised uses of the materials. Topics to be covered include; the general classifications of art and design materials including ceramics, metals, polymeric, composite materials etc., the properties of commonly used art and design materials that include paper, woods, clays, stones, metal, rubber, textiles and fibre glass; the manufacturing processes of these art and design materials; and the use of both computerized and manual approaches to art and design production. A series of small projects designed to expand students' horizons in art and design production while maintaining fidelity to effective use of art and design materials shall be done by students.

PDT6125 Small, Medium and Large Scale Designs (Elective)

18 Credits

This module looks at design situations, small, medium and large scale designs, infrastructural designs, design policy, on site designs and case studies.

PDT6126 Nature of Design and Technology Knowledge and Skills

18 Credits

This module is concerned with the nature of design and technology and significant issues that contribute to knowledge, skills and development of positive attitudes through design and technology processes. The module identifies theories of constructivism in design and entrepreneurship in product design. The module addresses global trends in technological management change.

PDT6128 Graphic Products

18 Credits

The module explores design influences and methodology the concepts of market-pull and producer-led design, influences of style and fashion upon design, need of designers to consider physical, cultural and aesthetic needs, production techniques and marketing methods used in the commercial world, drawing software, recognising the advantages of accuracy, ease of storage/retrieval, ease of modifying drawings, the production of many originals and the

integration of data for costing, range of drawing conventions, including engineering, electrical and architectural. It also looks at recording information free-hand sketching, annotation, bar and pie charts, 2D and 3D charts, graphs, tables, flow charts, pictograms and ideograms; modelling and testing construct two and three dimensional models; drawing systems assembled, exploded and cut-away, orthographic in first and third angle projection, dimensioning, isometric, Plano metric using 45/45, perspective using one and two point; presentation ability to enhance the visual impact of an illustration by the use of thick and thin line techniques, tone, colour, shadows, reflections and material representation; geometry loci to determine the path of movement of linkages, development (net) of basic geometric forms including prisms, cylinders, pyramids, cones and their frustums, Mechanisms methods for transmitting and converting linear and rotary motion including cranks, ratchets and simple cams, Materials general knowledge of the characteristics of card, paper and other modelling materials, general knowledge of wood, metals, plastics, concrete, brick, fabrics, glass and ceramics, being able to select them for appropriate use according to their characteristics, properties and performance.

PDT6191 Dress, Culture and Human Behaviour 18 Credits

The module explains the complete phenomenon of bodily adornment is explored in relationship to values, attitudes, activities and beliefs; the dress as an expression of self and reflection of society and global cultures; effects of dress on human behaviour at personal, interpersonal and social organizational levels. Students develop analytical skills to help them understand the role played by clothing in different times, places and contexts.

PDT6193 Visual Merchandising Display

The module aims at communicating fashion image through display and promotions – related media. The module focuses on design and display techniques to create effective visual presentations and provides an understanding of visual merchandising industry including the principles and elements of display, the development and design of language for product presentation, design construction of pros, styling and working to an industry brief, for creative displays that support retail sales and exhibition industries.

PDT6223 Advanced Visual Communication and Digital Design 18 Credits

In this module students shall explore technological visual communication, drawings, including digital design. Students shall have an opportunity to painting, graphic design use of ICT for drawing, painting, rendering techniques and digital design. They shall interact with Corel draw, Photo shop or other art software for drawing and painting including 3D drawing, printing and digital image product making. Topics to be covered include fine art drawing and painting using technological media, tools and techniques. The module is intended to expose students to a variety of technological and graphic designs.

PDT6224 Product Design

18 Credits

18 Credits

In this module students shall explore and interrogate the processes of designing products from their initial conception to the final solution. Different approaches to the product design process shall be studied. Topics to be covered include ideation, rapid visualization, rendered drawings, prototyping, problem solving, three dimensional modelling, technical/work drawings, and product realization. The module shall take students through projects that involve real life problems and issues they identify in their society and encourage them to design ideas, concepts or products that solve these problems.

PDT6225 Workshop Technology and Management 18 Credits

The module explores Industrial manufacturing plant planning, structures, equipment, tool, materials, equipment and machinery supplies for manufacturing, planning and setting up plants for manufacturing: machinery, equipment and tools for processing. Management: of space and resources (time, equipment, tools, materials), product management, management of control systems, technology marketing and information system management

PDT6229/PTE6253 Electronics, Power Sources and Circuits 18 Credits

This module is about Power sources characteristics of AC and DC current, principles of step down/up, rectification, voltage and current regulation, Ohm's Law, electronics and control transistors (NPN and PNP types), Darlington Pair, capacitors, diodes for rectification and protection against back emf, zeners for voltage reference, LEDs and photodiodes, resistors including stability, tolerance and power rating transducers including thermistors, strain gauges and LDRs. Circuits, Operational amplifiers, functions of AND, OR, NAND, NOR and XOR their truth tables and equivalent circuit diagrams.

PDT6292 Contemporary Issues in Textile and Apparel Design 18 Credits

This module is concerned with significant issues that impact the textile and apparel industry and solutions, theories of entrepreneurship in the textiles and apparel sector, quality theory and practice, global competitiveness, strategies of life cycle management, capacity planning and forecasting, managing technological change. It also looks into intellectual property management and Design Protection (Functions of designs in business and organizations, quality assurance, creating high performance designs, consultation and training in use of designs; adapting designs to changing environment and results based-design frameworks.)

PDT6294 Textile Performance and Quality Analysis 18 Credits

This module exposes students to textile science, performance enhancement and methods of analyzing and predicting the behaviour of the resultant products. The module is also about characteristics of fabrics and fabric mechanical properties, principles and applications of KES and FAST fabric evaluation systems, dimensional stability, surface modification techniques, oil/water repellency, waterproofing, coating, lamination, microscopy and surface analysis as well as textile colouration and finishing.

PDT6320 Design Project I

18 Credits

In consultation with advisor, the student conducts design project for concentrated design study. The elements of the study shall include, but not limited to, Design processes, literature search,

experimental design, design case study research, brain storming models in design, design project proposal preparation and presentation.

PDT6323 Law and Intellectual Property

18 Credits

The aim of the module is to develop an awareness of the need for legal protection of designs and art works. National, regional and international laws are examination and application; Intellectual property rules for securing and enforcing legal rights for inventions, designs, and artistic works; Trademarks: trademark registration and protection of symbols, names and slogans used to identify goods and service; Patenting: inventors exclusive rights to creations on machines, technological improvements and manufactured goods; protection of exclusive control of intangible assets, use of products in the marketplace, patenting procedures and government databases as well as copyrights: Understanding of protecting the act of creation and unpublished works and protecting against infringement, notice of trademarks and litigation.

PDT6329 CAD/CAM Applications in Design and Technology 18 Credits

The module looks at the following topics: Application of CAD/CAM in Design and Technology manufacturing systems for mass production; Interactive computer graphics and simple examples of CAD: Introduction; Hardware for CAD/CAM; Software for CAD/CAM; Computer Plotting and Display; Interactive Graphics; Simple Examples of Computer-Aided Drafting, Design and Analysis; CAD/CAM of elements and systems; Modelling of Elements and Systems; Manipulation of System's Transfer Function-- Introductory Finite Element Matrix Analysis; Elementary Numerical Methods of Solution; Analog and Hybrid Computer Application.

PDT6394 Textile and Apparel Product Design

18 Credits

This module advances the knowledge of designing textiles and apparel as two or three dimensional art forms with emphasis on conceptualisation, expression, media, techniques, lighting, space, movement and function as influential factors, experimentation with colour and design and surface decoration methods, the use of CAD in the production of a prototype fabric and other designing software packages, use of 3D software, 3D product visualization, designing and texture mapping, colour reduction, preparation of patterns and pattern grading, garment analysis, product development and material utilisation.

PDT6420 Design Project II

18 Credits

The module is about the development of possible solutions, creativity, using software for design, developing the chosen solution, critical analysis and further development of design to meet specifications, continued application of design processes; testing and evaluation, exhibition and oral presentation of design.

PDT6424 Assessment of Design Projects

18 Credits

The module will highlight exhibitions and Displays, assessing products / artefacts, assessing digital visual products, preparing check lists for assessment, designing assessment reports as well as apply a variety of research based assessment techniques for diverse learners. There will be a

one-to-one assessment on individual growth, assessment of achievement of objective knowledge and skills, processes, creativity, innovation, design criticism, techniques, strategie materials and technologies to meet instructional purposes as well as an engagement of students is assessment. Methods of assessment will include journals or sketch books, observation Interviews, group discussion, critiques and assessing design projects.

DEPARTMENT OF SCIENCE, MATHEMATICS AND TECHNOLOGY EDUCATION

Lecturer and Chairperson

Dr M Mpofu, BEd (University of Zimbabwe), MEd (Zimbabwe Open University), PhD (University of Fort Hare)

Secretary

S Nguwaya, HEXCO National Diploma in Secretarial Studies (Bulawayo Polytechnic), HEXCO National Certificate in Secretarial Studies (Bulawayo Polytechnic)

ACADEMIC STAFF

Lecturers

Dr L Sibanda, BEd (University of Zimbabwe), MEd (Midlands State University), PhD (University of Fort Hare)

AJP Sibanda, MEd (University of Zimbabwe), BEd (University of Zimbabwe)

I Mpofu, MScEd (University of Zimbabwe), BEd (University of Zimbabwe)

L Mpofu, MSc Finance and Investment (NUST), B Comm Accounting (NUST), B Accounting (UNISA), PGDHE (NUST), ACMA (CGMA)

UNDERGRADUATE DEGREE PROGRAMME SPECIAL REGULATIONS

1.0. ENTRY REGULATIONS

1.1. Admission requirements

- 1.1.1. **Special entry (In-service):** Relevant teaching diplomas (and approved certificates) in the specified subjects; five 'O' Level passes including English Language and Mathematics.
- 1.1.2. **Normal entry (Pre-service):** At least 2 'A' Level passes in relevant subjects of specialisation, and five 'O' Level passes including English Language, Mathematics and a science subject.

1.2. **Programme of study**

- 1.2.1. Special entry candidates shall pursue a four-year programme of study on block-release, consisting of a prescribed number of modules in specialist subjects and in education and professional studies, including work-based experience and a final year research or design project. The work-based experience shall be in the third year of study.
- 1.2.2. Normal entry candidates shall pursue a four-year full-time programme of study in which the third year shall be spent wholly on Industrial Attachment/Work-based experience in an institution or organization relevant to their degree programme.
- 1.2.3. Normal entry candidates shall study additional elective modules in education and professional studies as prescribed by the department.
- 1.2.4. Candidates shall be required to obtain a total of 480 credits to be awarded the degree.

2.0. STRUCTURE OF DEGREE PROGRAMMES AND SELECTION OF COURSE

2.1. PROGRAMMES OFFERED BY THE DEPARTMENT

2.2. Undergraduate

2.2.1. Bachelor of Science Education Honours (BScEd Hons) in one of the following subject areas:

Accounting and Business Studies, Biology, Chemistry, Computer Science, Mathematics and Statistics, Physics, Environmental Science.

2.2.2. Common Modules

All students in the programme shall study the given education and professional modules.

2.2.3. Specialist subject Modules

In addition to the common modules, candidates in the Department shall study prescribed modules under one of the given specialist subject areas.

3.0. ASSESSMENT OF CANDIDATES

3.1. **Assessment**

- 3.1.1. Unless specified otherwise in the module synopses, all taught theory modules shall be assessed through continuous assessment in the form of assignments, tests, quizzes, short projects or oral and other presentations, and a formal 3-hour written examination.
- 3.1.2. The weighting of written examinations and continuous assessment shall be 60% and 40%, respectively.
- **4.0.** Students enrolled in the pre-service programme will study the following additional bridging courses:

Pre-service bridging courses	Semester I	PLC1101 Peace, leadership and conflict transformation I PST0113 Learning environments and resources PST0118 Theory of education I
	Semester II	PLC1201 Peace, leadership and conflict transformation II PST0203 Lesson presentation techniques

ACCOUNTING AND BUSINESS STUDIES

PROGRAMME SUMMARY

YEAR 0	Bridging courses PST0160 selected topics from A level syllab		
YEAR I			
Module Code	Module Description	Credits	
PST1101	Theoretical Foundations in STEM Education	10	
PST1102	Communication and Public Relations	10	
PST1103	STEM Learning and Teaching strategies	10	
PST1160	Financial Accounting 1A	10	
PST1161	Principles of Management	10	
PST1162	Microeconomics	10	
PST1209	Introductory statistics	10	
PST1212	Computer Applications in Education I	10	
PST1213	Educational Technology	10	
PST1260	Financial Accounting 1B	10	
PST1261	Corporate and Business Law	10	
PST1262	Macroeconomics	10	
YEAR II			
PST2104	Curriculum development and evaluation	10	
PST2105	Testing, assessment and evaluation	10	
PST2116	Science, Technology and Society	10	
PST2160	Financial Accounting IIA	10	
PST2161	Human Resources Management	10	
PST2163	Management and Cost Accounting IA	10	
PST2208	Leadership and Supervision in STEM Education	10	
PST2211	Research Methods	10	
PST2212	Computer Applications in education II	10	
PST2260	Financial Accounting IIB	10	
PST2263	Management and Cost Accounting IB	10	
PST2264	Auditing	10	
YEAR III			
PST3000	Work-based experience	120	

YEAR IV

PST4010	Final Year Project	-
PST4109	Statistics for educators	10
PST4112	AutoCAD/CAD/CAM	10
PST4160	Financial Reporting I (Elective)	10
PST4161	Financial Management	10
PST4162	Entrepreneurship (Elective)	-
PST4163	Management and Cost Accounting II	10
PST4010	Final Year Project	20
PST4208	Project Development and Management	10
PST4215	Quality and innovation in STEM education	10
PST4261	Organizational Behaviour	10
PST4262	Strategic Management	10
PST 4263	Operations Management (Elective)	-
PST4264	Introduction to Taxation (Elective	10

TOTAL CREDITS FOR THE PROGRAMME

 YEAR I
 120

 YEAR II
 120

 YEAR III
 120

 YEAR IV
 120

Total minimum credits: 480

BIOLOGY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PST1101	Theoretical Foundations in STEM Education	10
PST1102	Communication and Public Relations	10
PST1103	STEM Learning and Teaching strategies	10
PST1135	Cell biology	10
PST1136	Biochemistry	10
PST1139	Biodiversity	10
PST1209	Introductory statistics	10
PST1212	Computer Applications in Education I	10
PST1213	Educational Technology	10
PST1236	Enzymes and Enzyme Biotechnology	10
PST1237	Gas exchange and Transport	10
PST1238	Genetics	10
TIE A D II		
YEAR II		10
PST2104	Curriculum development and evaluation	10
PST2116	Testing, assessment and evaluation	10
PST2116	Science, Technology and Society	10
PST2135	Cell and nuclear division	10
PST2136	Biostatistics	10
PST2139	Ecology and ecosystems	10
PST2208	Leadership and Supervision in STEM Education	10
PST2211	Research Methods	10
PST2212	Computer Applications in education II	10
PST2237	Bioenergetics	10
PST2238	Inherited change	10
PST2239	Human disease and immunity	10
YEAR III		
PST3000	Work-based experience	120
	r	-
NEAD IN		
YEAR IV	Einal Vaan Project	
PST4010	Final Year Project Statistics for educators	10
PST4109	Statistics for educators	10

PST4112	AutoCAD/CAD/CAM	10
PST4135	Biotechnology (Elective)	10
PST4137	Plant Physiology	10
PST4138	Evolution and Selection	-
PST4139	Crop plant productivity I (Elective)	10
PST4010	Final Year Project	20
PST4208	Project Development and Management	10
PST4215	Quality and innovation in STEM education	10
PST4236	Agricultural biology (Elective)	10
PST4237	Regulation and control	10
PST4238	Reproduction, growth and development	10
PST4239	Crop plant productivity II (Elective)	_

TOTAL CREDITS FOR THE PROGRAMME

Total minimum credits:	480
YEAR IV	120
YEAR III	120
YEAR II	120
YEAR I	120

CHEMISTRY

PROGRAMME SUMMARY

YEAR 0 Bridging courses PST0140 selected topics from A level syllabi

YEAR I		
Module Code	Module Description	Credits
PST1101	Theoretical Foundations in STEM Education	10
PST1102	Communication and Public Relations	10
PST1103	STEM Learning and Teaching strategies	10
PST1136	Biochemistry	10
PST1140	Mathematics for Chemists	10
PST1141	Inorganic Chemistry I	10
PST1209	Introductory statistics	10
PST1212	Computer Applications in Education I	10
PST1213	Educational Technology	10
PST1240	Chemical energetics	10
PST1242	Organic Chemistry I	10
PST1274	Modern Physics	10
YEAR II		
PST2104	Curriculum development and evaluation	10
PST2105	Testing, assessment and evaluation	10
PST2116	Science, Technology and Society	10
PST2141	Inorganic Chemistry II	10
PST2142	Organic Chemistry II	10
PST2143	Chemical and ionic equilibria 10	
PST2208	Leadership and Supervision in STEM Education	10
PST2211	Research Methods	10
PST2212	Computer Applications in education II	10
PST2140	States of matter	10
PST2241	Transition elements	10
PST2242	Polymers and polymerization	10
YEAR III	***	120
PST3000	Work-based experience	120
YEAR IV		
PST4010	Final Year Project	_
PST4109	Statistics for educators	10
101710/	Statistics for educators	10

PST4112	AutoCAD/CAD/CAM	10
PST4141	Nitrogen and sulphur	10
PST4143	Applications of analytical chemistry	10
PST4144	Electrochemistry	10
PST4010	Final Year Project	20
PST4208	Project Development and Management	10
PST4215	Quality and innovation in STEM education	10
PST4240	Nuclear chemistry	10
PST4243	Environmental chemistry	10
PST4244	Reaction kinetics	10

TOTAL CREDITS FOR THE PROGRAMME

YEAR I	120
YEAR II	120
YEAR III	120
YEAR IV	120

Total minimum credits: 480

COMPUTER SCIENCE

PROGRAMME SUMMARY

YEAR 0	Bridging courses PST0175 selected topics from	A level syllabi
YEAR I		
PST1101	Theoretical Foundations in STEM Education	10
PST1102	Communication and Public Relations	10
PST1103	STEM Learning and Teaching strategies	10
PTE1131	Engineering Mathematics I	10
PST1133	Mathematical Foundations of Computer Science	10
PST1172	Electricity and Magnetism	10
PST1209	Introductory statistics	10
PST1212	Computer Applications in Education I	10
PST1213	Educational Technology	10
PST1275	Introduction to Computers	10
PST1277	Business Information Systems	10
PTE1253	Electronic Circuits and devices	10
YEAR II		
PST2104	Curriculum development and evaluation	10
PST2105	Testing, assessment and evaluation	10
PST2116	Science, Technology and Society	10
PST2176	Database Concepts and Data Processes	10
PST2177	Programming and Programme Design	10
PST2178	Operating Systems Concepts	10
PST2208	Leadership and Supervision in STEM Education	10
PST2211	Research Methods	10
PST2212	Computer Applications in education II	10
PST2277	Data Structures and Algorithms	10
PST2278	Systems Analysis and Design	10
PTE2254	Digital Electronics	10
YEAR III		
PST3000	Work-based experience	120
YEAR IV		
PST4010	Final Year Project	-
PST4109	Statistics for educators	10
PST4112	AutoCAD/CAD/CAM	10
PST4175	Computer Communication and Networking	10

PST4178	Software engineering concepts	10
PST4179	Operating Systems & Comp Architecture	10
PST4010	Final Year Project	20
PST4208	Project Development and Management	10
PST4215	Quality and innovation in STEM education	10
PTE4254	Microprocessors & microcontrollers	10
PTE4276	Graphic Design	10
PST4277	Database design and management	10

TOTAL CREDITS FOR THE PROGRAMME

YEAR I	120
YEAR II	120
YEAR III	120
YEAR IV	120

Total minimum credits: 480

MATHEMATICS AND STATISTICS

PROGRAMME SUMMARY

YEAR 0 Bridging courses PST0130 selected topics from A level syllabi

YEAR I		
Module Code	Module Description	Credits
PST1101	Theoretical Foundations in STEM Education	10
PST1102	Communication and Public Relations	10
PST1103	STEM Learning and Teaching strategies	10
PST 1131	Calculus I	10
PST 1132	Linear Algebra	10
PST 1134	Applied Statistics	10
PST1209	Introductory statistics	10
PST1212	Computer Applications in Education I	10
PST1213	Educational Technology	10
PST1231	Calculus II	10
PST1232	Discrete Mathematics	10
PST1234	Statistical Inference I	10
YEAR II		
PST2104	Curriculum development and evaluation	10
PST2105	Testing, assessment and evaluation	10
PST2116	Science, Technology and Society	10
PST2132	Linear Programming	10
PST2131	Ordinary Differential Equations	10
PST2133	Probability Theory	10
PST2208	Leadership and Supervision in STEM Education	10
PST2211	Research Methods	10
PST2212	Computer Applications in education II	10
PST2230	Vector Analysis	10
PST2232	Advanced Linear Algebra	10
PST2233	Linear models	10
PST2203	Methods of Teaching Mathematics	-
YEAR III		
PST3000	Work-based experience	120
YEAR IV		
PST4010	Final Year Project	-
PST4109	Statistics for educators	10

PST4112	AutoCAD/CAD/CAM	10
PST4131	Partial Differential equations and Fourier Series	10
PST4132	Real Analysis	10
PST4134	Survey and Sampling Methods	10
PST4010	Final Year Project	20
PST4208	Project Development and Management	10
PST4215	Quality and innovation in STEM education	10
PST4231	Numerical Methods	10
PST4233	Mechanics	10
PST4278	Computer Packages for Mathematics and Statistics	10

TOTAL CREDITS FOR THE PROGRAMME

Total minimum credits:	480
YEAR IV	120
YEAR III	120
YEAR II	120
YEAR I	120

PHYSICS

PROGRAMME SUMMARY

YEAR 0	Bridging courses	PST0170 selected	topics from A	A level svllabi
	Dilaging courses	I D I O I O D D D D D D D D D D D D D D	topics in our r	10,010,11001

YEAR I		
Module Code	Module Description	Credits
PST1101	Theoretical Foundations in STEM Education	10
PST1102	Communication and Public Relations	10
PST1103	STEM Learning and Teaching strategies	10
PTE1131	Engineering Mathematics 1	10
PTE1147	Material science	10
PST1172	Electricity and magnetism	10
PST1209	Introductory statistics	10
PST1212	Computer Applications in Education I	10
PST1213	Educational Technology	10
PTE1231	Engineering Mathematics 11	10
PST1270	Oscillations and Waves	10
PST1274	Modern physics	10
YEAD II		
YEAR II		10
PST2104	Curriculum development and evaluation	10
PST2116	Testing, assessment and evaluation	10
PST2116	Science, Technology and Society	10
PST2171	Mechanics and relativity	10
PST2172	Circuit theory	10
PTE2150	Analogue electronics	10
PST2208	Leadership and Supervision in STEM Education	10
PST2211	Research Methods	10
PST2212	Computer Applications in education II	10
PST2271	Solid state physics	10
PTE2246	Thermodynamics	10
PTE2254	Digital electronics	10
YEAR III		
PST3000	Work-based experience	120

YEAR IV	T' 137 D ' .	
PST4010	Final Year Project	-
PST4109	Statistics for educators	10
PST4112	AutoCAD/CAD/CAM	10

PST4170	Quantum physics (Elective)	10
PST4172	Statistical mechanics	10
PST4173	Electromagnetism (Elective)	10
PST4010	Final Year Project	20
PST4208	Project Development and Management	10
PST4215	Quality and innovation in STEM education	10
PST4270	Atomic and nuclear physics	10
PST4271	Classical mechanics	10
PST4274	Energy physics	10

TOTAL CREDITS FOR THE PROGRAMME

Total minimum credits:	480
YEAR IV	120
YEAR III	120
YEAR II	120
YEAR I	120

MODULE SYNOPSES

PST0113 Learning Environments and Resources

The module explores learning space organisation; displays, internal and external learning environments, field trips, educational technology and teaching/learning resources and learning outcomes. Assessment in this course will be by coursework only. Students will produce a portfolio of teaching resources and assignments on designing learning environments.

PST0118 Theory of Education

The module has an introduction on contemporary theory, definition of philosophy, dominant philosophy and theory in science and technology education, linking theory to practice, educational psychology basics, sociology of education, theory and curriculum development, theory and human development.

PST0203 Lesson Presentation Techniques

Students will spend time conducting peer and micro-teaching session to sharpen their lesson presentation skills learnt in PST1101 to acquire teaching skills e.g. voice projection and regulation, posture, mannerisms, grooming and classroom control as well as an evaluation of peer and pre-recorded lessons. Assessment in this course will be by coursework only. Students will produce portfolios of work done.

PST1101 Theoretical Foundations in Stem Education 10 Credits

The module focuses on psychology of education- Physical, cognitive and emotional development in children, adolescents and adults. Piaget, Brunner, Pavlov, Vygotsky, etc; Individual differences and learning styles; Pedagogy and andragogy; memory and understanding; Sociology of education- Human Social Interactions; society and community; urban and rural communities, agents of socialization; culture and education, inclusive learning; industrialization; globalization, citizenship; Durkheim, Weber, Mead, etc; Philosophy of education- theory and practice; trends in philosophy of education, humanism, progressivism, reconstructionism, empiricism, modernism, structuralism, critical theory, hermeneutics, constructivism, phenomenology; Rousseau, Karl Marx, John Dewey and Vygotsky, etc.

PST1102 Communication and Public Relations 10 Credits

This module explores principles and theory of communication and media; conventions, appropriate use of voice, language and register; vocabulary and use of specialist/technical language; verbal/nonverbal communication; oral/written communication, bibliography and referencing; study skills; questioning and communication skills in education/training; business communication skills— letters, memos, reports, meetings, interviews; explanatory skills; diplomacy, tolerance and assertiveness; international communication, information technology and globalisation; public relations, theories and approaches, corporate image, advertising and marketing as well as conflict resolution.

PST1103 Stem Learning and Teaching Strategies 10 Credits

This module looks at instructional design and planning; Analysing learning situations and contexts; Prior learning; students' individual and collective needs; curriculum specifications, operational content, aims and objectives. behavioural approach to objectives; taxonomies of objectives; inputs to teaching and learning; Planning for different types of teaching and learning strategies for groups and individuals Selecting a strategy according to appropriate criteria; determining sequence, activities and organisation of training sessions; teaching methods – lecture, discussion, simulations, case studies, games, role play, projects, assignments, groupwork, experiential learning, programmed learning, demonstration, effective questioning. Competence-based- education, performance criteria and range statements; work-based experience (WBE) preparation and coordination and specific subject teaching methods.

PST1209 Introductory Statistics

10 Credits

This module focuses on descriptive and inferential statistics in science, education and research, methods of summarizing and interpreting data, frequency distribution, measures of central tendency, measures of dispersion, fractiles, measures of strength and association. (X-ref SMA2204).

PST 1212 Computer Applications in Education I 10 Credits

The module explores word Processing: Creating a document, correction of text, deletion and insertion, saving documents, retrieving a document, using HELP facility, printing documents, mail merge; Editing and Manipulating Documents: mark block of text, find and replace, move block of text, tabulation, indentation, underline, justify, use Equation Editor; Spread Sheet: Creating a spread sheet (Excel), entering labels, saving, deleting and inserting rows and columns, decimal places, currency, use of functions e.g. Sum, Ave etc; Graphics: Produce graphs using MS word and excel, use of Title, Legend etc, Print graphs; Drawing: Draw diagrams using MS word and paint, copying diagrams, moving diagrams, Flipping/ Rotating diagrams, shading; Power Point; Creating slides, titles and subtitles, Slide Sort View, insert new slide, adding pictures to slides, change slide background, Send to back, change font, Fill effects, Add colour, Slide transition and slide show.

PST1213 Educational Technology

10 Credits

The module looks at using appropriate technology for teaching and training; the chalk board; the white board; the overhead projector; the slide projector; the video recorder; use of video and television in the classroom; basic use of computers for producing training materials and presentation techniques using multimedia packages, e-learning fundamentals.

PST2104 Curriculum Development and Evaluation 10 Credits

This module explores the curriculum terminology and concepts; ideology and philosophy underpinning curriculum planning, development and evaluation; curriculum needs assessment model; the impact of social, economic, political, technological, psychological, philosophical and cultural, environmental influences on the curriculum; process and product models of curriculum development; objectives models e.g. Tyler, Wheeler; decision-making models e.g. Stufflebeam (CIPP); Designing/developing, delivering and evaluating a curriculum; curriculum change and

innovation; strategies for change (Havelock's RD&D, SI, PS, L); evaluating the overall effectiveness of curricula; curriculum evaluation models; course design and production, varying modes of delivering the curriculum, including flexible, distance, open and resource-based learning, and independent study. Examples of curriculum projects in Zimbabwe and internationally and concept maps and hierarchies, concept analysis as well as the roles of CRADU, CDU, RCZ, SIRDC will be explored.

PST 2105 Testing, Assessment and Evaluation

The module focuses on the purposes and methods of assessment; formal/informal; formative/summative; norm/criterion referenced; objective/subjective; characteristics, strengths and weaknesses of a range of testing methods, examinations: processing and administration; item writing; examination results grading systems; item analysis; examination boards: HEXCO, ZIMSEC, etc; standardized tests; continuous and terminal assessment; portfolio and project assessment; the effects of assessing learners and teachers; evaluation; selecting and using appropriate approaches and tools for evaluating the effectiveness of learning sessions and programmes; quality control techniques and accreditation; trade testing and competency-based testing.

PST2116 Science, Technology and Society

The module outlines contemporary society and global culture; social stratification, western science and the scientific method in problem solving, science and technology for rural/urban environments, industrialization and automation; government policies on science and technology, appropriate technology in energy, water, sanitation and health issues; science and technology ethics and social responsibility.

PST2208 Leadership and Supervision in Stem Education 10 Credits

The module highlights the administration of education; administrative tasks; school-based management; results-based management; power, authority, leadership and institutional governance; leadership styles; school effectiveness; change and improvement; quality control; delegation, decentralization, empowerment and models of supervision. X-Ref PST5208.

PST 2211 Research Methods

10 Credits

10 Credits

10 Credits

This module looks at the origins and purpose of research-based practice; the role of the teacher/trainer as a researcher and reflective practitioner; features and purposes of qualitative and quantitative research methods; types of research and designs; research and development (R&D); ethical issues and problems in educational, scientific and technology research; codes of conduct of various research institutions and organisations; accessing research information; data collection methods; populations and samples; proposal and report writing; research in curriculum development and preparation for final year project.

PST 2212 Computer Applications in Education II 10 Credits

The module looks at the Microsoft office applications for educators, the use of modern methods of instruction in Education - Recording of podcasts (adobe audition, audacity), internet and intranets in education, social media for educators, e-learning (synchronous and asynchronous),

the interactive white board as a tool in modern education. The course will also cover fundamentals of cybercrime and how it can be managed.

PST 3000 Work-Based Experience

120 Credits

This module is on monitoring, assessment and evaluation of students' teaching in their respective work places by tutors and local supervisors. Students will produce a file, a log book and a written report on their experiences in their workplaces for their terminal assessment.

PST 4010 Final Year Project

20 Credits

This is a theoretical research, experimental or design project in the specialist subject of the candidate. The project counts as two taught courses and will be carried out during the whole final year.

PST 4109 Statistics for Educators

10 Credits

This module looks at the applications of descriptive and inferential statistics in education, Sampling theory, probability theory and distribution, the normal distribution, the binomial distribution, the Poisson distribution, applications of significance and hypothesis testing, X2 test, t-test, z-test (X-ref SMA2104)

PST 4112 AutoCAD/CAD/CAM

10 Credits

The module explores CAD, solid modelling, finite elements and other analysis methods, CAM, CNC machines, NC programming, CADACAM, introduction to CIM, introduction to computer-aided process planning, MRP, MRP II, process simulation, expert systems, robotics, sensing and vision systems.

PST 4208 Project Development and Management

10 Credits

The module looks at project management in political, economic, social, technical, legal and environmental (PESTLE) issues; types of projects, the project life cycle; resources, time, costs, and quality; project planning, design and development; risks and contingency, the critical path method (CPM), project evaluation and review techniques (PERT); change management, research techniques and use of IT in project management, examples of projects in technical education; resources management, personnel, finance, time, materials, equipment and plant; investment, entrepreneurship and fundraising.

PST 4215 Quality and Innovation in Stem Education

10 Credits

The module looks at quality in education and training; collaboration and competition; quality circles; quality assurance; total quality management (TQM); quality control techniques; product development principles, organizational management structures and functions; processes of management; strategic planning and management, the role of research and development (R&D). Outcomes-based education (OBE).; Competency-based training, the competency model; elements of competence; performance criteria and indicators; range statements; skills and task analysis; job analysis; technical proficiency profiles; skilled and unskilled workmanship; trade testing; training assessment and measuring instruments.

ACCOUNTING AND BUSINESS STUDIES SPECIALIST COURSES

PST 1160 Financial Accounting 1A

10 Credits

The module focuses on the principles and techniques of financial accounting and their application to the preparation of financial statements of the sole traders, partnerships, limited companies and non-profit making organisations. The role of the International Accounting standards and how to interpret them are also covered. Other topics to be covered include partnerships (excluding partnership changes), cash book, bank reconciliations, and presentation of financial statements, revenue, property plant and equipment

PST 1161 Principles of Management

10 Credits

The module explores the development of management as a function in business, organizational structures, decision making, communication, centralization and decentralization, delegation and leadership controlling and budgetary and non-budgetary controls. The role of operations management in the organization is also explored.

PST 1162 Microeconomics

10 Credits

The module explores microeconomic issues and problems, competition and monopoly, pricing, consumer demand, and producer supply; theoretical framework for microeconomic analysis; applying theory to practical domestic and international economic policy problems; introduction to supply and demand and the basic forces that determine equilibrium in a market economy, learning about consumer behaviour and analysing consumer decisions; firms and their decisions about optimal production, and the impact of different market structures on firms' behaviour; introduction to more advanced topics that can be analysed using microeconomic theory, e.g. international trade, the impact of uncertainty on consumer behaviour, the operation of capital markets, equity vs. efficiency trade-offs in economic policy and social insurance; introductory microeconomic theory, solving basic microeconomic problems and policy questions relevant to the operation of the real economy.

PST 1260 Financial Accounting 1B

10 Credits

The module is a continuation of financial accounting 1A and looks at partnership changes, statement of cash flows and the role of social accounting with regard to climate change as well as accounting for Non Profit making organisations and incomplete records.

PST 1261 Corporate and Business Law

10 Credits

The module explores the role of law in a system of governance, sources of law, contracts, case, agency, corporate governance and ethics, economic, political and legal systems, obligations and risk contracts for obligation sales and organization as a legal persona.

PST 1262 Macroeconomics

10 Credits

The module is about economics at national level, the role of the central government, monopolies and oligopolies and consolidation of household behaviour.

PST 2160 Financial Accounting IIA

10 Credits

The module builds on the foundation laid by Financial Accounting I and looks at partnership conversion to a limited company, understanding the nature of current accounts for individual partners, published accounts, and comprehensive statement of cash flows and events after the reporting period.

PST 2161 Human Resources Management

10 Credits

The module examines the operative function of the human resources management, the role of the labour act, bargaining power of labour and labour as a factor of production. It involves leadership, values, employment planning, recruiting and selecting employees, training and compensating them, and evaluating their performance. It also significantly influences the corporate culture.

PST 2163 Management and Cost Accounting IA

10 Credits

The module aims at providing an understanding of the principles, concepts and techniques of management and cost accounting and helps the students develop an ability to apply this knowledge to practical situations as well as cost control and computation.

PST 2260 Financial Accounting IIB

10 Credits

The module is a continuation of Financial Accounting IIB, the course aims at exposing students to more accounting standards so as to interpret and apply them in various scenarios, financial analysis, ratio analysis and capital budgeting

PST 2263 Management and Cost Accounting IB

10 Credits

The module is a continuation of management and cost accounting IB and topics include standard costing, Economic order quantity, budgeting as well as capital budgeting.

PST 2264 Auditing

10 Credits

The module explores the role of audit as well as the nature and scope of auditing principles and the application international standards of Auditors; the role of external auditors is also covered in conjunction with code of professional conduct and standards for professional behaviour as well as internal control systems and ethical issues concerning audit engagements; auditing I equips students to be able to understand and apply the principles of accounting systems and internal controls, to explain the principles and concepts underlying the audit function, and to discuss the professional environment and legal framework in which the auditor operates.

PST 4160 Financial Reporting I (Elective)

10 Credits

The module focuses on accounting theory, application of various standards with a bias towards the disclosure in the published financial statements, the objectives of financial reports. The emphasis is on applying the principles learned in Financial accounting 1 and 2 in more applied situations as part of the process towards developing the ability to prepare financial reports.

Students will be expected to apply the accounting rules contained in IFRSs and IASs dealing with reporting performance, non-current assets, including their impairment, inventories, disclosure of related parties to a business and construction contracts (and related financing costs),post-balance sheet events, provisions, contingencies, and leases (lessee only).

PST 4161 Financial Management

10 Credits

This module introduces the roles of the financial manager that is Investment, financing and dividend decisions. It covers the sources of finance, calculation of the cost of capital, the weighted average cost of capital. Investing decisions are also covered. It also addresses the working capital management techniques, like Economic order quantity, management of receivable and payables.

PST 4162 Entrepreneurship (Elective)

10 Credits

The module explores the nature of entrepreneurship; the evolving nature of entrepreneurship, understanding entrepreneurship in individuals, environmental assessment; preparation for a new venture; marketing research for new ventures, financial preparation for entrepreneurship ventures, developing effective business plans; sources of capital for entrepreneurs; assessment and evaluation of entrepreneurial opportunities, structuring and legal issues associated with new Business ventures; strategic planning for emerging ventures, entrepreneurship and the global environment (x ref CBU4109).

BIOLOGY

Specialist Courses

PST1135 Cell Biology

10 Credits

The module looks at microscope techniques, typical plant and animal cell ultra-structure, cell organelles, eukaryotic and prokaryotic cells, fluid-mosaic model of cell membrane, cell transport processes and water potential, etc.

PST1136 Biochemistry

10 Credits

The module explores structure, classification, formation and functions of macromolecules, carbohydrates, lipids, proteins and vitamins and the chemistry of water in living organisms.

PST1139 Biodiversity

10 Credits

The module examines the five-kingdom classification of living organisms, phyla, genus and species of a few typical examples, microscopic and macroscopic observations and drawings, maintenance of biodiversity and protection of endangered species.

PST1236 Enzymes and Enzyme Biotechnology

10 Credits

The module focuses on characteristics and classification of enzymes, mode of action, activation energy, factors affecting enzyme action, inhibitors, elementary enzyme biotechnology, enzyme and cell immobilization, synthesis of chemicals, drugs and food.

PST1237 Gaseous Exchange and Transport

10 Credits

The module looks at microscopic structure of trachea, bronchioles, alveoli, arteries, veins, capillaries and blood cells, the process of gaseous exchange in humans, tobacco and smoking-related diseases, e.g. coronary heart disease, the heart and the cardiac cycle; Plant transport, transpiration and translocation, symplastic pathways and mass flow hypothesis.

PST1238 Genetics

10 Credits

The module highlights structure of DNA and RNA, Watson - Crick Model, base pairing, structural formula of bases, replication of DNA, amino acid coding, transcription and translation, roles of mRNA, tRNA and rRNA.

PST2136 Biostatistics

10 Credits

The module outlines statistical distributions, regression, standard error, sampling, confidence intervals, measurement error, hypothesis and significance tests, Discrete and continuous probability distributions, point estimation/tests of hypothesis, z, t, X2 tests and distributions, design and analysis of experiments, principles and one-way ANOVA.

PST2135 Cell and Nuclear Division

10 Credits

The module looks at mitosis and its role in growth, repair and asexual reproduction, the cell cycle, DNA replication, uncontrolled cell division resulting in tumours and cancers; Meiosis and gamete formation, stages and sub-phases of meiosis, haploid and diploid cells and homologous chromosomes.

PST2139 Ecology and Ecosystems

10 Credits

The module explores ecological organization, biosphere, biomes, habitats, niches, population, ecosystems, food chains and webs, biotic/abiotic environments, trophic levels and energy flow and nutrient cycles, e.g. Nitrogen; (X-ref ESH1203).

PST2237 Bioenergetics

10 Credits

The module examines energy needs in organisms, anabolic and catabolic reactions, biological oxidation and phosphorylation, structure, synthesis and role of ATP, aerobic and anaerobic respiration processes, glycolysis, Kreb's cycle, respiratory quotient, respirometry, lipid metabolism and regulation.

PST2238 Inherited Change

10 Credits

The module focuses on linking meiosis to variation in organisms, genetic transfer from parent to offspring, genotype and phenotype, Mendelian genetics, mono/dihybrid crosses, dominance, alleles, sex linkage, autosomal linkage, epistasis, X2 tests for test crosses, mutations and effects of the environment.

PST2239 Human Disease and Immunity

10 Credits

The module looks at infectious and non-infectious human diseases- cholera, malaria, tuberculosis, smallpox, measles, HIV/AIDS, cancers, sickle cell anaemia, causative and transmitting organisms (life cycles), social, biological and economic factors in prevention and control, global patterns, antibiotics, the immune system, phagocytes and lymphocytes, immune response, antibodies and vaccination.

PST4135 Biotechnology

10 Credits

The module examines molecular biology, microorganism cultures and industrial applications, DNA recombination, DNA libraries, gene transfer, penicillin production and use, monoclonal antibodies, bio- and genetic engineering, fingerprinting, gene technology in insulin production; Genetic screening and genetic counselling.

PST4137 Plant Physiology

10 Credits

The module examines conversion of light energy in plant cells, photoactivation, photolysis, cyclic/non-cyclic photophosphorylation, the Calvin cycle, photorespiration, C3 and C4 pathways, Kranz anatomy, CAM plants; Leaf structure, chloroplasts, investigation of limiting factors, absorption and action spectra and chromatography.

PST4138 Evolution and Selection

10 Credits

The module looks at principles of natural and artificial selection, variation, linking natural selection to evolution, Darwin's theory, environmental effects on populations, allele frequencies in populations, isolation and species formation and examples of artificial selection.

PST4139 Crop Plant Productivity I (Elective)

The module explores plant sexual/asexual reproduction, pollination, double fertilization, fruit and endosperm (in maize) seed formation and dormancy, plant growth regulators, anatomy and physiology of C4 plants, arid (sorghum) and wet (rice) land plants, hybridization, inbreeding and genetic modification.

PST4236 Agricultural Biology (Elective)

10 Credits

The module looks at molecular, cellular and physiological structure of plants and animals; Experimental biology techniques, plant and animal diversity, breeding and cultivation, agricultural productivity of cultured plants, domestic animals, and beneficial microorganisms; pest, weed and disease control and environmental management.

PST4237 Regulation and Control

10 Credits

The module looks at homeostasis, metabolic wastes, detoxification and excretion, kidney structure and function; Nervous coordination, sensory and motor neurons, synapse, action potential; Endocrine system, negative feedback processes; Plant communication, auxins, gibberellins and abscisic acid, etc.

PST4238 Reproduction, Growth and Development

10 Credits

This module looks at histology of the mammalian ovary and testes, gametogenesis, hormonal control in the menstrual cycle, contraception and its implications, fertilization (in-vivo and in-vitro), embryo development, measurement of growth and growth rates.

PST4239 Crop Plant Productivity (Elective)

10 Credits

This module looks at plant-associated microbes; food crop challenges and benefits in association with microbes, soil and nutrient related factors to productivity, environmental factors; management of crops, harvest and storage; local, regional and international considerations in crop productivity.

CHEMISTRY

Specialist Courses

PST1136 Biochemistry

10 Credits

The module explores structure, classification, formation and functions of macromolecules, carbohydrates, lipids, proteins and vitamins and the chemistry of water in living organisms.

PST 1140 Mathematics for Chemists

10 Credits

The module examines linear Algebra: matrices, operations, inverses, determinants, eigenvalues and solutions of linear equations; Functions: exponential and logarithmic; Calculus: idea of limit and continuity; differentiations and integration.

PST 1141 Inorganic Chemistry 1

10 Credits

In this module students will be introduced to the Periodic Tables; Chemical and Physical periodicity of elements generally; Relative atomic and molecular masses; the mole and Avogadro constant; empirical and molecular formulae; Atomic structure: electrons, protons and neutrons; nuclear structure; electronic structure and atomic orbitals; isotopes; Bonding: ionic, covalent and coordinate; molecular orbitals; hybridisation; molecular geometry and intermolecular bonding.

PST 1240 Chemical Energetics

10 Credits

This module covers enthalpy changes: Hg formation, combustion, hydration, solution, neutralization and atomization; bond energy; lattice energy and election affinity.

PST 1242 Organic Chemistry 1

10 Credits

This module looks at structural, displayed and skeletal formulae exemplified by alkanes, alkenes and arenes; Alkanes e.g. ethane; alkanes e.g. ethane; Arenes e.g. benzene and methylbenzene; Hydrocarbons as fuels.

PST1274 Modern Physics

10 Credits

This module focuses on electrons, beams of charged particles, energy of a photon, photo electrics emission of electrons, wave particle duality, energy levels in atoms, line spectra, nuclear atom, nucleus, isotopes, mass excess and nuclear energy and nuclear processes (X-Ref SPH1104).

PST 2141 Inorganic Chemistry 11

10 Credits

This module looks at group II: Similarities and trends in the properties of elements; Group IV: variation in melting points and electrical conductivities; bonding, molecular shape, volatility and hydrolysis of the tetrachlorides; bonding, acid/ base nature and thermal stability of the oxides; relative stabilities of oxidation states for the elements in their oxides and aqueous cations; Group VII: physical properties; reactivity as oxidising agents; reactions of the halide ion and reactions with aqueous sodium hydroxide.

PST 2142 Organic Chemistry 11

10 Credits

This module explores structure, nomenclature, synthesis and reactions of halogenoalkanes; carbonyl compounds; compounds; alcohols and carboxylic acids.

PST 2143 Chemical and Ionic Equilibria

10 Credits

The module covers reversible reactions; dynamic equilibrium; Factors affecting chemical equilibria; The Haber process and contact process and Ionic Equilibria.

PST 2140 States Of Matter

10 Credits

The module covers Ideal gaseous state and ideal behaviour; Liquid state, simple kinetic molecular descriptions to explain changes of state; solid state and Lattice structure.

PST 2241 Transition Elements

10 Credits

This module examines the general physical and characteristic chemical properties of the first set of transitional elements, titanium to copper and colour of complexes.

PST 2242 Polymers and Polymerization

10 Credits

The module looks at addition polymerization as well as condensation polymerization.

PST 4142 Halogen Compounds

10 Credits

The module focuses on Halogenalkanes and halgenoarenes; nucleophilic substitution; hydrolysis; formation of nitriles, primary amines; elimination and relative strength of the C-Hal bond.

PST 4141 Nitrogen and Sulphur

10 Credits

The module explores nitrogen reactivity; use in formation of ammonia (NH3), Nitric acid and fertilizers; Impact of nitrogen oxides and nitrates on the environment; Sulphur and formation of oxides resulting in acid rain formation as well as sulphur oxide as a food preservative.

PST 4143 Applications of Analytical Chemistry

10 Credits

The module explores the method of detection and analysis and application of chemistry in society.

PST 4144 Electrochemistry

10 Credits

This module covers redox processes; electrode potentials; standard electrode (Redox); standard cell potentials; batteries and fuel cells.

PST4240 Nuclear Chemistry

10 Credits

This module looks at the fundamentals of nuclear behaviour, nuclear properties, radioactive decay and nuclear reactions; applications of nuclear phenomenon, biological effects of radiation; nuclear analytical techniques-tracers, radioisotope dating and nuclear power.

PST 4243 Environmental Chemistry

10 Credits

The module emphasizes the atmosphere, chemical processes and reactions, carbon cycle, greenhouse effect, soils, soil and water associations, ion exchange, water cycle, water treatment, sewage, BOD values, waste management and industrial waste.

PST 4244 Reaction Kinetics

10 Credits

The module looks at simple rate equations, orders of reaction; rate constants; effect of temperature on rate constants; activation energy and homogeneous and heterogeneous catalysts.

COMPUTER SCIENCE

Specialist Courses

PTE1131 Engineering Mathematics 1

10 Credits

The module covers introductory topics, indices and logarithms, formulae, mensuration, trigonometry, force and moments, estimating and costs; Series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Polynomials, discriminant, real roots, solving quadratic equations, domain, range, one-one functions, graphical illustrations; Calculus, differentiation, integration, applications of arc length, area, volumes, moments of inertia, centroids; Vector and scalar products; Equations of lines and planes; Matrices basic operations, rank, inverse Gaussian elimination, Cramer's rule; Determinants, Eigen values and Eigen vectors; Ordinary differential equations; Applications of First order differential equations: mechanical and electrical engineering problems; Elementary functions including Hyperbolic functions and their inverses, Differentiation technique; Leibnitz's Rule, Hospital's Rule; Applications of differentiation: maxima and minima, kinematics; Integration techniques, Reduction formula; Integration of complex functions, integration by substitution,

trigonometric relationships, trapezium rule, graphical determination, integration by parts; Applications of Integration: arc-length, area, volume, moments of inertia and centroids.

PST1133 Mathematical Foundations of Computer Science 10 Credits

The module examines sets, relations, function; Discrete probability; Combinatory, Propositional logic, first-order predicate logic; Reasoning about programs, axiomatic semantics, pre/post-conditions, loop invariants, Order statistics, recurrence relations, application to searching and sorting, probability and programming in Haskell.

PST 1172 Electricity and Magnetism

10 Credits

The module highlights the static electricity fields, coulomb's law and the electric field; Motion of point of charge in electric field; Lines of force, electric dipoles in electric fields, electric flux; Gauss's law and its applications; Potential of a system, electric scalar potential; Capacitors in circuits, their energy, dielectrics and applications of static electricity.

PST1275 Introduction to Computers

10 Credits

This module outlines information Society, History of Computers; Data and Information; number system and arithmetic; data representation; basic computer components:-CPU, I/O units; Storage; Brief concepts of computer language and programming techniques; high/low level languages, compiler, interpreter, grammar, recursion, simple data structures (array, lists, trees, hash tables, queues & stacks) problem solving; Algorithms: Sorting, compression, numerical and encryption, operating system and its function:- process and memory management, I/O, data communication job control; Processing:-File structures, organization and access, databases; Fundamentals of Network, a simple program, initialization, printing, comments, keyboard, constants, assignments and expressions.

PST1277 Business Information Systems

10 Credits

The module looks at the business environments; organizations as systems: goal setting and decision making; IT strategy and information systems objectives; Frameworks used for analysis organizational systems; Types of information system: transaction processing, operational control, MIS, DSS and Expert Systems; The process of system development: the systems of life cycle, the phases within it and the activities and documentation appropriate to each phase; Other development strategies include 4GLs, prototyping and evolutionary development; The anatomy of a system: project organization and project management; The analysis and design of information systems, physical of information systems and implementation and post implementation activities.

PTE1253 Electronic Circuits and Devices

10 Credits

The module examines the introduction to volt-ampere characteristics of diodes, transistors with power and photo electronic devices; Maxwell's equation for static and harmonic varying current, displacement current, application of circuit theory, semi-conductors, diodes and transistors, logic gates, NAND, NOT, NOR, OR exclusively OR, Boolean algebra, combination logic,

minimization, programmable logic devices, sequential logic, arithmetic operations and circuit memory elements.

PST2176 Databases Concepts and Data Processing 10 Credits

The module looks at database terms; Database management systems (DBMS), database models: Entity-relationship model; Database security; The relational model, comparison of files and database systems; The SQL language, database design, ER or relational mapping, normalization, aspects of physical database access: database transactions, embedded SQL(PL/SQL), cursors, distributed databases; Client-server database systems, Higher-level and extended data models, Object-oriented data models are introduced; SQL3 and requirements of multimedia databases.

PST2177 Programming and Program Design 10 Credits

The module looks at the application of set theory to program specification; Program design through pseudo code; JSP; Klarner, O, Diagrams; Types of systems: generic system development life cycle(SDLC) stages and design aspects; Programming languages and visual basic programming.

PST2178 Operating Systems Concepts 10 Credits

The module gives an overview of operating systems, operating system organization and services, computer design, the hardware and its interface, device management, I-O management: creating virtual device abstractions, Support for processes and threads, job scheduling, disk scheduling, file system; Protection(privacy) and security, process management, synchronization, file management, filing systems, interface and implementation; Backup and archiving, distributed operating systems and file systems; Case studies drawn from UNIX, MS-DOS, File and directory structure and Data transmission.

PTE2254 Digital Electronics 10 Credits

This module explores the Boolean algebra, Combinational logic; Minimization; Karnaugh mapping; Programmable logic devices; Sequential logic; Arithmetic Operations and circuit memory elements; Operational amplifiers, classification, parameters and basic building blocks.

PST 2277 Data Structure and Algorithms

The module focuses on problem solving, algorithms, compilation, variables, I/O, control structures, data structures, subprogram, files, data types, storage elements, control constructs, procedures, parameter passing and results, recursion, functional, imperative and logical programming, scope rules, extensibility, data structures:-pointers, linked lists, queues, stacks, tree and operations on them, divide and conquer, backtracking, space/time, trade-offs, data abstraction, sorting, hashing; System design approaches and computer arithmetic errors.

PST 2278 Systems Analysis and Design 10 Credits

This module gives an overview of system development life cycle, structured analysis and design, business systems and computer resources; Analysis phase and ad techniques used, data dictionaries, DFDs, database definitions and system maintenance, project planning and control;

communication; Documentation and its standards; System security and integrity; prototyping and case studies of practical systems project.

PST 4175 Computer Communication and Networking 10 Credits

The module is on keeping information safe, active and passive attacks, digital signatures and cryptographic checksums, countering digital forgery and ensuring integrity; Types of networks; network topologies; network device types and characteristics and media access; Networking technology overview, End-to-end protocols; the Internet protocol Suite overview; UDP, TCP – connection established and adaptive retransmission, RPC; Congestion control, Resource allocation, Network performance and network management.

PST4178 Software Engineering Concepts

10 Credits

10 Credits

The module looks at the software life cycle; The software development process, Design objectives, Function oriented and objectives oriented design methodologies; documentation, implementation strategies, debugging, anti bugging, introduction to specifications, verification and validation, elementary proof of correctness, code and design reading, structured walkthroughs, testing strategies, software reliability issues, configuration management, cast tools and team project assignment.

PST4179 Operating Systems and Computer Architecture

This module focuses on Von Neumann architecture; pipelining; buses; memory mapping; interrupts; registers; addressing modes; Overview of operating systems structures, Operating system organization and services, Computer design, the hard ware and its interfaces; Device management, I-O management, Job scheduling, Disc scheduling, file systems, Protection and security, process management, synchronization and communication; Memory management; Filing systems, UNIX, MS-DOS, File Directory; Buses, memory data representation; arithmetic operations, the ALU; Control: data path layout, controlling the fetch – decode-executive cycle, Instruction set design, Interfacing to the outside world as well as improving usability and performance.

PTE 4254 Microprocessors and Microcontrollers 10 Credits

The module covers the basic concepts of microprocessors; Architecture and operation; Instruction sets and assembly language programming; Subroutine, interrupts, programmed controlled I/O: I/O operations; I/O memory mapped; I/O ports; Programmable LSI ports and applications of microprocessor.

PST4276 Computer Graphics

10 Credits

The module looks at the nature and history of graphic design, Fundamental of computer graphics Two dimensional drawing (2-D), Three dimensional drawing (3-D) in graphic design; ICT for designing; photo realism, retracing radiosity and particle tracing Digital drawing, digital photography; Developing designs from digital images; Computer design software and tools for graphic design; Advertizing designs and print media; Development of graphic products,

magazines, packing and posters; Designing using software e g;, CorelDraw, Publisher, Photoshop and other software; : Colour, textures and the human visual system.

PST4278 Software and Hardware Systems 10 Credits

This module looks at application software; systems software; systems software and hardware; Reliable system/ software design concepts and development method; design management and development lifecycles phases; Review of system and software design methods: functional, object oriented, formal, prototyping; Function design method: SSADM; outline of version IV, object orientated method: object orientated analysis and design; Case study/project: design of a data-base retrieval system with OOD front-end and functional data-base design.

PST4179 Operating Systems and Computer Architecture

10 Credits

The module explores Von Neumann architecture; pipelining; buses; memory mapping; interrupts; registers; addressing modes; Overview of operating systems structures, Operating system organization and services, Computer design, the hard ware and its interfaces; Device management, I-O management, Job scheduling, Disc scheduling, file systems, Protection and security, process management, synchronization and communication; Memory management; Filing systems, UNIX, MS-DOS, File Directory; Buses, memory data representation; arithmetic operations, the ALU; Control: data path layout, controlling the fetch – decode-executive cycle, Instruction set design, Interfacing to the outside world, improving usability and performance.

MATHEMATICS AND STATISTICS

Specialist Courses

PST1131 Calculus I 10 Credits

This module explores the functions: domain, range, injective, bijective and surjective; classes of functions, polynomials, rational, transcendental, algebraic, trigonometric, exponential, logarithmic, hyperbolic functions and their inverses; Limits and continuity of single variable functions, Differentiation: rules of differentiation, differentiation from first principles, Leibnitz's Rule, L'Hopital's Rule, Rolle's Theorem, Mean Value Theorem of differential calculus; Application of differentiation: Maxima and minima, Integration: indefinite and definite integrals, integration techniques; substitution method, integration by parts, tabular integration, trigonometric substitutions, reduction formulae; Mean value Theorem of Integral calculus; Application of integration: arc length, area, volume, moments of inertia and Centroids.

PST1132 Linear Algebra

10 Credits

The module looks at the complex numbers: geometric representation and algebra of complex numbers; De Moivres theorem polynomials and roots of polynomial equations, Roots roots of complex numbers; Matrices: Algebra of matrices, trace, rank of a matrix, determinants and inverses, solutions of simultaneous linear equations: Cramer's rule; Gauss Elimination and

Gauss Jordan Elimination; Vectors: Addition and scalar multiplication of vectors, Vector projections, , Dot and vector product, Lines and planes, Scalar triple products and its application; Vector triple product, Vector spaces Definition of vector spaces and subspaces; Linear combination, Linear dependence and Independence, Basis and dimension Row and Column spaces; Eigenvalues and Eigenvectors of 2 × 2 Matrices.

PST1134 Applied Statistics

10 Credits

The module looks at discrete and continuous data, Descriptive statistics, initial data exploration, Measures of central tendency, dispersion and position; Measures of shape of distribution; Mean, mode and median of grouped data; Graphical representation of data: multiple and stacked bar charts, histogram, Stem and leaf, dot plots, Box and whisker; Discrete and continuous random variables, probability density functions: mean, expectation, variance and their properties; Cumulative probability density functions; Sampling methods(simple random, systematic, stratified, purposive/judgemental, cluster, convenience sampling; Introduction to hypothesis testing: definition of key terms; Parametric test: t-test and Z –test; Hypothesis testing for a single mean and proportion; Non-parametric tests: Chi-square tests; goodness of fit and test of independence ,Mann-Whitney, Wilcoxon, Runs, Kruskal Wallis test, Median test and sign test.

PST1231 Calculus II 10 Credits

The module explores functions of several variables(domain and range) and their derivatives, Limits and continuity of functions with several variables, Partial derivatives, higher order partial derivatives, chain rule, directional derivatives, Double Integration: Changing of coordinate systems, Jacobians, Triple Integrals and Applications, Triple Integrals using spherical or cylindrical coordinates; Application of triple integrals to find area and Volume, sequence and series, power series, convergence tests, Taylor's Theorem, centre of masses and moments of Inertia maximum and minimum points and Lagrange's multipliers.

PST1232 Discrete Mathematics

10 Credits

This module looks at the real number system; Natural numbers, integers, rational, real numbers, decimal representations, irrationals, interval notation, inequalities and their solutions, absolute value; Set Theory: Introducing sets, set description, basic description and language, Operation on sets, Venn diagrams Theorems of Inclusion and operation on sets; De Morgans Laws, Indexed sets and power sets, Ordered pairs and Cartesian Products, set theorems and proofs; Relations: properties symmetric, antisymmetric, transitivity, Types of relations; partial order and equivalence relation; Logic and propositions: predicates, truth values, logical equivalence and quantifiers; Mathematical proofs: proof by mathematical induction, direct proof, proof by transposition/contrapositive, proof by contradiction; Mathematical structures and operations: binary operations and properties, groups and rings.

PST1234 Statistical Inference I

10 Credits

This module focuses on basic concepts of Statistical Inference: deductive inference population, sample parameters and statistics; Measurement scales and types of data; Point estimation: methods of finding point estimators (Method of Moments, maximum likelihood and Least Squares); Properties of point estimators (biasedness, consistency, efficiency and

sufficiency);Sampling distributions, Central Limit Theorem, Chi-Square student-t-test and F-distributors distribution of the minimum and maximum sample; Estimation: methods of estimation, properties of estimators and their sampling distributions; Interval estimation: samples, proportion and confidence intervals; Confidence interval between two means and between two proportions; Hypothesis testing using confidence intervals(Z-test and t-test); Hypothesis testing between two means and proportion: Matched t-test and correlated t-test.

PST2132 Linear Programming

10 Credits

This module highlights linear programming, model formulation, graphical LP solution, Solution of Maximisation and minimisation models, degeneracy, feasible solution, optimality condition, Linear Programming applications to real-life situations, simplex, Simplex Tableau computations, Big M method; Computer solution with Excel solver and AMPL; Duality; sensitivity analysis, sensitivity analysis with Tora, Excel solver and AMPL; Transportation Models: transportation algorithm(North-west corner, Least cost method, Vogel's Approximation Method), Balanced and unbalanced problems, Assignment models(Hungarian); Network models: minimum spanning algorithm, shortest route algorithm, linear programming application and maximal flow models.

PST2131 Ordinary Differential Equations

10 Credits

This module outlines first order ordinary differential equations: separable , linear , Exact, integrating factor; Bernoulli Equations; Application of First Order differential equations, Second Order equations; Linear equations and linear differential operators; Linear independence, Wronskian; Ordinary Linear Differential Equations with constant coefficients and undetermined coefficients; Variation of parameters; Laplace transforms and applications; Predator-prey and Volterra-Litka equations; Series solution of ordinary differential equations; Frobenius method, Legendre polynomials and Bessel functions.

PST2133 Probability Theory

10 Credits

This module focuses on probability, Axioms, mutually and independent events, Probability tree diagrams, Law of total probability, Conditional probability, Baye's Rule; Common discrete distributions: Bernoulli and Binomial Uniform, hypergeometric, Geometric, Poisson, Use of Binomial and Poisson tables; Common Continuous Distributions: Uniform, Normal, Exponential; Normal approximation to binomial and to Poisson etc; Use of Z- tables; Moment and probability generating functions; Properties of moment generating functions, Joint Probability Distributions and marginal distribution; Markov and Chebshev's inequalities.

PST2230 Vector Analysis

10 Credits

This module gives a review of algebra; Definition of vector –valued functions, Differentiation of vector functions: derivatives of vector functions, Limits and continuity of vector functions, partial differentiation of vector functions ,space curves ,Curvature and torsion, Scalar fields - directional derivatives of a scalar field ,gradient of scalar fields, Laplacian of a scalar field, Vector fields: divergence and curl of vector fields, Laplacian operator: Conservative solenoidal and irrotational vector fields, line and surface integrals, Integral theorems: Green's theorem,

Gauss' divergence theorem, Stoke's theorem, and their applications and Orthogonal curvilinear coordinates.

PST2232 Advanced Linear Algebra 10 Credits

This module looks at linear transformations operations on linear operators, change of basis, kernel and image of a linear mapping; Eigenvalues and eigenvectors, characteristic equation; Properties of eigenvalues and eigenvectors, orthogonality of eigenvectors, geometric and algebraic multiplicity of eigenvalues; Application of diagonalisation of matrices, quadratic and bilinear forms, Jordan, Normal form of a matrix , Quadratic forms; Orthogonal matrices and theorems; Method of Gramm-Schimdt, Unitary matrices , Inner product vector spaces and Cauchy Schwarz inequality; The Cayley Hamilton Theorem and its applications; Symmetric, Skew-Symmetric, Hermitian and Skew-Hermitian matrices definitions and properties.

PST2233 Linear Models

10 Credits

10 Credits

This module covers regression: Simple linear regression model; Residual analysis; Scatter plots and correlation (product moment and Spearman Brown correlation coefficients, Coefficient of determination, Least squares method; Full rank linear regression model, Multiple regression Model; General linear hypothesis; Stepwise methods; ANOVA(one and two way); Design Matrix, Quality of prediction and hat matrix; Matrix representation covariance matrix; Design and Analysis of Experiments, completely randomized design, randomized complete block design, Latin squares, factorial experiments; Time Series: seasonal, trend, cyclical and random (residual) factor, Moving averages and smoothing and predictions.

PST2203 Methods of Teaching Mathematics

The topics covered in this module include Theories in the learning of Mathematics: Constructivism Learning theory, Realistic Mathematics Education Approach, Problem solving, The Japanese Lesson Study, Activity-based Facilitation and Project Method; Philosophical issues in Mathematics: Forms of philosophies in Mathematics Education and their influence in Mathematics instruction; Forms of knowledge in mathematics: Conceptual Vs Procedural knowledge, Technological and Pedagogical Content Knowledge (TPACK Model); Inductive and Deductive reasoning; Assessment in Mathematics Education: Assessment tools and test construction in Secondary schools, Bloom's taxonomy and Test blue print (Specification grid); Contemporary issues in Mathematics: Gender differential, Attitudes and Mathematics anxiety, Culture and Mathematics (Ethnomathematics), ICT integration in Mathematics Education including use scientific calculator and graphing calculators.

PST4131 Partial Differential Equations and Fourier series 10 Credits

The module gives a review of ODEs and Laplace Transforms Partial differentiation equations: Solving first order partial differentiation equations by integration and method of characteristics; Classification of second order partial differential equations with two independent variables; Derivation of the wave, heat, Laplace and Poisson equations; Solving second order Partial differentiation: change of variables, method of characteristics, separation of variables and Laplace transforms techniques; Fouries analysis: Fourier series and Fourier transforms, Fourier sine and cosine series; Half range Fourier series, convergence theorem; Integration and

differentiation of Fourier series; Application of Fourier series to boundary value problems; Fourier transforms and inverse; Convolution theorem and its applications.

PST4132 Real Analysis 10 Credits

The module offers an introduction to Analysis: Review of real number system, countability of real number system, field axioms, order axioms; Completeness, supremum, infirmum, Limits of sequences; Neighbourhoods, limits and interior points, open sets, closed sets, convergence, Cauchy sequence, bounded sequences, subsequences, Bolzano-Weitrass theorem; Cauchy-Schwartz inequality, Pythagoras Theorem; Differentiability continuous functions, Uniform continuity, Intermediate value theorem; Integration: Riemann integrals, properties of Riemann Integrals, proofs on Riemann Integrals; Study of measure theory and the Lebesgue Integral, Fubini's theorem.

PST4134 Survey and Sampling Methods

10 Credits

The module explores sample survey and questionnaire design, postal and telephone questionnaires, interviewer-administered questionnaires; Errors in sample surveys; Ratio and regression estimators, separate and combined ratio estimators; Sampling methods, Simple random sampling, sample size estimation; Systematic sampling; Simple random and Systematic, Stratified populations and stratified simple random sampling; Optimum allocation and Neyman allocation; Cluster and multi-stage sampling; The module also looks at the application of computer based test statistics (System Application Statistics (ASA), Statistics Package for Social Sciences(SPSS) inference and Statistic.

PST4231 Numerical Methods

10 Credits

The module looks at the types and causes of errors: Error sources , strategies for reducing errors; Introduction to simple numerical methods for solving problems in Mathematics Science and Finance, Simpson and Trapezium rule;; Numerical methods for root-finding simple iterative method, the Newton –Raphson method, Bisection method, convergence of Bisection method, Regula Falsi or False Position method, Secant Method, Polynomial interpolation and splines; Solution of linear algebraic equations: direct and indirect methods; Numerical integration: Newton Cote's formulae, derivation of the trapezoidal and Simpson's rules, Romberg integration, Gaussian quadrature formulae; Numerical integration of ODE's, Euler and Taylor second order; Runge-Kutta methods.

PST4233 Mechanics 10 Credits

The module looks at particle kinematics: displacement, velocity and acceleration of a vector, radius of curvature normal and tangential acceleration, coordinate system(cartesian and polar system), Particle dynamics: Newton's Laws of motion Projectile motion: particle launched at horizontal & inclined plan, Circular motion(vertical and Horizontal), Work, Energy and Power momentum and collisions (direct impact): Oscillations: Linear simple harmonic motion; Central forces and Orbits: Central Forces and Planetary Motion: Equations of motion for a particle in a central field, Potential energy of a particle in a central field, Conservation of energy and Kepler's law of planetary motion.

PST4278 Computer Packages In Mathematics and Statistics 10 Credits

This course will be a practical course, dealing with the use of computers to solve mathematical and statistical problems. It is designed to complement the understanding of some of the mathematical concepts through the use of mathematical packages; Spreadsheets, including formulae, data analysis and graphs Use of Mathematical packages including MATLAB, Autograph, Geogebra, Miscrosoft, Equation Editor etc; Solution of equations, Limits, Differentiation and Integration; Solution of first and second order differential equations; Solution of systems of linear equations; Statistical Packages: MINITAB, SPSS, Spreadsheets including data handling, descriptive statistics distribution, graphs etc.

PHYSICS

Specialist Courses

PTE1131 Engineering Mathematics 1

10 Credits

The module looks at introductory topics, indices and logarithms, formulae, mensuration, trigonometry, force and moments, estimating and costs; Series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Polynomials, discriminant, real roots, solving quadratic equations, domain, range, one-one functions, graphical illustrations; Calculus, differentiation, integration, applications of arc length, area, volumes, moments of inertia, centroids; Vector and scalar products; Equations of lines and planes; Matrices basic operations, rank, inverse Gaussian elimination, Cramer's rule; Determinants, Eigen values and Eigen vectors; Ordinary differential equations; Applications of First order differential equations: mechanical and electrical engineering problems; Elementary functions including Hyperbolic functions and their inverses, Differentiation technique; Leibnitz's Rule, Hospital's Rule; Applications of differentiation: maxima and minima, kinematics; Integration techniques, Reduction formula; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination, integration by parts; Applications of Integration: arc-length, area, volume, moments of inertia and centroids.

PTE1147 Material Science

10 Credits

The module looks at materials classification and their structure; atomic bonding in materials, crystallization, dislocations, plastic deformation; temperature measurement; phase diagrams: solidification, liquidification, vapourization; alloy formation, types of material: composite, selection and their applications i;e; wood, plastics, ceramics and alloys; Structure and properties of metals and alloys; Review of principles, Diffusional processes; Constitutional phase diagrams;

Lattice defects; Deformation of metals, fracture and fatigue, polymers and corrosion; (X-Ref SPH4104 & SPH4204).

PST1172 Electricity and Magnetism

10 Credits

This module explores simple electrostatic phenomena concept of an electric field, force between point charges, electric field of a point of charge, electric potential; Coulomb's law, Concept of magnetic field, electric current and resistance: electric conductors, Kirchoff's laws, Wheapstone's bridge, thermo-electricity; magnetic fields: Biot-Savart law, Ampere's law, Faraday's and Lenz's law; (X-Ref SPH1105).

PTE1231 Engineering Maths II

10 Credits

This module explores series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination and integration by parts.

PST1270 Oscillations and Waves

10 Credits

The module highlights simple harmonic motion dumped and forced oscillations; Waves: refraction of light, progressive waves, transverse and longitudinal waves, polarization, electromagnetic waves; Superposition: stationary waves, diffraction, interference and two – source interference patterns.

PST1274 Modern Physics

10 Credits

The module covers electrons, beams of charged particles, energy of a photon, photo electrics emission of electrons, wave particle duality, energy levels in atoms, line spectra, nuclear atom, nucleus, isotopes, mass excess and nuclear energy and nuclear processes (X-Ref SPH1104).

PST2171 Mechanics and Relativity

10 Credits

This module looks at the types of force, equilibrium of forces, center of gravity, Newton's law of motion, linear momentum ad its conservation, impulse turning effects of forces, energy conversion and conservation, work, potential energy, kinetic energy and internal energy; Power, gravitational field, force between point masses, field of a point mass, field near to the surface of earth and gravitational potential (X-Ref SPH1101).

PST2172 Circuit Theory

10 Credits

The module examines resistive Circuits: Ohms Law, Nodes, Branches and Loops, Kirchhoffs Laws, Series Equivalents and Voltage Division, Parallel Equivalents and Current Division, Wye-Delta Transformation; Analysis Method: Nodal Analysis, Circuit Containing Voltage Sources, Mesh Analysis, Circuit Containing Current Sources; Nodal versus Mesh Analysis; Network Theorems: Linearity and Proportionality, Superposition, Thevenin Theorem, Norton Theorem, Maximum Power Theorem; OP AMPS: Operational Amplifiers, Role of Negative Feedback,

Operational Amplifier Building Block Circuits, Interconnecting Op Amp Building Blocks; Virtual Short Principle for Op Amps; Energy Storage Elements: Capacitors, Energy Storage in Capacitors, Series and Parallel Capacitors, Inductors, Energy Storage in Inductors, Series and Parallel Inductors, DC Steady State, Practical Capacitor and Inductors; First- Order Circuits: Simple RC and RL Circuits without Sources, Time Constants, General First-Order Circuits without Sources, Circuits with DC Sources, Superposition in First-Order Circuits, Unit Step Function, Step and Pulse Responses; Second-Order Circuits: Circuits with Two Storage Elements, Second Order Equations, Natural Response, Forced Response, Total Response, Unit Step Response; AC Circuits; Sinusoids and Phasors; Sinusoidal Steady state Analysis; AC Power Analysis; Three Phase Circuits and Magnetically Coupled Circuits.

PTE2150 Analogue Electronics

10 Credits

The module is an introduction to stabilized power supplies, small-signal models of differential, single stage; Multistage and integrates circuit amplifiers, oscillators, wave shaping and switching circuits; High frequency effects; Stability and performance measurement (X-Ref SPH1202).

PST2271 Solid State Physics

10 Credits

The module explores crystal Structure and Defects: Unit cell, crystal systems, elements of symmetry, Miller indices, diffraction, imperfections-vacancies, colour centers, dislocations; Burger's vector; Lattice Vibration: Elastic waves; Density of states; Specifi c heat models of Eistein and Debye; Scattering of X-rays, neutrons and light by phonons; Free-electron Model: Free electron gas; Electrical conductivity; Heat capacity of free electrons; Fermi surface; Thermionic emission; Semi-conductivity: Fermi level, direct and indirect band gap semiconductors, conductivity, mobility and life times in intrinsic semiconductors, extrinsic semiconductors: p-type and n-type semiconductors; P-N juctions, light emitting-, zener -, tunnel diodes; Ohmic and non-ohmic contacts, Hall effect in semiconductors; Schottly barrier; Oxide and non-oxide semiconductors; Magnetism: Classifi cation as dia-, para-, ferro-, ferri- and antiferro-magnetics; Detailed study of the above; Domains and other macroscopic phenomena; Magnetic measurement techniques; Applications-magnetic bubbles, magnetic phase analysis of alloys, imaging etc; Dielectrics and Ferro-electrics: Electric polarisation, Mechanisms of polarisation-electronic, ionic orientational and space charge, derivation as a function of temperature and frequency; Claussius Mossoti equation; Ferro-electrics-classifi cation, ferropyro-electricity, and piezoelectric materials domains, and Superconductivity: Theory of superconductivity, Meissner effect, flux quantization, types type II superconductors heat capacity and I applications (X-Ref SPH2202).

PTE2246 Thermodynamics

10 Credits

This module covers temperature scales, practical thermometers; Ideal gas: equation of state, kinetic theory of gases, pressure of a gas, kinetic energy of a molecule, work done by an ideal gas, thermal equilibrium, thermal conduction, convection, radiation; Laws of thermodynamics, the working fluid and phase equilibrium, reversible and irreversible processes, The second law of thermodynamics and Entropy, The heat engine cycles, vapour power cycles, refrigeration cycles, Turbines and compressors, Cooling systems: air, water, additives; Communication and production; Design registration and protection (X-Ref SPH1203).

PTE2254 Digital Electronics

10 Credits

This module focuses on Boolean algebra, Combinational logic; Minimization; Karnaugh mapping; Programmable logic devices; Sequential logic; Arithmetic Operations and circuit memory elements; Operational amplifiers, classification, parameters and basic building blocks.

PST4170 Quantum Physics (Elective)

10 Credits

The module look at Schrödinger's theory of Quantum Mechanics: The wave function and its required properties; The probability densities; Solution of the time- independent Schrödinger equation for all known simple potentials including the harmonic Oscillator-Hermite polynomial Operator algebra: Hermiticity of Operators: Communicators; The Hamiltonian; The equation of Motion; The eigen values and eigen functions; Observables and expectation values; The one electron atoms: Spherical Harmonics; Quantum numbers; Selection rules; Angular momentum; The Zeeman Effect; The electron spin the Stern-Gerlach experiment; Addition angular momentum; The Spin Orbit interaction; Total Angular Momentum; Spin -Orbit Interaction and the Hydrogen Energy levels; Many –election atoms: Pauli exclusion principle, electronic states; bonding in molecules and solids, the classical free electron model and Fermi energy; (X-ref SPH 2101).

PST4172 Statistical Mechanics

10 Credits

This module highlights the statistical systems micro canonical, canonical and grand canonical ensembles; Phase space; Classical statistics: Liouville theorem; Entropy and thermodynamic probability; Partition function; Maxwell's velocity distribution function; Equipartition of energy; Quantum statistics, statistics of fermions, cryogenics and superconductivity.

PST4173 Electromagnetism (Elective)

10 Credits

The module looks at Capacitors, inductors, generators and eddy currents; Electromagnetism and electromagnetic induction (X-ref SPH2105).

PST4270 Atomic and Nuclear Physics

10 Credits

The module explores the Shell model, Fermi gas and collecture model; Nuclear decay: alpha decay, basic alpha decay processes, theory of alpha emission; Angular momentum and parity in alpha decay, alpha decay spectroscopy; The beta decay, Fermi theory of beta decay, energy release in beta decay, angular momentum and parity selection rules, forbidden decays, double beta decay, beta decay spectroscopy; Gamma decay: energetics of gamma decay, angular momentum and parity selection rules, internal convection, lifetimes of gamma ray spectroscopy, nuclear resonance, fluorescence and Mossbauer effect, nuclear reaction; Neutron physics, nuclear fusion, accelerators and application of nuclear physics (X-ref SPH2205 & SPH4102).

PST4271 Classical Mechanics

10 Credits

The module covers fundamental forces: classification and unification; Inertia forces in linearly accelerating frame; Non – inertial systems; Lagrange's and Hamilton's formulation of mechanics; Generalized coordinates; Principles of least action; Lagrange's equation of motion and applications; Simple and double pendulum, inclined plane; Orbital mechanics; Equivalence

of Lagrange and Newtonian mechanics; Lagrange's undetermined multipliers; Hamilton - Jacobi theory and relativity.

PST4274 Energy Physics

10 Credits

This module examines the sources of energy - primary and secondary; Solar energy, solar cells, solar panels; Other Non-conventional energy sources - wind, tide, chemical, geothermal etc; Efficiencies and application; (X-ref SPH4150 & SPH4250).

MASTERS DEGREE PROGRAMME

SPECIAL REGULATIONS

1.0. ENTRY REGULATIONS

1.1 Admission requirements

- 1.1.1 Applicants must have an approved Bachelor of Science Education Honours degree or its equivalent with subject specialisation in accounting, mathematics, science or technology subjects.
- 1.1.2 Alternatively applicants with a relevant bachelor's degree plus the Postgraduate Diploma in Science and Technology Education or its approved equivalent shall be considered.

2.0 STRUCTURE OF DEGREE PROGRAMMES AND SELECTION OF COURSES

2.1 **Programme of study**

- 2.1.1 The two-year block release or part time programme is composed of prescribed core and elective modules as well as a research project culminating in a mini-dissertation of at least 10 000 words.
- 2.1.2 Candidates shall be required to study modules both in education and in the areas of specialization indicated below.

3.0 ASSESSMENT OF CANDIDATES

3.1 **Assessment**

- 3.1.1 All taught modules shall be assessed through coursework and examination, unless specified otherwise in the appropriate module synopsis.
- 3.1.2 The dissertation shall count as three modules per semester for assessment purposes.
- 3.1.3 To be awarded the degree, candidates must complete a minimum of 288 credits.

ACCOUNTING AND BUSINESS STUDIES

PROGRAMME SUMMARY

YEAR I

Module Code	Module Description	Credits
PST6101	Philosophical issues in STEM education	18
PST6104	Science, Mathematics and Technology Curricular	18
PST6160	Advanced financial Accounting	18
PST6161	Applied Management Accounting	18
PST6205	Assessment in STEM education	18
PST6208	Quality Assurance	18
PST6260	Financial Management	18
PST6261	Strategic Management	18
YEAR II		
PST6410	Dissertation	-
PST6311	Advanced research methods	18
PST6360	Advanced Auditing (Elective)	-
PST6361	Corporate Governance (Elective)	18
PST6411	Tools for basic and applied research	18
PST6410	Dissertation	72
PST6461	Applied Marketing (Elective)	-
PST6464	Advanced Taxation (Elective)	18

TOTAL CREDITS FOR THE PROGRAMME

BIOLOGY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PST6101	Philosophical issues in STEM education	18
PST6104	Science, Mathematics and Technology Curricular	18
PST6136	Molecular and cell biochemistry	18
PST6137	Advanced physiology	18
PST6139	Conservation Biology (Elective)	-
PST6205	Assessment in STEM education	18
PST6208	Quality Assurance	18
PST6237	Environmental Microbiology	18
PST6238	Molecular Genetics (Elective)	-
PST6236	Advanced Plant Physiology (Elective)	18
YEAR II		
PST6410	Dissertation	-
PST6311	Advanced research methods	18
PST6339	Habitat ecology	18
PST6411	Tools for basic and applied research	18
PST6410	Dissertation	72
PST6437	Plant health and productivity (Elective)	18
PST6438	Advanced Genetics (Elective)	-

TOTAL CREDITS FOR THE PROGRAMME

CHEMISTRY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PST6101	Philosophical issues in STEM education	18
PST6104	Science, Mathematics and Technology Curricular	18
PST6140	Advanced Physical Chemistry	18
PST6141	Advanced Inorganic Chemistry	18
PST6205	Assessment in STEM education	18
PST6208	Quality Assurance	18
PST6242	Advanced Organic Chemistry	18
PST6244	Advanced Anal Chemistry	18
YEAR II		
PST6410	Dissertation	-
PST6311	Advanced Research Methods	18
PST6336	Advanced Biochemistry (Elective)	18
PST6342	Molecular Chemistry (Elective)	-
PST6411	Tools for basic and applied research	18
PST6410	Dissertation	72
PST6440	Instrumental Chemistry Analysis (Elective)	-
PST6443	Materials Chemistry (Elective)	18

TOTAL CREDITS FOR THE PROGRAMME

COMPUTER SCIENCE

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PST6101	Philosophical issues in STEM education	18
PST6104	Science, Mathematics and Technology Curricular	18
PST6175	Computational Discrete Mathematics	18
PST6179	Advanced Enterprise Architecture Programming	18
PST6205	Assessment in STEM education	18
PST6208	Quality Assurance	18
PST6276	Advanced Database and Data Mining	18
PST6278	Evolution Computing & Parallel Distributed Processing	18
YEAR II		
PST6410	Dissertation	-
PST6311	Advanced research methods	18
PST6375	Simulation and Modelling (Elective)	18
PST6379	Interactive Computer Graphics	-
PST6411	Tools for basic and applied research	18
PST6410	Dissertation	72
PST6478	Information Systems Security and Auditing	18

TOTAL CREDITS FOR THE PROGRAMME

MATHEMATICS AND STATISTICS

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PST6101	Philosophical issues in STEM education	18
PST6104	Science, Mathematics and Technology Curricular	18
PST6131	Non-linear Differential Equations	18
PST6134	Multivariate Statistics	18
PST6205	Assessment in STEM education	18
PST6208	Quality Assurance	18
PST6232	Metric Space and Topology	18
PST6234	Surveying Sampling Techniques	18
YEAR II		
PST6410	Dissertation	-
PST6311	Advanced research methods	18
PST6331	Control Theory (Elective)	18
PST6411	Tools for basic and applied research	18
PST6410	Dissertation	72
PST6332	Functional Analysis (Elective)	18

TOTAL CREDITS FOR THE PROGRAMME

PHYSICS

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PST6101	Philosophical issues in STEM education	18
PST6104	Science, Mathematics and Technology Curricular	18
PST6170	Mathematical Methods in Physics	18
PST6171	Solid state physics	18
PST6205	Assessment in STEM education	18
PST6208	Quality Assurance	18
PST6270	Advanced Quantum Mechanics	18
PST6272	Advanced Electromagnetics	18
YEAR II		
PST6410	Dissertation	-
PST6311	Advanced research methods	18
PST6371	Astrophysics (Elective)	18
PST6411	Tools for basic and applied research	18
PST6410	Dissertation	72
PTE6446	Advanced Thermodynamics	18

TOTAL CREDITS FOR THE PROGRAMME

MODULE SYNOPSES

PST6101 Philosophical Issues In Stem Education

The module explores the nature of scientific/mathematical knowledge; science sub-culture; knowledge bases and knowledge management; indigenous knowledge and science; views and conceptions of STEM education; alternative views; paradigms and ideologies; positivist, post-positivist, modernist, postmodernist, functionalist, inductivist and feminist perspectives.

PST6104 Science, Mathematics and Technology Curricular 18 Credits

This module looks at local, national and international determinants of curricula; examples of historical developments e.g. Nuffield Science project (UK), Millennium Mathematics project (USA); pre-colonial, colonial and post-colonial developments in Africa; inclusive curricula; content and structure of educational programmes; planning, design, implementation and evaluation of national and institutional curricular.

PST6205 Assessment in Stem Education 18 Credits

This module covers testing, measurement and evaluation; categorising assessment; judging the quality of assessment tools and processes; measures of validity and reliability as well as examination systems and processes.

PST6208 Quality Assurance

18 Credits

18 Credits

The module highlights inputs, processes and products of science, mathematics and technology education; measures of quality in teaching, assessment and educational management; resource planning and mobilisation; accreditation, standards control; research and case studies in quality science and mathematics education.

PST6311 Advanced Research Methods

18 Credits

This module looks at paradigms in educational research; basic and applied research; qualitative and quantitative research methodologies; research proposals and abstracts; developing a research project report: the research process - research questions, literature review, methodology, findings and conclusions; feasibility and pilot studies, field work, research instruments and data analysis.

PST6411 Tools for Basic and Applied Research (Elective) 18 Credits

This module explores statistical and quantitative research designs; experimental, quasi-experimental, correlation, hypothesis testing; ANOVA, ANCOVA, data analysis using ICT software e.g. SPSS, SAS; Atlas.ti, etc; qualitative research designs; content and thematic analysis; qualitative data analysis (QDA) software and application of data analysis techniques.

PST6410 Dissertation

36 Credits

A report of minimum 10 000 words is developed in a stipulated period thorough a supervised process. The dissertation is undertaken over 2 semesters and counts as 2 modules.

ACCOUNTING AND BUSINESS STUDIES SPECIALIST COURSES

PST6160 Advanced Financial Reporting

18 Credits

The aim of the module is to gain a comprehensive understanding of the advanced financial accounting concepts, and practices associated with International Financial Reporting Standards. A greater understanding of, accounting for Conceptual Framework, Employee Benefits, Share Based Payments and financial instruments is acquired through the study of this module as students develop integral knowledge of financial statements. Upon completion of this module students should be able to better assess the tools, definitions and acceptable practises of International Financial Reporting Standards.

PST6161 Applied Management Accounting

18 Credits

The aim of the module is to explore the use of management accounting and accounting systems to link strategic leadership, resource management, and organisational performance. This module develops the ability to manage resources, create and sustain value, and develop a system of organisational score and goal-keeping tools. The ability to integrate these skills with accounting systems will enable the organisation to make performance-based decisions.

PST6260 Financial Management

18 Credits

The aim of this module is to examine and integrate into practice a blend of global financial management strategies and case-based applications. Through intense case study analysis, this module focuses on topics that range from the acquisition, deployment and management of international financial resources, to financial planning and analysis. The student will learn how to devise strategies for identifying and developing international financial resources, and to effectively communicate these strategies with organisational team members, partners and governments. The student will also become adept at analysing an organisation for reorganisation and restructuring from a strategic perspective

PST6261 Strategic Management

18 Credits

The student will be able to ascertain, measure and revise strategic goals associated with performance and develop a performance metrics system that will measure performance against the overall organisational strategic goals. In addition, ethical and moral dimensions of strategic financial decision-making will be explored. The student will be able to ascertain, measure, and revise strategic goals associated with performance and develop a performance metrics system that will measure performance against the overall organisational strategic goals. In addition, ethical and moral dimensions of strategic financial decision-making will be explored.

PST 6360 Advanced Auditing (Elective)

18 Credits

The aim of this module is to dissect how management controls the entity and relationships with external partners to enhance organisational value. This module investigates the roles of audit and assurance in management control, and promotes organisational compliance with a focus on internal controls, risk management procedures, assurance and management information. The concept of due diligence, including the acquisition and the monitoring of activities of business partners is also analysed at both the national and international levels. The student will appreciate the nature and roles of assurance engagements and internal audits and develop an understanding of risk management and risk reporting in a global context.

PST6361 Corporate Governance (Elective) 18 Credits

The aim of this module is to analyse the regulation of governance, recognise varying international governance practise, and examine the links between governance and corporate performance. This module will enable the student to gain a practical understanding of how governance structures can promote good decision making and performance, and increase the accountability of directors and managers. Key external regulations can affect organisations such as international tax and law, are highlighted extensively. The capacity to assess and monitor director remuneration will also be an acquired asset by the time module is complete.

PST6461 Applied Marketing (Elective)

18 Credits

The objective of this module is to examine the characteristics and goals for the social entrepreneur as well as an in-depth view into the practises of creating social value for individuals and communities. The student's ability to develop and implement social change will increase significantly as the student becomes acquainted with the theories of social entrepreneurship and learn how to identify the characteristics of the social entrepreneur. Upon completion of this recommended module, the student will also be able to evaluate the organisational structure, human resources, funding, marketing and stakeholder participation; all vital success factors in a social change project. The study of the theories and practice of creating partnerships for social change, the aptitude to resource initiatives to link community needs and the talent to develop a plan to implement social change will all be covered in this study of social entrepreneurship.

PST6464 Advanced Taxation (Elective)

18 Credits

The aim is to gain a comprehensive understanding of the regulations, concepts, and practices associated with local taxation. A greater understanding of taxation is acquired through the study of this module as you develop integral knowledge of the global taxation practices. Upon completion of this module students should be able to better assess the regulations, definitions, and acceptable practises of local and international taxation based on the different tax laws as required in many countries and economic trade areas.

BIOLOGY

Specialist Courses

PST6136 Molecular and Cell Biochemistry

18 Credits

The module look at the vast and complex array of chemical reactions occurring in living matter and the chemical composition of the cell; Life processes occurring at the molecular level, including the storage and transfer of genetic information and the interactions between cells and the viruses that infect them.

PST6137 Advanced Physiology

18 Credits

This module explores functions of biological macromolecules; physiology at the cellular level; cardiac, vascular and respiratory systems; the nervous, the endocrine systems and the immune system; control and maintenance of homeostasis.

PST6139 Conservation Biology

18 Credits

The module focuses on the loss of biological diversity; human impacts on biological diversity; management of species and ecosystems, captive breeding and reintroduction, genetic analyses, and habitat restoration; population viability analysis (PVA); minimum viable population (MVP) and trends in environmental security.

PST6236 Advanced Plant Physiology (Elective)

18 Credits

The module explores modern concepts and research in plant physiology, mineral nutrition, translocation, growth, and development of plants; Growth and differentiation of plants at molecular, cellular and organismal levels; Regulation of development; macromolecular interpretation of differentiation, dormancy, germination, flowering and senescence.

PST6237 Environmental Microbiology

18 Credits

The module is on bacterial and viral structure; composition and physiology of microbial communities in the soil, in water and the air; microbial interactions and processes; advances in virology and bacteriology; mechanisms of microbial parthenogenesis; immune system disorders; HIV/AIDS and cancer.

PST6336 Advanced Biochemistry (Elective) 18 Credits

The module examines cell biology, molecular biology; molecular structure & function; components of biological systems; experimental and computer-based techniques of biochemistry and molecular biology; techniques required to analyse biomolecules STRUCTURAL AND CHEMICAL BIOLOGY, including nucleic acid structure and interactions, signaling proteins and membrane proteins, enzyme kinetics and drug discovery and protein design; From GENOME to PROTEOME, including all steps in eukaryotic gene expression from chromatin accessibility to translation and mRNA turnover. THE DYNAMIC CELL, including the dynamics of proteins and membrane-bound organelles in eukaryotic cells; CELL CYCLE, SIGNALLING AND

CANCER, including cell and molecular biology of signaling and cancer, DNA repair and apoptosis.

PST6338 Molecular Genetics (Elective)

18 Credits

The module looks at topics in molecular genetics of eukaryotic organisms, including: gene structure and expression, protein processing and folding, genome stability, and molecular evolution; molecular mechanisms of bacterial and plasmid genetic processes. Topics covered include genome organization, DNA replication, transcription and translation.

PST6339 Habitat Ecology

18 Credits

This module explores terrestrial and aquatic habitats; commercial organisms and their habitats; articficial environments; requirements for food, shelter, protection and reproduction; effects of soil erosion, pollution, global warming and climate change.

PST6437 Plant Health and Productivity

18 Credits

The module looks at the importance of nitrogen; organic matter molecules; microbial inoculants; microbiat; microbial community structure; metagenome; interactions between plants and mycorrhizal fungi; the future of crop and agricultural science; crop biotechnology; alternative agriculture and management of agrochemicals.

PST6438 Advanced Genetics

18 Credits

The module looks at pangenesis, epigenesis, and preformationism; positive and negative eugenics; the euphenics approach; cancer genetics; genetics and genomics of behavioural disorders.

CHEMISTRY Specialist Courses

PST6140 Advanced Physical Chemistry

18 Credits

The module explores properties and characteristics of solids, liquids and gases from a fundamental level - utilising computation of individual atoms and bonds - right through to applied systems such as colloids and surfactants, relevant to minerals, food and formulation; Natural progression from atomic and molecular properties at a single atom or bond level through key thermodynamics to the properties of chemical systems, such as viscosity, phase behaviour and the interactions between solids and liquids; Surfaces and colloids - key to understanding important chemical systems due to their ubiquity in minerals processing, food and dairy industries, energy and oil, pharmaceuticals, water and waste processing.

PST6141 Advanced Inorganic Chemistry

18 Credits

The module helps students to draw and interpret molecular orbital diagrams for small molecules as well as explore the Crystal field theory and MO theory to describe the bonding in metal complexes; Ground states of transition metal complexes; Group properties of d-block metal

complexes; Metal-ligand and metal-metal multiple bonding; Properties of the lanthanides and actinides and aspects of the coordination chemistry of these metals; Mechanistic pathways for inorganic reactions based on experimental data; Chemistry of selected biological metal centres.

18 Credits

PST6242 Advanced Organic Chemistry

The module covers the fundamental structural topics and basic mechanistic types; It can standalone; together, with Part B: Reaction and Synthesis, the two volumes provide a comprehensive foundation for the study in organic chemistry; Companion websites provide digital models for study of structure, reaction and selectivity for students and exercise solutions for instructors; Reactions, mechanisms and structure; Structure of Organic Molecules Organic Reaction Mechanism Organic Reaction Mechanisms Isomerism and Stereo-chemistry Spectroscopy Alkanes Cycloalkanes Petroleum, Petrochemicals and Alternative Fuels Alkenes and Dienes Alkynes alkyl Halides Organometallic Compounds Alcohols Polyhydric Alcohols Polyhydric alcohols Ethers and Epoxides Thiols and Thiothers Aldehyde Methylene Compounds Lipids Cyan Compounds Derivatives of Carbonic Acids Nitroalkanes, Diazoalkanes and Azides much more.

PST6244 Advanced Analytical Chemistry 18 Credits

This module is on spectroscopic methods for structure elucidation and practical uses; Complex Nuclear Magnetic Resonance (NMR) methods: recording techniques, analytical applications of exchange phenomena, double resonance, spin-lattice relaxation, Nuclear-Overhauser-Effect (NOE), analytical applications of two dimensional (2D) and multipulse NMR spectroscopy, shift reagents; Instrumentation of mass spectrometry: Principles and techniques of ion formation, focusing, collision, fragmentation, and reaction (soft ionization, desorption, and spray methods); Interpretation of mass spectra of organic and inorganic molecules; Mass analyzers and ion traps (time of flight and ion cyclotron resonance mass spectrometry); Coupling of separation with identification methods; Applications to analysis of large molecules and chromatography (selected chemical; analytical and biological applications); Fourier transforms in chemistry: introductory fourier mathematics; spectroscopic oscillators; noise and multiplex advantage; discrete fourier transform and applications to spectroscopy.

PST6336 Advanced Biochemistry (Elective) 18 Credits

The module focuses on cell biology, molecular biology; molecular structure & function; components of biological systems; experimental and computer-based techniques of biochemistry and molecular biology; techniques required to analyse biomolecules; STRUCTURAL AND CHEMICAL BIOLOGY, including nucleic acid structure and interactions, signaling proteins and membrane proteins, enzyme kinetics and drug discovery and protein design; From GENOME to PROTEOME, including all steps in eukaryotic gene expression from chromatin accessibility to translation and mRNA turnover; THE DYNAMIC CELL, including the dynamics of proteins and membrane-bound organelles in eukaryotic cells; CELL CYCLE, SIGNALLING AND CANCER, including cell and molecular biology of signaling and cancer, DNA repair and apoptosis.

PST6338 Molecular Genetics (Elective)

18 Credits

The module has topics in molecular genetics of eukaryotic organisms, including: gene structure and expression, protein processing and folding, genome stability, and molecular evolution; Molecular mechanisms of bacterial and plasmid genetic processes. Topics covered include genome organization, DNA replication, transcription, and translation.

PST6342 Molecular Chemistry (Elective)

18 Credits

The module examines to synthesize molecules with new biological or physical properties to address scientific or societal challenges; New catalytic conversions, lead compounds for future medicines or the next generation of conducting polymers; Working with chemical structures the possibilities are endless: in principle, every molecule can be made; Adaption of the 3D-structure to the desired properties and design an efficient synthesis method.

PST6440 Instrumental Chemistry Analysis (Elective) 18 Credits

This module looks at mass spectrometry, NMR spectroscopy and X-ray diffraction; Each of these techniques contains a number of key common themes (data collection, analysis and management); Measurement Principles and Electronics: Introduction to the analytical process; Basic electronics, Signals and noise; Basics of Spectroscopy; Introduction to Spectroscopic Methods; Components of Optical Systems; Atomic Spectroscopy; An Introduction to Optical Atomic Spectroscopy; Atomic absorption spectroscopy: Atomic Emission Spectroscopy; Molecular Spectroscopy – Electronic transitions; Introduction to UV-Vis molecular spectroscopy: Applications of UV-Vis spectroscopy: Fluorescence, phosphorescence and chemiluminescence; Molecular Spectroscopy – Vibrational excitation; IR absorption spectroscopy; Applications of Infrared Spectrometry and Molecular Spectroscopy.

PST6443 Materials Chemistry (Elective)

18 Credits

The module deals with properties & Reactions of Matter, Chemistry of Functional Materials, Physical Techniques in Action, Techniques and Concepts in Inorganic Chemistry; The design of nano-structured materials from novel combinations of molecular building blocks, templating molecules, nano-particles and various functional molecules.

COMPUTER SCIENCE

Specialist Courses

PST6175 Computational Discrete Mathematics

18 Credits

This module looks at discrete models; Foundations; Basic concepts of sets and functions; Finite series; Logic; Propositional logic; Predicate logic; Combination circuits; Induction; Finite probability space, events; Conditional probability; Bayes' theorem; Integer random variables; Expectations; Varia Analysis and verification; Searching algorithms; Recursive algorithms; Relations; Discrete models; Foundations; Basic concepts of sets and functions; Finite series; Logic; Propositional logic; Predicate logic; Combination circuits; Induction; Finite probability

space, events; Conditional probability; Bayes' theorem; Integer random variables; Expectations; Varia Analysis and verification; Searching algorithms; Recursive algorithms; Relations; Basic concepts; Properties of relations; Operations relations; Undirected graph, Directed graph, weighted graph, Euler circuits and Hamiltonian cycles; Graph isomorphism and representation Planar graphs; Trees; Different state machines; Input, Output, Initial state and the transition table.

PST6179 Advanced Enterprise Architecture Programming 18 Credits

This module gives an introduction to application server programming and business logic programming; Transaction processing, concurrency control, Event-driven programming, asynchronous method invocation, job scheduling, Inter process communication; Deployment of software components in application server; Business Interface development and deployment.

PST6276 Advanced Database and Data Mining 18 Credits

The module examines the data Models; The enhanced Entry Relationship (EER) Model, EER Models to Relational Databases, Database Design and Implementation design methodologies, Implementation methodologies, Physical Database design and tuning, Query process and Optimization; Algorithm for Query Processing and Optimization, Transaction Processing, Concurrency Control Techniques; Database Security and Distribution, Distributed Databases, Mobile Databases Machine Learning and Pattern Recognition as well as Data Mining.

PST6278 Evolutionary Computing and Parallel Distributed Processing 18 Credits

This module looks at the fundamentals of genetic algorithms, genetic programming; Conceptual simplicity and broad applicability of genetic algorithms; Features of evolutionary computation, evolutionary strategies, evolutionary programming; Hybridization and Optimization techniques; Heuristic level: knowledge representation, inference strategies; Man-machine interfaces; Fuzzy set theory; Decision: Classical, nonstandard and fuzzy logic; Data representation; Network configurations: single layer non-recurrent networks; Multilayer non-recurrent networks; Recurrent networks; Application for artificial neural networks: character and speech recognition, image analysis Parallel distributed processing; General framework; Distributed representation; Basic mechanisms and formal analysis.

PST6375 Simulation and Modelling (Elective) 18 Credits

This module covers the advances in simulation and modelling methodology; Modelling complexities and decision making simulation using system dynamics; Applied statistical functions, Experimentation, Applied statistical methods for analysis and modelling; Approaches to structuring simulations; Contrasting discrete, continuous and agent-based simulation.

PST6379 Interactive Computer Graphics (Elective) 18 Credits

This module explores the fundamentals of Computer Graphics: Structure of Images; Image formats, compression and dithering; Mesh Data Structures; shapes as vertices, edges and faces, using the indexed face set and the half-edge data structures; Transformational Geometry: Scale,

rotation, translation, stretch and shear of a shape; Viewing; Perspective, the illusion of depth; Lighting; Rasterisation, convert mesh triangles to screen pixels; Texture Mapping; Visibility; GPU Programming; Colour Theory; Physical Simulation Animation; Parametric Surfaces; Implicit Surfaces; Quaternion Rotations; Skinning and Shadowing.

PST6479 Software Methodology (Elective)

18 Credits

The module gives an overview of Software Engineering, the Software Development Process; requirements analysis and specification phase; Design phase; implementation phase; maintenance; Engineering with a Programming Language; Software Engineering Paradigms; Engineering with existing software and a Software Engineering Project.

PST6478 Information Systems Security and Auditing (Elective) 18 Credits

The module looks at developing an Information Security Policy, Physical Computer Security, Biometrics and Digital Signatures, Network Intrusion Detection and Prevention System, Wireless and Mobile Network Security, E-commerce Security, Risk Management & Analysis, Biba Integrity Model, Nature of IS Audit, Audit responsibilities against fraud, IS audit guidelines and standards.

MATHEMATICS AND STATISTICS Specialist Courses

PST6131 Non-Linear Differential Equations

18 Credits

This module looks at modern methods in the theory of nonlinear partial differential equations; Sobolev spaces; Weak solutions Existence results, Regularity results; Stochastic Processes and their applications; Solving marligale problems; Exist stance, uniqueness and ergodicity flow of solutions; Phenomenon of transitions on the Schlogl model; Pure jump Markov process, birth-death process and invariant measurement.

PST6134 Multivariate Statistics

18 Credits

This module is on the multivariate statistical methods; Multivariate techniques; Graphic models, Pre-analysis data, Pre-analysis data screening, Factorial analysis of variance, Analysis of covariance, Multivariate analysis of variance and covariance, Multiple regression, Path analysis, Factor analysis, Discriminant analysis, Logistic regression, SPSS data sets and Chi square distribution.

PST6232 Metric Space and Topology

18 Credits

This module looks at continuity and open sets for metric spaces; Closed sets for metric spaces; Closed sets for metric spaces; Topological spaces; Interior and closer; Topological structures and spaces; Hausdorff spaces; Compactness; Compactness in metric spaces; Products of compact spaces and the language of neighbourhoods.

PST6234 Surveying Sampling Techniques

18 Credits

The module looks survey Sample Element Population Probability Nonat probability Representative sample Sampling error Biased sample Sampling distribution Central limit theorem Sampling frame Simple random sampling Equal probability of selection method (EPSEM) Systematic sampling Stratified sampling Stratification variable Clustered sampling Sample weights SPSS SAS STATA Convenience sampling Quota sampling Purposive sampling Referral sampling Network sampling Snowball sampling Sample size Random selection Type I and Type II errors Confidence intervals Attrition bias Sampling methods Equal probability of selection method or EPSEM Non-random sampling, Referral sampling, Sample size and sampling bias.

PST6332 Functional Analysis (Elective)

18 Credits

This module explores metric spaces; Definitions and examples; Inequalities of Holder, Minkowski, Cauchy-Schwarz; Open and closed sets, neighbourhoods; Convergence, completeness; Contraction Mapping Theorem; Applications to linear systems, integral equations, differential equations; Normed spaces; Definitions and examples; Banach space; Finite dimensional space; compactness and Riesz Lemma; Linear operators and functionals; Dual space; Second dual; Reflexivity; Weak convergence; Hilbert spaces; Definitions and examples; Cauchy-Schwarz inequality, Pythagoras' theorem; Orthogonal complements and direct sums; Orthonormal sets, Fourier series and orthogonal polynomials; Hilbert adjointoperator; Self adjoint operators; Eigenvalues and eigenfunctions and Operators.

PST6431 Control Theory (Elective)

18 Credits

The module looks at the types of control; Feedback control and open loop systems; Principle of superposition; Transfer functions; Block diagrams; State space formulation; Direct solution; Solution using laplace transform; Stability; Asymptotic stability; Routh stability creation; Liapunov' method; Nyquist stability creation; Controllability and observability criteria; Optimal control; Variational calculus; Free end conditions; Constraints; Optimal control with unbounded continuous controls; Band-bang control; Pontryagin's principles; Switching curves and transversality conditions.

PST6434 Experimental Design and Regression Analysis (Elective) 18 Credits

The module explores theory and applications of statistics, which include, Experimental design and analysis: 2^k factorial experiments; Confounding, complete and partial confounding; Orthogonal contrasts; Fractional factorial experiments, aliasing; Multiple linear Regression: Variable selection and model building; Multiple coefficient of determination, r^2 ; Mullow's,

 C_p and S_p statistics; Covariance analysis; Stepwise regression methods; Forward selection, backward elimination and stepwise regression.

PHYSICS Specialist Courses

PST6170 Mathematical Methods in Physics

18 Credits

The module has a complex Analysis: Multi-valued functions; Branch Points and cuts; Evaluation of Integrals; Singularities of functions; Dispersion relations; Fourier Series and Integral Transforms: Fourier series and Fourier analysis; Orthogonality, random process probability; Time-frequency domain; Signal processing; Fourier and Laplace transforms; Fast Fourier and Z transformation; Convolution and De-convolution; Auto and cross co-relation; Differential Equations: Higher order differential equations with constant and non-constant coefficients; Partial differential equations; Integral transform and Green function methods; Special Functions: Sturm-Lioville Theory; Legendre, Lagurre; Hermite and Bessel functions; Group Theory: Definition and examples of groups, The action of a group on a set; Theory of fi nite groups; Small oscillations and group theory; Compact and Lie groups; Applications of groups in quantum mechanics and spectroscopy (X-Ref MAPH5131).

PST6171 Solid State Physics

18 Credits

The module explores the rigid matter, or solids, through methods such as quantum mechanics, crystallography, electromagnetism, and metallurgy; Condensed matter in physics.

PST6270 Advanced Quantum Mechanics

18 Credits

This module looks at angular momentum and spin in Schrondiger Equation; Spin-spin, spin-orbit interactions; Thomas-Fermi model; Angular distributions from decay and collisions; Generalised Pauli principle; Properties of symmetry of states, Notion of Parity; Time reversal and charge conjugation (X-Ref MAPH5071).

PST6272 Advanced Electromagnetics

18 Credits

This module explores materials: electrical conduction and heat capacity are investigated by solid state physics; An early model of electrical conduction was the Drude model: To explain electrical and thermal conductivity Applied kinetic theory to the electrons in a solid; Materials containing immobile positive ions and an "electron gas" of classical, non-interacting electrons; Hall's effect in metals and electronic heat capacity; Arnold Sommerfeld combined the classical Drude model with quantum mechanics in the free electron model (or Drude-Sommerfeld model) perturbation meant to model the interaction between the conduction electrons and the ions in a crystalline solid. By introducing the idea of electronic bands; Here, the electrons are modelled as Fermi gas, a gas of particles which obey the quantum mechanical Fermi–Dirac statistics; Predictions for the heat capacity of metals; Conductors, semiconductors and insulators.

PST6371 Astrophysics (Elective)

18 Credits

The module looks at properties of materials are affected by their crystal structure. This structure can be investigated using a range of crystallographic techniques, including X-ray crystallography, neutron diffraction and electron diffraction. The sizes of the individual crystals in a crystalline solid material vary depending on the material involved and the conditions when it

was formed. Most crystalline materials encountered in everyday life are polycrystalline, with the individual crystals being microscopic in scale, but macroscopic single crystals can be produced either naturally (e;g; diamonds) or artificially; Real crystals feature defects or irregularities in the ideal arrangements, defects that critically determine many of the electrical and mechanical properties of real materials.

PST6372 Nuclear Physics (Elective)

18 Credits

This module explores nuclear properties, Force between Nucleons, Nuclear model, Nuclear decay and Radioactivity, Detecting Nuclear radiation, alpha, beta and gamma decay, Nuclear reaction and calculation of Q values, Nuclear fusion and fission.

PTE6446 Advanced Thermodynamics

18 Credits

The module examines the systems, surroundings, state variables; Thermal equilibrium; The Zeroth law of thermodynamics and temperature; Thermodynamic equilibrium; Equation of state; Ideal gases; Thermodynamics Process; Reversible and irreversible processes; Scope of Thermodynamics, Macroscopic and Microscopic approaches.

POSTGRADUATE DIPLOMA IN SCIENCE AND TECHNOLOGY EDUCATION (PGDSTE)

1.0 ADMISSION REQUIREMENTS

- 1.1 Applicants must hold a minimum of a bachelor's degree majoring in either accounting, mathematics, science or technology subjects.
- 1.2 Applicants must be employed as teachers in the secondary school at the time of applying and must have accrued at least one year's teaching experience.

2.0 PROGRAMME OF STUDY

- 2.1 Candidates shall pursue an 18-month programme of study consisting of three semesters (or stages) on block-release.
- 2.2 The programme consists of taught modules, work-based experience assessment and a research or design project.

3.0 ASSESSMENT

- 3.1 All modules shall be assessed through both coursework and examination unless specified otherwise in the module synopsis.
- 3.2 The research project shall count as two modules for purposes of assessment and all the other modules shall be equal in weighting.
- 3.3 The weighting of written examinations and coursework shall be 60% and 40% respectively.
- 3.4 Candidates must pass at least 66% of all modules in one stage before proceeding to the next stage. The pass mark in each module shall be 50%.
- 3.5 A candidate who fails one or two modules in the first year shall be required to carry that/those module(s) into the second year.
- 3.6 A candidate who fails more than two modules in Year 1 will be required to repeat and pass those modules before proceeding to the next year.
- 3.7 To be awarded the diploma, candidates must complete a minimum of 180 credits.

PROGRAMME SUMMARY

SEMESTER (STAGE) 1

Module Code	Module Description	Credits
PST5101	Theoretical foundations in STEM education I	10
PST5102	The teaching profession (Elective)	10
PST5103	Instructional design in STEM education	10
PST5104	Curriculum development and evaluation	10
PST5105	Assessment and evaluation in STEM education	10
PST5109	Statistics in Education	-
PST5119	Didactics & pedagogy (Elective)	10
SEMESTER (STAG	E) II	
PST5201	Theoretical Foundations in STEM education II	10
PST5205	Designing assessment and grading tools (Elective)	10
PST5206	Learner backgrounds and characteristics (Elective)	-
PST5208	Leadership, Supervision & Management in S&T education	10
PST5211	Research Methods	10
PST5212	Computer Applications in STEM education	10
PST5213	Educational and Instructional Technology	10
SEMESTER (STAG	EE) III	
PST5300	Work-based Experience (Practice in teaching)	20
PST5310	Research or Design Project	20
PST5312	Online learning principles and practice	20
TOTAL CREDITS	FOR THE PROGRAMME	
SEMESTER (STAGE		

SEMESTER (STAGE) 1 60 SEMESTER (STAGE) 11 60 SEMESTER (STAGE) 111 60 Total minimum credits: 180

MODULE SYNOPSES

PST 5101 Theoretical Foundations in Stem Education I 10 Credits

The module explores the philosophical considerations, national goals, ideology and paradigms of educational practice; ethics, epistemology; educational policy, science and technology curriculum theory; modernism and postmodernism; positivism, determinism; Sociological considerations; society and socialization; family, culture and community influence, public schooling and social development and multi-cultural education.

PST 5102 The Teaching Profession

10 Credits

This module looks at the norms and values of the teaching profession, standards and benchmarks of professionalism; teacher profiles; teacher-student interaction; staff relations; external relations; the school as an organization, introductory organizational behaviour, staff development, promotion; recruitment, probation, remuneration, termination of service; Quality issues and standards in science and technology education, quality control, quality management, quality assurance in teaching and assessing students.

PST 5103 Instructional Design in Stem Education

10 Credits

The module examines the methods and strategies of lesson delivery; Learner involvement and participation; group work, discussion, practical subjects, and project work; Curriculum, syllabus, schemes of work; taxonomy of educational objectives; setting objectives, lesson planning and preparation, learning documentation, delivery and evaluation of lessons and the types of lessons.

PST 5104 Curriculum Development and Evaluation

10 Credits

The module covers curriculum terminology and concepts; ideology and philosophy underpinning curriculum planning, development and evaluation; Curriculum needs assessment models; The impact of social, economic, political, technological, psychological, philosophical and cultural, environmental influences on the curriculum; Process and product models of curriculum development; objectives models e;g; Tyler, Wheeler; decision-making models e;g; Stufflebeam (CIPP); Designing/developing, delivering and evaluating a curriculum; Curriculum change and innovation; strategies for change (Havelock's RD&D, SI, PS, L); Evaluation as well as curriculum evaluation models;

PST 5105 Assessment and Evaluation in Stem Education

10 Credits

The module highlights the principles of assessment in science and technology studies; Learner performance measurement, standards, methods of assessment; formative and summative assessment; types, functions and structures of tests and examinations; Types of test questions; objective and subjective; assessment and the taxonomies of educational objectives; standardized tests; assessment for science and technical subjects.

PST 5109 Statistics in Education

10 Credits

This module covers the descriptive and inferential statistics in science, education and research, methods of summarizing and interpreting data, frequency distribution, measures of central

tendency, measures of dispersion, fractiles, measures of strength and association; (X-ref PST1209 and SMA2204).

PST 5119 Didactics and Pedagogy I

10 Credits

10 Credits

The module looks at the variety of science and technology lessons (Mathematics, biology, chemistry, physics, accounting, technical subjects, etc;); preparation of teaching documents and resources; designing and conducting experiments and practical lessons; supervision and assessment of projects; handling equipment and tools; peer teaching; peer and tutor evaluation of mock lessons; review of recorded lessons; using evaluation instruments; teacher reflection; case studies and journal/log book writing.

PST 5201 Theoretical Foundations in Stem Education II 10 Credits

The module focuses on understanding the learner; physical, social, mental and emotional development; Psychological perspectives, learning and cognition, the non-western science and technology learner; education ideologies, humanism, behaviourism, Gestalt theory, cognitivism and constructivism, neural learning, multiple intelligences; Guidance and counselling, inclusive education and discipline.

PST 5205 Designing Assessment and Grading Tools

This module is on item writing, structuring of examination questions and papers; Marking guides, scoring and recording; grading; criterion and norm-referenced testing; local and standardized tests; Continuous and terminal assessment, assessment of practical work, projects and field wok. Students are expected to set at least three original examination papers with marking guides in their teaching subjects.

PST 5206 Learner Backgrounds & Characteristics (Optional) 10 Credits

The module looks at the theories of human development, adolescent and adult learners, learner needs identification, needs hierarchies, motivation, mental intelligence, emotional intelligence, multiple intelligences, HBDI, neural learning, learning styles, small and large groups, learners with special needs as well as learning with technology.

PST 5208 Leadership, Supervision and Management in Stem Education 10 Credits

The module looks at the administration of education; administrative tasks; school-based management; results-based management; power, authority, leadership and institutional governance; leadership styles; school effectiveness; change and improvement; quality control; delegation, decentralization, empowerment and models of supervision; X-Ref PST2208.

PST 5211 Research Methods

10 Credits

This module looks at the teacher as researcher and reflective practitioner; qualitative and quantitative research methods; research and designs; ethical issues and problems in educational, scientific and technology research; data collection methods; populations and samples; proposal and report writing; Statistics in education and research; sampling theory, methods of summarising and interpreting data; frequency distributions; measures of central tendency; measures of dispersion, significance and hypothesis testing.

PST 5212 Computer Applications in Stem Education 10 Credits

The module covers concepts of human communication; planning and using educational technology; learning environments; computers and learning; computer literacy; word processing, spreadsheets, document production, e-learning and online education.

PST 5213 Educational and Instructional Technology 10 Credits

The module looks at using appropriate technology for teaching and training; The chalk board; The white board; The overhead projector; The slide projector; The video recorder; Use of video and television in the classroom; Basic use of computers for producing training materials; Presentation techniques using multimedia packages and e-learning fundamentals (X-Ref PST1213).

PST 5219 Didactics and Pedagogy II

10 Credits

This module explores peer teaching; peer and tutor evaluation of mock lessons; review of recorded lessons; using evaluation instruments; teacher reflection; case studies as well as journal/log book writing.

PST 5300 Work Based Experience

20 Credits

This is supervised and assessed professional practice in schools and a review of professional documentation, resources and learning environments; observation of lessons; discussion and counselling. The module counts as two taught modules.

PST 5312 Online Learning Principles and Practice

20 Credits

The module is on theory and practice of online learning. Students engage in a virtual learning experience to gain skills in online lesson planning, delivery and assessment of students. The module counts as two taught modules.

PST 5310 Research Project

20 Credits

A short experimental, theoretical or design project preferably linking the specialist subject of the candidate to teaching and learning. The project counts as two taught modules.

DEPARTMENT OF TECHNICAL AND ENGINEERING EDUCATION AND TRAINING

Lecturer and Chairperson

Mrs D. Chasokela: NC; Automobile Electrics (HIT), Dip Ed (Gweru Poly), BTech Hons Ed; Electrical & Electronics (NUST), MEng; Electr. Syst Control & IT (Southwest Jiaotong)

Secretary

Ms P. Dube: NC Secretarial Studies, ND Secretarial Studies, HND Office Management (Bulawayo Poly)

ACADEMIC STAFF

Lecturers

Dr G. N. Shava: BEd (UZ), MEd (University of Fort Hare), PhD (ZOU)

UNDERGRADUATE DEGREE PROGRAMME SPECIAL REGULATIONS

1.0 PREAMBLE

- 1.1 The Department of Technical and Engineering Education and Training seeks to offer world-class programmes in identified area of engineering education. The Department aims to prepare quality practitioners, educators and professionals for the secondary and post-secondary school education sector, suitable for serving in a wide variety of environments for teaching, training and skills development. The master's and doctoral programmes offered in the Faculty shall prepare technologically-inclined senior professionals for leadership in raising the level of scientific and technological appreciation among the general populace.
- 1.2 These regulations should be read in conjunction with the General Academic Regulations for Undergraduate Degrees of the University (hereinafter referred to as the General Regulations).

2.0 PROGRAMMES OFFERED IN THE DEPARTMENT

The Department of Technical and Engineering Education and Training at NUST offers the programmes listed below:

2.1 Undergraduate

- 2.1.1 Bachelor of Technology Education Honours (BTechEd Hons) in:-
- 2.1.1.1 Civil and Construction Engineering
- 2.1.1.2 Electrical and Electronic Engineering
- 2.1.1.3 Mechanical and Industrial Engineering
- 2.1.1.4 Technical Graphics
- 2.1.1.5 Wood Science and Technology
- 2.2 Bridging Modules in Engineering and Technology
- 2.3 **Postgraduate**
- 2.3.1 Postgraduate Diploma in Higher Education (PGDHE)
- 2.3.2 Master of Technology Education (MTechEd) in
- 2.3.2.1 Civil and Construction Engineering
- 2.3.2.2 Electrical and Electronic Engineering
- 2.3.2.3 Mechanical and Industrial Engineering
- 2.3.2.4 Technical Graphics

2.3.2.5 Wood Science and Technology		
2.4	Diploma in Engineering Education (Short modules)	

CIVIL AND CONSTRUCTION ENGINEERING

PROGRAMME SUMMARY

Key to n	ıodule	codes
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- 55 Brick and bond theory
- 56 Construction material
- 57 Construction drawing
- 58 Measurement of construction work
- 59 Industrial studies and design

YEAR I

Module Code	Module Description	Credits
PTE1131	Engineering Mathematics 1	10
PTE1145	Engineering Drawing (TCW1203)	10
PTE1147	Material Science	10
PTE1231	Engineering Mathematics II	10
PTE1246	Engineering Mechanics (Statics & Dynamic	*
PTE1256	Workshop Technology and safety	10
YEAR II		
PTE2146	Fluid Mechanics	10
PTE2147	Strength of materials I	10
PTE2157	Construction Survey (TCW2102)	10
PTE2255	Solid Mechanics/Strength of Materials II	10
PTE2258	Analysis of Structures	10
PTE2259	Environmental Engineering	10
YEAR III		
PTE3000	Industrial Attachment	120
YEAR IV		
PST4010	Final Year Project	20
PTE4146	Engineering Mechanics II (Elective) -	20
PTE4156	Electrical Installations and Appliances (Elec	ctive) 10
PTE4157	Geo-technological Engineering	10
PTE4158	Design of Structures	10
		-

TOTAL CREDITS FOR THE PROGRAMME

Total minimum credits:	480
YEAR IV	120
YEAR III	120
YEAR II	120
YEAR I	120

ELECTRICAL AND ELECTRONIC ENGINEERING

PROGRAMME SUMMARY

Key to module codes

- 50 Analogue Electronics and Communication
- 51 Digital Electronics and Communication
- 52 Electrical Systems
- 53 Electronics Systems
- 54 Computers and Programs

YEAR I

Module Code	Module Description	Credits
PTE1131	Engineering Mathematics I	10
PTE1153	Circuit Theory and Networks	10
PTE1154	Computer Engineering	10
PTE1231	Engineering Mathematics II	10
PTE1252	Electrical and Electronic Measurements	10
PTE1253	Electronic engineering circuits and devices	10
YEAR II		
PST2177	Programming & programme design	10
PTE2150	Analogue electronics	10
PTE2152	Electrical Machines	10
PTE2250	Analogue communication	10
PTE2253	Design Project	10
PTE2254	Digital Electronics	10
YEAR III		
PTE3000	Industrial Attachment	120
YEAR IV		
DCT 44-5		1.0
PST4175	Computer Communication & Networking	10
PTE4151	Digital Communication	10
PTE4152	Instrumentation and Control I	10
PST4010	Final Year Project	20

PTE4252	Instrumentation and Control II	10
PTE4254	Microprocessors and microcontrollers	10
PDT4276	Graphic design	10

Total Credits for the Programme

Total Minimum Credits:	480
Year IV	120
Year III	120
Year II	120
Year I	120

MECHANICAL AND INDUSTRIAL ENGINEERING

PROGRAMME SUMMARY

Key to module codes

- 45 Engineering drawing and design
- 46 Mechanics statics & dynamics
- 47 Material science and technology
- 48 Maintenance engineering, workshop technology
- 49 Manufacturing engineering

YEAR I

Module Code	Module Description	Credits
PTE1131	Engineering Mathematics I	10
PTE1145	Engineering Drawing I	10
PTE1147	Material Science	10
PTE1231	Engineering Mathematics II	10
PTE1246	Engineering Mechanics I (Ref PTE1281)	10
PTE1256	Workshop Technology and safety	10
YEAR II		
PTE2145	Industrial Design	10
PTE2146	Fluid Mechanics	10
PTE2147	Strength of Materials I	10
PTE2245	Engineering Design	10
PTE2246	Thermodynamics	10
PTE2247	Strength of Materials II	10
YEAR III		
PTE3000	Industrial Attachment	120
YEAR IV		
PTE4146	Engineering Mechanics II	10
PTE4149	Manufacturing technology & Processes	10
PTE4152	Instrumentation and Control I	10
PST4010	Final Year Project	10
PTE4248	Maintenance Engineering	10
PTE4249	Manufacturing Systems	10
PTE4252	Instrumentation and Control II	10

TOTAL CREDITS FOR THE PROGRAMME

Year I	120
Year II	120
Year III	120
Year IV	120
Total Minimum Credits:	480

TECHNICAL GRAPHICS

PROGRAMME SUMMARY

80 Mathematical applications to drawing81 Building, architectural drawing and desig

82 Engineering drawing and design83 Fine art and Free hand sketching

Key to module codes

84 Computer aided design

YEAR I		
Module Code	Module Description	Credits
PTE 1145	Engineering Drawing I	10
PTE 1147	Material science	10
PTE 1181	Architectural mathematics	10
PDT1222	Fine art studio I	10
PTE 1281	Applied structural statics and dynamics	10
PTE1282	Technical drawing	10
YEAR II		
PTE1280	Applied geometry	10
PTE 2181	Architectural & structural drawing	10
PTE 2183	Environmental design	10
PDT2224	Product Development	10
PTE 2281	Building Construction	10
PDT2222	Fine Art Studio II	10
YEAR III		
PTE3000	Industrial Attachment	120
YEAR IV		
PTE 4158	Design of Structures	10
PTE 4181	Building Services	10
PTE 4184	Computer Aided Architectural Design	10
PST4010	Final Year Project	20

PTE 4224	Personal Development	10
PDT4222	Graphic Design	10
PTE 4288	Materials and construction	10

Total Credits for the Programme

Total Minimum Credits:	480
Year IV	120
Year III	120
Year II	120
Year I	120

WOOD SCIENCE AND TECHNOLOGY

PROGRAMME SUMMARY

Key to module codes

85 Wood characteristics and quality
86 Processing and workshop technology
87 Tools, machines and machining
88 Design, drawing and materials

89 Product development and manufacturing		
YEAR I		
Module Code	Module Description	Credits
PTE1145	Engineering Drawing I	10
PTE1147	Material science	10
PTE1185	Wood chemistry	10
PTE1246	Eng Mechanics I (Statics & Dynamics)	10
PTE1256	Workshop Technology and safety	10
PTE1282	Technical drawing	10
YEAR II		
PTE2185	Wood structure, quality and processing	10
PTE2187	Construction equipment & methods	10
PTE2189	Wood manufacturing systems & processes	10
PDT2224	Product development	10
PTE2258	Analysis of structures	10
PTE2287	Wood machines & Maintenance Engineering	10
YEAR III		
PTE3000	Industrial Attachment	120
YEAR IV		
PST4161	Principles of marketing	10
PTE4186	Furniture and cabinet construction	10
1127100	1 dimiture and cabinet construction	10

PTE4189	Wood finishes	10	
PST4010	Final Year Project	20	
PDT4224	Personal development	10	
PDT4222	Graphic Design	10	
PTE4288	Materials and construction	10	

TOTAL CREDITS FOR THE PROGRAMME

Year I	120
Year II	120
Year III	120
Year IV	120
Total Minimum Credits:	480

MODULE SYNOPSES

CIVIL AND CONSTRUCTION ENGINEERING

PTE1131 Engineering Mathematics 1/Calculus 1 10 Credits

The module covers indices and logarithms, formulae, mensuration, trigonometry, force and moments, estimating and costs; Series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Polynomials, discriminant, real roots, solving quadratic equations, domain, range, one-one functions, graphical illustrations; Calculus, differentiation, integration, applications of arc length, area, volumes, moments of inertia, centroids; Vector and scalar products; Equations of lines and planes; Matrices basic operations, rank, inverse Gaussian elimination, Cramer's rule; Determinants, Eigen values and Eigen vectors; Ordinary differential equations; Applications of First order differential equations: mechanical and electrical engineering problems; Elementary functions including Hyperbolic functions and their inverses, Differentiation technique; Leibnitz's Rule, Hospital's Rule; Applications of differentiation: maxima and minima, kinematics; Integration techniques, Reduction formula; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination, integration by parts; Applications of Integration: arc-length, area, volume, moments of inertia, and centroids.

PTE1145 Engineering Drawing

10 Credits

The module gives an introduction to engineering drawing; geometrical constructions; tangency constructions; construction of ellipses; orthographic projections of simple geometrical solids and general engineering components in first and third angle; plane geometry; space geometry; dimensioning; pictorial views; freehand sketching; sectioning; intersections; developments; conventions and assembly drawings.

PTE1147 Material Science

10 Credits

The module looks at materials classification and structure, atomic bonding in materials, crystallisation, dislocations, plastic deformation, temperature measurement, phase diagrams, solidification, liquidification, vaporization, alloy formation, types of material, composite, selection and their applications i.e.; wood, plastics, ceramics and other alloys; Structure and properties of metals and alloys; Review of principles, Diffusional processes; Constitutional phase diagrams; Lattice defects; Deformation of metals, fracture and fatigue, polymers and corrosion; Materials for Modelling; Theories of models and model making; Imagination, creativity, innovation and invention; Image formation, model making and realization; Problem solving, visual patterns, models, prototypes and artefacts; Material selection for designs, experimentation with a range materials; Costs of models for designs; properties and analysis of materials for

design models and product development; Testing and evaluating materials; Directory of design materials and an analysis of design case studies.

PTE1231 Engineering Maths II

10 Credits

This module explores series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination and integration by parts;

PTE1246 Engineering Mechanics I (Statics and Dynamics)

10 Credits

This module covers scalars, vectors, triangle of forces, parallelogram and polygon of forces, principle of transmissibility, Newton's laws, resolution of forces into two and three dimensional components, position vectors, resultant forces, moments, couples, equilibrium equations, structures: types of supports, truss analysis, joint method, section method, friction in inclined plane, wedges and screws; (X-ref TIE2106/2206).

PTE1256 Workshop Technology and Safety

10 Credits

This module examines workshop tools, occupational safety and health, processes and routines, construction materials, construction measuring instruments, personnel in the construction process, construction laws; The workshop environment, safety and care of equipment, space management; Safety and hygiene: workshop safety, ergonomic safety, Government regulations; Environmental stresses and hygiene, chemical stresses, harmful agents through inhalation, skin absorption & ingestion; Control of environmental factors; Measurement and measuring instruments, reliability, precision, scale, steel rules, calipers, micrometers, gauges, etc; Machine shop practice, marking, hand sawing, filing, drilling, and use of lathe; Equipment operation and maintenance, fabrication, welding, turning, cutting, soldering and brazing; Equipment acquisition, storage and disposal; (X-ref TIE 1103 and TIE1203).

PTE2146 Fluid Mechanics

10 Credits

This module focuses on elements of fluid mechanics, Pressure and head, Static Forces on surfaces, Motion of fluid particles and streams, Bernoulli's equation, The momentum equation, Uniform flow in open channels, Design of hydraulic systems and control, applications of hydraulics in industry, pneumatics and cut-out systems.

PTE2147 Strength of Materials I

10 Credits

This module is on direct stress and strain; Compound bars; Poisson's ratio and lateral strain; Hoop stress and axial stress in a cylinder; Stress in thin shells; Mechanical properties of materials, ductile and brittle materials, resilience, fatigue, creep, hardness; Sheer and torsion; Bending moment diagrams; Second moment of are and modulus of section.

PTE2157 Construction Survey

10 Credits

The module gives a definition of survey, SI units in survey, Application of Plane and geodetic survey; Topographical, cadastral, hydrographic, mine photogrammetry and engineering survey; Theory of errors; Systematic and random errors; Methods of eliminating or minimizing these errors; Methods of set up; Ranging a line using a prism square; Taping; Corrections to the measured lengths; Temperature, slope, standardization, tension, reduction to mean sea level; Leveling:- dumpy, tilting, and automatic levels, Leveling of construction, longitudinal and cross-sections, grading of constructions, cut and fill work; (X-Ref TCW2102).

PTE2247 Strength of Materials II

10 Credits

This module covers structures: forces in members, sheer force and bending moments diagrams; Simple bending equation and applications, slope and deflections of beams, Macaulay's method, Torsion equation and applications to hollow and solid shafts, thin cylinders, thick cylinders: Lame's theory and line, stresses in three dimensions, shear and tensible combined, Mohr's stress circle, strain in three dimensions and Mohr's strain circle.

PTE2255 Solid Mechanics

10 Credits

This module explores normal stress and strain, stress and strain relationships, elastic and plastic deformation, Hooke's law, shear stress and strain, allowable stress and allowable load; Analysis of axially loaded bars, temperature effects, stresses on inclined surfaces; Analysis of beams for shear and bending:- shear force and bending moment; Bending stresses in beams; Torsional behaviour of hollow bars, indeterminate circular shafts, elastic torsion of thin walled closed tubes; Analysis of stress and strain:- plane stresses, principal stresses, and maximum shear stresses, Mohr's circle of plane stress, Hooke's law for plane stress, spherical and cylindrical pressure vessels, triaxial stress, 3D stress as well as plain stress.

PTE2258 Analysis of Structures

10 Credits

The module is on basic structural theory; structures and their behaviour; loads, determinacy and indeterminacy; plane and space trusses; bridge and roof trusses; long span structures – cables and arches; influence lines for statically determinate beams and trusses; strain and complementary energy; basic structural theorems, principle of virtual work; Deflection of statically determinant structures; area moment method, application of Castiglione's theorems, unit load method, analysis of statically indeterminate structures; method of superposition, slope deflection and moment distribution and application to beams and rigid frames.

PTE2259 Environmental Engineering

10 Credits

This module looks at human activities and environmental pollution; Plumbing, drainage, Objectives of wastewater treatment; Waste water characteristics BOD kinetics; Wastewater flow rates and design flows; Flow equalization, wastewater treatment processes and selection; Design, operation and management plant.

PTE4146 Engineering Mechanics II (Elective)

10 Credits

This module explores dynamics of a particle, force, mass, acceleration, work and energy, Impulse of energy and momentum, special applications, dynamics of system of particles, conservation of energy and momentum, introduction to three dimensional dynamics of a rigid body, angular momentum, KE, momentum and energy equations, parallel plane motion, gyroscope motion, are moments of inertia, mass moment of inertia, mass moment of inertia about an axis and products of inertia; (X-ref TIE2106/2206).

PTE4156 Electrical Installations and Appliances (Elective)

10 Credits

The module looks at domestic installation, domestic appliances and conduit work.

PTE4157 Geotechnical Engineering

10 Credits

This module focuses on important subjects include principles of effective stress and shear strength of soil; Strain-stress behaviour; Soil stiffness; Lateral earth pressure; Moor-Coulomb and Rankin approaches; Consolidation theory and permeability; Gravity and sheet piling; Behaviour of piles; Seepage; Bearing capacity and slope stability; Critical soil model and the ultimate capacity of shallow foundations.

PTE4158 Design Of Structures

10 Credits

This module gives an introduction to structural design, design methods, load on structures; Design in reinforced concrete; Basis of design, material properties, loading, design of beams, slabs, columns and foundations; Design in structural steel work; Design of vertically loaded masonry walls, design of laterally loaded wall panels; Enhancement of Auto CAD application in Civil Engineering drawings e.g. detailing, labelling and dimensioning.

PTE4256 Transport Engineering and Plan

10 Credits

The module explores the role of traffic and transport engineering- its scope and function; Highway surveys; Geometric design of highway, design of intersections, design of signals, markings and signs; Sight distances Horizontal and vertical curves; Construction and maintenance of low cost roads, stabilize roads and bituminous roads.

PTE4258 Hydraulic Design

10 Credits

The module gives an overview of hydraulic structures: conveyance structures, flow measuring devices, control structures etc; Design of municipal drainage system; Methods of analysis and hydraulic design: conveyance structures, water distribution systems etc. Storage systems: ground and overhead reservoirs and impoundments.

PTE4259 Geotechnical Engineering II

10 Credits

This module looks at the Geo-structural mechanisms and the critical state soil model; Bearing capacity and design of foundations; Settlement of foundations and analysis; Geotechnical process for ground improvement; Construction methods, dams and embankments; Soil improvement grouting vertical drains, geosynthesis, soil reinforcement; Filtration, separation and

erosion control; Drainage in plane; Flow prevention; Gravity construction, flexible and rigid pipes and deep in situ walls.	retaining	walls	and	design;	Pile

ELECTRICAL AND ELECTRONICS

PTE1131 Engineering Mathematics 1/Calculus 1 10 Credits

The module looks at indices and logarithms, formulae, mensuration, trigonometry, force and moments, estimating and costs; Series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Polynomials, discriminant, real roots, solving quadratic equations, domain, range, one-one functions, graphical illustrations; Calculus, differentiation, integration, applications of arc length, area, volumes, moments of inertia, centroids; Vector and scalar products; Equations of lines and planes; Matrices basic operations, rank, inverse Gaussian elimination, Cramer's rule; Determinants, Eigen values and Eigen vectors; Ordinary differential equations; Applications of First order differential equations: mechanical and electrical engineering problems; Elementary functions including Hyperbolic functions and their inverses, Differentiation technique; Leibnitz's Rule, Hospital's Rule; Applications of differentiation: maxima and minima, kinematics; Integration techniques, Reduction formula; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination, integration by parts; Applications of Integration: arc-length, area, volume, moments of inertia and centroids.

PTE1153 Circuit Theory and Networks

10 Credits

The module gives an analysis of continuous and discrete signals and systems. Topics include convolution, impulse response, system classifications, state variable formulation, differential and difference equations.

PTE1154 Computer Engineering

10 Credits

The module explores computer components: types of computer systems features, function of central processing unit, the motherboard, the expansion bus, system memory map, and volatile/non- volatile memory storage methods; Introduction to operating systems: MSDOS, UNIX and Windows; Software development; Software life cycles, structured programming, introduction to modular design: C-constricts, introduction to programming in C; Packages: computer maintenance and diagnostic spreadsheets.

PTE1231 Engineering Maths II

10 Credits

This module examines series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination and integration by parts;

PTE1252 Electrical and Electronic Measurements 10 Credits

The module looks at physical quantities, SI units, Avogadro constant, scalar and vectors; Measurements, errors and uncertainty; Measurement Systems: Static characteristics of

measurement instruments; Transducers: Principles of Capacitive, resistive, inductive, electromagnetic, thermoelectric, elastic, piezoelectric, piezo-resistive, electrochemical, gas, ion selective electrodes; Signal conditioners and data acquisition; Introduction to flow measurement; Radiation Measurements, Basic measuring devices, ammeters, voltmeters, transducers, accuracy, precision and components; Electronic measuring instruments, digital voltmeters, multimetres; Oscilloscopes; Measurement of AC power and the measurement of non-electrical parameters.

PTE1253 Electrical Circuits and Devices

10 Credits

The module gives an introduction to volt-ampere characteristics of diodes, transistors with power and photo electronic devices; Maxwell's equation for static and harmonic varying current, displacement current, application of circuit theory, semi-conductors, diodes and transistors, logic gates, NAND, NOT, NOR, OR exclusively OR, Boolean algebra, combination logic, minimization, programmable logic devices, sequential logic, arithmetic operations and circuit memory elements.

PTE2150 Analogue Electronics

10 Credits

The module is an introduction to stabilized power supplies, small-signal models of differential, single stage; Multistage and integrates circuit amplifiers, oscillators, wave shaping and switching circuits; High frequency effects; stability and performance measurement.

PTE2152 Electrical Machines

10 Credits

The module covers fields and magnetic circuits; Energy conversion phenomena; Three-phase theory; Transformers: principles, operation and construction; Special transformers; Principles, classification, characteristics and construction of synchronous, induction and dc machines; Single-phase induction motors; Steady-state and transient behaviour of machines.

PTE2250 Analogue Communication

10 Credits

The module is an introduction to analogue communications; amplitude modulation; single side band modulation and angle modulation, frequency division multiplexing, propagation effects; demodulation; Determination of the signal-to-noise ratio in AM and FM systems; Design of small signal HF amplifiers, mixers, oscillators and detectors, mixer theory and spectral analysis, noise generation in electronic circuits and devices.

PTE2253 Design Project

10 Credits

The module constitutes of various designs that can be constructed and tested in the laboratory or computer room.

PTE2254 Digital Electronics

10 Credits

The module focuses on Boolean algebra, Combinational logic; Minimization; Karnaugh mapping; Programmable logic devices; Sequential logic; Arithmetic Operations and circuit memory elements; Operational amplifiers, classification, parameters and basic building blocks.

PTE2259 Environmental Engineering

10 Credits

The module outlines the human activities and environmental pollution; Plumbing, drainage, Objectives of wastewater treatment; Waste water characteristics BOD kinetics; Wastewater flow rates and design flows; Flow equalization, wastewater treatment processes and selection; Design, operation and management plant.

PTE4151 Digital Communication

10 Credits

The module gives an introduction to digital communication systems: digital signal processing, modulation, transmission, and demodulation; Propagation; Random noise, channel capacity and error control coding and optimum receiver design principles.

PTE4152 Instrumentation And Control I

10 Credits

The module highlights the frequency measuring instruments, frequency analysers, Counters, Transducers; Open and closed loop controllers; Transfer functions, Simple servomechanisms, Derivation of transfer functions; Time domain, Frequency domain, Stability, Routh criterion, Root locus; Characteristics of measuring means , static characteristics, gain, sensitivity, resolution sensitivity of an instrument or a transducer; dynamic characteristics of measuring means; errors in engineering measurements; Analogue measuring instruments: flow meters, pressure gauges, thermometers, scales etc; Electronic instrumentation: sensors and transducers; AD/DA Converters; Accuracy and error of measurement.

PTE4252 Instrumentation and Control II

10 Credits

The module looks at frequency measuring instruments, Frequency analysers; Counters; Transducers and sensors; Open and closed loop controllers; Transfer functions; Simple servomechanisms, Derivation of transfer functions; Time domain, Frequency domain, Stability, Routh Criterion, Root Locus; Programmable logic controllers (PLCs), Distributed Control Systems (DCCs); Supervisory Control and Data Acquisition (SCADA) packages; Time domain and frequency domain system modelling; representation and reduction of multiple systems (block diagram techniques); stability; steady state errors (accuracy); frequency response methods, PID controllers compensation; programmable logic controllers (PLCs) and introduction to state space methods.

PTE4254 Microprocessors and Microcontrollers

10 Credits

The module looks at the basic concepts of microprocessors; Architecture and operation; Instruction sets and assembly language programming; Subroutine, interrupts, programmed controlled I/O: I/O operations; I/O memory mapped; I/O ports; Programmable LSI ports and applications of microprocessors.

MECHANICAL AND INDUSTRIAL ENGINEERING

PTE1131 Engineering Mathematics 1/Calculus 1

10 Credits

The module explores indices and logarithms, formulae, mensuration, trigonometry, force and moments, estimating and costs; Series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing functions, rates of change, stationary points; Polynomials, discriminant, real roots, solving quadratic equations, domain, range, one-one functions, graphical illustrations; Calculus, differentiation, integration, applications of arc length, area, volumes, moments of inertia, centroids; Vector and scalar products; Equations of lines and planes; Matrices basic operations, rank, inverse Gaussian elimination, Cramer's rule; Determinants, Eigen values and Eigen vectors; Ordinary differential equations; Applications of First order differential equations: mechanical and electrical engineering problems; Elementary functions including Hyperbolic functions and their inverses, Differentiation technique; Leibnitz's Rule, Hospital's Rule; Applications of differentiation: maxima and minima, kinematics; Integration techniques, Reduction formula; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination, integration by parts; Applications of Integration: arc-length, area, volume, moments of inertia and centroids.

PTE1145 Engineering Drawing

10 Credits

The module is an introduction to engineering drawing; geometrical constructions; tangency constructions; construction of ellipses; orthographic projections of simple geometrical solids and general engineering components in first and third angle; plane geometry; space geometry; dimensioning; pictorial views; freehand sketching; sectioning; intersections; developments; conventions and assembly drawings.

PTE1147 Modelling and Materials

10 Credits

The module looks at materials classification and structure, atomic bonding in materials, crystallisation, dislocations, plastic deformation, temperature measurement, phase diagrams, solidification, liquidification, vaporization, alloy formation, types of material, composite, selection and their applications i;e; wood, plastics, ceramics and other alloys; Structure and properties of metals and alloys; Review of principles, diffusional processes; Constitutional phase diagrams; Lattice defects; Deformation of metals, fracture and fatigue, polymers and corrosion; Materials for Modelling; Theories of models and model making; Imagination, creativity, innovation and invention; Image formation, model making and realization; Problem solving, visual patterns, models, prototypes and artifacts; Material selection for designs, experimentation with a range materials; Costs of models for designs; properties and analysis of materials for design models and product development; Testing and evaluating materials; Directory of design materials and analysis of design case studies.

PTE1231 Engineering Maths II

10 Credits

The module examines series, arithmetic and geometric progressions, convergence, sum to infinity, gradient of a curve, the chain rule, tangents and normals, increasing and decreasing

functions, rates of change, stationary points; Integration of complex functions, integration by substitution, trigonometric relationships, trapezium rule, graphical determination, integration by parts.

PTE1246 Engineering Mechanics I (Statics and Dynamics) 10 Credits

This module is on scalars, vectors, triangle of forces, parallelogram and polygon of forces, principle of transmissibility, Newton's laws, resolution of forces into two and three dimensional components, position vectors, resultant forces, moments, couples, equilibrium equations, structures: types of supports, truss analysis, joint method, section method, friction in inclined plane, wedges and screws; (X-ref TIE2106/2206).

PTE1256 Workshop Technology and Safety

10 Credits

The module explores workshop tools, occupational safety and health, processes and routines, construction materials, construction measuring instruments, personnel in the construction process, construction laws; The workshop environment, safety and care of equipment, space management; Safety and hygiene: workshop safety, ergonomic safety, Government regulations; Environmental stresses and hygiene, chemical stresses, harmful agents through inhalation, skin absorption & ingestion; Control of environmental factors; Measurement and measuring instruments, reliability, precision, scale, steel rules, calipers, micrometers, gauges, etc; Machine shop practice, marking, hand sawing, filing, drilling, and use of lathe; Equipment operation and maintenance, fabrication, welding, turning, cutting, soldering and brazing as well as equipment acquisition, storage and disposal; (X-ref TIE 1103 and TIE1203).

PTE2145 Industrial Design

10 Credits

The module explores the stages in the life cycle of a product, characteristics of global competition, characteristics of a competitive product, research and development, its role in the design of a product, factors influencing forward move of a product; Identifying customer needs and establishing product, generic product development process, concept generation and development.

PTE2146 Fluid Mechanics

10 Credits

The module looks at the elements of fluid mechanics, Pressure and head, Static Forces on surfaces, Motion of fluid particles and streams, Bernoulli's equation, The momentum equation, Uniform flow in open channels, Design of hydraulic systems and control, applications of hydraulics in industry, pneumatics and cut-out systems.

PTE2147 Strength of Materials I

10 Credits

The module explores direct stress and strain; Compound bars; Poisson's ratio and lateral strain; Hoop stress and axial stress in a cylinder; Stress in thin shells; Mechanical properties of materials, ductile and brittle materials, resilience, fatigue, creep, hardness; Sheer and torsion; Bending moment diagrams; Second moment of are and modulus of section.

PTE2245 Engineering Design

10 Credits

The module looks at coupling design: rigid and flexible couplings, Bolt Loading, Clutches: conical and multiple disc, Brake design: band, disc, automatic braking systems, Gear design: spur, helical, bevel and worm, Rolling bearings design, Ball bearings, taper bearings, belt design, V-belt and flat belt.

PTE2246 Thermodynamics/Thermal Physics 10 Credits

The module explores temperature scales, practical thermometers; Ideal gas: equation of state, kinetic theory of gases, pressure of a gas, kinetic energy of a molecule, work done by an ideal gas, thermal equilibrium, thermal conduction, convection, radiation; Laws of thermodynamics, the working fluid and phase equilibrium, reversible and irreversible processes, The second law of thermodynamics and Entropy, The heat engine cycles, vapour power cycles, refrigeration cycles, Turbines and compressors, Cooling systems: air, water, additives; Communication and production; Design registration and protection.

PTE2247 Strength of Materials II

10 Credits

This module examines structures: forces in members, sheer force and bending moments diagrams; Simple bending equation and applications, slope and deflections of beams, Macaulay's method, Torsion equation and applications to hollow and solid shafts, thin cylinders, thick cylinders: Lame's theory and line, stresses in three dimensions, shear and tensible combined, Mohr's stress circle, strain in three dimensions, Mohr's strain circle; deflection and moment distribution; application to beams and rigid frames.

PTE2259 Environmental Engineering

10 Credits

Human activities and environmental pollution. Plumbing, drainage, Objectives of wastewater treatment. Waste water characteristics BOD kinetics. Wastewater flow rates and design flows. Flow equalization, wastewater treatment processes and selection. Design, operation and management plant.

PTE4146 Engineering Mechanics II (Elective)

10 Credits

10 Credits

This module looks at dynamics of a particle, force, mass, acceleration, work and energy, impulse of energy and momentum, special applications, dynamics of system of particles, conservation of energy and momentum, introduction to three dimensional dynamics of a rigid body, angular momentum, ke, momentum and energy equations, parallel plane motion, gyroscope motion, are moments of inertia, mass moment of inertia, mass moment of inertia about an axis and products of inertia; (X-ref tie2106/2206).

PTE4149 Manufacturing Technology and Processes

This module covers casting processes, solidification of castings, gating and feeding systems, mould materials and their testing, continuous casting, special processes, design of castings, casting defects, inspection and quality control; Bench work, marking and setting out; Powder metallurgy: production of metal powders, their characteristics, purity, grain size etc; control and testing, pretreatments, pressing, lubricants, sintering, injection moulding, film blowing,

cindering, mixing, extrusion; Machining processes: metal cutting tools, mechanics of chip removal, economics of cutting, cutting processes, turning, milling, sawing, thread cutting, metal removal rate calculations, grinding; Non-traditional machining processes and rapid prototyping techniques.

PTE4152 Instrumentation And Control I

This module looks at frequency measuring instruments, frequency analysers, Counters, Transducers; Open and closed loop controllers; Transfer functions, Simple servomechanisms, Derivation of transfer functions; Time domain, Frequency domain, Stability, Routh criterion, Root locus; Characteristics of measuring means , static characteristics, gain, sensitivity, resolution sensitivity of an instrument or a transducer; dynamic characteristics of measuring means; errors in engineering measurements; Analogue measuring instruments: flow meters, pressure gauges, thermometers, scales etc; Electronic instrumentation: sensors and transducers; AD/DA Converters; Accuracy and error of measurement.

PTE4248 Maintenance Engineering

10 Credits

10 Credits

The module focuses on maintenance and reliability, Preventative maintenance, Total productive maintenance (TPM) corrective maintenance breakdown maintenance, reliability centred maintenance, condition based maintenance, systems reliability – Weibull parameters; Estimating reliability and the Weibull diagram.

PTE4249 Manufacturing Systems

10 Credits

This module covers the classification of manufacturing systems, project, batch, line, continuous, facility layout and design: problems that stimulate facility layout design, locating new facilities, Assembly lines, Flow line design, Approaches to line balancing: Ranked positional weight, Largest candidate Rule, Kibridge and Western method, Practical issues in line balancing, sequencing of a mixed model, improvements to solutions on line balance, GT Cellular manufacturing and scheduling.

PTE4252 Instrumentation and Control II

10 Credits

This module examines the frequency measuring instruments, Frequency analysers; Counters; Transducers and sensors; Open and closed loop controllers; Transfer functions; Simple servomechanisms, Derivation of transfer functions; Time domain, Frequency domain, Stability, Routh Criterion, Root Locus; Programmable logic controllers (PLCs), Distributed Control Systems (DCCs); Supervisory Control and Data Acquisition (SCADA) packages; Time domain and frequency domain system modelling; representation and reduction of multiple systems (block diagram techniques); stability; steady state errors (accuracy); frequency response methods, PID controllers compensation; programmable logic controllers (PLCs) and introduction to state space methods.

TECHNICAL GRAPHICS

PTE1145 Engineering Drawing

10 Credits

The module is an introduction to engineering drawing; geometrical constructions; tangency constructions; construction of ellipses; orthographic projections of simple geometrical solids and general engineering components in first and third angle; plane geometry; space geometry; dimensioning; pictorial views; freehand sketching; sectioning; intersections; developments; conventions and assembly drawings.

PTE1147 Modelling and Materials

10 Credits

The module looks at materials classification and structure, atomic bonding in materials, crystallisation, dislocations, plastic deformation, temperature measurement, phase diagrams, solidification, liquidification, vaporization, alloy formation, types of material, composite, selection and their applications i;e; wood, plastics, ceramics and other alloys; Structure and properties of metals and alloys; review of principles, diffusional processes; Constitutional phase diagrams; Lattice defects; Deformation of metals, fracture and fatigue, polymers and corrosion; Materials for modelling; theories of models and model making; Imagination, creativity, innovation and invention; Image formation, model making and realization; Problem solving, visual patterns, models, prototypes and artifacts; Material selection for designs, experimentation with a range materials; Costs of models for designs; properties and analysis of materials for design models and product development; Testing and evaluating materials; Directory of design materials and an analysis of design case studies.

PTE1181 Architectural Mathematics

10 Credits

The module looks at calculation of linear, curved and circular objects; measurement of surface area, volume, density of 2-D and 3-D formations; angular measures of shapes and designs found in building and product structures; sawing, filing, drilling, and use of lathe; Equipment operation and maintenance, fabrication, welding, turning, cutting, soldering and brazing; Equipment acquisition, storage and disposal; (X-ref TIE 1103 and TIE1203).

PTE 1281 Applied Structural Statics and Dynamics

10 Credits

This module is an introduction to static and dynamic behaviour of the major structural systems applied in architecture; An examination of the monolithic wall, post-and- lintel and multistory framed construction, tunnels, vaults and domes, suspended, catenary and tensile structures, etc to enable students to develop their understanding of the structural principles that underlay their physical structural form. The aim of the module is to develop analytical capabilities in relating the sizes of components to their physical characteristics of structural elements and the analysis of forces acting on them.

PTE1282 Technical Drawing

10 Credits

This module looks at plane geometry, space geometry, first and third angle projection, dimensioning, pictorial views, freehand sketching, drawing of common objects, sectioning, intersections, developments, conventions, assembly drawing and exploded views; The use of

AutoCAD covering the menu options of the operating screen settings, limits and control g auto CAD program; Use of basic operating commands SNAP, GRID, ORTHO, ENTER, etc; Practical lab exercises and assignments in 2D and 3D such as drawing and dimensioning of various machine parts, architectural plans, process flow charts and block diagrams.

PTE2180 Applied Geometry

10 Credits

The module examines surface development principles, parallel radial and triangulation; Development of right and oblique based prisms and the development of special types of roofs.

PTE2181 Architectural & Structural Drawing

10 Credits

The module is on drawing and utilizing models, block and site plans, floor existing work, new work, elevations and sections, constructional details of key components, fixtures and jointing methods; Steel and timber structures, roof trusses, columns and steel base fixture.

PTE 2281 Building Construction I

10 Credits

The module examines the construction process and the materials used in construction through lectures, case studies and project assignments. Students shall be required to study a building under construction and create a portfolio for documenting the project.

PTE4158 Design Of Structures

10 Credits

The module is an introduction to structural design, design methods, load on structures; Design in reinforced concrete; Basis of design, material properties, loading, design of beams, slabs, columns and foundations; Design in structural steel work; Design of vertically loaded masonry walls, design of laterally loaded wall panels; Enhancement of Auto CAD application in Civil Engineering drawings e;g; detailing, labelling and dimensioning.

PTE4181 Building Services

10 Credits

The module looks at infrastructural services required in buildings including water supply and distribution, hot water supply and distribution of solid waste and rain water drainage, sewage treatment and its disposal, refuse removal and disposal, electrical and telephone services for buildings, ventilation, air conditioning and acoustics.

PTE4184 Computer Aided Architectural Design

10 Credits

This module explores thinking skills, creativity and the expression and provides a practical introduction to the use of computers in design, various electronic graphic representation used in design, and functionality and the structure of modern CAD systems. Students are then given theoretical and practical introduction to computer based and drawing tools and techniques through lectures and hands on instruction and demonstration.

PTE4288 Materials and Construction

10 Credits

This module is about on-site and off-site analysis of construction projects and products; selection and evaluation of materials for construction and design projects; quantitative and qualitative analysis; materials for repair jobs; (X-ref AAR1204).

WOOD SCIENCE AND TECHNOLOGY

PTE1145 Engineering Drawing

10 Credits

The module is an introduction to engineering drawing; geometrical constructions; tangency constructions; construction of ellipses; orthographic projections of simple geometrical solids and general engineering components in first and third angle; plane geometry; space geometry; dimensioning; pictorial views; freehand sketching; sectioning; intersections; developments; convention and assembly drawings.

PTE1147 Modelling and Materials

10 Credits

The module looks at materials classification and structure, atomic bonding in materials, crystallisation, dislocations, plastic deformation, temperature measurement, phase diagrams, solidification, liquidification, vaporization, alloy formation, types of material, composite, selection and their applications i;e; wood, plastics, ceramics and other alloys; Structure and properties of metals and alloys; Review of principles, diffusional processes; Constitutional phase diagrams; Lattice defects; Deformation of metals, fracture and fatigue, polymers and corrosion; Materials for Modelling; Theories of models and model making; Imagination, creativity, innovation and invention; Image formation, model making and realization; Problem solving, visual patterns, models, prototypes and artifacts; Material selection for designs, experimentation with a range materials; Costs of models for designs; properties and analysis of materials for design models and product development; Testing and evaluating materials; Directory of design materials and annalysis of design case studies.

PTE1185 Wood Chemistry

10 Credits

The module looks at the chemical structure of wood and bark, cellulose, lignin, tannin, extractives, resins and gums, rubber, pyrolysis, dyes, mass spectroscopy, eco-friendly production and products.

PTE1246 Engineering Mechanics I (Statics and Dynamics) 10 Credits

The module explores scalars, vectors, triangle of forces, parallelogram and polygon of forces, principle of transmissibility, Newton's laws, resolution of forces into two and three dimensional components, position vectors, resultant forces, moments, couples, equilibrium equations, structures: types of supports, truss analysis, joint method, section method, friction in inclined plane, wedges and screws (X-ref TIE2106/2206).

PTE1256 Workshop Technology and Safety

10 Credits

The module looks at workshop tools, occupational safety and health, processes and routines, construction materials, construction measuring instruments, personnel in the construction process, construction laws; The workshop environment, safety and care of equipment, space management; Safety and hygiene: workshop safety, ergonomic safety, Government regulations; Environmental stresses and hygiene, chemical stresses, harmful agents through inhalation, skin absorption & ingestion; Control of environmental factors; Measurement and measuring instruments, reliability, precision, scale, steel rules, calipers, micrometers, gauges, etc; Machine shop practice, marking, hand sawing, filing, drilling, and use of lathe; Equipment operation and maintenance, fabrication, welding, turning, cutting, soldering and brazing and equipment acquisition, storage and disposal; (X-ref TIE 1103 and TIE1203).

PTE1282 Technical Drawing

10 Credits

This module looks at plane geometry, space geometry, first and third angle projection, dimensioning, pictorial views, freehand sketching, drawing of common objects, sectioning, intersections, developments, conventions, assembly drawing and exploded views; The use of AutoCAD covering the menu options of the operating screen settings, limits and control g auto CAD program; Use of basic operating commands SNAP, GRID, ORTHO, ENTER, etc; Practical lab exercises and assignments in 2D and 3D such as drawing and dimensioning of various machine parts, architectural plans, process flow charts and block diagrams.

PTE1285 Timber Mechanics (Stat & Dynamics)

10 Credits

The module looks at strength properties of wood; Static and dynamic behaviour of building structural systems, framed structures, walls, tunnels, lintels, vaults and domes, catenary and tensile structures and effects of loading (X-ref AAR1206).

PTE2187 Construction Equipment & Methods

10 Credits

The module explores planning and scheduling projects; heavy and large-scale construction, building estimations; quantity surveying and pricing of labour, materials and equipment; resource management and computer-based solutions (X-ref AQS4108).

PTE2189 Wood Manufacturing Systems and Processes 10 Credits

The module explores the classification of systems; layout; assembly lines; scheduling; group technology; machine scheduling; production flow analysis and wood manufacturing processes (X-ref TIE3112, TIE3113, TIE3213).

PTE2258 Analysis of Structures

10 Credits

The module looks at basic structural theory; structures and their behaviour; loads, determinacy and indeterminacy; plane and space trusses; bridge and roof trusses; long span structures – cables and arches; influence lines for statically determinate beams and trusses; strain and complementary energy; basic structural theorems, principle of virtual work; Deflection of statically determinant structures; area moment method, application of Castiglione's theorems, unit load method, analysis of statically indeterminate structures; method of superposition, slope deflection and moment distribution; application to beams and rigid frames.

PTE2287 Wood Machines & Maintenance Engineering 10 Credits

The module explores the rationale for maintenance; types of maintenance; machine maintenance operations and organization; investigative maintenance; repair, replacement and monitoring; systems reliability; engineering tools and solutions (X-ref TIE2110; TIE3110).

PTE4186 Furniture & Cabinet Construction 10 Credits

The module focuses on the interpretation of plans and drawings, measurement, shop and office geometry, hand, portable power and stationary power tools, joinery and assembly, small, medium and large-scale projects, shelves, drawers and doors, materials and processes.

PTE4189 Wood Finishes

10 Credits

The module examines the planning and applying wood finishes; Surface Coatings, 'Natural' Finishes, pigmented Finishes, penetrating finish, and waxing; Finishing Techniques; Staining, Glazing and Toning, Pickling and Liming, Bleaching and distressing.

PTE4288 Materials and Construction 10 Credits

The module covers on-site and off-site analysis of construction projects and products; selection and evaluation of materials for construction and design projects; quantitative and qualitative analysis and materials for repair jobs (X-ref AAR1204).

POSTGRADUATE DIPLOMA PROGRAMME

SPECIAL REGULATIONS

1.0 ENTRY REGULATIONS

1.1 Admission requirements

- 1.1.1 Applicants must be in possession of at least an appropriate Bachelor's degree.
- 1.1.2 Applicants must also be employed in a teaching capacity in higher and tertiary education institutions.

1.2 **Programme of study**

- 1.2.1 The minimum duration of the diploma programme is one-year on block-release or two years on part-time study.
- 1.2.2 The programme consists of taught modules and live assessment of practical teaching.
- 1.2.3 Each semester shall consist of 6 modules (3 core and 3 electives).
- 1.2.4 Candidates who prefer to study only the 6 core modules shall be awarded the Postgraduate Certificate in Higher Education.
- 1.2.5 Electives offered in any academic year shall be determined by the availability of lecturers and demand.
- 1.2.6 The mode of instruction shall include lectures, seminars, workshops, peer presentations and online delivery.
- 1.2.7 Candidates shall be required to obtain a minimum total of 144 credits to be awarded the diploma.

2.0 ASSESSMENT OF CANDIDATES

2.1 Assessment

- 2.1.1 All taught modules shall be assessed by coursework and examination, unless specified otherwise.
- 2.1.2 The continuous assessment must normally consist of at least three distinct tasks by the students including assignments, tests, mock examinations, presentations, reports, projects, portfolios, etc.
- 2.1.3 A component of observed and assessed practical teaching is embedded in each module in which candidates demonstrate their teaching and knowledge delivery skills.

PROGRAMME SUMMARY

YEAR I

CORE

Module Code	Module Description	Credits
PTE 5103	Learning & Teaching Strategies in HE	12
PTE 5104	Higher Education Curriculum Development	12
PTE 5105	Student Assessment in HE	12
ELECTIVES		
PTE 5102	Scholarship in Further & Higher Education (HE)	12
PTE 5106	Large and Small Group Teaching	12
PTE 5107	Problem-based Learning	12
PTE 5108	Quality & Innovation in HE	12
PTE 5111	Student Research and design projects	12
PTE 5116	Academic Involvement in the Community	12
CORE		
PTE5206	Adolescent & Mature Students	12
PTE5213	Educational & Information Technology	12
PTE5203	Lesson delivery	12
ELECTIVES		
PTE 5202	Policy, professionalism & Management in HE	12
PTE 5204	Programme Planning & Development	12
PTE 5208	Leadership, Governance and Strategic Planning in H	E 12
PTE 5209	Statistics for Educators	12
PTE 5211	Research, Consultancy and Publishing	12

TOTAL CREDITS FOR THE PROGRAMME

YEAR I 144 **Total minimum credits:** 144

MODULE SYNOPSES

PTE5102 Scholarship in Further and Higher Education (Elective) 12

12 Credits

The module explores the nature of academic work in modern universities and colleges, expectations, challenges, comparisons with other professions, adaptations to change; Lecturer performance, effectiveness, job detailing and appraisal; Teaching, research and community service.

PTE5103 Learning & Teaching Strategies in Higher Education (Core) 12 Credits

The module looks at specifying educational purpose: aims, goals and objectives; curriculum Specification, operational content Bloom's Taxonomy: domains and levels of learning process/expressive objectives; Competence and performance criteria (P;C;); Learning outcomes; Planning for cognitive, psychomotor and affective learning outcomes; Teaching strategies: face-to-face, print-based, e-learning, etc; Learning styles: tutor-led, self-directed, mediated, etc; and documentation for teaching.

PTE5104 Higher Education Curriculum Development (Core) 12 Credits

The module covers conceptions, principles, models and factors influencing curriculum development; Needs assessment, curriculum changes, curricular reforms and innovation in developing countries; Evaluation of the overall effectiveness of curricula in Higher Education; Quality and quality assurance through inspection; Curriculum research and the educator.

PTE5105 Student Assessment in Higher Education (Core)

12 Credits

The module examines testing, assessment and evaluation of student performance; Formative, diagnostic and summative); Validity and reliability criteria; Assessment; Tutor, self and peer assessments; criterion/norm referenced assessment; Preparation for and processing of examinations, assessment specification grid, marking, grading and profiling of examination results; Moderation of question papers for quality and standards control.

PTE5106 Large and Small Group Teaching (Elective)

12 Credits

The module explores mass lectures, medium and small classes, conducting theory and practical lessons, group projects and assignments; Media of presentation; Tutorials and mentoring sessions; Group compositions and dynamics.

PTE5107 Problem-Based Learning (Elective)

12 Credits

The module looks at the definitions, models, and examples of problem-based learning (PBL); Practice and application, comparative benefits, essentials and resources.

PTE5108 Quality and Innovation in Higher Education (Elective) 12 Credits

The module looks at the attitudes and the environment for quality assurance, staff, students, facilities, resources; innovation and creativity in programme delivery.

PTE5111 Student Research & Project Writing (Elective)

12 Credits

This module explores types and paradigms of research, sharpening skills of data collection, analysis and interpretation; Formats and contents of reports; Writing style and language, etc.

PTE5116 Academic Involvement in the Community (Elective) 12 Credits

This module looks at community development processes, identification, needs analysis, feasibility study, negotiation and intervention and factors influencing success in community development projects.

PTE5203 Lesson Delivery (Core)

12 Credits

This module is a supervised and assessed professional practice in the candidates' own classes; Review of professional documentation, resources and learning environments; observation of lessons; discussion and counselling. Each candidate shall be assessed at least twice.

PTE5202 Policy, Professionalism and Management in Higher Education (Elective)

12 Credits

The module explores policy formulation and implementation, decision-making strategies in organizations and communities; policy and educational reform; dominant policies in Zimbabwe education, Resources management: human, financial, material, time; Principles of project planning and management, factors affecting project management: Political, Economic, Social, Technical, Legal and Environmental (PESTLE); Budgeting; Risk and Contingency Management and research in Management.

PTE5204 programme Planning and Development (Elective) 12 Credits

This module focuses on academic and administrative programmes in higher education; module development: objectives, processes and evaluation, module writing, designing short and long modules, designing individualised and group programs, professional staff development, purposes and procedures for accreditation for prior learning (APL) and accreditation for prior experiential learning (APEL).

PTE5206 Adolescent and Mature Students (Core)

12 Credits

The module covers college and university student characteristics, behaviour and academic performance; Psycho-social and physiological influences to student performance.

PTE5208 Leadership, Governance and Strategic Planning In H E (Elective) 12 Credits

The module explores the institutional organization; academic and administrative leadership, principles and tools for good governance, the role of the state; Local, regional and international cooperation between institutions; Strategic Planning principles and processes.

PTE5209 Statistics for Educators (Elective)

12 Credits

The module looks at the descriptive and inferential statistics in use in education and educational research; sampling theory, methods of summarising and interpreting data; frequency distributions; measures of central tendency; measures of dispersion; fractiles; measures of strength and association; probability distributions: the normal distribution; significance and hypothesis testing.

PTE5211 Research, Consultancy and Publishing (Elective)

12 Credits

The module looks at the foundations and practices in academic research; Identifying research opportunities in industry and society; Drawing up research proposals; Seeking funding; Conference presentations; Gaining consultancy assignments, specialist training; Publishing in journals, books; Current issues in the research literature relating to funding, organisation, student support, human resources development, reform and innovation, etc; in higher and tertiary education; Consultancy and project proposals.

PTE5213 Educational and Information Technology (Core)

12 Credits

The module examines the trends, theories and history of media in education, technical developments in subject content delivery, implications for classroom and distance education modes, appropriate technology, computers, information and communication technologies (ICT), multimedia, virtual learning, hardware and software developments, strengths and limitations for developing countries, developing programs using ICT, educational resources planning and management and learning resource centres.

MASTERS DEGREE PROGRAMME SPECIAL REGULATIONS

These are the postgraduate programmes offered by the department of Technical and Engineering Education and Training.

1.0 ENTRY REGULATIONS

1.1 Admission requirements

- 1.1.1 Applicants must be in possession of an approved Honours degree in the area of Technical Education with relevant subject specialisation.
- 1.1.2 Alternatively, applicants with a relevant Bachelor's degree plus the Postgraduate Diploma in Technical or Technology Education or its approved equivalent shall be considered.

1.2 Programme of study

- 1.2.1 The two-year block release or part time programme is composed of prescribed core modules as well as a research project.
- 1.2.2 The supervised research project should culminate in a dissertation of a minimum of 10 000 words.

2.0 ASSESSMENT OF CANDIDATES

All taught modules shall be assessed through coursework and examination, unless specified otherwise in the appropriate module synopsis.

CIVIL AND CONSTRUCTION ENGINEERING

PROGRAMME SUMMARY

YEAR I

Module Code	Module Description	Credits
PTE6156	Environmental Engineering & water resources	18
PTE6159	Structural design in concrete & steel	18
PTE6253	Electronic, Power Sources & Circuits	18
PTE6256	Surface Water Modelling	18
	Education modules	36
YEAR II		
PTE6357	Ground Water Modelling (Elective)	18
PTE6352	Electronics Design (Elective)	18
PTE6456	Water, Resources Planning & Management (Elective)	18
PTE6459	Environmental Engineering & Management (Elective)	18
PST6010	Dissertation	72

TOTAL CREDITS FOR THE PROGRAMME

ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PTE6153	Linear Systems	18
PST6175	Computational Discrete Mathematics	18
	Education Modules	36
PTE6245	Human Factor Engineering	18
PTE6254	Intelligent Condition and Monitoring	18
	Education Modules	36
YEAR II		
PTE6346	Management and Technology	18
PST6375	Simulation and Modelling	18
PST6311	Advanced Research Methods	18
PST6010	Dissertation	-
PTE6448	Automation and Robotics	18
PTE6446	Engineering Project management	18
PST6411	Tools for basic and applied research	18
PST6010	Dissertation	72

TOTAL CREDITS FOR THE PROGRAMME

MECHANICAL AND INDUSTRIAL ENGINEERING

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PTE6146	Environmentally conscious engineering	18
PST6175	Computational Discrete Mathematics	18
	Education Modules	36
PTE6245	Human Factor Engineering	18
PTE6248	Computer Control & Manufacturing Systems	18
	Education Modules	36
YEAR II		
PTE6346	Management and Technology (Elective)	18
PST6375	Simulation and Modelling (Elective)	18
PST6311	Advanced Research Methods	18
PST6010	Dissertation	72
PTE6448	Automation and Robotics (Elective)	18
PTE6449	Quality Systems (Elective)	18
PST6411	Tools for basic and applied research	18
PST6010	Dissertation	72

TOTAL CREDITS FOR THE PROGRAMME

TECHNICAL GRAPHICS

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PTE6180	Architectural design and drawing	18
PTE6182	Advanced design and manufacturing	18
	Education modules	36
PTE6256	Production Management	18
PTE6280	Advanced Engineering Science	18
	Education modules	36
YEAR II		
PST6381	Integrated Building Services	18
PTE6356	Sustainable Environment (Elective)	18
PST6311	Advanced Research Methods	18
PTE6458	Advanced Construction	18
PTE6461	Entrepreneurship	18
PST6411	Tools for basic and applied research	18
PST6010	Dissertation	72

TOTAL CREDITS FOR THE PROGRAMME

WOOD SCIENCE AND TECHNOLOGY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PTE6182	Advanced design and manufacturing	18
PTE6188	Advanced Material Science	18
	Education modules	36
PTE6247	Material Technology	18
PTE6256	Production Management	18
	Education modules	36
YEAR II		
PTE6387	Advanced Wood Processing	18
PTE6388	Timber Engineering	18
PST6311	Advanced Research Methods	18
PTE6458	Advanced Construction (Elective)	18
PTE6461	Entrepreneurship (Elective)	18
PST6411	Tools for basic and applied research	18
PST6010	Dissertation	72

TOTAL CREDITS FOR THE PROGRAMME

ENGINEERING AND TECHNOLOGY

PROGRAMME SUMMARY

YEAR I		
Module Code	Module Description	Credits
PTE6146	Environmentally conscious engineering	18
PTE6182	Advanced Design and Manufacturing	18
	Education modules	36
PTE6245	Human Factor Engineering	18
PTE6256	Production Management	18
	Education modules	36
YEAR II		
PTE6356	Management and Technology (Elective)	18
PTE6375	Simulation and Modelling (Elective)	18
PST6311	Advanced Research Methods	18
PTE6449	Quality Systems (Elective)	18
PTE6461	Entrepreneurship (Elective)	18
PST6411	Tools for basic and applied research	18
PST6010	Dissertation	72
PST6010	Dissertation	72

TOTAL CREDITS FOR THE PROGRAMME

MODULE SYNOPSES

CIVIL AND CONSTRUCTION ENGINEERING

PTE6156 Environmental Engineering & Water Resources

18 Credits

The module looks at human activities and environmental pollution and an understanding of the role transport processes play in natural and engineered systems which control the quality and quantity of water for human use. The scope includes concerns in toxic and hazardous waste management with a focus on aspects of chemical transport between air, water and soil systems, and microbial degradation processes in the natural and engineering environment. A particular emphasis is placed on recognizing and modeling processes that are potentially transport limited and to what degree such limitations may be overcome; Wastewater characteristics; BOD kinetics; Wastewater flow rates and design flows; Introduction to microbial metabolism and role of micro-organisms in biological treatment; Kinetics of biological growth; Landfill Engineering, Urban Hydrology and Urban Drainage.

PTE6159 Structural Design in Concrete & Steel

18 Credits

The module explores concrete design: limit state, ultimate state, characteristic material strength, stress, yield, shear and calculations; Concrete structures: calculations; Concrete design tool; Reinforced concrete: magnitudes, stresses and calculations.

PTE6253 Electronic, Power Sources and Circuits

18 Credits

The module examines power sources: characteristics of AC and DC current, principles of step down/up, rectification, voltage and current regulation, Ohm's Law, power, use meters to measure voltage, current and resistance; Electronics and control: reed switch, micro switch and relay, transistors (NPN and PNP types) as amplifier and switch and define current gain, a Darlington Pair, capacitors, diodes for rectification and protection against back emf, zeners for voltage reference, LEDs and photodiodes, resistors, transducers, calculate resistance of series and parallel resistors; Circuits: draw circuit diagrams including – switching using the output to operate transistors and relays; Operational amplifiers, explain the functions of AND, OR, NAND, NOR and XOR as well as construct truth tables for the above functions.

PTE6256 Surface Water Modelling

18 Credits

The module focuses on hydrologic cycle; Water balance: Evaporation, infiltration, overland flow, base flow; Rainfall-runoff models, overland flow models; Stream flow discharge and rating curve; advanced flood routing; stochastic hydrology and a statistical analysis of hydrologic events.

PTE6352 Electronics Design (Elective)

18 Credits

The module explores study circuit and component technologies in contemporary very large scale and very large scale integrated circuits; Use of the Computer-Aided Design workstation to

produce complete circuits related to area of specialization and design circuits in special construction of choice.

PTE6357 Ground Water Modelling (Elective)

18 Credits

The module outlines the classification of groundwater systems; Aquifer parameters and properties; Flow and contaminant transport equations; Well hydraulics and parameter estimation; Well development; Artificial Recharge; Numerical modelling of aquifer systems; Use of groundwater models; Seepage and drainage problems; Quality loss function; Total quality tools and techniques.

PTE6456 Water, Resources Planning and Management (Elective) 18 Credits

The module highlights planning economics; Quantitative optimization methods applied to water resources planning; Waste recycling practices; Planning under uncertainty; Conjunctive use of surface and groundwater resources; Water legislation and administration as well as experiences from professionals in industry on water resource planning and management.

PTE6459 Environmental Engineering and Management (Elective) 18 Credits

The module examines environmental issues: solid and liquid wastes management; Water and air quality monitoring and modelling:- monitoring methods, analytical and numerical modelling methods; Environmental Impact Assessment; legal and institutional issues on environmental management; Public Health issues; Water and Sewerage Network Operation and Management; Environment and Sustainable development.

ELECTRICAL AND ELECTRONICS ENGINEERING

PTE6153 Linear Systems

18 Credits

The module looks at linear Vector Spaces, Functions and Linear Transformations, Normed Linear Spaces, Differential Equations and Dynamical Systems, Reachability and Controllability, Decomposition Theory for LTI systems, Observability and State Reconstruction.

PDT6245 Human Factor Engineering

18 Credits

The module explores work Study: method study, time study, motion economy; Ergonomics: man-machine interaction, work conditions; Industrial psychology and biomechanical models of human at work.

PTE6254 Intelligent Conditioning and Monitoring 18 Credits

The module has an introduction to the role of sensors in manufacturing automation; operation principles of different sensors; electrical, optical, acoustic, pneumatic, magnetic, electro-optical and vision sensors; Condition monitoring of manufacturing systems; principle; sensors for

monitoring force, vibration and noise, selection of sensors and monitoring techniques; Acoustic emission; principles and applications; concepts of pattern recognition; Sensors for CNC machine tools; linear and angular position and velocity sensors; Automatic identification techniques for shop floor control; optical character and machine vision sensors; smart / intelligent sensors; integrated sensors, Robot sensors, Micro sensors, Nano sensors; Manufacturing of semi conductor sensors and fibre optic sensors; principles, applications.

PTE6346 Management of Technology (Elective) 18 Credits

The module covers technology; Technology transfer; Research and development infrastructure, interaction, and cooperation; Technology and its environment - social, human, political factors; Managing innovation and technology dynamics and change dynamics.

PDT6446 Engineering Project Management (Elective)

18 Credits

The module focuses on the entrepreneur, project planning, implementation and review, decision making factors, problem formulation and solution using optimisation theory, finite mathematics, and statistical techniques.

PDT6448 Automation and Robotics (Elective) 18 Credits

This module examines industrial Robots: An introduction to industrial robots; Classification of robots and their geometries; Robot end-effectors (tooling and grippers); Safety considerations; Programming Industrial Robots: Robot motion control; resolution, repeatability, accuracy and control; Future trends; Robot Animation Teaching Simulation; Robotics Sensing: Robot sensor technologies; Image acquisition; Computer vision systems: Image processing; Robot programming using sensors; Automated Assembly: Image processing; transfer and parts presentation; Requirements for general purpose assembly; Some problems with assembly; Design considerations in automated assembly; principles of high volume manufacturing systems; Choosing, specifying and justifying a robot system: Evaluation methods for robot capital investment and evaluation of manufacturing costs.

MECHANICAL AND INDUSTRIAL ENGINEERING

PTE6146 Environmentally Conscious Engineering

18 Credits

The module explores cleaner production concepts; Eco-design; Explosive and toxic gases, liquid and metallic poisons; Airborne dust - causes and prevention; Physiological effects of vitiated and contaminated air; Compiling of a monitoring strategy, management systems for environmental control and environmental auditing.

PST6175 Computational Discrete Mathematics

18 Credits

The module explores discrete models; Foundations; Basic concepts of sets and functions; Finite series; Logic; Propositional logic; Predicate logic; Combination circuits; Induction; Finite

probability space, events; Conditional probability; Bayes' theorem; Integer random variables; Expectations; Varia Analysis and verification; Searching algorithms; Recursive algorithms; Relations; Discrete models; Foundations; Basic concepts of sets and functions; Finite series; Logic; Propositional logic; Predicate logic; Combination circuits; Induction; Finite probability space, events; Conditional probability; Bayes' theorem; Integer random variables; Expectations; Varia Analysis and verification; Searching algorithms; Recursive algorithms; Relations; Basic concepts; Properties of relations; Operations relations; Undirected graph, Directed graph, weighted graph, Euler circuits and Hamiltonian cycles; Graph isomorphism and representation planar graphs; Trees; Different state machines; Input, Output, Initial state and a transition table;

PDT6245 Human Factor Engineering

18 Credits

The module examines work Study: method study, time study, motion economy; Ergonomics: man-machine interaction, work conditions; Industrial psychology and biomechanical models of human at work.

PDT6248 Computer Control and Manufacturing Systems

18 Credits

The module gives an analysis of microprocessor controlled servo loops, adaptative control, state space methods in controlling analysis of NC machines, robots and their controllers; programmable controllers; Prerequisites as well as industrial Instrumentation and Control.

PTE6346 Management of Technology (Elective)

18 Credits

The module outlines technology; Technology transfer; Research and development infrastructure, interaction, and cooperation; Technology and its environment - social, human, political factors; Managing innovation and technology dynamics; Change dynamics; Contemporary social and environmental policy issues and research themes, such as: development and displacement, the transnational dimensions of environmental issues, access to wood in urban areas, urban planning and sustainability, the social production of risk, and resource extraction and conservation conflicts.

PDT6448 Automation and Robotics (Elective)

18 Credits

The module highlights industrial Robots: An introduction to industrial robots; Classification of robots and their geometries; Robot end-effectors (tooling and grippers); Safety considerations; Programming Industrial Robots: Robot motion control; resolution, repeatability, accuracy and control; Future trends; Robot Animation Teaching Simulation; Robotics Sensing: Robot sensor technologies; Image acquisition; Computer vision systems: Image processing; Robot programming using sensors; Automated Assembly: Image processing; transfer and parts presentation; Requirements for general purpose assembly; Some problems with assembly; Design considerations in automated assembly; principles of high volume manufacturing systems; Choosing, specifying and justifying a robot system: Evaluation methods for robot capital investment and the evaluation of manufacturing costs.

PTE6449 Quality Systems (Elective)

18 Credits

The module looks at total quality management: overview, principles, levels of adoption; Pioneering works of Deming, Juran, Crosby, Ishikawa, Imai, Shingo and Fiegenbaum;

International Standards: Malcom Baldridge, ISO 9000, ISO 14 000; Cost of quality; Quality function deployment; Quality loss function as well as total quality tools and techniques.

TECHNICAL GRAPHICS

PTE 6182 Advanced Design and Manufacturing

18 Credits

The module explores product design, technology for sustainability, advance manufacturing technology, web and internet technologies and multidiscinary engineering technologies.

PTE6180 Architectural Design and Drawings

18 Credits

The module examines plans, sketches, presentation, art, landscape, perspective and axonometric.

PDT6256 Production Management

18 Credits

The module looks at construction and design, budget management, event management and health and safety.

PTE6280 Advanced Engineering Science

18 Credits

The module enables the students to extend and apply knowledge and understanding of key engineering concepts, principles and practice through independent learning, understand and apply the relationships between engineering, mathematics and science, develop skills in investigation and research in an engineering context, analyse, design, construct and evaluate creative solutions to complex engineering problems, communicate advanced engineering concepts clearly and concisely, using appropriate terminology, develop an informed understanding of the role and impact of engineering in changing and influencing our environment and society, including ethical implications.

PTE6381 Integrated Building Services

18 Credits

The module looks at how various types of building services equipment work and how they are integrated into a building; Heating cooling, lighting, energy supply, on-site power generation, building management systems, water supply and waste systems, fire safety, vertical transportation and building services for high-performance buildings; Short and long-term maintenance contracts to the commercial, retail and construction sectors throughout.

PTE6356 Sustainable Environment (Elective)

18 Credits

The module explores contemporary social and environmental policy issues and research themes, such as: development and displacement, the transnational dimensions of environmental issues, access to wood in urban areas, urban planning and sustainability, the social production of risk, and resource extraction and conservation conflicts.

PTE6458 Advanced Construction

18 Credits

The module examines the management of technology, processes and projects, its technological interdependencies and socio-economical boundary constraints, results in the worldwide uniqueness of our program, New technologies, processes and strategies for designing and producing of buildings: Faster return on investment through implementation of rapid project delivery and zero defect construction by robot oriented design and automated construction systems, Integration of intelligent systems in daily life and environments: Microsystems and microelectronics increasingly form a part of our everyday's life; Its miniaturization allows its incorporation in domestic systems and appliances; Simultaneously we want to deal with a standardized and compatible network of synergetic subsystems rather than detached island solutions, Life cycle management, value engineering and innovation.

PST 6461 Entrepreneurship (Elective)

18 Credits

The objective of this module is to examine the characteristics and goals f the social entrepreneur as well as an in-depth view into the practises of creating social value for individuals and communities. The student's ability to develop and implement social change will increase significantly as the student becomes acquainted with the theories of social entrepreneurship and learn how to identify the characteristics of the social entrepreneur. Upon completion of this recommended module, the student will also be able to evaluate the organisational structure, human resources, funding, marketing and stakeholder participation; all vital success factors in a social change project. The study of the theories and practice of creating partnerships for social change, the aptitude to resource initiatives to link community needs and the talent to develop a plan to implement social change will all be covered in this study of social entrepreneurship

WOOD SCIENCE AND TECHNOLOGY

PTE6182 Advanced Design and Manufacturing

18 Credits

The module highlights product design, technology for sustainability, advance manufacturing technology, web and internet technologies and multidiscinary engineering technologies;

PTE6188 Advanced Material Science

18 Credits

The module looks at materials processing, structural materials, functional materials and materials for sustainable technology material characterisation.

PTE6256 Production Management

18 Credits

The module covers construction and design, budget management, event management and health and safety.

PTE6247 Material Technology

18 Credits

The module outlines wood-based hybrid materials, bionics, material emissions, material characterisation and innovative material technology.

PTE6387 Advanced Wood Processing

18 Credits

The module explores chemical pulping of eucalypts (collaboration of Western Australian Forestry and a number of pulp and paper companies (APM, APPM, and ANM); Chemical pulping of eucalyptus is now the dominant process used world-wide for the manufacture of fine writing paper, High temperature drying of pine (CSIRO in collaboration with NSW and Queensland Forestry Commission Laboratories) Machine stress grading of pine, Wood-fibrereinforced cement composites (CSIRO and James Hardie), Advanced breeding and selection technology for pine (CSIRO/State Forestry Services) ;Introduction to Wood Finishing, Colour Theory and Wood Colour, Surface Preparation, Surface Finishes, Spraying Technology, Automated Finishing, Drying and Curing of Finishes, Post-Treatments and Cost Considerations, Coating Parameters, Recycling, Safety, Environmental, Quality Control and Finish Testing, Measuring the colour of Canadian wood species, Farnsworth-Munsell colour test, Finish sanding and surface preparation, Conditioning of surfaces for staining, Spraying basics – gun setup, correct use, and cleaning, Staining effects & simple finishes, chemical staining, Advanced staining systems, Preparing bleaches and removing stains from wood, Tests on liquid finishes, Tests on wet coatings, Water-based finishes, Roller coating, UV curing, Curtain coating, Powder coating of MDF, Achieving special finishing effects, Exterior finishes and testing, Testing the properties of finishes as well as tours of various industrial finishing facilities.

PTE6388 Timber Engineering (Elective)

18 Credits

The module examines timber and hybrid structures, multi - story timbers buildings, assessment and retrofitting, methods of assessment, maintenance and strengthening, remodelling, densification, structural dynamics, lateral force method, modal response and spectrum analysis.

PTE6458 Advanced Construction

18 Credits

The module focuses on management of technology, processes and projects, its technological interdependencies and socio-economical boundary constraints, results in the worldwide uniqueness of our program, New technologies, processes and strategies for designing and producing of buildings: Faster return on investment through implementation of rapid project delivery and zero defect construction by robot oriented design and automated construction systems, Integration of intelligent systems in daily life and environments: Microsystems and microelectronics increasingly form a part of our everyday's life; Its miniaturization allows its incorporation in domestic systems and appliances; Simultaneously we want to deal with a standardized and compatible network of synergetic subsystems rather than detached island solutions, Life cycle management, value engineering and innovation.

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significantly as the student becomes acquainted with the theories of social entrepreneurship and learn how to identify the characteristics of the social entrepreneur. Upon completion of this recommended module, the student will also be able to evaluate the organisational structure, human resources, funding, marketing and stakeholder participation; all vital success factors in a social change project. The study of the theories and practice of creating partnerships for social change, the aptitude to resource initiatives to link community needs and the talent to develop a plan to implement social change will all be covered in this study of social entrepreneurship.



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

Yearbook

2018/19

THE MISSION STATEMENT

To lead in human capital development for industrial and socio-economic transformation, with a bias towards science, technology, engineering and mathematics (STEM) based solutions.

THE VISION

To be a world class University in science, technology, innovation, entrepreneurship and business development, spearheading industrialisation locally and beyond.

CORE VALUES

In the delivery of value to our clients, we pursue academic excellence with integrity,
honesty and ethical behaviour.
We are committed to responsible research and innovation that drives commercialisation
and industrialisation.
We thrive on mutual respect, teamwork and effective partnerships.
We are driven by a passion to fulfil your dream.



Interpretation of Logo

Colours	Symbols	
❖ White − Facts and Figures	❖ Star – Rising	
❖ Red – Intuition/ Gut Feeling	❖ Bird − Zimbabwe	
❖ Green − Creative Thinking	❖ Scroll – Programmes/ Qualifications	
❖ Yellow − Positive Assessment	❖ Cap − Knowledge	
❖ Blue − Control of the thought Processes	❖ Telescope − Looking	
❖ Black − Negative Assessment	❖ Wall – Industry	
	❖ Shield – Protection	

ADDRESSES

Main Campus:

Cnr Gwanda Road and Cecil Avenue, Bulawayo Postal Address: P. O. Box AC 939, Ascot Bulawayo + 263 292 282842| www.nust.ac.zw

OTHER LOCATIONS

School of Medicine

Mpilo Central Hospital **Bulawayo**

Institute of Development Studies (IDS)

Surburbs **Bulawayo**

Centre for Continuing Education

55 Jason Moyo Bulawayo +263 292 88 75 48 +263 292 88 74 88

NUST Guest House

12 Kerr Road Kumalo **Bulawayo**

Harare Office

Zimdef House 18572 Off Mother Patrick Avenue Rotten Row **Harare**

+263 242 251534/ Fax +263 242 794848

FACULTIES AND TEACHING DEPARTMENTS

Faculty of Applied Science

Department of Applied Biology and Biochemistry

Department of Applied Chemistry

Department of Applied Mathematics

Department of Applied Physics

Department of Computer Science

Department of Environmental Science and Health

Department of Forest Resources and Wildlife Management

Department of Radiography

Department of Statistics and Operations Research

Department of Sports Science and Coaching

Faculty of Commerce

Department of Accounting

Department of Banking

Department of Finance

Department of Business Management

Department of Marketing

Department of Insurance and Actuarial Science

Graduate School of Business

Institute of Development Studies

Faculty of Communication and Information Science

Department of Journalism and Media Studies

Department of Library and Information Science

Department of Records and Archives Management

Department of Publishing Studies

Faculty of Engineering

Department of Chemical Engineering

Department of Civil and Water Engineering

Department of Electronic Engineering

Department of Industrial and Manufacturing Engineering

Department of Fibre and Polymer Materials Engineering

Faculty of Medicine

Department of Anatomy & Physiology

Department of Pharmacology and Biochemistry

Department of Pathology

Department of Psychiatry and Social Behavioural Sciences

Department of Nursing and Midwifery Sciences

Department of Surgery and Anaesthestics

Department of Obstetrics and Gynaecology

Department of Paediatrics

Department of Medicine

Faculty of The Built Environment

Department of Architecture

Department of Quantity Surveying

Department of Landscape Architecture and Urban Design (LAUD)

Faculty of Science and Technology Education

Department of Art, Design and Technology Education

Department of Science, Mathematics and Technology Education Department of Technical and Engineering Education and Training					

PRINCIPAL OFFICERS OF THE UNIVERSITY

Chancellor

The President of the Republic of Zimbabwe, His Excellency Cde Emmerson DambudzoMnangagwa LLB, London; Hon. LLD, MSU; Hon. LLD, UZ; Hon. DPIR, GZU; LLB, LPI, UNZA

Vice-Chancellor

Professor Mqhele E. Dlodlo; PhD (Delft University of Technology, The Netherlands); MSEE (Kansas State University, USA); BSEE, BS- Mathematics and Engineering Management (Geneva College, USA)

Pro Vice-Chancellor (Acting): Academic, Research and Consultancy

Dr Nduduzo Phuthi; PhD (Ass & Quality Ass in HE & Training); Pretoria, (2012),MScEd (Science Education); Curtin, Australia (1998), PGradDip (Educational Technology) UZ; 1992,BEd (Biol); University of Zimbabwe(1988)

Pro Vice-Chancellor: Innovation and Business Development

Dr Gatsha Mazithulela; PhD (Genetic Engineering); University of East Anglia, John Innes Centre Norwich, UK (1998); MBA, Middlesex University Business School, London, UK (2002); B.ApSc Hons Biology and Biochemistry (1994)

Registrar

Mr Fidelis Mhlanga; TI Science, Z'bwe; Bed, Msc, UZ; MBA NUST, Z'bwe

Librarian

Ms Katherine Matsika; BA (Hons) Rhodesia, Dip.AdEd.Z'bwe, HDip. LibSci (UNISA)

Bursar

Dr F S Nkomo; B.B.S Z'bwe, MBA Finance, Stirling, C.I.S, Ex DBA (PSB)

Senior Proctor

Professor S. Dube; BSc, MSc Benin, (Nigeria); Grad CE (UZ)

UNIVERSITY COUNCIL

(As constituted in terms of Section 10 of the National University of Science and Technology ActChapter 25..13 (Formerly Act, 1990)

a) Ex officio:

Vice-Chancellor

Professor Mqhele E. Dlodlo; PhD (Delft University of Technology, The Netherlands); MSEE (Kansas State University, USA); BSEE, BS- Mathematics and Engineering Management (Geneva College, USA)

Pro-Vice-Chancellor: Innovation and Business Development

Dr Gatsha Mazithulela;PhD (Genetic Engineering); University of East Anglia, John Innes Centre Norwich, UK (1998); MBA, Middlesex University Business School, London, UK (2002); B.ApSc Hons Biology and Biochemistry NUST (1994)

Pro-Vice-Chancellor (Acting): Academic, Research and Consultancy

*Dr Nduduzo Phuthi;*PhD (Ass & Quality Ass in HE & Training); Pretoria, (2012),MSc Ed (Science Education); Curtin, Australia, (1998), PGradDip (Educational Technology) UZ; 1992,BEd (Biol); University of Zimbabwe (1988)

b) Appointed by the Minister of Higher and Tertiary Education, Science and Technology Development:

Ambassador Zenzo Nsimbi; Msc Industrial Metallurgy and Management, Aston University, Higher National Diploma in Metallurgy, Certificate in Metallurgy, Professional Manager's Program, Professional Manager's Workshop, Mineral Project Management in Developing Countries, Finance for Non-Financial

Mrs Nomathemba Ndlovu; MSc Marketing NUST, BCom

Mr Job Sibanda; Bachelor of Laws Honours Degree

Mr Japhet Gwante Ndabeni-Ncube; M.A Economics, Post graduate Diploma, Financial Economics, B. A Economics

Mr Israel Ndlovu; Chartered Management Accountant (CIMA); B.Acc (UZ)

Mrs Sithembinkosi Nyathi; Bachelor of Philosophy Honours in Marketing; Masters in Business Administration, Post Graduate Diploma in Management, Diploma in General Management, Diploma in Marketing Management

Ms Elizabeth Chikwanda; Master of Business Administration (MBA)

Mr Obert Sibanda; Masters of Business Administration, Executive Development Programme, HND Marketing Management, ND Marketing Management, NID in Business Studies, Diploma in Salesmanship, Diploma in SMEs Management & Development

Mr Stephen Nyambuya; Bachelor of Architecture

Engineer Simela Dube; Bachelor of Science Honours (Civic)

Mr Casper Ronney; Master of Business Administration Degree, Bachelor of Science Honours Degree In Accounting, Post graduate diploma in Management, Grad ICSA, Advanced diploma in Accounting and Business, Diploma in Secondary Education

Rev. Dr Rudo Lois Moyo; PhD in Theology, Master of Theology, Honours Bachelor of Theology in Biblical Studies, Certificate in Education

Engineer Todd G Nkiwane; Master of Science in Electrical Engineering, Programmable logic Controller and Mechano-electronics, Wiring Regulations, Portable Appliance Testing Engineer Gratitude Charis; M Eng. Manufacturing Systems and Operations Management, Bachelor of Engineering Honours Degree in Chemical engineering

Mrs Kezinet Ndhlovu; Master of Business Administration Degree in Banking, Bachelor of Commerce Honours

Degree in banking, Diploma in Credit Management & Advanced Bank Credit Management, Business Systems & Training, Relationship Management, Selling Skills

Mr Chrispen Mugova; Bachelor of Commerce in Accounting

Pastor (Dr) Jefrety Sibanda; Doctor of Ministry in Leadership, Master of Arts in Theology, Bachelor of Education in Educational Administration and Policy Studies, Certificate in Education

Engineer Josephine Makuvara; BSc in Electrical Engineering

Dr Mbongeni Ndlovu; MB ChB, Mmed,

Mr Alois Muzvuwe; Master of Science in Finance and Actuaries, Bachelor of Commerce Honours Degree in Actuarial Science

Ms Bridget Chipungu; Master of Science in Telecommunication Engineering, Bachelor of science in Electrical Engineering, Certificate in Project Management

Engineer E Gwaze; Master of Business Administration, Bachelor of Science Honours Degree in Metallurgy

Ms Fiona Gandiwa Magaya; Certificate in Public Policy, Governance and Leadership, Post Graduate Diploma in law Conciliation and Arbitration, Certificate in Globalisation and Labour Rights, Certificate – Educators development Training, Certificate in Paralegal Training, Diploma in Business Studies accounting

Mr Godwin Zarura Manyonganise; Certificate in Management of Development Programme, Certificate in Post Harvesting and Processing of Certificate in Monitoring and Evaluation, Horticultural Crops, LCCI Diploma In Marketing, Diploma in Project Planning and Management; National Diploma in Agriculture

Mrs Mildred Mkandla; MSc Health Education, (University of London), BA Hons Applied Social Studies; Certificate in Health Visiting, Certificate in Neonatal Intensive Care, State Certified Neonatal Intensive Care, State certified Midwife's Certificate, State Registered Nurse, Primary Teacher's Certificate

c) Appointed by the Senate:

Engineer Dr A Chinyama
Dr D J Hlatywayo
Ms V Madiro
Mr H Tshuma
Dr P Nkala
Professor P J Mundy
Mr T Nyamande
Mrs A Chivore
Professor L Nkiwane
Professor E O Enwerem
Dr N Phuthi
Dr C Mabhena
Ambassador M Ngulani
Mr M Mukawa

- d) President of the Student' Union (Ex officio):
 Mr D Mwashita
- e) A distinguished Academic Appointed by the Council on the recommendation of Senate: Professor P J Mundy

- f) A woman appointed by the Minister to represent women's interests: (Vacant)
- g) Elected by the Non-Senate Members of the Academic Staff and approved by the Vice-Chancellor: Mr Alois Muzyuwe
- h) Elected by the Administrative Staff and approved by the Vice-Chancellor: Mr Lawrence Ncube
- *Appointed by the Workers Committee and approved by the Vice-Chancellor: Mr R Dube*
- j) Appointed by the Minister from the Zimbabwe Congress of Trade Union (ZCTU): (Vacant)
- k) Appointed by the Minister from a list of Associations or Organisations representing Lecturers/Teachers Associations:
 (Vacant)
- l) Appointed by the Minister from a list of the Zimbabwe National Chamber of Commerce (ZNCC):

 (Vacant)
- m) Appointed by the Minister from a list of the Confederation of Zimbabwe Industries (CZI):

 (Vacant)
- n) Appointed by the Minister from a list of the Council of Zimbabwe Institution of Engineers:
 (Vacant)
- o) Appointed by the Minister from a list of names of the Chamber of Mines of Zimbabwe: (Vacant)
- p) Appointed by the Minister from a list of names of Farmers' Union: (Vacant)
- q) Appointed by the Minister from a list of Church Organisations: (Vacant)
- r) Appointed by the Minister from a list of Organisations representing the Youth Secretary:
 The Registrar

ADMINISTRATIVE STAFF

Vice-Chancellor

Professor Mqhele E. Dlodlo; PhD (Delft University of Technology, The Netherlands); MSEE (Kansas State University, USA); BSEE, BS- Mathematics and Engineering Management (Geneva College, USA)

Communication and Marketing

Director –*Mr Felix F. Moyo*; MSc Marketing, BA Comm & Ind.Psy **Marketing**-*Lindiwe Nyoni*; MSc Journalism & Media Studies, BSc Journalism & Media Studies

Pro-Vice-Chancellor (Acting): Academic, Research and Consultancy

Dr Nduduzo Phuthi; PhD (Ass & Quality Ass in HE & Training); Pretoria, (2012),MSc Ed (Science Education); Curtin, Australia, (1998), PGradDip (Educational Technology) UZ; 1992,BEd (Biol); University of Zimbabwe (1988)

Research and Innovation Office

Director- *Y S Naik;* BSc (Univ of Bombay), MSc (Univ of Bombay), PhD (Univ Zim) **Chief Research Officer-** *P Makoni*; BSc (Hons) (UZ), MSc (UZ), PhD (Univ of Copenhagen) **Research Administrator-** *Cinderella Dube*; Cert in Education, (UZ), Cert in Env. Edu., (Rhodes), B.A., (UNISA), M.ED. (EAPPS), (ZOU), MBA, (NUST)

Centre for Continuing Education

Professor S Mpofu; B Admin, MSc RUP (Rhodesia), PhD Michigan State

Senior Assistant Registrar/AVU Learning Centre Manager

Mr V A Mkandla; BA GRAD C.E MPhil, UZ. Diploma Personnel Mgt and Industrial Relation CTC, UK

Administrative Assistant

Buhlebenkosi Bumhira; B.Com (UNISA)

Pro-Vice-Chancellor: Innovation and Business Development

Dr Gatsha Mazithulela; PhD (Genetic Engineering); University of East Anglia, John Innes Centre Norwich, UK (1998); MBA, Middlesex University Business School, London, UK (2002); B.ApSc Hons Biology and Biochemistry NUST (1994)

Innovation and Business Development Operations Manager (Acting)

Arnold Moyo; Bachelor of Textile Technology, Master of Science in Marketing

Alumni Affairs Officer

Concillia Mpofu; Bsc Hons. Journalism and Media Studies – NUST, PGDIP - Management in Marketing – University of Cape Town

Innovation, Product and Service Development Acting Director

Mr A Ncube; BA, Media Studies, MSc. Information Science, MIP. (Masters in Intellectual Property)

Physical Planning Works and Estate

Acting Director

Mr. M. Maphosa; BQS (Hons) in Quantity Surveying, NUST

Administrative Officer

Mr R. Moyo; BA (Gen), PGDE, UZ; MBA, MSc Mktng, NUST

Information and Communications Technology Services

Director

CC L Sibanda; BSc (Hons) Comp Science NUST Z'bwe; MSc Elect Eng (Telecoms), UCT

Managers

Mr Z E Ndlovu; BSC Computer Science, MSc Information Systems *Ms Novuyo N T Bobo*; BBA Computer and Management Information Systems, MSc Computer Science, Diploma in ICT and Pedagogical Development.

H Tsokodayi, BSc (Hons) Comp. Science NUST Z'bwe

Engineers

Mr Alan Ntini; BSc (Hons) Computer Science, MBA Ndlovu Thulani; BEng (Hons) Electronic Engineering (NUST) Reading MSc in Communication Engineering (UZ)

Webmaster

Ngqabutho B Nhlabano; BSc Computer Science, MSc Information Systems

Chief Technician

Tiese D Maseko; BSc (Hons) Computer Science (NUST)

Registrar

Mr Fidelis Mhlanga; TI Science, Z'bwe; Bed, Msc, UZ; MBA NUST, Z'bwe

Deputy Registrar, Academic

Mr E Phiri; BSc (Hons) Pol Admin, UZ, MBA NUST Z'bwe

Senior Assistant Registrar: Admissions and Student Records

Mr L J Hadebe; Med (ZOU), BEd (UZ), Cert in Edn (Gwanda Zintec)

Administrative Assistant: Admissions and Student Records

Mrs Shorayi Manjeru; MBA (Executive) (NUST), B Mgt Human Resources, ND Secretarial Studies

Administrative Assistant: Admissions and Student Records

Mrs D Dengu; BEd, Bristol, Dip Ed, MED, UZ, IPMZ fellow

Senior Assistant Registrar: Examinations

Mrs J Nyathi; JEB TIP Diploma in Typing, Pitman UK, BA English and Communication ZOU, MBA NUST Z'bwe

Administrative Assistant - Examinations

Ms Ndlelenhle Mpala; MSc RAM, BSc(Hons) RAM NUST

Deputy Registrar, Administration

Ms V R Dube; Cert Tng & Dev. (IPMZ), Dip. Pers. Mgt (IPMZ) BSc Home Economics Messiah USA, MBA NUST

Senior Assistant Registrar: Human Resources – Academic Section

Mr T Moyo; BA, Grad CE (UZ); MBA NUST; Dip Training Mgt; Higher Dip HR

Senior Assistant Registrar: Human Resources- Non -Academic Section

(Vacant)

Senior Assistant Registrar: Human Resources – Training and Staff Development Section

Mrs Nonsikelelo Ndlovu; BBA, Solusi; MBA, NUST

Administrative Assistant: Human Resources

Mrs Faith Ndlovu; B Com (Hons) HR, HND in Secretarial

Central Services: Acting Assistant Registrar

Mrs Monicah Matema; B. Management Human Resources (ZOU), MSc Marketing (NUST)

Security

Chief Security Officer

Mr C C Banda; MSc Aeronautical Eng, Hellenic Academy-Greece, City and Guilds, QA Psc. SqnLdr (rtd)

Administrative Assistant

Mr L Mazhanyuro; EMBA (NUST), B Ad Edu (UZ), Dip in Ad Edu (UZ), Dip in Dev and Disaster Management (NUST), Soccer Referees' Certificate (ZiFA), InterAction Leadership

Programme (British Council), Police Driving School Instructor's Certificate (Z R Police Driving School), Certificate of Achievement, Manager's Toolkit (Aura Factor), Certificate of Attendance (Human Rights and the Law) (Legal R/Foundation), Human Rights and the Law (ZiPAM), Basic Counselling and Communication (ZOU), Certificate in Internal Controls and Fraud detection (NUST), Certificate of Attendance, Communication (Rowa), Certificate in Basic Counselling Skills (ZOU), Certificate in Security, Human Rights and the Law (NUST CCE)

Security Officer

Abednico Dube; MSc Disaster Management, BSc (Hons) degree in Police and Security Studies (BUSE), Diploma in General Management (CACC), Certificate in Training Methods (UZ), Certificate in Basic Police Training, Certificate in Investigations

Student Affairs Division

Dean of Students

Sibongile Kamusoko; Doctorate in Educational Leadership (Ed.D) (Higher Education Administration)

Assistant Dean of Students

Stylish Magida; CE, (UCE); STC (Hillside); Dip Adult Edn, Bed, Med, MAdult Edn, UZ

Student Health Services- Medical Doctor

(Vacant)

Chief Nursing Sister

(Vacant)

Student Employment and Career Guidance

C. Ncube; Dip in Edn (Hillside Teachers College), Dip in French (University of Tampon, Reunion), BSc Hons Sociology (UZ), MA UNISA

Director Residences, Campus Life and Catering

Mr P Z Khumalo; Bachelor of Education (Bed) (Chem) (UZ)University Certificate in Education (CEd-Sc) UR, Master in Business Administration (MBA) (UZ)

Chaplain

Mr T Dube; BA Hons (UZ), Grad CE (UZ), Dip in Church Ministry (Calgary University, CA), MIIM (SIT, USA)

Senior Administrative Assistant

(Vacant)

Sports Administrator

Judith Siziba; BSc (Hons) in Sports Science and Coaching (NUST), Master of Sports Science and Coaching (University of KwaZulu Natal)

Administrative Assistant (Sports)-

Sibonile Madhodha; Dip, Edu, UZ. BSc. Sports, ZOU

Student Counselor

Sibongile Munzara; Bsc (Hons) Counseling, MBA Racheal Ndebele; MSc in Counseling, BSc (Hons) Psychology; Dip in Edn

Librarian

Ms Katherine Matsika; BA (Hons) Rhodesia, Dip.AdEd.Z'bwe, HDip. LibSci (UNISA)

Bursar

Dr F S Nkomo; Ex DBA (PSB), B.B.S Z'bwe, MBA Finance, Stirling, C.I.S

Deputy Bursar Accountancy & Systems Management

Ms T. Ncube; B Sc Economics(UR), ACMA (CIMA)

Deputy BursarFinance and Administration

R Noko; BCom(Hons) Accounting, MCom Accounting, CPA (Zim), RPAcc (Zim)

Principal Accountant

Mr Lawrence Ncube; Msc - Banking and Financial Services (NUST-Zimbabwe), Bcom (Honors) in Banking (NUST-Zimbabwe), Cert.in basics of Business University of South Africa (UNISA), Cert.in Retirement Funds Trusteeship Insurance Intitute of Zimbabwe (IIZ)

Mr C Ncube; B Com Accounting (ZOU), MBA (Banking and Finance) (UZ)

Nomathemba Moyo; MBA Banking and Finance (NUST), BCom Hon in Accounting (MSU), HND Higher National Diploma in Accountancy (Byo Poly)

Procurement Manager(Acting)

Mrs T Ngwenya; BCom Hons Purchasing and Supply, HND Purchasing and Supply Mgt, PGDM in Mgt

Assistant Accountants

Ms T Karikoga; HND (Bulawayo Polytechnic), B.Com Accounting (NUST) Master of Science in Finance and Investments (Nust)

Phendlinhlalo Nkomo; BBA -Accounting degree

HISTORICAL PERSPECTIVE

The idea of a Second University in Zimbabwe was first mooted in June 1982 in the Report of the University of Zimbabwe, Vice Chancellor's committee of Inquiry into the high failure rates which that University experienced in the years 1980 and 1981. The report observed that:

"It is estimated that the maximum number of students which the present campus can carry is about 6 000. From existing projections there will be about 5 000 students by 1985 and 6 000 in 1986 or 1987. This fact together with the already existing problem of applicants with minimum requirements failing to gain admission makes it imperative that plans should begin to be made for the establishment of a Second University Campus in Zimbabwe. The committee considered that the best and most cost effective way to do this is to set up another campus of the University of Zimbabwe which will grow towards specialisation in certain fields of study such as Education/and orScience and Technology. The campus could eventually grow into a College of the University of Zimbabwe and perhaps, into a Second University in the long run".

Unfortunately, this recommendation was not taken seriously at the time. Government seemed to have considered the matter to be premature while the University of Zimbabwe thought it was largely a matter for the Government to decide upon.

It was not until late 1987, that the Vice Chancellor of the University of Zimbabwe, Professor W. J. Kamba, discussed with his colleagues the necessity of approaching Government about setting up a feasibility study of a second university/campus. As a result of this discussion a recommendation was made to the Minister of Education, Dr Dzingai Mutumbuka, that a Commission be set up to look into the question of a second institution of higher education in Zimbabwe.

On the 15th of April 1988, His Excellency the President, Cde R. G. Mugabe appointed a Commission under Statutory Instrument 59A. Seven Commissioners were sworn in on April 25, 1988, by the Acting President, Cde S. V. Muzenda. The three remaining commissioners were sworn in by His Excellency the President himself on June 15, 1988.

The membership of the commission was as follows:

Mr P. R. Williams: (Chairman) Dr S. Mahlahla Professor R. J. Amonoo Mr S. R. S. Dangarembwa Mr M. F. Haddon
Professor Z. Krajina
Rev. G. Malaba
Mr S. C. Mumbengegwi
Professor E. A. Ngara
Dr G. G. Sikipa
Mr S. Q. Mphisa served as Commission Secretary

The commission was given comprehensive terms of reference, among which were:

- To investigate the need for and assess the feasibility of setting up a Second University/Campus bearing in mind the manpower requirements and development objectives of Zimbabwe.
- To make recommendations on whether the Second University/Campus should have a Science and Technology bias and or other alternative bias, taking into account the need for rapid technological and industrial development in Zimbabwe.

The Commission presented its report to His Excellency the President on the 1st of February 1989. Its major conclusion was that, on the basis of manpower requirements for economic growth as well as the increasing number of well qualified `A' level school leavers, University expansion *"is not only justified: it is also a necessity"*.

After considering the argument put to it for different possibilities in which University education could be expanded, such as: the creation of a new autonomous University; the establishment of a second major campus of the University of Zimbabwe; or starting several University Colleges or satellites in different parts of the country, the Commission opted for a new autonomous University.

It recommended that a "Second University should be established with a Science and Technology bias", and that the University "be located in Bulawayo and should admit its first students in 1993".

After considering the report of the Commission, the Government of Zimbabwe decided to accept all the recommendations contained therein, except the one relating to the timing of the first intake of students. Instead of 1993, the government decided that the University should open its "doors" to the first intake of students in May 1991.

However, there was a delay in taking steps for the actual implementation of the commission's report. It was not until late 1989 that a committee was formed by the Ministry of Higher Education to make a first draft of the new University's enabling legislation. The final draft Bill was presented to the Zimbabwe Parliament by the then Minister of Higher Education, Cde David Karimanzira on the 24th of October, 1990.

It was piloted through Parliament together with a Bill amending the 1982 University of Zimbabwe Act. The effect was to make the Acts of the two universities virtually identical. Some of the provisions of the two Bills were considered controversial by the University community. Students and staff demonstrations were held at the University of Zimbabwe against these provisions which were

considered as significantly reducing the University's academic freedom and autonomy by shifting the power base towards the Government.

In spite of the demonstrations, protests and protracted discussions which followed the publication of the Bills, they sailed through Parliament and have now become laws of Zimbabwe. The name "National University of Science and Technology (NUST)" was adopted for the New University in Bulawayo.

Meanwhile, even before the new University Bill was presented to Parliament the Minister of Higher Education had constituted the Foundation Committee of the then proposed National University of Science and Technology.

The membership of the Foundation Committee was as follows:-

Professor P. M. Makhurane (Chairman)

Professor C. J. Chetsanga (Vice-Chairman)

Dr F. Takawira

Professor G. L. Chavunduka

Dr E. J. Chanakira

Dr M. N. Mambo

Dr S. C. Mumbengegwi

Mr M. M. Ndubiwa

Mr A. Maboyi-Ncube

Mr W. Bako

Dr J. B. Dube

Mr F. Munezvenyu

Mr V. R. M. Nyathi

Dr S. Muchena

Mr N. Kudenga

Mr P. M. Kodzwa

Mrs S. D. Nyoni

Mr A. Read

Mr A. Movo

Mr R. Chitrin

Mr P. S. Mahlangu

Eng. M. Grant

Mr N. Mabodoko

Mr E. W. Sansole

Mr Justice G. Chinengundu

The Foundation Committee was officially launched by the Minister of Higher Education in the Large City Hall in Bulawayo on the 17th of August 1990. It became a legal entity on the 21st of December 1990 when the National University of Science and Technology Act was published in the Government Gazette.

By the time it was dissolved the Foundation Committee had met nine times. Most of its work was carried out by the Chairman who operated on a semi-full time basis having been kindly and informally seconded to NUST by the University of Zimbabwe.

In order to expedite its work, the Foundation Committee established several Sub-Committees including the following:-

the Executive Sub-Committee

the Academic Sub-Committee

the Planning/Building Sub-Committee

the Senior Non-Academic Staff Sub-Committee

the Staff Development Sub-Committee

Like the Foundation Committee, these Sub-Committees operated until the proper Council of the University had been constituted. The terms of reference of the Foundation Committee were set out in Section 30 of the Act (See Part VI).

In spite of numerous rather frustrating delays resulting from the launching of the Foundation Committee before the enabling Act had been promulgated, the long gap between the presentation of the Bill to Parliament in October 1990 and its Publication in December 1990, the lack of financial and budgetary provisions for the work of the Committee and the protracted negotiations with Treasury emanating from this, the Foundation Committee managed to meet the deadline set by the Minister of Higher Education at the launching ceremony. The Committee managed to arrange for the first intake of students into NUST to take place in April 1991.

The Committee further decided that for the 1991 academic year the University should offer first year teaching in the Faculties of Commerce, Industrial Technology and Applied Sciences. These were chosen mainly by virtue of the fact that they offered courses which were closest to those which were being offered by the University of Zimbabwe through its Bachelor of Technology (B. Tech.) programme at the Bulawayo Polytechnic. This made it possible for NUST to make use of the facilities at the Bulawayo Polytechnic for the benefit of its first year students. B. Tech. staff in Bulawayo were appointed by NUST and the transitional arrangements were satisfactory.

Meanwhile, the University of Zimbabwe decided to phase away the B. Tech. programme in the wake of the establishment of NUST. Thus there was no intake into the B. Tech. Programme in 1991.

However, the 2nd, 3rd and 4th year students on the B. Tech programme continued to be taught at both the Harare and Bulawayo Polytechnics. The academic staff were fully consulted on this and

they were aware of the fact that for the next few years they would serve the interests of both Universities. A special honorarium was to be paid to them in recognition of this arrangement.

In appreciation, the Chairman of the Foundation Committee, Professor P.M. Makhurane, wrote,

"As former Chairman of the Foundation Committee I wish to express my great appreciation to all members of the Committee for their co-operation and assistance at all times. Although some of the meetings were called at very short notice we managed to achieve good attendance so that decisions could be taken. I also wish to extend my gratitude to all the people who were so ready to render their services either as members of the Sub-Committees or in other capacities. The then Permanent Secretary of Higher Education, Dr E. J. Chanakira, deserves special mention for his willingness to bend some of the rules in order to place facilities, equipment and personnel at the Foundation Committee's and my disposal. The principal of the Bulawayo Polytechnic, Mr A. Maboyi-Ncube, apart from being a member of the Foundation Committee also assisted the Committee tremendously in willingly allowing us to use his Board Room for all our meetings and for providing tea and some lavish meals. The then Acting Principal of the United College of Education, the late Mr G. T. Msengezi and the Principal Miss S. Chakanyuka were of invaluable service to me in that they provided the two offices and their Guest House to the National University of Science and Technology. After providing the offices and the Guest House, they continued to be very valued "neighbours" and they were untiring in offering help in all sorts of ways including some meals, teas and the collection of very heavy mail. I must express my appreciation for the services of Miss Ketiwe Dhliwayo who will go down in history as the first Secretary of the National University of Science and Technology. She was kindly seconded to me by the Secretary for Higher Education to assist with all the secretarial work. She discharged her duties with distinction and much patience. Later on she was joined briefly by Miss Thembinkosi Dube as a Temporary Clerical Assistant and more permanently by Miss Eureka Dube in the same capacity. I wish to express my personal hope that the National University of Science and Technology will grow to become a flourishing and reputable institution not only in Zimbabwe and in Southern Africa but also among the international fraternity of Universities. I hope and pray that it will achieve its Mission of, among other things, 'encouraging in all its members and in society those attitudes of fair mindedness, understanding, tolerance and respect for people and views which are essential for the attainment and maintenance of justice, peace and harmony at all times".

On the 8th of April 1991, NUST opened for the very first time with 270 students in the three Faculties mentioned above. The number of academic staff was 28.

On the 19th of May 1991, Professor P. M. Makhurane was appointed as the inaugural Vice-Chancellor of the University and soon after that Mr Lameck Sithole and Mr Michael Kariwo were

appointed as the first Bursar and first Registrar respectively. Other staff followed and by the 1st of October 1991, the total number of people involved on a full-time basis with what was going on at NUST was as follows:-

270 students

28 academic staff

41 administrators

11 support staff

On the 28th of October 1991, the University organised a large public ceremony to install its first Chancellor, His Excellency Cde R. G. Mugabe, President of Zimbabwe and its first Vice-Chancellor, Professor Phinias Makhurane, as well as to lay the institution's Foundation stone. The ceremony was held at the University site where a large and colourful camp had been constructed for the purpose. A separate report on the installation and Foundation laying ceremony wasprepared and all the speeches delivered on that day are included in the report.

For the 1992/93 academic year the University admitted an additional 300 students into the first year in the three existing faculties viz. Commerce, Applied Science and Industrial Technology. Student numbers grew to over 1200 by 1995. During the same period Academic Staff in post grew to 85.

On Saturday 27 May 1995 the University held its first Graduation Ceremony at which the Doctor of Technology honorary degree was conferred upon the President and Chancellor, Cde R.G. Mugabe. Some 163 graduates from the Faculties of Commerce and Applied Sciences were capped. This was indeed a historical event.

On the 20th of July, 1996 the University held its second graduation ceremony, where 281 graduands were capped. The first cohort of graduates from the Faculty of Industrial Technology and the Department of Computer Science were conferred with degrees on that occasion.

The generous donation by the Bulawayo City Council of a site 160 hectares in size and provision of a capital budget by Government enabled the first construction phase to begin.

The Building programme was initially delayed by the shortage of water in Bulawayo. Work started in March 1992 when the first contract valued at Z\$4,6m was awarded to A. P. Glendenning for the bulk earth works and civil engineering construction for roads. Briefs for the building were completed in May 1992. In July 1993 the construction programme started with the award of our first contract to Belmont Construction for the Administration Block. A year later, in September 1994 the second contractor, International Construction Zimbabwe started work on the Faculty of Commerce block. In November and December 1994 work also started on the departments of Chemistry and Chemical Engineering respectively. Construction of the first student hostel began a year later, in September, 1995. However, progress on the construction of this building has been hampered by cash flow

problems. Work on the Library began in April 1998, followed by the Ceremonial Hall and the Student Services Centre in November of the same year.					
The University moved to campus on the 1st of August, 1998, to occupy the Faculty of Commerc and Administration Buildings. The first lectures on campus took place in the Faculty of Commerc Building on the 17th of August, 1998.					

THE NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY ACT, 1990 ARRANGEMENT OF SECTIONS

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY ACT CHAPTER 25.13 (FORMELY ACT, 1990)

ARRANGEMENT OF SECTIONS

Section

- 1. Short title and the date of commencement.
- 2. Interpretation.
- 3. Establishment of University.
- 4. Objects and Powers of University
- 5. Membership of University
- 6. Prohibition against discrimination in membership of University.
- 7. Chancellor.
- 8. Vice-Chancellor.
- 9. Pro-Vice-Chancellors.
- 10. Council.
- 11. Functions of Council.
- 12. Chairman and Vice-Chairman of Council.
- 13. Executive Committee of the Council.
- 14. Senate.
- 15. Functions of Senate.
- 16. Academic Board.
- 17. Registrar.
- 18. Bursar.
- 19. Librarian.
- 20. Convocation.
- 21. Terms and Conditions of Service.
- 22. Appointment and Grading of Staff.
- 23. Promotion of Staff.
- 24. Staff Disciplinary Committee.
- 25. Student Disciplinary Committee
- 26. Finance Committee.
- 27. Statutes.
- 28. Regulations.
- 29. Validity of Decisions of Council, Senate, Convocation and Boards and Committees.

SCHEDULE: Statutes of the University

To establish the National University of Science and Technology and also to provide for matters connected therewith or incidental thereto.

ENACTED by the President and the Parliament of Zimbabwe.

1.

2.

Short title and Da	te
of Commencemen	nt

- (1) This Act may be cited as National University of Science and Technology Act Chapter 25..13 (formerly Act 1990).
- (2) Sections two to twenty-nine shall come into operation on a date to be fixed by the President by statutory instrument.
- (3) This section and section thirty shall come into effect on the date of publication of this Act.

Interpretation

- (a) In this Act:-
 - "Academic Staff" means all persons employed, whether full-time or part-time, by the University as –
 - (a) professors, lecturers of any class or persons engaged in research; or
 - (b) holders of posts declared by the Senate to be academic posts:
 - "Administrative Staff" means all persons employed by the University who are categorized in terms of the Statutes as members of the administrative staff;
 - "Bursar" means the person holding office as Bursar of the University in terms of Section Eighteen;
 - "Chairman of Department" means a person appointed in terms of the Statutes to be chairman of a Teaching Department or head of an Institute or Centre controlled by the University;
 - "Chairman of the Council" means the person elected to be chairman of the Council in terms of Section Twelve;
 - "Chancellor" means the President in his capacity as Chancellor of the University in terms of Section Seven;
 - "Council" means the University Council established in terms of Section Ten;
 - "Faculty" means a Faculty of the University established in terms of the Statutes;
 - "Institute" means an Institute established in terms of the Statutes;

- "Librarian" means the person holding the office of Librarian of the University in terms of Section Nineteen;
- "Minister" means the Minister of Higher and Tertiary Education,
 Science and Technology Development or any other Minister
 to whom the President; may from time to time assign the
 administration of this Act:
- "Non-academic staff" means all persons employed by the University who are not members of the academic staff;
- "Pro-Vice-Chancellor" means a person holding office as Pro-Vice-Chancellor in terms of Section Nine;
- "Professor" means a professor of the University;
- "Registrar" means the person holding office as Registrar of the University in terms of Section Seventeen;
- "Regulations" means regulations made by the Senate under Section Twenty-eight;
- "Senate" means the Senate established in terms of Section Fourteen;
- "Senior," in relation to the staff of the University, means the Registrar, the Bursar and such other members of staff as the Council may determine from time to time;
- "Statutes" means the Statutes of the University set out in the Schedule as amended from time to time or replaced in terms of Section Twenty-seven;
- "Students' Union" means any association of students recognized by the Council as the Students Union;
- "University" means the National University of Science and Technology constituted in terms of this Act;
- "Vice-Chancellor" means the person holding the office of Vice-Chancellor in terms of Section Eight;
- "Workers" means all persons employed by the University who are categorised in terms of the Statutes as workers.

Establishment of the University

3.

(1) There is hereby constituted a university to be known as the National University of Science and Technology.

(2) The University shall be a body corporate with perpetual succession and shall be capable of suing and being sued in its corporate name and subject to this Act, of performing all acts that bodies corporate may by law perform.

Objects and Powers of the University

4.

- (1) The objects of the University are the advancement of knowledge with a special bias towards the diffusion and extension of science and technology through teaching, research and, so far as is consistent with these objects, the nurturing of the intellectual, aesthetic, social and moral growth of the students of the University.
- (2) For the achievement of its objects, the University shall, subject to this Act, have the following powers:-
 - (a) to provide for research and courses of instruction, whether on a full-time or part-time basis, by correspondence or extramurally, and to take such other steps as may appear necessary and desirable for the advancement and dissemination of knowledge;
 - (b) to hold examinations and to confer degrees, including honorary degrees, diplomas, certificates and other awards, upon persons who have followed courses of study approved by the Senate and additionally, or alternatively, have satisfied such other requirements as may be determined by the Senate:
 - (c) to provide courses not leading to degrees, diplomas or certificates, including training for persons wishing to enter the University;
 - (d) to provide opportunities for staff and students and such other persons as the University may approve to engage in productive activity in the fields of science and technology and any other fields in which the University may from time to time be engaged;
 - (e) to promote research with emphasis on scientific, technological, industrial and developmental projects, with particular reference to the developmental needs of Zimbabwe;
 - (f) to institute professorships, lectureships, research fellowships, staff development fellowships and other posts and offices and to make appointments thereto;

- (g) to institute and award fellowships, bursaries, prize medals, exhibitions and other distinctions, awards and forms of assistance consistent with its objects;
- (h) to erect, equip and maintain laboratories, offices, halls of residence, lecture halls, libraries, museums and other buildings and structures required for the promotion of its objects;
- to regulate and provide for the residence of its students and members of staff;
- (j) to provide and maintain sports fields and other recreational facilities for its students and members of staff;
- (k) to demand and receive such fees as may from time to time be prescribed by or in terms of the Statutes;
- (I) to enter into such contracts and to establish such trusts and to appoint such staff as the University may require;
- (m) to establish pension, superannuation or provident or other credit fund schemes for the benefit of its staff or any section thereof and to enter into arrangements with the Government or any organization or person for the operation of such schemes:
- (n) to acquire any property, movable or immovable, and to take, accept and hold any property which may become vested in it by way of purchase, exchange, grant, donation, lease, testamentary disposition or otherwise;
- (o) to sell, mortgage, let on hire, exchange, donate or otherwise dispose of any property held by it;
- (p) to invest in land or securities such funds as may be vested in it for the purpose of endowment, whether for general or specific purposes, or such other funds as may not be immediately required for current expenditure;
- (q) to borrow money for any purpose which the Council thinks fit;
- (r) to lend money in the form of short-term loans to its staff on terms and conditions approved by the Council;
- (s) to do all such acts and things, whether or not incidental to the powers specified in this subsection and whether inside Or outside Zimbabwe, as may be requisite in order to further its objects or any of them.

Membership of the University	5.	The U (a) (b) (c) (d) (e) (f) (g) (h)	niversity shall consist of:- a Chancellor, and a Vice-Chancellor, and one or more Pro-Vice-Chancellors, and members of the Council, and members of the Senate, and members of staff, and students, and the Convocation
Prohibition against discrimination in membership of University	6.	(1)	No test of religious or political belief, race, ethnic origin, nationality or sex shall be imposed upon or required of any person in order to entitle him to be admitted as a member of staff or student of the University or to hold any office therein or privilege thereof.
		(2)	Nothing in subsection (1) shall be constructed as preventing the University from giving preference to citizens or residents of Zimbabwe when making appointments or promotions or when admitting students.
Chancellor	7.	(1) (2) (3)	 The President of Zimbabwe shall be Chancellor of the University. The Chancellor shall be the Head of the University. The Chancellor shall have the right:- (a) to preside over any assembly or meeting held by or under the authority of the University, and (b) upon the recommendation of the Council and the Senate, to confer degrees, diplomas, certificates and other awards and distinctions of the University and to withdraw or restore such awards.
Vice-Chancellor	8.	(1) (2) (3)	The Vice-Chancellor shall be appointed by the Chancellor after consultation with the Minister and Council and shall hold office for such period as is provided in his contract of employment. Subject to the general control of the Council, the Vice-Chancellor shall be the chief academic, administrative and disciplinary officer of the University, with general responsibility for maintaining and promoting the efficiency, effectiveness and good order of the University. Subject to sub-sections (4) and (5), the Vice-Chancellor may:-
			(a) suspend from duty any member of staff of the University;

- (b) subject to section six, prohibit the admission of a student or any person to the University;
- (c) prohibit, indefinitely or for such period as he may specify, any student or groups of students from attending any class or classes;
- (d) prohibit any student or group of students or person or group of persons from entering or remaining on such part or parts of the University campus as he may specify;
- (e) expel or suspend, indefinitely or for such a period as he may specify, any student or group of students;
- (f) dissolve or suspend, indefinitely or for such period as he may specify, the Students Union or any of its committees or organs, or prohibit or suspend, indefinitely or for such period as he may specify, any activity or function of the Students' Union or any of its committees or organs;
- (g) impose any other or give any other order in respect of:-
 - a member of staff, which is recommended by the Disciplinary Committee in terms of subsection (6) of section twenty-four;
 - (ii) a student, which is recommended by the Student Disciplinary Committee in terms of subsection (6) of section twenty-five.
- (4) The Vice-Chancellor shall not expel a student for misconduct unless the student has been found guilty of that misconduct by the Student Disciplinary Committee in terms of section *twenty-five*.
- (5) Any action taken by the Vice-Chancellor in terms of subsection (3) shall be subject to ratification by the Council.

Pro-Vice Chancellors

9.

- (1) One or more Pro-Vice Chancellors may be appointed by the Council with the Approval of the Minister in accordance with the Statutes.
 - (2) A Pro-Vice Chancellor shall assist the Vice-Chancellor in the performance of his functions and, in addition, shall have such functions as may be specified in the Statutes.
 - (3) The Vice-Chancellor may delegate to a Pro-Vice Chancellor, either absolutely or subject to conditions, any of his functions in

terms of this Act and may at any time amend or withdraw any such delegation;

Provided that the delegation of a function in terms of this subsection shall not prevent the Vice-Chancellor from himself exercising that function.

Council

- Subject to this Act any general directions as to policy given by the Minister, the government and executive authority of the University Shall be vested in the Council, which shall consist of:-
 - (a) the Chancellor, the Vice-Chancellor and the Pro-Vice Chancellors, who shall be ex-officio members; and
 - (b) sixteen persons appointed by the Minister; and
 - (c) nine persons who are members of the of the academic staff appointed by the Senate, other than the Vice-Chancellor and the Pro-Vice Chancellors; and
 - (d) the President of the Students' Union, who shall be an exofficio member; and
 - (e) one person who is a distinguished academic appointed by the Council on the recommendations of the Senate; and
 - (f) one woman appointed by the Minister to represent women's interests; and
 - (g) one person approved by the Vice-Chancellor and elected by the non-Senate members of the academic staff from among themselves; and
 - (h) one person approved by the Vice-Chancellor and elected by the administrative staff from among themselves; and
 - (i) one person approved by the Vice-Chancellor and elected by the workers' committee of the University; and
 - (j) one person appointed by the Minister from a list of names submitted by the Zimbabwe Congress of Trade Unions or, if that organization ceases to exist, by such other organization as the Minister, after consultation with the Minister to whom the administration of the Labour Relations Act, 1985 (No.16 of 1985) has been assigned, recognizes as its successor for the purposes of this paragraph; and
 - (k) one person appointed by the Minister from a list of names submitted by such organization representing teachers and additionally, or alternatively, lecturers, as the Minister recognizes for the purposes of this paragraph; and

- (I) one person appointed by the Minister from a list of names submitted by the Zimbabwe National Chamber of Commerce, if that organization ceases to exist, by such other organization as the Minister, after consultation with the Minister responsible for commerce, recognizes as its successor for the purposes of this paragraph; and
- (m) one person appointed by the Minister from a list of names submitted by the Confederation of Zimbabwe Industries or, if that organization ceases to exist, by such organization after consultation with the Minister responsible for industry, recognizes as its successor for the purposes of this paragraph; and
- (n) one person appointed by the Minister from a list of names submitted by the Council of the Zimbabwe Institution of Engineers (Private) Act (Chapter 226) or if that organization ceases to exist, by such other organization as the Minister, after consultation with the Minister responsible for public construction, recognizes as its successor for the purposes of this paragraph; and
- (o) one person appointed by the Minister from a list of names submitted by the Chamber of Mines of Zimbabwe Incorporation (Private) Act (Chapter 162) or, if that organization ceases to exist, by such other organization as the Minister, after consultation with the Minister responsible for mines, recognizes as its successor for the purposes of this paragraph; and
- (p) one person appointed by the Minister from a list of names submitted by such farmers unions as the Minister, after consultation with the Minister responsible for agriculture, recognizes for the purposes of this paragraph; and
- (q) one person appointed by the Minister from a list of names submitted by such organization representing churches or organizes religion as the Minister recognizes for the purposes of this paragraph; and
- (r) one person appointed by the Minister from a list of names submitted by such organization representing youths or the interests of youths as the Minister recognizes for the purposes of this paragraph.

- (2) If any person, organization or authority fails or declines:-
 - (a) to appoint or elect any person in terms of paragraph (c), (g),
 (h), or (i) of subsection (1) within a reasonable time after being called upon to do so, the Council, after consultation with the Minister, may appoint any person to fill the vacancy;
 - (b) to submit a list of names in terms of paragraph (j), (k), (l), (m), (n), (o), (p), (q) or (r) of subsection (1) within a reasonable time after being called upon to do so, the Minister may appoint any person to fill the vacancy.

Functions of Council 11. (1) Subject to this Act and the Statutes, the Council shall:-

- (a) appoint -
 - (i) with the approval of the Minister, the Pro-Vice-Chancellors and the Registrar;
 - (ii) the Bursar, the Librarian and academic staff; and
 - (iii) the administrative staff and other employees of the University.

Provided that the Council may delegate its duties under this paragraph to such committee as may be prescribed in the Statutes:

- (b) on the recommendation of the Senate, institute professorships, associate professorships and other academic offices, and abolish or hold in abeyance any such offices;
- (c) receive and, if the Council considers it proper to do so, give effect to report and recommendations from the Senate on those matters upon which the Senate is authorized or required by this Act or the Statutes to make reports and recommendations;
- (d) cause to be prepared annually a statement of expenditure of the University during the previous financial year, and of the assets and liabilities of the University on the last day of that previous financial year;
- (e) submit statements of income and expenditure referred to in paragraph (d) to audit by an auditor appointed by the Council, and shall publish such statements and the auditor's reports thereon;
- (f) cause to be prepared annually estimates of income and expenditure for the following financial year;

- (g) cause to be prepared and made available to the public a report on the activities of the University during each year.
- (2) Without limitation on any other powers conferred on Council by this Act, the Council shall have the following powers:-
 - (a) to receive recommendations from the Senate for conferment, withdrawal or restoration of degrees, including honorary degrees, and diplomas, certificates and other awards and distinctions of the University and, if approved, to submit them to the Chancellor;
 - (b) to administer the property of the University and to control its affairs and functions:
 - (c) to exercise on behalf of the University such of the powers set out in subsection (2) of section *four* as are not exercisable in terms of this Act by any other authority;
 - (d) to do such other acts as it considers to be necessary for the proper administration of the University and the achievement of its objects.

Chairman and Vice-Chairman of Council

12.

13.

- (1) The Council shall elect a chairman and a vice-chairman from amongst its members to hold office for such period and subject to such terms and conditions as are prescribed in the Statutes.
- (2) At all meetings of Council at which the Chancellor is not present the chairman of the Council or, in his absence, the vice-chairman shall preside.
- (3) If at any meeting of the Council the Chancellor and the chairman and vice-chairman of Council are all absent, the members of the Council who are present shall elect a person from amongst their number to preside at the meeting.

Executive Committee of Council

- (1) There shall be a principal committee of the Council to be known as the Executive Committee.
- (2) The Executive Committee shall consist of:-
 - (a) the chairman and vice-chairman of the Council and
 - (b) the Vice-Chancellor and every Pro-Vice-Chancellor; and
 - (c) ten members of the Council, of whom:-
 - (i) five shall be appointed by the Minister; and
 - (ii) three shall be appointed by the Senate; and
 - (iii) two shall be appointed by the Council.
- (3) The Chairman and Vice-Chairman of the Council shall be the chairman and vice-chairman of the Executive Committee.

- (4) the Executive Committee shall exercise such of the functions of the Council as the Council may delegate to it.
- (5) Any delegation of functions by the Council in terms of subsection(4) may be made absolutely or subject to conditions and may be amended or withdrawn at any time.
- (6) A delegation of any function by the Council in terms of subsection(4) shall not prevent the Council from itself exercising that function.

Senate

- (1) Subject to this Act, the Academic Authority of the University shall be vested in the Senate, which shall consist of:-
 - (a) the Vice-Chancellor, the Pro-Vice-Chancellors, the Deans, the Full Professors, the Chairmen of Departments and the Librarian, who shall be ex-officio members; and
 - (b) one member of the permanent academic staff from each Faculty elected annually by such staff; and
 - (c) six students elected annually by the Students' Union: Provided that such students shall not be entitled to attend deliberations of the Senate on matters which are considered by the chairman of the Senate to be confidential.
- (2) If the full-time academic staff or the Students' Union fails or declines to elect a person in terms of paragraph (g) or (h) of subsection (1), the council may appoint a suitably-qualified person to fill the vacancy.

Function of Senate

15. The Senate shall have the following functions:-

- (a) to promote the advancement of knowledge through research;
- (b) to formulate and carry out the academic policy of the University;
- (c) to regulate the programmes, subjects and courses of study and the examinations held by the University;
- (d) to regulate the admission of students to the University;
- (e) to recommend to the Chancellor, through the Council, the conferment of degrees, including honorary degrees, diplomas, certificates and other awards and distinctions of the University and the withdrawal and restoration of such awards;
- (f) to fix, subject to the consultation with any sponsors and subject to the approval of the Council, the times, modes and conditions of competitions for fellowships, scholarships and prizes;

14.

- (g) to appoint examiners for examinations conducted by the University;
- (h) to cause to be prepared estimates of expenditure required to carry out the academic work of the University and to submit them to the Council;
- (i) subject to the approval and direction of the Council, to formulate, modify and revise the organization of Faculties, Departments, Institutes, Centres and units of the University and to assign to them their various subjects or functions, and to advise the Council on the establishment of the Faculties, Departments, Institutes, Centres or units;
- (j) to recommend to the Council the institution, abolition or holding in abeyance of professorial chairs and other academic offices;
- (k) without derogation from the powers of the Council, to propose changes to the Statutes;
- (I) to make any regulations it is authorized to make by or in terms of this Act;
- (m) to appoint committees, which may include persons who are not members of the Senate, to exercise any of the functions of the Senate, other than the power to make regulations;
- (n) to report on any matter referred to it by Council;
- (o) to do such other acts as the Council may authorize or direct it to do.

Academic Board

- 16. (1) There shall be a principal committee of Senate to be known as the Academic Board.
 - (2) The Academic Board shall consist of:-
 - (a) the Vice-Chancellor, who shall be chairman; and
 - (b) every Pro-Vice-Chancellor; and
 - (c) *four* full professors of the University, elected annually by the Senate; and
 - (d) all the Deans of Faculties; and
 - (e) the Librarian; and
 - (f) two members of the Senate elected annually by the persons referred in paragraphs (a) and (b) of subsection (1) of Section Fourteen.
 - (3) The Academic Board shall exercise such of the functions of the Senate as the Senate, with the approval of the Council, may delegate to it.

		(4)	Any delegation of functions by the Senate in terms of sub-section (3) may be made absolutely or subject to conditions and may be amended or withdrawn at any time.
		(5)	A delegation of any function by the Senate in terms of sub-section (3) shall not prevent the Senate from its exercising that function.
Registrar	17.	(1)	There shall be a Registrar of the University who shall be appointed by the Council with the approval of the Minister in the manner provided in the Statutes.
		(2)	Subject to the directions of the Council, the Registrar shall be responsible for the general administration of the University, and shall perform such other functions as may be specified in the Statutes.
		(3)	The Registrar, or a member of his staff whom he may authorize to act for him, shall be secretary of the Council and the Senate.
Bursar	18.	(1)	There shall be a Bursar of the University who shall be appointed by the Council in the manner provided in the Statutes.
		(2)	Subject to the directions of the Council, the Bursar shall act as the accountant of the University and shall be responsible for the safe-guarding of its funds and, in accordance with the general directions of the Vice-Chancellor, for authorizing its investments and expenditure.
		(3)	The Bursar shall perform such additional functions as may be specified in the Statutes.
Librarian	19.	(1)	There shall be a Librarian of the University who shall be appointed by the Council in the manner provided by the Statutes.
		(2)	Subject to the directions of the Senate and the Vice-Chancellor, the Librarian shall be responsible for the administration and safeguarding of the libraries of the University.
Convocation	20.	(1)	The Convocation of the University shall consist of all persons whose names appear on the Convocation roll maintained by the Registrar.
		(2)	The Vice-Chancellor and all Pro-Vice-Chancellors, lecturers, Chairman of Departments, the registrar, the Librarian and the Bursar shall be <i>ex-officio</i> members of the Convocation.
		(3)	All graduates of the University who signify in writing addressed to the Registrar that they desire to be members of the Convocation and who inform the Registrar of their address shall be entitled to have their names entered on the Convocations roll.
		(4)	Subject to section seven, the Vice-chancellor or such other person as he may appoint shall be chairman of meetings of the

- Convocation.
- (5) Meetings of the Convocation shall be held at such time and places as the Council shall direct.
- (6) The convocation may deal with any matter relating to the University which may be referred to it by the Council.

Terms and Conditions 21. of Service of Staff

The terms and conditions of service for each category of staff employed by the University, including the Vice-Chancellor and every Pro-Vice-Chancellor, shall be determined by the Council in terms of this Act, and such terms and conditions shall provide that:-

- (a) any person so employed shall be entitled to resign from his employment on giving such notice in writing to the Registrar as may be fixed such terms and conditions;
- (b) any person so employed shall, subject to any exception that may be provided, retire from his office at such time or in such circumstances as may be fixed in such terms and conditions;
- (c) no summary termination of the employment of any person so employed shall take place except for good cause and, in the event of any such termination, the person concerned shall have a right of appeal to the Council, whose decisions shall be final.

Appointment and Grading of Staff

22.

- (1) Every appointment to the academic staff shall be made by an Academic Appointments Board consisting of :-
 - (a) the Vice-Chancellor or his nominee, who shall be chairman; and
 - (b) two members appointed by the Council from amongst those of its members who are not members of staff of the University; and
 - (c) the Chairman of the Department to which the appointment is made; and
 - (d) one other member approved by the Vice-Chancellor, of the Department to which the appointment is made; and
 - (e) the Dean of the Faculty to which the appointment is made; and
 - (f) the Chairman of a Department approved by the Council as being related to the Department referred to in paragraph (c).
- (2) Subject to this Act and the Statutes, the Council shall appoint Boards of Selection for the purpose of appointing members of staff other than the Vice-Chancellor, a Pro-Vice-Chancellor, the Registrar, the Bursar, the Librarian and academic staff.
- (3) The Council shall appoint a Grading Committee for the purpose of

Think in other terms

Promotion of Staff	23.	(1)	Every promotion of a person to a post or grade within the academic staff shall be effected by an Academic Staff Promotions Committee consisting of:- (a) the Vice-Chancellor or his nominee, who shall be Chairman; and (b) every Pro-Vice-Chancellor; and
			(c) four members of the Council who are not members of staff of the University, appointed by the Council; and(d) all Deans of Faculties; and
			(e) at least three full professors of the University appointed by the Senate once every three years.
		(2)	Every promotion of a person to a post or grade within the non-academic staff shall be effected by a Non-Academic Staff Promotions Committee appointed by the Council and consisting of:-
			(a) a Pro-Vice-Chancellor, who shall be chairman; and(b) the Registrar; and(c) the Bursar; and(d) the Librarian; and
			(e) two members of the Council who are not members of staff of the University; and
			(f) one representative of each category of the non-academic staff prescribed in the Statutes; and
Staff Disciplinary Committee	24.	(1)	 (g) one representative of each Faculty. There shall be a Staff Disciplinary Committee which shall consist of the following members appointed by the Vice-Chancellor:- (a) a Pro-Vice-Chancellor, who shall be chairman; and (b) a senior member of the academic or administrative staff; and
			(c) a member of the academic or administrative staff of similar status to the person charged.
		(2)	Two members of the Staff Disciplinary Committee shall form a quorum.
		(3)	All matters to be decided at any meeting of the Staff Disciplinary Committee shall be decided by a simple majority and, in the event of an equality of votes, the chairman or person presiding shall have a casting vote in addition to his deliberative vote.
		(4)	The functions of the Staff Disciplinary Committee shall be to

determining all matters relating to the grades and points of entry

upon salary scales by members of staff of the University.

- investigate any breach of a Statute, regulation, ordinance or other misconduct on the part of any member of the academic or administrative and general staff and, subject to subsection (6), to recommend to the vice-Chancellor the punishment to be imposed on or order to be made in respect of the member if it finds him guilty of such misconduct.
- (5) A person charged with misconduct referred to in subsection (4) shall have a right of audience before the Staff Disciplinary Committee.
- (6) Where the Staff Disciplinary Committee has found a person guilty of misconduct referred to in subsection (4), the Committee shall recommend to the Vice-chancellor any one or more of the following:-
 - (a) that the person's employment be terminated;
 - (b) that the person pay a fine to the University not exceeding one thousand dollars:
 - (c) that the person be demoted;
 - (d) that the person be censured or reprimanded;
 - (e) such other penalty or order as may be provided for by or in terms of the Statutes.

Student Disciplinary Committee

25.

- (1) There shall be a Student Disciplinary Committee which shall consist of the following members appointed by the Vice-Chancellor:-
 - (a) a Pro-Vice-Chancellor, who shall be chairman; and
 - (b) the Senior Proctor, who shall be vice-chairman; and
 - (c) four members of the academic staff; and
 - (d) one student nominated by the Student's Union.
- (2) Five members of the Student Disciplinary Committee shall form a quorum.
- (3) All matters to be decided at any meeting of the Student Disciplinary Committee shall be decided by a simple majority and, in the event of an equality of votes, the chairman or person presiding shall have a casting vote in addition to his deliberative vote.
- (4) The functions of the Student Disciplinary Committee shall be to investigate any breach of a Statute, regulation or ordinance or other misconduct on the part of any student and, subject to subsection (6), to recommend to the Vice-Chancellor the

- punishment to be imposed on the student if it finds him guilty of such misconduct. A student charged with misconduct referred to in subsection (4) shall have right of audience before the Student Disciplinary Committee. Where the Student Disciplinary Committee has found a student guilty of misconduct referred to in subsection (4), the Committee shall recommend to the Vice-Chancellor the imposition upon the student of any one or more of the following punishments:-(a) expulsion or suspension from the University; (b) the withdrawal of any academic or University privilege, benefit, right or facility other than to follow courses of
 - instruction and present himself for examination; (c) the imposition of a fine not exceeding five hundred dollars, which fine may be deducted from any allowances payable to the student and shall be paid to the University;
 - (d) a censure or reprimand;
 - (e) such other penalty as may be provided for by or in terms of Statutes.
- **Finance Committee** 26. (1) Subject to this Act, there shall be a Finance Committee of the Council consisting of:-
 - (a) the Chairman of council, who shall be Chairman; and
 - (b) the Vice-Chancellor; and
 - (c) every Pro-Vice-Chancellor; and
 - (d) three persons appointed by the Council from among its members who are not members of the University staff; and
 - (e) two persons appointed by the Senate from among its members; and
 - (f) the Bursar, who shall be the secretary of the Finance Committee: and
 - (g) the Registrar; and
 - (h) a representative of the Deans of Faculties appointed by the Council.
 - (2) The functions of the Finance Committee shall be as provided in the Statutes.
 - (1) Subject to this Act, the University shall be administered in accordance with the Statutes.
 - With the approval of the Minister the Council may, by statutory (2) instrument, amend, repeal or replace the Statutes set out in the

27.

(5)

(6)

Statutes

Schedule in order to prescribe all matters which, in terms of this Act, are required or permitted to be prescribed in Statutes or which, in the opinion of the Council are necessary or convenient to be so prescribed for carrying out or giving effect to the provisions of this Act or for the proper administration of the University.

- (3) Subject to this Act, Statutes made in terms of subsection (2) may provide for:-
 - (a) the appointment, conditions of service and functions of the Vice-Chancellor, the Pro-Vice-Chancellors, the Registrar, the Bursar, the Librarian and all members of staff and the categorization of such members of staff;
 - (b) the functions of the Pro-Vice-chancellors;
 - (c) the election or appointment of persons to the Council and the Senate to committees of the Council and the Senate;
 - (d) the terms of office of members of the Council and its committees, other than ex-officio members thereof;
 - (e) the terms of office and conditions of service of the chairman and vice-chairman of the Council;
 - (f) the convening of meetings of the Council and the Senate, the quorum at such meetings and the procedure to be adopted thereat;
 - (g) the terms of office of members of the Academic Appointments Board and the Academic Staff Promotions Committee, the convening of meetings of that Board and Committee, the quorum at such meetings and the procedure to be adopted thereat:
 - (h) the functions of the Academic Appointments Board, Boards of Selection, the Grading Committee, the Academic Staff Promotions Committee, the Non-academic Staff Promotions Committee and the Finance Committee;
 - the persons who may enter into contracts and sign documents on behalf of the University, and the procedure to be followed in relation to transactions entered into by or on behalf of the University;
 - (j) the establishment and organization of Faculties, Departments, Centres and Institutes;
 - (k) the functions of Deans of Faculties, Chairmen of Departments and heads of Centres and Institutes;

- (I) the holding of congregations of the University for the purpose of conferring degrees, diplomas, certificates and other honours and awards:
- (m) the seal of the University and its use and custody;
- (n) the academic year of the University;
- (o) the discipline of members of staff and students and the procedures to be adopted in respect thereof;
- (p) fees and charges to be paid for anything done by any person in terms of this Act:
- (q) empowering any person specified in the Statutes to make ordinances or rules in respect of any matter referred to in paragraphs (a) to (p).

Regulations

- (1) Subject to this Act and the Statutes and with the approval of the Council, the Senate may make regulations prescribing any matter which, in the opinion of the Senate, is appropriate to be prescribed for the better carrying out of the Senate's functions.
- (2) Regulations may provide for:-
 - (a) teaching within the University, whether generally or in relation to specific subjects;
 - (b) progress reports to be submitted by members of the academic staff:
 - (c) schemes of study and research and the conditions subject to which such schemes may be embarked upon or continued;
 - (d) the use of libraries of the University;
 - (e) the conduct and supervision of examinations;
 - (f) the award of degrees, diplomas, certificates and other academic honours and awards, other than honorary degrees, honours or awards.
- (3)The Senate may at any time amend or repeal any regulations.
- (4) Regulations need to be published in the *Gazette*, but the Senate shall publish them in such manner as the Senate considers will best make them known to the persons to whom they apply.

No decision or act of the Council, the Senate, the Convocation or any of board or committee established by or in terms of this Act shall be invalid solely on the ground that:-

28.

(a) the Council, Senate, Convocation, board or committee, as the case may be, consisted of fewer than the number of members for which provision is made by or in terms of this Act; or

29. Validity of decisions Council, Senate, Convocation and boards and Committees

(b) a disqualified person acted as a member of the Council, Senate, Convocation, board or committee, as the case may be; if the duly qualified members who took the decision or did or authorized the act constituted a quorum of the membership of the Council, Senate, Convocation, board or committee, as the case may be.

Appointments and 30. Functions of Foundation Committee

- (1) Subject to this section, the Minister may appoint not fewer than ten and not more than twenty-five persons to constitute a committee to bring the University into existence.
- (2) Persons appointed in terms of subsection (1) shall be chosen for their ability and experience in academic matters or administration or their professional qualifications or their suitability otherwise for appointment.
- (3) The Minister shall designate one of the persons appointed in terms of subsection (1) to be the chairman and another such person to be the vice-chairman of the committee.
- (4) the functions of the committee appointed in terms of subsection (1) shall be:-
 - (a) with the approval of the Minister, to appoint a Vice-Chancellor, one or more Pro-Vice-Chancellors and other officers and members of staff of the University and to fix their terms and conditions of employment;
 - (b) to provide for election or appointment of the first Council of the University;
 - (c) to acquire movable and immovable property on behalf of the University;
 - (d) to make arrangements for the admission of students to the University;
 - (e) to make Statutes for the University;
 - (f) generally, to do all things necessary or expedient to bring the University into existence and make this Act effective on the date fixed in terms of subsection (2) of section one.
- (5) For the purpose of subsection (4), the appropriate provisions for this Act shall apply to the committee appointed in terms of subsection (1) as if it were the Council, notwithstanding that those provisions have not yet come into operation in terms of subsection (2) of section *one*.
- (6) any decision taken or act done or authorized by the committee appointed in terms of subsection (1) shall be deemed:-
 - (a) on or after the date fixed by the President in terms of

- subsection (a) of section one; or
- (b) after the period specified by the Minister in terms of paragraph (a) of subsection (7); whichever is the later, to be a decision taken or act done or authorised, as the case may be, by the Council.
- (7) Notwithstanding any other provision of this Act, if the Minister is satisfied that it is necessary or expedient for the committee appointed in terms of subsection (1) to continue to exercise its functions after the date fixed in terms of subsection (2) of section one, he may, by notice in writing to the chairman of the committee:-
 - (a) authorise the committee to continue exercising its functions for such period after that date, not exceeding twelve months, as the Minister may specify; and
 - (b) suspend or modify such of the provisions of this Act as the Minister may specify, for the purpose of enabling the committee to continue exercising its functions; and the provisions concerned shall be suspended or shall apply with the appropriate modifications for the period specified in terms of paragraph (a).

SCHEDULE (SECTIONS 2 AND 27) STATUTES OF THE UNIVERSITY

ARRANGEMENT OF STATUTES

- 1. Appointment of Pro-Vice-Chancellor.
- 2. Length of appointment of members of Council.
- 3. Casual vacancies in Council.
- 4. Meetings and quorum of Council.
- 5. Resolutions by circulation among members of Council.
- 6. Meetings and quorum of Senate.
- 7. Convocation.
- 8. Faculties.
- 9. Deans.
- 10. Composition of Faculty Boards
- 11. Functions of Faculty Boards
- 12. Meetings of Faculty Boards.
- 13. Teaching Departments.
- 14. Institutes and Centres.
- 15. Appointment of Registrar, Bursar Librarian.
- 16. Procedure generally.
- 17. Financial procedures.
- 18. Auditors.
- 19. University seal.
- 20. Ordinances.
- 21. Arrangements with other Universities, affiliated bodies, etc.

1.Appointment of Pro-Vice-Chancellors

- (1) For the purpose of considering appointments to the office of Pro-Vice-Chancellor, there shall be a joint committee of the Council and the Senate consisting of
 - (a) the chairman of the Council, who shall be chairman of the joint committee; and the Vice-Chairman of the Council; and
 - (b) the Vice-Chairman of the Council; and
 - (c) the Vice-Chancellor; and
 - (d) two persons appointed by the Council from among its members who are not members of the Senate; and
 - (e) three persons appointed by the Senate from among its members.
- (2) The joint committee constituted by this Statute shall consider each applicant for appointment to a vacancy in the office of Pro-Vice-Chancellor and shall make recommendations thereon to the Council, and the Council, after considering the joint committee's recommendations, shall make the appointment concerned with the approval of the Minister.
- (3) A Pro-Vice-Chancellor shall hold office for three years from the date of his appointment and, subject to subsection (2) and the approval of the Minister, shall be eligible for reappointment.

2. Length of appointment of members of Council

- (1) Members of the Council, other than ex-officio members, shall hold office for three years, and shall be eligible for re-appointment or re-election, as the case may be; provided that
 - (i) of the first sixteen members appointed by the Minister, five shall be appointed for a period ending one year after the date of commencement of the Act and further five shall be appointed for a period ending two years after the date of commencement of the Act.
 - (ii) of the first nine members appointed by the Senate, three shall be appointed for a period ending one year after the date of commencement of the Act and a further

three shall be appointed for a period ending two years after the date of commencement of the Act:

(2) Any member of Council, other than an ex officio member, may resign his membership at any time by notice in writing addressed to the Registrar.

3. Casual vacancies in Council

Any casual vacancy occurring among the appointed or elected members of the Council shall be filled as soon as possible by the person, persons or body which appointed or elected the member whose place has become vacant, and the person so appointed or elected shall hold office for the remainder of the period for which he fills was appointed or elected.

4. Meetings and quorum of Council

- (1) The Council shall meet at least three times a year.
- (2) The quorum of the Council shall be one-half of the members holding office at the time of the meeting.

5. Resolutions by circulation among members of Council

A resolution proposed by the Executive Committee of the Council, other than for the purpose of making a Statute, which is on its authority circulated by the Registrar to all members of the Council and which receives the written agreement of not less than two-thirds of such members shall, upon receipt of such agreement by the Registrar, have the same force and effect as a resolution passed at a meeting of the Council.

6. Meeting and quorum of Senate

- (1) The Senate shall meet at least three times a year.
- (2) The quorum of the Senate shall be one-half of the members holding office at the time of meeting.
- (3) The Vice-Chancellor or, in his absence, a Pro-Vice-Chancellor, shall be the chairman of Senate.

7. Convocation

There shall be no quorum for meetings of the Convocation, the proceedings of which shall be regulated by the chairman, subject to any general or special direction of the Council.

8. Faculties

The University shall include such Faculties as may from time to time be established by the Council.

9. Deans

- (1) There shall be a Dean of each Faculty, who shall be appointed by a Selection Board appointed by the Council, and chaired by the Vice-Chancellor, or in his absence, a Pro-Vice-Chancellor. The Selection Board shall consist of the Vice-Chancellor, the Pro-Vice-Chancellor(s), two persons not belonging to the Faculty appointed by the Senate, and three persons appointed by the Faculty. Normally, the Dean must be a prominent academic with a proven administrative record who commands respect among the staff in the faculty and within the University community.
- (2) A Dean shall hold office for four years or such other period as may be prescribed by Ordinance, and shall be eliqible for re-appointment for a further term of office.
- (3) A Dean shall preside at meetings of the Faculty Board of his Faculty and at meetings called by him in terms of these statutes, and shall have such functions as are prescribed by Ordinance.

10. Composition of Faculty Boards

For each Faculty there shall be a Faculty Board which shall consist of -

- (a) all the full-time academic staff of the Faculty; and
- (b) such persons as may be assigned to the Faculty Board by the Senate; and
- (c) two students elected annually by the students in the Faculty

11. Functions of Faculty Boards

A Faculty Board shall have the following functions –

- (a) to regulate, subject to the approval of the Senate, the teaching and study of the subjects assigned to the Faculty;
- (b) To report to the Senate on any matter specifically relating to the work of the Faculty;
- (c) To deal with any matter referred or delegated to it by the Senate;
- (d) To appoint committees, which may include a minority of persons who are not members of the Faculty Board, to carry out any of the duties or exercise any of the powers of the Board.

12. Meetings of Faculty Boards

- (1) The Dean of each Faculty shall call regular meetings of the Faculty Board at which matters relating to the policy of the Faculty and appointments shall be discussed and recommendations adopted for submission to the appropriate authorities on appointments.
- (2) The Vice-Chancellor and every Pro-Vice-Chancellor shall be entitled to attend any meeting of a Faculty board or any committee thereof.

13. Teaching Departments

- (1) The Teaching Departments and their allocation to Faculties shall be prescribed by ordinances
- (2) A Chairman of Department shall be appointed by the Vice-Chancellor, on behalf of the Council, from among the full-time members of the academic staff of the Department, and the Dean of the Faculty to which the Department is allocated.
- (3) A Chairman of Department shall hold office for a period of three years, or such other period as may be determined by ordinance, and shall be eligible for re-appointment.
- (4) A Department may be allocated to twoor more Faculties.

14. Institutes and Centres

The Council, after consultation with the Senate, may establish Institutes or Centres of learning within or outside the University and shall appoint at the head of any such Institute or Centre and give directions as to its studies and research and administration.

15. Appointment of Registrar, Bursar and Librarian

- (1) For the purpose of considering appointments to the offices of Registrar, Bursar and Librarian, there shall be a joint committee of the Council and the Senate consisting of
 - (a) the chairman of the Council, who shall be the chairman of the joint committee; and
 - (b) the vice-chairman of the Council; and
 - (c) the Vice-Chancellor; and

- (d) every Pro-Vice-Chancellor; and
- (e) two persons appointed by the Council from among its members who are not members of the Senate; and
- (f) three persons appointed by the Senate from among its members
- (2) The joint committee constituted by this Statute shall consider each applicant to a vacancy in the office of Registrar, Bursar or Librarian and shall make recommendations thereon to the Council.

16. Procedure generally

- (1) Except as otherwise specifically provided by the Act or these Statutes, in the absence of the chairman or vice-chairman at a meeting of a board or committee the members present shall elect from those present a chairman to preside over that meeting.
- (2) Except as otherwise specifically provided by the Act or these Statutes, the quorum at any meeting of a board or committee shall be as fixed by the person or authority that appointed the board or committee.
- (3) Except as otherwise specifically provided by the Act or these Statutes, each board or committee shall determine and may make rules for the time, place and procedure of its meetings.
- (4) The minutes of a meeting of a board or committee shall be laid on the table at the next following meeting of the body that appointed it.
- (5) At a meeting of board or committee, in the event of an equality of votes on any matter, the person presiding shall have a casting vote in addition to his original vote.
- (6) Subsection (3), (4) and (5) shall apply, *mutatis mutandis*, to the Council and the Senate, save that minutes of the Council shall be sent to the Chancellor and the Minister and a report of each meeting of the Senate shall be laid on the table at a meeting of the Council.

17. Financial Procedures

- (1) The Council shall fix the financial year of the University.
- (2) The Finance Committee shall submit to the Council, before the beginning of the financial year, draft estimates of income and expenditure, and such estimates, amended as the Council thinks fit, shall be approved by the Council before the beginning of the financial year.

- (3) The Council may revise the estimates during the course of the financial year and give directions for the manner in which amendments of expenditure estimates may be made, which directions may make provision for delegating the powers of revision so long as such delegation does not extend to altering the total estimated expenditure.
- (4) As soon as practicable after the end of financial years, a balance sheet and income and expenditure account with supporting schedules shall be submitted to the auditors.
- (5) The audited accounts, with any comments thereon made by the auditors, shall be submitted to the Council.

18. Auditors

- (1) Subject to subsections (2) and (3), the Council shall, before the beginning of each financial year, appoint auditors who are registered in terms of the Accountants Act (Chapter 215).
- (2) No person shall be appointed as an auditor in terms of subsection (1) if he, or any of his partners or employees, holds any other office in the University.
- (3) If no appointment of new auditors is made before the beginning of any financial year, the auditors in office shall continue in office.
- (4) An auditor appointed in terms of subsection (1) shall be entitled at all reasonable times to require any officer, employee or agent of the University:-
 - (a) to produce all accounts and other records relating to the financial affairs of the University as may be in the custody of such officer, employee or agent; and
 - (b) to provide such information or explanation as, in the opinion of the auditor, is necessary for the purposes of the audit.

19. University seal

- (1) There shall be a seal of the University, of such design as may be approved by the Council.
- (2) The seal of the University shall be kept in the custody of the Registrar and, subject to the directions of the Council, shall be affixed to-
 - (a) certificates, degrees and diplomas conferred by the University; and
 - (b) any document attested by the signature of the Vice-Chancellor and the Registrar.

20. Ordinances

- (1) The Council may, with the approval of the Minister, make ordinances providing for any matter referred to in paragraphs (a) to (p) of subsection (3) of section 27 of the Act.
- (2) The Registrar shall publish any ordinance made in terms of subsection (1) in such manner as the Council may direct, being a manner which the Council considers will best make the ordinance known to the persons whom it applies.

21. Arrangements with other universities, affiliated bodies, etc.

- (1) The Council may make arrangements with any other university whereby students of the University may be registered as students of such other university and so enabled to study for, enter the examination of and be afforded the degrees of such other university.
- (2) The Council may affiliate to the University, any other institution or any branch or departments thereof and recognize selected members of the staffs thereof as teachers of the University and admit the members thereof to any of the privileges of the University and accept attendance at courses of study in such institutions or branches or departments thereof in place of such part of the courses of study in the University and upon such terms and conditions and subject to such rules as may from time to time be determined by the Council.

THE FACULTY GOVERNANCE

ORDINANCE: 2003

In terms of Statute 20(1), The Council of the National University of Science and Technology in exercise of its powers under Section 27 of the National University of Science and Technology Act Chapter 25..13 (formerly Act 1990), hereby makes the following Ordinance:-

1.0 FACULTY

A Faculty shall consist of related teaching Departments, Research Institutes, Schools and Centres as established by the Council on the recommendations of Senate.

2.0 THE FACULTY BOARD

- 2.1 There shall be a Faculty Board for each Faculty which shall consist of:
 - 2.1.1 The Dean of the Faculty,
 - 2.1.2 The Deputy Dean of the Faculty,
 - 2.1.3 All full-time Academic Staff of the Grade of Lecturer or above of the Faculty,
 - 2.1.4 All full-time Research Fellows of the Faculty,
 - 2.1.5 All Teaching Assistants,
 - 2.1.6 Where relevant, one representative of the Technical Staff of the Faculty,
 - 2.1.7 Such persons as may be assigned to the Faculty Board by Senate, and
 - 2.1.8 Two Student Representatives, elected annually by the students from among the Student Representatives to the Departmental Boards in the Faculty. The Chairperson shall have the authority to exclude Student Representatives from Faculty Board deliberations on matters considered by the Board to be confidential to members of staff only.
- 2.2 The Vice-Chancellor and Pro-Vice-chancellor(s) shall be entitled to attend Faculty Board Meetings and any Committee Meetings thereof in an *ex-officio* capacity
- 2.3 The Faculty Board may invite staff from the other Faculties and other persons to attend meetings of the Board.

- 2.4 A Faculty Board shall meet at least three times every Semester and shall maintain a proper record of Agendas and Minutes for every Meeting.
- 2.5 The quorum of the Faculty Board shall be 50% of the membership.
- 2.6 Normally, the Faculty Assistant Registrar/Senior Assistant Registrar shall serve as the Secretary of all Faculty Board Meetings.
- 2.7 Fifty Percent (50%) of members of the Faculty Board may petition the Dean to require him to call a Special Meeting.

3.0 DUTIES AND RESPONSIBILITIES OF THE FACULTY BOARD

Subject to the provisions of the University Statutes, the authority of the Senate and the provisions of this Ordinance, the Faculty Board:

- 3.1 shall regulate, subject to the approval of the Senate, the teaching and study of the subjects assigned to the Faculty.
- 3.2 shall make reports to the Senate on any matters specifically relating to the work the Faculty.
- 3.3 shall make recommendations to the Senate for the establishment of new Courses and Programmes and the Faculty Regulations thereof, and the amendment of existing General Regulations, Faculty Regulations and Syllabi relating to studies within the Faculty.
- 3.4 may appoint Committees, to carry out any of the duties or exercise any of the responsibilities of the Faculty Board.
- 3.5 shall deal with any matter referred or delegated to it by Senate
- 3.6 shall exercise such responsibilities as may be conferred upon it by the Senate and the Vice-Chancellor.
- 3.7 shall make such other recommendations and decisions as may be required of the Faculty by other University Ordinances and Regulations and make decisions on such other matters as it may deem appropriate for other proper functioning of the Faculty.

4.0 DEAN

4.1 There shall be a Dean of each Faculty who shall be appointed by a Selection Board appointed by the Council and chaired by the Vice-Chancellor, or in his absence, a Pro-Vice-Chancellor.

The Selection Board shall consist of the Vice-Chancellor, the Pro-Vice-Chancellor(s), two persons not belonging to the Faculty appointed by the Senate, and three persons appointed by the Faculty. Normally, the Dean must be a prominentj academic with a proven administrative record who commands respect among the staff in the Faculty and within the University Community.

- 4.2 The term of office shall be four (4) years and, on the expiry of his term of office, shall be eligible for re-appointment. Normally, a Dean may not serve for more than two consecutive terms. At the end of office, if not re-appointed, a Dean who is appointed from one of the Departments in the University shall revert to an academic position within the Faculty, if he so wishes.
- 4.3 The performance of a Dean shall be evaluated annually by a Committee appointed by the Vice-Chancellor and consisting of Senior Academic Staff and Administrators of which at least fifty-percent (50%) shall be drawn from the Faculty concerned.
- 4.4 A Dean may resign from his office by giving the Vice-Chancellor three months' written notice or such longer or shorter notice as the Dean and the Vice-Chancellor may agree on.
- 4.5 Subject to the approval of the Council, the Vice-Chancellor may terminate the appointment of a person as Dean:
 - 4.5.1 on the recommendations of a Committee referred to in Section 4.3 above or
 - 4.5.2 for any other good cause
- 4.6 A Dean whose appointment has been terminated in terms of Section 4.5 above may appeal to the Council within fourteen days of being notified of the termination, an on any such appeal the Council may confirm, vary or rescind the termination, as the case may be, or give such other direction in the matter as it thinks appropriate.

5.0 DUTIES AND RESPONSIBILITIES, OF THE DEAN

- 5.1 The Dean is the Chief Academic, administrative and Financial Officer for the Faculty and shall be responsible to the Vice-Chancellor for:-
 - 5.1.1 The character and quality of the academic and teaching programmes of the Faculty.
 - 5.1.2 The proper direction, control and management of the staff, students, property, equipment and finances of the Faculty

- 5.1.3 Contributing to the evolution and maintenance of an environment conducive to learning at the University.
- 5.2 Without limiting Sub-Section 5.1, a Dean's function shall include:
 - 5.2.1 Provision of leadership in innovative curriculum design and delivery.
 - 5.2.2 Promotion of academic achievement and learner satisfaction consistent with the nationally and internationally accepted standards in the programmes.
 - 5.2.3 Ensuring the quality and integrity in academic functions of the Faculty.
 - 5.2.4 Motivation and support of research activities with the Faculty and facilitation and encouragement of inter-Faculty multi-disciplinary research programmes.
 - 5.2.5 Fostering collegiality within the Faculty at all levels and maintaining a close working relationship with Chairpersons of Departments in the Faculty.
 - 5.2.6 Calling and Chairing regular Meetings of the Faculty Board.
 - 5.2.7 Chairing the Faculty Planning Committee Meetings.
 - 5.2.8 Implementing policies approved by the Faculty Planning Committee, Faculty Board, Senate, Senior University Management and Council.
 - 5.2.9 Provision of leadership for increasing national and international visibility and reputation.
 - 5.2.10 Attracting new resources and planning and managing the use of all resources responsibly within the Faculty.
 - 5.2.11 Developing innovative and strategic alliances with industry, government and international partner institutions and organizations.
 - 5.2.12 Maintaining collaborative and consultative relationships with other Deans and with the University Administration.
 - 5.2.13 Chairing Faculty Board of Examiners Meetings.
 - 5.2.14 Representing the Facultyinappropriate University Committees and other bodies as required.
 - 5.2.15 Entitlement to attend Departmental Board and Panel of Examiner's meetings in an ex-officio capacity.

- 5.2.16 Making recommendations with respect to Probation, Advancement and Promotion of all staff within the Faculty.
- 5.2.17 Presenting to the Congregation for Conferment of Degrees, persons who have qualified for the degrees of the University at examinations held in Departments for which responsibility is allocated to that Faculty. This shall exclude honorary degrees.
- 5.2.18 Report to the Vice-Chancellor annually on the activities of the Faculty.
- 5.3 In exercising his/her duties and responsibilities, the Dean shall take full cognizance of the provisions of the Ordinance on Departmental Governance.

6.0 THE DEPUTY DEAN OF A FACULTY

- In every Faculty there shall be a Deputy Dean, whose term of office shall be three (3) years. The Deputy Dean shall be appointed by the Vice-Chancellor after consultation with the Faculty Planning Committee.
- In addition to teaching, research and other duties and responsibilities, the Deputy Dean of a Faculty shall:
 - 6.2.1 serve as the Acting Dean in the absence of the Dean.
 - 6.2.2 perform such other functions as may be delegated to him/her by the Dean.

Date of Operation

This Ordinance shall apply with effect from 1 January 2003, or any later date as approved by the Minister of Higher and Tertiary Education, Science and Technology Development, and shall remain in force until otherwise repealed or varied by a further Faculty Governance Ordinance of the National University of Science and Technology.

1.0 This Ordinance may be cited as The Departmental Governance Ordinance 1982 and shall take effect from 3 April 1992.

2.0 THE DEPARTMENTAL BOARD

- 2.1 There shall be a Departmental Board for each Department which shall consist of:-
 - 2.1.1 The Chairman of the Department,
 - 2.1.2 All full-time members of the Academic Staff of the Department,

- 2.1.3 Honorary and Part-time Lecturers in the Department or their representative, as determined by the Departmental Board,
- 2.1.4 Where relevant, at least one representative of the technical staff in the Department, or where technical staff are assigned to the Faculty and not to Departments and the Board considers it helpful to have representatives of such staff, at least one representative of the technical staff in the Faculty, elected annually by such staff, provided that the representative(s) so elected shall not be entitled to attend for deliberations on matters considered by the Chairman to be confidential.
- 2.1.5 Two students in the Department elected annually by the students from amongst themselves, provided that the students so elected shall not be entitled to attend for deliberations on matters considered by the Chairman to be confidential.
- 2.2 The Vice-Chancellor, the Pro-Vice-Chancellor(s) and the appropriate Dean and Deputy Dean shall be entitled to attend Departmental Board meetings in an *ex-officio* capacity.
- 2.3 From time to time, the Chairman of the Department, after consultation with members of the Departmental Board, may invite other persons to attend Departmental Board meetings.
- 2.4 Each Departmental Board shall meet at least twice every Semester and shall maintain a proper system of Agendas and Minutes for such meetings.
- 2.5 Subject to Section 3 of this Ordinance, each Departmental Board shall regulate its own procedures, including the establishment of a quorum.

3.0 DUTIES AND POWERS OF THE DEPARTMENTAL BOARD

Subject to the provisions of the University Statutes, the authority of the Senate, provision of this Ordinance and such limitations as the Faculty of which the Department forms a part may impose, the Departmental Board:-

3.1 Shall arrange for, conduct and control the teaching and instruction of students within the Department and the setting and marking of examination papers in accordance with regulations approved by the Senate, the general academic policy agreed by the Faculty Board and the approved administrative procedures of the University.

- 3.2 Shall make recommendations to the Faculty Board for the establishment of new courses and the amendment of existing regulations and syllabuses relating to studies within the Department.
- 3.3 May delegate functions and responsibilities to individuals or groups of individuals within the department.
- 3.4 Shall exercise such powers as may be conferred upon it by the Faculty Board, the Senate or the Vice-Chancellor.
- 3.5 May provide consultancy services on matters concerning the subject assigned to the department within the limitations of its capabilities and subject to the general University policy on consultancy services.
- 3.6 Shall monitor the implementation of the University's conditions relating to the undertaking of private remunerative work in respect of the members of the Department.
- 3.7 May take recommendations in respect of estimates of expenditure in the department Budget Committee.
- 3.8 Shall suggest preliminary short-list of candidates for appointment to academic and technical posts within the Department, taking into account the need to maintain strict confidentiality in handling applications, and shall forward such short-lists to the relevant Board of Selection for consideration.
- 3.9 Shall recommend candidates for Staff Development Programmes.
- 3.10 Shall formulate general guidelines on pure and applied research and suggest means of funding research programmes in the Department.
- 3.11 Shall submit recommendations to the Senate in respect of the appointment of External Examiners and any other consultations.

4.0 CHAIRMEN OF DEPARTMENTS

4.1 There shall be a Chairman of each Department appointed by the Vice-Chancellor, on behalf of the University Council, from among the full-time members of the Academic Staff of the Department.

- 4.2 Before appointing a Departmental chairman, the Vice-Chancellor:-
 - 4.2.1 shall consult and take note of the views of each member of the academic staff in the Department about the appointment.
 - 4.2.2 Shall consult and take note of the views of at least one of the Pro-Vice-Chancellors and the Dean of the Faculty concerned.
- 4.3 The Chairman of a Department shall hold office as such for a period of up to three years and shall be eligible for re-appointment.
- 4.4 After consultation with a Pro-Vice-Chancellor, the Dean of the Faculty and the Chairman concerned, the Vice-Chancellor may terminate the appointment of a Chairman of Department as such by giving him two months' notice in writing.
- 4.5 The Chairman of a Department may resign his appointment as such by giving the Vice-Chancellor two months' notice in writing.
- 4.6 Where the Chairman of a Department is unable, either by reasons of his absence from the University or for any other reason, to carry out his functions as Chairman, the Vice-Chancellor may, subject to the provisions of Section 4.2 of this Ordinance, appoint an Acting Chairman of the Department for such a period and under such conditions as he may determine, provided that the period of appointment does not exceed the balance of the period of office of the substantive Chairman.
- 4.7 A Chairman of Department shall be paid a responsibility allowance at a rate determined from time to time by the Finance Committee of Council for the duration of his term of office as Chairman, provided that no allowance shall be payable where the Chairman is absent or unable to perform his functions for a period of more than 10 days.
- 4.8 An Acting Chairman of Department who is appointed Acting Chairman for a period in excess of 10 days shall be paid a responsibility allowance at a rate determined from time to time by the Finance Committee of Council for the duration of his term of office as Acting Chairman.

5.0 DUTIES AND POWERS OF THE CHAIRMAN OF DEPARTMENT

In addition to his teaching, research and other duties and responsibilities, the Chairman of Department shall:-

- 5.1 Serve as Chairman of Departmental Board meetings.
- 5.2 Represent the Department on the appropriate University Committees and other bodies as required.
- 5.3 At all times use his best endeavour to ensure that proper and acceptable standards of teaching and instruction are maintained in the Department.
- 5.4 Make recommendations with respect to probation, advancement and promotion of academic staff within the Department, provided that:-
 - 5.4.1 In so doing the Chairman shall consult full-time academic members of the Department.
 - 5.4.2 If the Chairman is himself a candidate for promotion, the appropriate recommendations shall be made by the Dean of the relevant Faculty after consultation with all full-time academic members of the Department.
- 5.5 Serve as executive officer of the Department in the implementation of Departmental Policy, as determined by the Departmental Board and other University authorities, and be responsible for the day to day administration of the Department.

ACADEMIC STAFF GRADING, TENURE AND PROMOTIONS ORDINANCE (1997): ORDINANCE 28

- **1.0** This Ordinance may be cited as the Academic Staff Grading, Tenure and Promotions Ordinance 1983, and shall take effect from 1 January 1984.
- **2.0** The Staff (Tenure) Ordinance 1973 is hereby repealed.

3.0 Objectives

In making this Ordinance, the Council has as its objective the establishment within the University of an equitable and workable system of appointments and promotions which satisfy the legitimate career aspirations of academic staff and which ensure the achievement of the University's academic aims whilst maintaining the high quality of its academic staff.

4.0 Structure of Academic Staff Grades

4.1 the following structure of grades and notches for Academic Staff shall apply within the University;

Grade	Number of notches
Professor	As approved by the University from time to time
Associate Professor	
Senior Lecturer	
Lecturer	

- 4.2 The salary scales applicable to each grade and the salary step applicable to each notch within a scale shall be such as may be approved by University Council from time to time, and published as part of the University's Salary Scales.
- 4.3 The University Council or its authorized committees shall have sole discretion to determine the academic staff establishment in each Academic Department and Faculty in the University, and in so doing, may designate that posts be established at any of the grades listed in Section 4.1 above, but normally:
 - 4.3.1 there shall be only one established Professorial Chair in a Department which shall be filled by appointment;
 - 4.3.2 each of the other academic posts on a Department's or Faculty's establishment may be filled at professorial level only by the promotion of existing staff.

5.0 Grading and Notching on Initial appointment

On initial appointment of the University's Academic Staff, a successful candidate shall be graded and notched according to his or her qualifications experience and published research, and in so doing, the following criteria will apply;

5.2 Qualifications

- 5.2.1 The basic qualification for appointment to the University's academic staff is a good first degree or an approved equivalent in the appropriate discipline.
- 5.2.2 An appointee with a good first degree or any approved equivalent in the appropriate discipline, but without any relevant post-graduate experience, shall be placed at the first notch of the teaching assistant scale.
- 5.2.3 An Appointee with approved research or non-research post-graduate qualifications which have been the subject of an examination process, shall be granted additional notches within a grade according to the following guidelines:-
 - 5.2.3.1 a postgraduate diploma or postgraduate Masters Degree extending over less than 2 years of study or equivalent. (1 notch).
 - 5.2.3.2 a postgraduate Masters Degree extending over 2 years of study or equivalent. (2 notches).
 - 5.2.3.3 a DPhil or PhD Degree or equivalent. (3 notches).

- 5.2.4 The qualifications which are accepted by the University as approved equivalent to the basic levels recognized are set out in the First Schedule to this Ordinance.
- 5.2.5 A serving member of the University's Academic Staff who obtains a further qualification, as described in Section (c) above, shall be awarded the appropriate additional notches with effect from the 1st of the month after the additional qualification is finally awarded, provided that such additional notches do not result in the member of staff being effectively promoted to a higher grade.

5.3 Experience

- 5.3.1 New appointees to the University's Academic Staff will be awarded, on initial appointment, one notch on the salary scales for each year of relevant postgraduate experience, provided that such recognition of experience does not result in the appointee being appointed at a higher grade than that of the Lecturer, unless the appointee also satisfies the criteria for promotion to such higher grade as specified in Section 7.5 of this Ordinance.
- 5.3.2 in granting recognition to relevant postgraduate experience the University shall:
 - 5.3.2.1 make no distinction between professional experience
 - 5.3.2.2 recognise in full, the time spent as a full-time member of the academic (teaching and/or research) staff of a reputable university.
 - 5.3.2.3 no grant credit in notching on the scales for the time an appointee has spent in full time study for a postgraduate qualification.
- 5.3.3 in all disciplines, any postgraduate experience in the appropriate discipline will be recognized as relevant, and in particular internship year following graduation as an MBChB or B. Pharm, or equivalent will be recognized as a postgraduate experience.
- 5.3.4 In general, the University will not provide any credit in notching an appointee, on initial appointment, for pre-graduate experience, but from time to time the University may recognize such experience and, in so doing, shall specify the type

of experience and the extent of its recognition by the University, by including such information in the Second Schedule to this Ordinance.

5.4 **Published Research**

The University recognizes published research, other than that forming part of a post-graduate qualification, for the purposes of determining the notch on initial appointment.

The University does not prescribe specific mechanisms or guidelines for such recognition, and relies on the appropriate Appointment Board to make recommendations in each appointee's case. In making such recommendations, Appointment Boards shall take cognizance of the quality of the published work and whether it had been referred by persons expert in the particular field.

6.0 PROFESSIONAL SUPPLEMENT

- There shall be only one Academic (Teaching and Research) grading and salary structure, and the same salary scales shall apply to all posts in all Faculties within the University.
- In certain fields a pensionable, professional supplement in addition to the basic salary may be paid to staff.

7.0 PROMOTION

7.1 Criteria for Promotion

In assessing the suitability of members of the academic staff for promotion to a higher grade, the University shall take into account the following broad criteria;

- 7.1.1 Teaching
- 7.1.2 Research, Scholarship and Creative Work and
- 7.1.3 University Service.

7.2 Assessment of Teaching

In making an assessment of a candidate's teaching, the University regards the following general areas as being of central importance.

- 7.2.1 Teaching method;
- 7.2.2 Course content;

- 7.2.3 The general performance of students in the course taught by the candidate for promotion;
- 7.2.4 The quality of the candidate's supervision of graduate students;
- 7.2.5 The development of new and effective techniques of instruction.

7.3 Assessment of Research, Scholarship and Creative Work

- 7.3.1 In making an assessment of a candidate's research, scholarship and creative work (hereinafter referred to as "research"), the University recognizes that research has a number of dimensions and, therefore, would examine a candidate's research to determine which of the following dimensions apply:-
 - 7.3.1.1 The accumulation of data that confirms an existing theory
 - 7.3.1.2 The application of existing theory to acts specific to given contexts;
 - 7.3.1.3 The generation of new theory and its empirical testing;
 - 7.3.1.4 The generation of new methodologies for dealing with problems in the discipline or in practice;
 - 7.3.1.5 Originality and innovation in contributions to issues of culture, of creative arts, writing, architectural designs etc.
- 7.3.2 Normally, the University would take into account for promotion purposes only research which has been published, been accepted for publication or, in the case of longitudinal studies, is in written-up form which can be referred. Invariably, the University will seek the views of referees, which it appoints, on the quality of the candidate's research.
- 7.3.3 In addition to making an assessment of a candidate's research from the point of view of its quality, the University would also make an assessment in terms of the quantity of research output.

7.4 Assessment of University Service

In assessing a candidate's University service, the University is conscious of the fact that every member of the academic staff should be a good University citizen, performing his/her duties conscientiously and well, attending and participating on committees to which he/she is assigned. The University regards such activity as adequate University service. If a candidate has taken a leadership role in University service such as serving as Dean,

Chairman of Department, Chairman of a Committee or in organizing a Faculty or organizing vacation research for students or is involved in student counseling and does the activities outstandingly well, the University would regard such service as better than adequate.

7.5 Criteria for Promotion to Specific Grades

- 7.5.1 Criteria for Promotion to the Senior Lecturer Grade
 - 7.5.1.1 Assessments at the level of satisfactory in teaching, research and University service and
 - 7.5.1.2 An assessment at the level of outstanding in at least one of the following, teaching, research and University service.
- 7.5.2 Criteria for the Promotion to the Associate Professor Grade

The criteria for promotion to the Associate Professor Grade are as follows:-

- 7.5.3.1.1 An international reputation for scholarship in the candidate's field as testified by external assessors, examiners or reviewers of the candidate's work;
- 7.5.3.1.2 In some fields, one or more books and substantial publications in scholarly journals;
- 7.5.3.1.3 It is possible, but unlikely, for a Lecturer to be promoted directly to the Associate Professor Grade:
- 7.5.5 An Associate Professor would be required to demonstrate the sustained record required for promotion to a Professor in the period he/she was promoted or appointed as an Associate Professor.

7.6 **Promotion Procedures**

7.6.1 Annually, in the early part of each calendar year, the Chairman of a department shall place in the file of each academic member of that Department a report concerning the member's teaching, research and University service in the previous year. This report shall be available to the member of staff concerned, the Faculty and the appropriate members of the University administration.

- 7.6.2 The Annual Reports filed in terms of Section 7.6.1 will form the basis of a chairman of Department's report to the Promotion or appropriate Academic Appointments Board for the purposes of application for promotion.
- 7.6.3 A member of staff wishing to apply for promotion should do so in response to the annual invitation to apply for promotion issued by the University Administration. In the first instance, such applications shall be submitted to the Chairman of the member's Department who will submit to the Promotions Committee, through the Dean of Faculty, a dossier containing the following documents:-
 - 7.6.3.1 The candidate's complete, up-to-date curriculum vitae;
 - 7.6.3.2 The candidate's application for promotion;
 - 7.6.3.3 Copies of each of the Annual Reports on the member since initial appointment or since the date of promotion whichever is the most recent;
 - 7.6.3.4 A summary of the Departmental Board's views on the candidate's application;
 - 7.6.3.5 A report containing his recommendations on the candidate's application, which shall first have been made available to the candidate for comment, but in all other respects should be regarded as confidential to the Promotions Committee:
 - 7.6.3.6 Any comments on the Chairman's report which the candidate may wish to submit to the Promotions Committee.
- 7.6.4 In circumstances where the candidate expressly wishes the Departmental Board to consider any difference of opinion between him/herself and the Departmental Chairman he/she may request the Departmental Board to do so, in which event the outcome of the Departmental Board's deliberations would be included in the dossier submitted through the Dean to the Promotions Committee.
- 7.6.5 The dossier shall also include a list, in order of preference, of assessors to whom the Promotions Committee may refer. This list shall be prepared by the Departmental Board and shall be as follows in applications for promotions to:-
 - 7.6.5.1 Senior Lecturer: 3 assessors, at least one of which shall be an outsider to the University.

- 7.6.5.2 Associate Professor or Professor: 6 assessors, at least two of which shall be outsiders to the University.
- 7.6.6 The Dean of each Faculty shall forward to the Promotions Committee the dossier received from the Chairman of Department on each candidate, together with a report and recommendation by him/herself as Dean. The Dean's report shall be confidential, except that if he/she disagrees with the Chairman's report, the Dean is required to make his report available to the Chairman and the candidate, in which event the candidate's comments on the Dean's report shall be included in the final dossier submitted to the Promotions Committee.
- 7.6.7 The Promotions Committee shall have final authority in all promotion matters and, in particular, shall be the sole arbiter as to whether or not to seek reports from assessors in any case for promotion. If a "prima facie" case for promotion is judged to exist then the Committee shall seek the opinion of external assessors, in which event the assessors' reports shall be confidential to the Promotions Committee.

7.7 Composition of Annual Report

7.7.1 The Annual Report placed in each academic member of staff's personal file each year by the Chairman of the Department shall include an assessment of the member's teaching, research and University services as indicated in Section 1.2.1.3 and 1.4 above.

7.7.2 Report on Teaching

In compiling the section of the Annual Report on a member's teaching the Chairman of Department shall include an evaluation arrived at after implementing at least the following means assessment.

7.7.2.1 Peer Evaluation of Teaching

The Departmental Board shall establish a panel of at least two academic members of staff for each academic member of the Department, with the responsibility of attending lectures given by their colleagues on different occasions and without prior notice to the person giving the lecture. The panel's report will be considered by the Departmental Board and after

constructive, open discussion with the member of staff concerned, will become a component in the assessment of each member of staff's teaching.

7.7.2.2 Evaluation by Students

Students will be provided with an opportunity to complete an evaluation form in respect of each course. In the first instance, evaluation forms completed by students will be submitted to the Chairman ofDepartment who will discuss the views expressed with the member of staff concerned and the Departmental Board before including any informal comment in the Annual Report.

7.7.2.3 Assessment by External Examiners

Any comments by External Examiners on a member's teaching shall be included in the Annual Report.

7.7.2.4 **Seminars**

All departments are required to encourage members of the staff to hold seminars on relevant subjects of their choice to which staff and students should be invited to attend. The feed-back from these seminars is seen as being helpful to the Lecturer but need not be included formally in the assessment of teaching ability for the Annual Report.

7.7.3 Report on University Services

The Section of the Annual Report on a member's University service shall comprise:-

- 7.7.3.1 a report by the Chairman of Department on the quality and quantity of the member's University service during the year in question;
- 7.7.3.2 any written comments by the member of the Chairman's report made in terms of Section 7.7.3.1 above.

8.0 TENURE

- 8.1 Only citizens and residents of Zimbabwe, in accordance with section 6(2) of the University Act, shall be appointed on permanent terms of service which enable the gaining of tenure in due course should the University so determine.
- 8.2 Persons who are not citizen or residents of Zimbabwe shall be appointed only on fixed term contracts, which do not entitle such staff to being considered for tenure, and therefore, the further provisions of this section of this Ordinance do not apply to such staff.
- 8.3 All academic staff appointed by the University shall be required to serve a probationary period before being considered for tenure.
- 8.4 The duration of the probationary period shall be:-
 - 8.4.1 In the case of staff who, before appointment, had tenure at another reputable university or institution of higher education: 2 years.
 - 8.4.2 In the case of staff who had not previously had tenure: 3 years
- 8.5 Appointments Boards are authorized to recommend the granting of immediate tenure, and the consequent waiver of the probationary period, in cases where the Board is recommending an appointment at the Associate Professor of Professor level and feels there are good grounds for making the appointment with immediate tenure.
- 8.6 The criteria for granting of tenure on completion of the requisite probationary period shall be:
 - 8.6.1 Satisfactory teaching;
 - 8.6.2 Satisfactory research;
 - 8.6.3 Satisfactory University service.
- The procedures for determining whether or not to grant tenure shall be as stipulated above for the consideration of applications for promotion, and therefore, the provisions of sections 7.2.3, 7.4, 7.6.2, 7.6.3, 7.6.4, 7.6.6 and 7.7 shall apply except that:-
 - 8.7.1 the appropriate final authority shall be the appropriate Academic Appointments Board rather than the Academic Promotions Committee.
 - 8.7.2 the initiation of the process will be made by the University Administration, at a time suitably in advance of the scheduled date of completion of a member's probationary period of service.

- 8.8 If a member of staff is not granted tenure after the completion of his/her probationary period the University may either:-
 - 8.8.1 extend the probationary period by up to two further years with permission for the member of staff to apply for tenure before the expiry of that time, or terminate the member of staff's employment with the University.
- 8.9 If at the end of the probationary period a member of staff is granted tenure then the appointment shall be without time limit up to the age fixed by the University for retirement except that:-
 - 8.9.1 a member may resign his appointment by giving not less than 3 months' notice in writing, provided that he/she may not give notice of resignation while he/she is on Sabbatical Leave or Contact Visit, nor may any period preceding or spent on such leave visit be counted as a period or portion of a period of notice.
 - 8.9.2 the University Council may terminate the appointment for "good cause" by giving the member of staff not less than 3 calendar months' notice or paying the member's salary in lieu thereof.
- 8.10 Before terminating appointment in terms of Section 8.9.2 the Council:-
 - 8.10.1 shall inform the member in writing of the matters alleged against him/her and give the member the opportunity of replying in writing to those charges.
 - 8.10.2 may, and if so requested by the member of staff shall, before considering such dismissal, refer the case to the Staff Disciplinary Committee established in terms of Section 24 of the University Act.
- 8.11 "Good Cause" for the termination of an appointment in terms of Section 2.9.2 means:-
 - 8.11.1 conviction of any offence which the Council considers to be such as to render the person concerned unfit for the execution of the duties of his/her office.
 - 8.11.2 any physical or mental incapacity which Council considers to be such as to render the person concerned unfit to continue to hold his/her office.
 - 8.11.3 conduct of an immoral, scandalous or disgraceful nature which the Council considers to be such as to render the person concerned unfit to continue to hold his office.

8.11.4 conduct which the Council considers to be such as to constitute failure or inability of the person concerned to perform the duties of his office or to comply with the conditions of tenure of his office.

9.0 TRANSITIONAL ARRANGEMENTS

- 9.1 On the coming into effect of this Ordinance, all existing academic staff shall be incorporated into the new grades designated in Section 4.1 of the Ordinance in accordance with the arrangements set out in the Fourth Schedule to this Ordinance.
- 9.2 In addition, all academic members of staff below the grade of Senior Lecturer shall have their grading and notching reviewed in the light of the criteria set out in the Section 5 of this Ordinance provided that such review:-
 - 9.2.1 does not result in a member of staff being re-notched to a lower grade than he/she is currently on,
 - 9.2.2 such review does not result in a member of staff being re-notched to a new higher grade,
 - 9.2.3 the results of such review shall only come into effect from the member of staff's next incremental date.

10.0 INTERPRETATION

In this Ordinance:-

"Academic Staff" means all persons employed by the University as professors, associate professors, senior lecturers or lecturers and who are contractually required to carry out teaching, and administrative duties and to conduct research,

"A good first degree" means a first degree classified at the level of Upper Second or equivalent,

"Longitudinal" means research which is carried out over a period of at least 5 years before final results are obtainable.



FIRST SCHEDULE

QUALIFICATIONS ACCEPTED BY THE UNIVERSITY AS APPROVED EQUIVALENTS

(SECTIONS 5.2.4 OF THE ORDINANCE)

1.0 Qualifications recognized as equivalent to a postgraduate Diploma or postgraduate Masters Degree extending over less than 2 years of study.

Faculty/Department		Qualifications
1.1	Agriculture	No specific equivalent qualifications identified.
1.2	Architecture and Quantity Surveying	Bachelor of Architecture Degree
1.3	Arts	Aggregation
1.4	Commerce	Membership of the Institute of Cost and Management Accountants
1.4.1	Accountancy	Membership of the Institute of Chartered Secretaries and Administrators
1.4.2	Business Studies	Membership of the Institute of Marketing Management.
		Membership of the Institute of Chartered Secretaries and Administrators.
		Membership of the Institute of Personnel Management
1.5	Education	Graduate Certificate of Education.
1.6	Engineering	No specific equivalent qualifications identified.

1.7	Medicine	No specific equivalent qualifications identified.
1.8	Science	No specific equivalent qualifications identified.
1.9	Social Studies	No specific equivalent qualifications identified.
1.10	Veterinary Science	Specialty certificates issued after one year's full time study, or the equivalent in part-time study, and after examination by Universities and bodies such as the Royal College of Veterinary Surgeons, the American Veterinary Medical Association, and the Australian College of Veterinary Scientists.

2.0 Qualifications recognized as equivalent to a Postgraduate Masters Degree extending over 2 years of study.

Faculty/Department		Qualifications
2.1	Agriculture	No specific equivalent qualifications identified.
2.2	Art	B.Litt., B Phil.
2.3	Commerce	Membership of the Institute of Chartered
	Accounting	Accountants of Zimbabwe or Membership of an approved society as defined in the Accountants By-Laws promulgated in terms of the Accountants Act.
2.4	Education	No specific equivalent qualifications identified.
2.5	Engineering	Corporate Membership of an appropriate Institute of Engineering obtained by

examination at a professional interview procedure.

Faculty/Department		Qualifications
2.6	Medicine	M.Gen.Med. M. Med.(in Medicine, Surgery, Pathology, Paediatrics, Obstrics and Gynaecology or Psychiatry) MRCP (UK) FRCS (Eng.), (Glasg),(Edin)or (Irel) MRCOP, FFARCS, MRCPath
		any other qualification s acceptable to the Medical, dental and allied Professions Council of Zimbabwe for registration as a Practitioner on a Specialist Register
2.7	Science	No specific equivalent qualifications identified.
2.8	Social Studies	No specific equivalent qualifications identified.
2.9	Veterinary Science	Speciality Diplomas or Certificates issued after 2 years or 3 years full- time study, or the equivalent in part-time study, and after examination by Universities and bodies such as the Royal College of Veterinary Surgeons, the American Veterinary Medical Association, and the Australian College of Veterinary Scientists.

Qualifications recognized as equivalent to a DPhil or PhD Degree.

3.0

Faculty/Department Qualifications

3.1	Agriculture	No specific equivalent qualifications identified.
3.2	Arts	No specific equivalent qualifications identified.
3.3	Commerce	No specific equivalent qualifications identified.
3.4	Education	No specific equivalent qualifications identified.
3.5	Law	No specific equivalent qualifications identified.
3.6	Medicine	MD, Pharm. D
3.7	Science	No specific equivalent qualifications identified.
3.8	Social Studies	No specific equivalent qualifications identified.
3.9	Veterinary Science	No specific equivalent qualifications identified.

SECOND SCHEDULE RECOGNITION OF PRE-GRADUATE EXPERIENCE (SECTION 5.3.4 OF THE ORDINANCE)

Faculty/Department	Recognised Postgraduate	Extent of Recognition
1.0 Agriculture	Experience in the Agriculture Industry following award of a recognized Diploma in Agriculture.	One notch for each complete year of the relevant experience up to a maximum of years.
2.0 Arts	Nil	Nil
3.0 Commerce		
3.1 Accountancy	Relevant experience at an appropriate level in any of Auditing, Taxation, Financial and Management Consultancy.	One notch for each complete year of experience up to maximum of 5 years.
3.2 Business Studies	Experience at an appropriate	One notch for each complete year

	Business or Government administration at a supervisory or more senior level.	5 years.
4.0 Education complete	Depending on the job description of the post involved, teaching at Primary or Secondary level educational administrative experience following the award of a recognized certificate in education.	One notch for each complete year of experience up to a maximum of 5 years.
5.0 Engineering	Relevant experience at an appropriate level in engineering.	One notch for each complete year of experience up to a maximum of 5 years.
6.0 Law	Relevant experience at an appropriate level in law.	One notch for each complete year of experience up to a maximum of 5 years
7.0 Medicine	Relevant experience at an appropriate level in Medical Laboratory Technology following the award of a Diploma in Medical Laboratory Technology.	One notch for each complete year of experience up to a maximum of 5 years
8.0 Science	Depending on the job description of the post involved, certain technical experience may be	One notch for each complete year of experience up to a maximum of

level in a relevant activity in of experience up to a maximum of

recognized following the award of 5 years. an appropriate technical qualification.

9.0 Social Studies

Professional full time experience Studies in areas such as counseling fiscal, public and social administration following the award of a recognized qualification.

One notch for each complete year of experience up to a maximum of 5 years.

10.0 Veterinary Science

Depending on the job description the award of an following appropriate qualification in a field related to the Veterinary profession. Examples appropriate qualifications for this purpose are degrees in Animal Science, Microbiology or Zoology **Diplomas** in Medical and Laboratory or Animal Nursing.

One notch for each complete year of experience up to a maximum of 5 years

THE RULES OF STUDENT CONDUCT AND DISCIPLINE ORDINANCE NO.30 (AMENDED 2006)

These shall be the rules of Student Conduct and Discipline read together with the NUST Act Chapter 25.13 (formerly Act 1990).

- 1. This Ordinance may be cited as "The Rules of student Conduct and discipline Ordinance, Ordinance No. 30 (Amended 2006)".
- 2. The Student Disciplinary Committee hereby delegates to the officials referred to in the Rules of Student Conduct and Discipline the power of investigating and exercising disciplinary authority in respect of misconduct by any student to the extent and in the manner set out in the Rules of Student Conduct and Discipline.
- 3. The Student Disciplinary Committee may:-
 - Order a student to pay to the University the amount of any financial loss caused to the University by such a student;
 - 3.2 After reference to the Vice-Chancellor, impose any penalty on a student which in the circumstances of a particular case it deems appropriate.

SCHEDULE RULES OF STUDENT CONDUCT AND DISCIPLINE

1.0 INTERPRETATION

The University Officers charged with the administration of these rules will at all times seek to implement the letter and spirit of the University Act and will, in particular, have regard to the following principles:

- 1.1 The University is a Society in which high standard of communal life must be established and maintained for the benefit of both present and future members of the University;
- 1.2 A high level of personal integrity and a developed sense of responsibility towards others are as important to the University as outstanding scholastic achievement;
- 1.3 A proper concern for the reputation of the University and what it ought to stand for makes it incumbent upon its members to live decent and orderly lives;
- 1.4 Individual or collective action by members of the University which constitutes a breach of these rules may require to be punished, notwithstanding that the motive or goal of such action was a commendable one in the belief of such members.

2.0 UNDERTAKING AT REGISTRATION

When registering as a member of the University a student shall be given a copy of these rules and shall sign a statement in which he/she acknowledges that he/she has been furnished with the rules, and he/she undertakes to conduct himself/herself while a student of the University in accordance therewith and with any amendments duly made thereto.

3.0 STUDENT CONDUCT

- 3.1 No student of the University shall:-
 - 3.1.1 Use the University premises contrary to University Regulations, residence, Faculty or Departmental rules or do any act reasonably likely to cause such mis-use;

- 3.1.2 Damage or deface any property of the University or do any act reasonably likely to cause damage or defacement thereto;
- 3.1.3 Disrupt teaching, study, research or administrative work, or prevent any member of the university or its staff from carrying on his/her study or work, or do any act reasonably likely to cause disruption or prevention;
- 3.1.4 Engage in any conduct whether on or off the campus which is or is reasonably likely to be harmful to the interests of the University, members of the University staff or students.
- 3.2 The following would be regarded by the University as instances of breaches of the rule contained in 3.1 (above):-
 - 3.2.1 Displaying violence by word or act towards any member of the University, whether academic or administrative staff or student, or a guest of the University, or any visitor to the University or in any way intimidating or obstructing the free movement of such member, guest or visitor;
 - 3.2.2 Disrupting or seeking to disrupt any proper function of the University whether it be an official function, Council Meeting, Senate Meeting, Faculty or Committee Meeting, Lecture, teaching session, the function of any University Society or day to day administrative activity;
 - 3.2.3 Seeking to prevent a speaker invited by any section of the University Community from lawfully expressing his/her views.
- 3.3 Students are informed that:-
 - 3.3.1 If a group of students forms a common intention to commit certain acts and assist each other in their commission, and in due course a breach of these Rules is committed by one or some of the group, then each member of the group who foresaw that the breach would occur, may be held to have committed that breach of the Rules. A member of such a group can avoid this happening to him/her by taking clear and unequivocal steps, before such a breach is committed, to show that he/she dissociates himself/herself from the acts of the group with whom he/she has so far been associating;

- 3.3.2 Where a number of students have committed a breach of these Rules and only one or more of these students can be identified, the University will not hesitate to take disciplinary action against those students who can be identified and against whom there is sufficient evidence to warrant such a disciplinary action;
- 3.3.3 Where a student commits an act which is both an offence according to the laws of the country and one which after investigation appears to be a breach of the disciplinary rules of the University, the University may punish such a student notwithstanding that he/she is prosecuted and/or punished by the courts of the country;
- 3.3.4 A Student Identity Card is solely for the legitimate use by the person to whom it has been issued.
- 3.4 A student shall obey any Rules made from time to time by the Vice-Chancellor and shall further obey all instructions given by the Vice-Chancellor and shall further obey all instructions given by the Vice-Chancellor, the Proctors, and all those persons whom the Vice-Chancellor has charged to assist him/her in the maintenance of discipline, and in this regard:-
 - 3.4.1 Academic staff and Senior Administrative staff may order any member of a gathering of students which is committing an offence, or whose activities are likely to lead to a breach of Rule 3 (above), to disperse, and may further order any such member to furnish his/her full name or to accompany the member of staff for an interview with the Vice-Chancellor or a Proctor, or give both such orders. For the purposes of this section 'Senior Administrative Staff shall include the Registrar, Deputy Registrars, the Bursar, Deputy Bursars, Librarian, Deputy Librarian, Sub-Librarians, Directors, Dean of Students, Deputy dean of Students, Assistant/Senior Assistant Registrars, Assistant/Senior Assistant Librarians, Chief Security Officer, Accountants, Principal accountants, and Wardens of University Residence.
 - 3.4.2 If a student misbehaves in a lecture or teaching session or interferes with the conduct of a lecture or teaching session the member of staff conducting such a lecture or teaching session may order the student to leave or to cease such interference.
 - 3.4.3 Failing to comply with any order given as stated above constitutes a serious offence.

4.0 THE POWERS OF THE UNIVERSITY PROCTORS

The Vice-Chancellor shall from time to time appoint as many Proctors as he deems necessary from among the academic staff who are not members of the Student Disciplinary Panel or Wardens. One Proctor shall be known as the Senior Proctor with the responsibility of organising and supervising the work of the other Proctors. A second Proctor shall have legal expertise and known as the Legal Proctor with a particular responsibility for the presentation of cases before the Student Disciplinary Committee.

- 4.1 A Proctor shall be charged with ensuring the proper observance of these Rules by students on or off the University site and to this end shall, in addition to his power under Rule 3.4, have the following powers:
 - 4.1.1 To receive and investigate reports of student misconduct;
 - 4.1.2 To summon any student to appear before him/her either to answer a charge or complaint against him/her or to answer questions in regard to any matter under investigation by him/her;
 - 4.1.3 To proceed in the absence of a student who in the opinion of the Proctor has been duly summoned but has failed to appear;
 - 4.1.4 To recommend to the Registrar that a student be summoned to appear before the Student Disciplinary Committee to answer a charge or complaint against him/her or to answer questions in regard to any matter under investigation by the Student Disciplinary committee or Proctors;
 - 4.1.5 To reprimand a student;
 - 4.1.6 To impose a maximum fine on a student not exceeding 25% of the average annual tuition fees as stipulated by the Fees Ordinance for the State Universities for the first offence, and a maximum not exceeding 50% of the average annual tuition fees for the second offence. Any subsequent offences should be referred to the Registrar;

- 4.1.7 To order a student to pay to the University the amount of any financial loss caused to the University by such student;
- 4.1.8 To withdraw an existing student privilege, other than residence, for a period not exceeding 1 (one) semester.
- 4.2 When a report is made to a Proctor of an alleged misconduct by a resident of a Residential Unit, the Proctor shall communicate such a report to the Warden of the Residential Unit concerned before taking action against the resident.

5.0 POWER OF THE WARDENS

- 5.1 A Warden of a Residential Unit shall have the power to investigate any breach of these Rules by a student of his/her Residential Unit committed within any residential Unit and to make any of the following orders in respect of such student adjudged by him/her to have committed a breach of these rules.
 - 5.1.1 To reprimand a student;
 - 5.1.2 To withdraw an existing resident student privilege;
 - 5.1.3 To impose a maximum fine not exceeding 5% of the average annual tuition fees as stipulated by the Fees Ordinance for State Universities;
 - 5.1.4 To order a student to pay to the University the amount of any financial loss caused to the University. Such an order may be made on the person or persons who caused the loss or, where identity cannot be established, on members of the residence in which the loss was sustained:
 - 5.1.5 To suspend a student from his/her University Residence;
 - 5.1.6 To expel a student from his/her University Residence for a period not exceeding two semesters.
- Where a warden wishes to impose penalties 5.1.5 or 5.1.6 above, he/she shall first furnish the Senior Proctor with a full report concerning the alleged offence and the proposed penalty. On receipt of this report the Senior Proctor may, either:-

- 5.2.1 Confirm the proposed penalty and order of the Warden and in the event of variation, order the Warden to execute such varied order; or
- 5.2.2 Institute a further investigation of the matters before making such order at the conclusion as he/she deems fit; or
- 5.2.3 Recommend to the Registrar that a Student Disciplinary Committee be convened to examine the case.
- 5.3 A Warden of a University Residence and the Warden of Non-resident Students shall have the power to report any matter of student misconduct to the Proctors or, through the registrar, to the Student Disciplinary Committee.
- 5.4 Where a warden has imposed any of the penalties set out in Section 5.1.1 to 5.1.4 above on a student he/she shall submit a report to the Senior Proctor, Registrar and Dean of Students.

6.0 RULES FOR UNIVERSITY STUDENT RESIDENCES

6.1 **General**

A resident shall obey all Rules made by the University and instructions given by the Warden, Deputy and Sub-Wardens of the residence and shall refrain from conduct which:-

- 6.1.1 May bring discredit upon his/her Residential Unit; or
- 6.1.2 Is prejudiced to the welfare of other residents of the Unit.

6.2 Powers of University Residence Committee Members

Members of Residence Committee shall have power;

To investigate and if necessary reprimand residents for any infringement of the Rules contained in this Section, and report such investigation or reprimand to the Warden.

6.3 Damage to University Residence Property

A residence shall be liable to compensate the University in full for any damage caused by him/her to University property. Damage caused to a study - bedroom shall be presumed to have been caused by the resident to whom such a room has been allocated unless the contrary is proved.

6.4 **Fire**

- 6.4.1 Normally, fire drills shall be conducted at least three times per Semester (beginning, middle and end of the Semester)
- 6.4.2 A resident having knowledge of the outbreak of fire in, or adjacent to Resident premises shall as soon as possible:-
 - 6.4.2.1 Raise the alarm;
 - 6.4.2.2 Inform the Warden, Deputy or Sub-Warden;
 - 6.4.2.3 Summon the Municipal fire-brigade;
 - 6.4.2.4 Inform the Director of Physical Planning, Works and Estates/Dean of Students.

6.5 Vacation Residence (Only for NUST Campus Residence)

- 6.5.1 A resident may not occupy a study-bedroom during University vacations, save with the prior written authority from the Office of the Dean of Students, on the recommendation of the Dean of the appropriate Faculty and the Warden. Applications for vacation residence must be submitted through the prescribed channels and on the prescribed form.
- 6.5.2 A student granted leave to reside in University Residence during vacation who no longer wishes to avail himself/herself of this privilege shall furnish the Office of the Dean of Students with at least 3 (three) days' written notice of such fact. Omission to do so will, normally, render such resident liable to monetary penalty equivalent to the amount that was due.

6.6 **Absence from Residence**

To be absent from University Residence for two or more consecutive nights, a resident student needs to inform the Dean of his/her Faculty in addition to the Warden. A resident student may be required to be in residence every night by such time as may be laid down in Residence Regulations unless he/she has given prior notice to the Warden or a Subwarden that he/she will return to Residence at a later hour.

6.7 **Visitors**

6.7.1 Resident students' parents may visit them in their rooms from 1000 to 2230 hours.

6.7.2 Students in University Residence may visit each other's rooms between the following hours:

Monday to Friday - 1000 to 2230 hrs Saturday - 1000 to 0000 hrs

Sunday - 1030 to 2230 hrs

- 6.7.3 Students may have other Visitors between 1630 and 2030 hours.
- 6.7.4 Outside the prescribed visiting hours, all parts of the Residence except the Common rooms and entrance foyers are out of bounds.
- 6.7.5 Special arrangements for visits may be made by application to the Warden of the Residence concerned.
- 6.7.6 These provisions apply to all students undergraduate and postgraduate, living in undergraduate residence.
- 6.7.7 No visitor or non-resident student may make unauthorised use of accommodation or dining facilities in University Residence. Students introducing visitors or non-resident students to the Residences may be held responsible by the Wardens for the conduct of such visitors, and non-resident students making unauthorized use of the residence facilities shall be guilty of misconduct.

6.8 Withdrawal from Residence

If a student should leave the University or withdrawal from Residence before the end of the session for which he/she has been admitted, fees already paid by him/her are not normally returnable, except that a student gives proper notice before the end of a session that he/she wishes to vacate Residence for the remainder of the session may be refunded the balance of Residence fees in respect of the remaining period of session.

6.9 Loss of Valuables

A resident shall report as soon as possible to the Warden, Deputy or Sub-Warden the loss of any article from Residence.

6.10 Relationship of Resident and Staff

A resident shall not require a member of the Central Services Department Staff to perform a service outside the scope of his/her normal employment duties.

6.11 Illness

For a resident who is confined in bed, the Sub-Warden/Warden must ensure that his/her illness is reported to the University Student Health Service.

7.0 RULES FOR THE USE OF VEHICLES

- 7.1 A student wishing to keep or use a motor vehicle including a motor cycle, motor scooter or motorized bicycle within the boundaries of the University site shall previously notify the Registrar in writing on the form prescribed.
- 7.2 Save with the prior written permission of the Registrar, a student shall not, within University grounds:-
 - 7.2.1 Park a vehicle in a parking place marked "for staff and visitors only";
 - 7.2.2 Park a vehicle in any place at which parking by any persons has been prohibited;
 - 7.2.3 Bring a vehicle within any University building;
 - 7.2.4 Ride or drive a vehicle on any part other than roads, tracks or parking places;
 - 7.2.5 Leave a vehicle in an unusable condition for a period longer than is reasonably required to effect necessary repairs.
- 7.3 Whenever a vehicle registered with the University is driven, ridden or parked in contravention of the Rules set out in Section 7.2 it shall be presumed that it was so driven, ridden or parked by the person in whose name the vehicle has been registered with the University unless the contrary is proved.

7.4 **Penalties**

- 7.4.1 The Wardens, Proctors and such other persons so authorized by the Vice-Chancellor shall have power to investigate breaches of the Rules contained in this Section and to impose penalties calculated as proportions of the average annual tuition fees as stipulated by the Fees Ordinance for State Universities.
 - 7.4.1.1 First offence, 2% of annual Tuition Fees

- 7.4.1.2 Second offence, 4% of annual fees
- 7.4.2 In the case of a third subsequent offence the name of the offender, with particulars of his previous offences under this Section, shall be reported to the Proctors, who shall exercise appropriate authority in Terms of Rule 4.

RULES OF PROCEDURE IN DISCIPLINARY PROCEEDINGS BEFORE THE STUDENT DISCIPLINARY COMMITTEE

- 1.1 The Chairman of the Committee shall regulate proceedings in a manner as simple and informal as possible which is, notwithstanding, best fitted to do substantial justice and at all times in accord with the principles of natural justice. More particularly, a student charged with breach of the Rules of Student Conduct and Discipline shall at any investigation thereof before the Committee and with no derogation of his/her rights in terms of Section 23 (3) of the University Act:-
 - 1.1.1 Be furnished with a full and fair opportunity to meet such allegations if he so desires:
 - 1.1.2 Be permitted to present any relevant facts or call any witness capable of giving testimony relevant to the investigation;
 - 1.1.3 Be permitted to put questions to witnesses save those which are irrelevant, frivolous or vexatious;
 - 1.1.4 Be permitted to be present at all times save when the Committee is deliberating upon its decision of the matter;
 - 1.1.5 Be advised as fully and clearly as possible of the Committee's decision or recommendation and of its reasons for arriving at that decision or recommendation.
- 1.2 The Proctors and Wardens shall conduct any proceedings before them in accordance with Rule 8.1 save that the provisions of Section 25 (3) of the University Act will not be applicable.
- 1.3 In the event of the Legal Proctor conducting an investigation before the Student Disciplinary Committee it shall further be his/her duty:-

- 1.3.1 To elicit all evidence brought to his/her attention which is relevant to the investigation and admissible, whether favourable to or prejudicial to the student whose conduct is the subject thereof;
- 1.3.2 If so required by the Committee, to advise the Committee as to the issues which they have to decide and as to any point of law or procedure so as to ensure that the conduct of the investigation is consistent with the principles of natural justice;
- 1.3.3 To be absent at all times from the deliberations of the Committee upon its final judgments.
- 1.4 A notice to a student summoning him/her to appear before the Committee for investigation of an alleged breach of the University Rules of Student Conduct and Discipline shall be contained in a letter addressed to him/her and advising him/her of:-
 - 1.4.1 The place at which he/she is to attend;
 - 1.4.2 The date and time at which he/she is to attend, provided that such date shall be not less than 5 days after the date upon which such notice is received;
 - 1.4.3 The rule which he/she is to have contravened and full particulars of his/her alleged contravention;
 - 1.4.4 His/her right to make any relevant statements he/she wishes to the Committee;
 - 1.4.5 His/her right to call witnesses to attend and give any relevant testimony on his/her behalf before the Committee:
 - 1.4.6 His/her right to be accompanied and represented before the Committee by a legal practitioner;
 - 1.4.7 The right to furnish to the Proctors in advance of the investigation any information which he/she wishes to have given due consideration.
- 1.5 A member of the Committee who has acquired, other than in the course of his University life, knowledge of evidence in an investigation of misconduct to be held before the Committee' shall not participate in such investigation.

- 1.6 The member of the Committee who is a relative of a student charged with breach of the Rules of Student Conduct and Discipline shall not participate in the Committee's proceedings.
- 1.7 The Committee shall only find a student to have committed a breach of the rules of Student Conduct and Discipline when it is satisfied beyond reasonable doubt that the student has committed such breach.
- In the event of the Committee finding a student to have committed a breach of the rules, either on the student's own admission or at the conclusion of an investigation, it shall, before determining the punishment it should impose or the terms of its recommendation to the Vice-chancellor, permit such a student a full opportunity to make a statement or produce evidence which he/she wishes to be taken into consideration in mitigation of his/her punishment.
- 1.9 The Chairman of the Committee or his/her nominee shall keep full notes of any proceedings before the Committee but these need not be a verbatim record.

Date of Operation

This Ordinance shall apply with effect from 1 October, 2006, or any later date as approved by the Minister of Higher and Tertiary Education, Science and Technology Development, and shall remain in force until otherwise repealed or varied by further Rules of Student Conduct and Discipline Ordinance of the National University of Science and Technology.

GENERAL ACADEMIC REGULATIONS FOR UNDERGRADUATE DEGREES

1.0 PREAMBLE

- 1.1 The Senate shall be the final authority for the interpretation of these regulations.
- 1.2 The Senate reserves the right to alter, amend, cancel, suspend, or replace any of these regulations.
- 1.3 The Senate has the power to exempt any student from any of the regulations.
- 1.4 A student who has started a programme of study following one set of regulations shall not be affected by regulations subsequently adopted unless agreed to in writing by the student.
- 1.5 There shall be academic regulations for each Faculty which shall be subject to approval by the Senate and which shall include provision for admission to Programmes, Subjects and Modules within the Faculty and schemes of examinations for these Programmes.
- 1.6 The General Academic Regulations shall take precedence over the Faculty Regulations.
- 1.7 Detailed syllabi for Subjects or Modules in a Subject will not form part of the General or Faculty Regulations but shall be submitted to the appropriate Faculty Boards for approval.
- 1.8 In these regulations the following shall be used as described:-

"Academic Year" A defined portion of a Programme consisting of two semesters. "Part" A defined portion of a Programme covering one academic year. "Continuous Assessment" Prescribed assignments to be completed within a given period and forming a part of a module. "Industrial Attachment" A prescribed period of hands-on experience in a relevant work setting. "Module" Is a component within a Programme which is separately examinable. A plan of study lasting over a period of time which leads to the "Programme" award of a degree, diploma, or certificate of the University. "Project" A defined practical assignment which is separately examinable. "Semester" A prescribed period normally comprising 15 weeks, including teaching, revision and examinations. "Subject" A field of study offered by a Department. "Credit" Quantified means of expressing the volume of learning based on the workload students need in order to achieve the expected outcomes of a module. "Credit accumulation" The process of collecting credits awarded for achieving the

1.9 A schedule of Programmes, Subjects and Modules and their codes for use in computerised student records shall be maintained by the Registrar. These codes shall be alphanumeric.

learning outcomes of a module component of a programme.

2.0 PROGRAMMES

2...1 The University may offer programmes for undergraduate Bachelor's Degrees at Honours Level.

2.2 Honours Degrees

- 2.2.1 The structure of Honours Degree Programmes shall be as prescribed in the Faculty Regulations. These structures may vary in accordance with the particular requirements of different Faculties and Subjects but all Honours Programmes shall normally contain the following elements:-
- (a) one or more 'subjects' shall be studied over at least four years of full-time study(or equivalent), including one academic year of Industrial Attachment. These subjects shall be studied intensively and progressively (i.e. studies in the final year(s) assume prior knowledge of the Subject at first, second and third year level) and be taught and examined at a level requiring great breadth and depth of knowledge and understanding.
- (b) the combination of subjects and modules within an Honours Programme shall be prescribed so as to focus on specific topics and to disallow a wide choice of disparate options. This specific focus may be influenced by the requirements for professional recognition and registration within a particular field.
- (c) one or more subsidiary subjects or modules may be studied within the Honours programme but assessment in these subjects/courses either will not contribute to the final classification of the degree awarded or will be assigned a relatively lighter weighting in the overall calculation.
- (d) a student for an 'Honours' degree shall normally be required to complete a project or dissertation within the programme of study. Normally, at least 60% of the courses taken in an 'Honours' Programme will be in the major subject(s)
- 2.2.2 The following are Degrees offered by the University:

Bachelor of Architectural Studies Honours (BArch Studies Hons) Bachelor of Commerce Honours (BCom Hons) Bachelor of Engineering Honours (BEng Hons) Bachelor of Technology Honours (BTech Honours)
Bachelor of Science Honours (BSc Hons)
Bachelor Medicine and Bachelor of Surgery (MBBS)
Bachelor of Quantity Surveying Honours (BQS Hons)
Bachelor of Education Honours (BScEd Hons)
Bachelor Design Education (BDesEd)
Bachelor of Technology Education Honours (BTechEd Hons)

3.0 ENTRY REGULATIONS

3.1 Normal Entry

- 3.1.1 For normal entry candidates should:-
- (a) have satisfied the general requirements as prescribed below; and
- (b) have satisfied the special requirements for entry into the particular programme chosen; and
- (c) have passed English Language and Mathematics at Ordinary Level or approved equivalents.

General Requirements

Passes in at least 5 subjects at Ordinary Level and at least 2 subjects at Advanced Level or their equivalents.

The following are acceptable to the University:-

Ordinary Level Pass or Equivalent.

Ordinary Level of the Associated Examining Board's General Certificate of Education.

Credit standard of the Cambridge Overseas Higher School Certificate; Ordinary Level of the University of London's General Certificate of

Education:

Ordinary Level of the Zimbabwe General Certificate of Education/

Zimbabwe School Examinations Council.

Subsidiary standard of the Cambridge Overseas Higher School Certificate;

Advanced Level Pass or Equivalent

Advanced Level of the Associated Examining Board's General Certificate of Education. Principal subject standard of the Cambridge Overseas Higher School

Certificate;

Advanced Level of the University of London's General Certificate of Education.

Advanced Level of the Zimbabwe General Certificate of Education/Zimbabwe School Examinations Council.

3.1.2 **General Subject Provisions**

Subjects must have been chosen from the approved list below and restrictions against the combination of overlapping subjects must have been observed.

3.1.3 APPROVED SUBJECTS FOR ADMISSION PURPOSES:

Subjects approved by the Associated Examining Board; and/or the Cambridge Local Examination Syndicate and/or the London General Certificate of Education/and/or Zimbabwe General Certificate of Education/Zimbabwe School Examinations Council.

1	$\Delta V \Delta I$	

OA Accounting

O Accounts

OA Accounts, Principles of

OA Ancient History

A Ancient History and Literature

OA Applied Mechanics

O Applied Statistics

OA Art

OA Art and Crafts (AEB)

OA Bible Knowledge

OA Biology

O Bookkeeping and Accounting

OA Botany

O Building Studies

OA Business Management

OA Business Studies

OA Chemistry

O Commerce

OA Computer Studies

A Computing Science

O Computing Studies

- OA Divinity
- O Drama and Theatre Arts (AEB)
- A Economic & Political Studies
- O Economic and Public Affairs
- A Economic and Social History
- A Economic Geography
- OA Economic History
- O Economic Principles
- OA Economics
- A Electronic Systems (AEB)
- O Electricity & Electronics
- O Elementary Physiology
- O Elements of Sociology
- OA Engineering Drawing
- OA Engineering Science
- O English Language
- OA English Literature
- O Environmental Biology (AEB)
- OA Environmental Studies
- OA Fashion and Fabrics/Dress and Textiles
- OA Food and Nutrition/Food Studies
- OA French
- O French Literature (Cambridge)
- O French Studies
- O General Mathematics
- O General Paper (Use of English)
- OA General Principles of English Law
- O General Science
- OA Geography
- OA Geology
- A Government & Political Studies/Politics
- O Government Economics and Commerce
- OA Health Science
- OA History
- OA History, Ancient
- O History & Appreciation of Music
- O Home Economics
- OA Human Biology

OA Law

OA Mathematics

A Mathematics, Applied

OA Mathematics, Pure

O *Metalwork

O *Metalwork Engineering

OA Music

OA Ndebele

OA Physical Science

OA Physics

O Physics with Chemistry

OA Political Studies

OA Portuguese

O Principles of Economics

OA Psychology

OA Religious Studies

O Rural Biology

OA Shona

OA Social Science

OA Sociology

OA Statistics

O *Surveying

OA Technical Drawing

O Technical Graphics

O *Woodwork

OA Zoology

Other subjects and other Examining Boards may be accepted by the Senate on the recommendation of the Registrar.

3.1.4 Restrictions against the combination of Overlapping Subjects:

In the selection of subjects for the purpose of satisfying the general requirement, subjects listed under Column A in the Table below cannot be counted with any corresponding subjects under Column B.

^{*} Not more than one subject indicated above by an asterisk may be recognised for the purpose of satisfying Ordinary Level requirements.

COLUMN A	COLUMN B
Accounting	Accounts, Principles of Accounts,
	Bookkeeping.
Art	History of Art
Biology	Rural Biology, Botany, Zoology,
	General Science
Chemistry	Physical Science, Physics with
	Chemistry, General Science
Economic Geography	Geography, Environmental Studies
Economics	Economic Principles, Commerce,
	Economic History
Elementary Physiology	Human Biology
Elements of Sociology	Sociology
Engineering Drawing	Technical Drawing, Technical Graphics and Design
Environmental Studies	Geography
General Mathematics	Mathematics
General Science	Physics, Physical Science, Physics with
	Chemistry, Biology, Zoology, Botany, Rural Biology
Geography	Economic Geography
Government &	
Political Studies	Government & Politics
Health Science	Human Biology
Human Biology	Zoology, Biology, Health Science
Mathematics	Pure & Applied Mathematics, Pure
	Mathematics, Applied Mathematics, Additional
	Mathematics, Mechanical Mathematics, Statistics
Physical Science	Physics with Chemistry, Chemistry,
	General Science, Physics
Physics	Physics with Chemistry, Physical
	Science, General Science
Pure & Applied	
Mathematics	Pure Mathematics, Applied

Mathematics

Social Science Sociology

Zoology Human Biology, Health Science

Building Technology and Design

Business Enterprise
Design and Technology

History

Literature in Shona Literature in Ndebele Literature in Tonga Sport Management

Computer Science

Business Studies

Physical Education, Sport and Mass Displays,

Sport Science and Technology

Software Engineering

Theatre Arts Dance, Music

Wood Technology and Design

Animal Science

Communication Skills

Food Technology and Design

Home Management Literature in English

Metal Technology and Design Technical Graphics and Design

Agricultural Engineering

Shona Ndebele Tonga

French

Textiles Technology and Design Family and Religious Studies

Crop Science

3.1.5 Faculty Requirements

For admission to a particular programme of study and/or for Subject/ Courses within the programme there may be specific restrictions on the choice of subjects in the General Requirements and/or additional requirements concerning entry. Such additional requirements shall be prescribed in the Faculty Regulations.

3.2 **Special Entry**

- 3.2.1 The following persons may apply for Special Entry and for permission to proceed to a first degree with exemption from the whole or part of the normal entryrequirements:
- 3.2.1.1 A person who has obtained a degree of this or another University or degree awarding Institution.
- 3.2.1.2 A person who has obtained from a University or an Institution of similar status, academic qualifications (other than degrees) acceptable to the Senate;
- 3.2.1.3 A person who has obtained an appropriate number of subjects at An approved examination equivalent to the standard of the Ordinary Level of the General Certificate of Education examination and has subsequently passed an intermediate or equivalent examination at a University acceptable to the Senate;
- 3.2.2 Students who qualify under this regulation for Special Entry may apply to the Senate to be exempted from certain courses and examinations. Permission may be given to complete the programme for a Bachelor's degree in less than the normal required period provided that no student shall be allowed direct entry to the Final Part of any Programme;
- 3.2.3 Students who apply for admission under this regulation may be required to attend interviews and/or special tests at the University to determine their suitability for admission to Bachelor's degree studies.

3.3 **Mature Entry**

Persons who are at least 25 years of age on the first day of the academic year in which admission is sought and who are not eligible for entry under the Normal or Special Entry Regulations may apply for Mature Entry provided that:

3.3.1 Applicants must have passed at least five approved 'O' level subjects including English Language and Mathematics (or equivalents) and must have demonstrated potential suitability for university studies by virtue of their attainments and/or relevant work experience.

3.3.2 Normally, applicants should have completed their full-time school or college education at least five years before the start of the academic year in which admission is sought.

3.3.3 Requirements for Mature Entry

Applicants who wish to be considered under the Mature Entry provisions may be required to attend interviews and/or special tests at the University designed to assess their command of the English Language, numeracy and reasoning ability and general suitability for admission to Bachelor's degree studies. Applicants who have previously attended Mature Entry tests and/or interviews without success will not be considered for admission under this form of entry unless in the intervening period they have acquired additional qualifications and/or experience.

3.4 Submissions of Applications

- 3.4.1 Applications must be submitted on the official Admission forms.
- 3.4.2 The closing dates for receipt of application forms for Normal Entry shall be as advised for each year. Another date shall also be advised for receipt of late application forms. Late applications may be considered upon payment of the prescribed late- application fee until the advised date for such applications.
- 3.4.3 The closing date for Special Entry and Mature Entry applications shall be as advised for each year.

3.5 **General Provisions**

3.5.1 Every student must satisfy the University that he/she has an adequate command of the English Language. New students may be required to undertake a test in English proficiency set by the University, upon registering for Bachelor's degree studies.

- 3.5.2 Students admitted under the Special Entry provisions may be exempted from this requirement.
- 3.5.3 A student may not register simultaneously for more than one programme at the University without the permission of the Senate.
- 3.5.4 Registration will take place in accordance with the arrangements prescribed each year through the Registrar's Office.
- 3.5.5 A student's registration shall not be confirmed until he/she has fulfilled the requirements for payment of fees.
- 3.5.6 Normally, no student shall be admitted to any programme or any course more than two weeks after its commencement. Any exception to this Regulation must have the written endorsement of the Chairperson of the Department and the Dean of Faculty concerned and will be subject to approval through the Registrar's office.
- 3.5.7 Students who enter or return to the University late shall not be entitled to special tuition.
- 3.5.8 Such students shall be liable to pay the late registration fine, unless permission for such late registration has been given by the Registrar.
- 3.5.9 A student registered for a Subject and/or Course is expected to attend all classes prescribed for such Subject and/or Course. Where tutorials, seminars, fieldwork, vacation work and practical sessions are prescribed a student is required to attend and to complete any assignment set.
- 3.5.10 If a student is unable to attend classes for health reasons for longer than 72 hours, he/she must notify the appropriate Faculty Office of the facts as soon as possible and submit certification in support thereof by a medical practitioner registered in accordance with the Medical, Dental and Allied Health Professions Act.

For absence on grounds other than health, prior permission from the Dean on the recommendation of the Chairperson of Department concerned shall be necessary.

- 3.5.11 After taking due consideration of the academic progress of a student, the Senate may require or allow a student originally registered for one programme or Subject to register for another Programme or Subject on the completion of either the First Part or the Second Part of the Programme for which he/she is registered.
- 3.5.12 Normally, no programme shall commence with fewer than five students.

4.0 STRUCTURE OF PROGRAMMES

- 4.1 The duration of Bachelor's Degree Programmes shall be prescribed in the Faculty Regulations.
 - 4.1.1 Maximum Time Allowable to Complete an Undergraduate Degree Programme.

Except as otherwise provided for in the General Academic Regulations, a student must complete a Degree Programme within the specified duration period as `provided for in the respective Faculty Regulations.

The maximum time allowable to complete a Degree Programme shall be calculated based on the expected course duration and shall include deferments. The maximum time allowable to complete a Degree Programme shall be calculated as follows:

For all undergraduate degrees offered by the University either Full-time or Parttime it shall be the normal duration period of the degree programme plus 2 years.

4.1.2 Process of Requesting for an Extension of Programme Time Limit for Undergraduate Degree Programmes.

A student who reaches the maximum time limits allowed for their programme shall submit an Application in writing for an Extension of Programme Time Limit in the prescribed Form to the Department and payment of a fee determined by the University. The Department shall recommend its decision to the Faculty which in turn will recommend to the Academic Board. The application shall be considered by the Academic Board on behalf of the Senate, which may approve or reject the application. The decision of the Academic Board shall be final.

A student whose application is rejected or does not submit an application shall be deregistered from the programme. A student who wishes to rejoin the University shall be required to re-apply.

A student who is differently abled may apply for a time limit extension for reasons directly related to their disability. Such an application shall be in the prescribed Form and must be accompanied by a supporting letter from a Medical Doctor. Such an application for an extension due to a disability shall be exempted from payment of an application fee.

Applications to extend a time limit shall be submitted before the programme Time Limit expires.

Each Programme shall be divided into Years of Study.

An academic year of study shall comprise of not less than 30 weeks excluding vacations. Before the beginning of each academic year there shall be an orientation week for Part I students. Normally, before university examinations begin, there shall be a minimum period of one week of individual study/revision.

The possible combinations of Modules within a Subject shall be in accordance with the Faculty Regulations and shall be subject to approval by the Chairperson of the Department and the Dean concerned.

5.0 MARKING SCHEME DEGREE CLASSIFICATION

- 5.1 All Bachelor's degrees, except the MBBS degree, shall be classified in the following divisions:
 - 5.1.1 First Division, Upper Second Division, Lower Second Division, Pass.
 - 5.1.2 In determining the degree classification of a programme, the weightings of all parts of the degree programme shall be taken into consideration. The actual weightings shall be prescribed in the programme regulations.
- 5.2 The following Grading Scheme shall be adopted for all Modules and Programmes:

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75% and above 1 (First Division)
65% - 74% 2.1 (Upper Second Division)
60% - 64% 2.2 (Lower Second Division)
50% - 59% PASS (P)
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Below 50% FAIL (F)

- 5.3 The following Credit Accumulation regulations shall apply to all Modules and Programmes:
 - 5.3.1. A Credit shall be equivalent to 10 notional hours of learning.
 - 5.3.2 All programmes offered by the University shall use an academic credit allocation system approved from time to time by the Senate. The University shall adopt the following credit level framework prescribed by the Zimbabwe Council for Higher Education for all programmes offered:

SADC- QF LEVEL	QUALIFICATION
8	Bachelor's Honours
7	Bachelor's General

5.3.3 A student who successfully completes a module shall be awarded the credits approved for the module at the assigned level.

5.3.4 Award of Credit

A student shall be awarded credits on successful completion of a module.

5.3.5 Credit Accumulation and Degree Qualification

A student shall progressively accumulate credits for modules that they successfully complete. A student shall be required to accumulate sufficient credits to progress through the programme and would be required to gain the total credits required for the award of the degree qualification as prescribed in the Faculty Regulations.

5.3.6 Accreditation of Prior Learning

A student who is exempted from the first year of study shall be awarded credit determined by the Faculty recognising prior learning that matches the learning outcomes gained from an accredited institution and relevant work experience.

6.0 ASSESSMENT OF CANDIDATES FOR BACHELOR'S DEGREES

- Normally, evaluation shall be based on Continuous Assessment as well as University Examinations. Unless otherwise approved by the Senate, Continuous Assessment will contribute between 25% and 50% of the overall assessment.
- 6.2 Each Department shall determine which items of coursework and practical work will be included in the Continuous Assessment and shall define the relative weighting assigned to each item of coursework or practical work. Each Department shall inform the students of these details at the beginning of the module and shall maintain written records of each student's Performance in these elements of Continuous Assessment. Items Incorporated in the Continuous Assessment may include assignments, tests, essays, fieldwork, laboratory work and projects.
- 6.3 University Examinations shall normally be taken by students at the end of each appropriate semester as prescribed in the Faculty Regulations.
- 6.4 External Examiners shall be appointed to moderate all University Examinations.
- 6.5 All matters relating to the conduct of University Examinations shall be the responsibility of the Registrar.
- 6.6 To be admitted to any University Examination, a candidate must:-
 - 6.6.1 be registered as a student of the University in accordance with the General Regulations;
 - 6.6.2 have satisfactorily completed approved modules of study at the University. 'Satisfactory completion' of modules may require submission of written work, attendance at lectures, seminars, tutorials, Industrial Attachment and other activities as stated in the Faculty Regulations;
 - 6.6.3 have completed and submitted work on Continuous Assessment and has been awarded a mark for such work.
- 6.7 Exclusion from a University Examination shall require the authority of the Senate.
- 6.8 The Examiners may require any candidate to attend an oral examination and/ or write a special examination.

7.0 DETERMINATION OF CANDIDATES' RESULTS

Results shall be determined by the Senate on the recommendations from the Faculty Boards of Examiners.

- 7.1 Departmental Panels of Examiners shall comprise of all full-time lecturing staff in that Department, the External Examiner (s) and, where appropriate, as determined by the Departmental Panel, part-time lecturers and/or teaching assistants for the Course/Subject concerned.
- 7.2 Faculty Boards of Examiners shall comprise of the Dean and Deputy Dean of the Faculty, the Chairperson of each Department, and one other academic member of the Department nominated by the Departmental Panel from each Department involved in the subjects for that examination and normally the External Examiner(s) for the Department. The Chairperson of the Board of Examiners shall normally be the Dean of the Faculty who shall have a casting vote.
- 7.3 The Departmental Panel of Examiners shall:
 - 7.3.1 agree, for each candidate, marks in terms of percentages, for Continuous Assessment, for the University Examinations and overall marks (combining the Continuous Assessment and University Examination) in courses and, where required, in terms of the Faculty Regulations, in Subjects.
 - 7.3.2 recommend to the Faculty Board of Examiners whether a candidate should pass or fail the relevant Module (s) and Subject (s) taken.
 - 7.3.3 where Subject/Course prizes are available for award, make recommendations for the award of these prizes.
- 7.4 The Faculty Board of Examiners shall:
 - 7.4.1 consider the recommendations of the Panels of Examiners and recommend to the Senate an overall result for each candidate and any other conditions as it may deem appropriate;
 - 7.4.2 make recommendations to the Senate with regard to the award of any prizes which may be available for candidates within the Programme.
- 7.5 In determining results, all Departmental Panels of Examiners and Faculty Boards of Examiners shall have regard to all special requirements as prescribed in the Faculty Regulations. Such regulations may require candidates to satisfy the examiners in Continuous Assessment and University Examinations separately and/or that candidates must satisfy the examiners in individual components of the University Examinations either separately or in aggregate.

8.0 PROVISIONS FOR PASSING A COURSE OR PART, AND PROCEEDING IN A PROGRAMME

- 8.1 A candidate shall be deemed to have passed a Part of a Programme if he/she has satisfied the Examiners in terms of the Scheme of Examination as prescribed in the relevant Faculty Regulations.
- 8.2 Each Scheme of Examination shall indicate which Courses must be passed before a candidate may be allowed to proceed to a subsequent part of the Programme (or portion thereof).
- 8.3 Normally, a student shall not be allowed to proceed in a Subject without having passed the previous final examination (s) in that subject and having satisfied all the prerequisites for proceeding in that Subject as may be specified in the Faculty Regulations and to timetable feasibility.
- 8.4 A student who passes in one part with an aggregate of 45% or above may be permitted to proceed to a subsequent part carrying a course or courses subject to the provisions in Faculty Regulations.

9.0 FAILURE TO SATISFY THE EXAMINERS

- 9.1 A candidate who fails to satisfy the Examiners in terms of these General Academic Regulations and Faculty Regulations may be required by the Senate to:
 - 9.1.1 proceed to the next part of the Programme carrying not more than 25 % of the modulesfrom the preceding Parts
 - 9.1.2 repeat
 - 9.1.3 discontinue
 - 914 withdraw
- 9.2 Where a dissertation or a project is prescribed in any programme, a candidate shall be informed in advance of the deadline for submission of such dissertation or project. Unless prior permission for an extension of this deadline has been granted by the Academic Board, any candidate who fails to meet this submission deadline shall normally fail and would be required to repeatthe dissertation or project. A candidate who fails the dissertation or project but obtains a mark of 40% 49% may on the recommendation of the Examiners, be permitted to submit the dissertation or project at a later date, normally within three months of the publication of theresults. Unless otherwise determined by the Senate, the maximum mark allowable for such referred work shall be 50%.

9.3 **CARRY OVER**

- 9.3.1 The number of carry-over modules may be limited by Faculty Regulations.
- 9.3.2 For all Parts, other than the Industrial Attachment year which consists of only onemodule, the total number of carry-over modules shall not exceed 25% of the number of normally scheduled modules in a particular year of a Programme.
- 9.3.3 A student shall be required by Senate to undertake Continuous Assessment with their carry-over modules. This assessment will then be taken into account in the usual way in determining the overall assessment.
- 9.3.4 No candidate may carry over a particular module for more than two years.

9.4 **REPEAT**

- 9.4.1 A candidate who is not allowed to proceed to the subsequent Part of the Programme, but has passed at least 50% of the modules in that Part of the Programme, may be allowed to apply to repeat.
- 9.4.2 'Repeat' means that the student may apply for readmission into the same Programme and his/her application will be considered through the normal procedures.
- 9.4.3 If a student is repeating a module(s), he/she shall only be credited with the marks obtained during the 'repeat' year. A Repeat student shall only repeat failed courses.

9.5 **DISCONTINUE**

- 9.5.1 A candidate who fails more than half of the modules for any year of their programme or obtains an overall aggregate mark of less than 35% (40% in the Faculty of Medicine) shall discontinue.
- 9.5.2 'Discontinue' means that the student must discontinue the Programme in which he/she failed. Such a student will be free to apply for admission/transfer into a different programme and his/her application will be considered through the normal admission procedures.

9.6 WITHDRAW

9.6.1 A candidate who is not allowed to proceed to the subsequent Part of the Programme, and

- 9.6.1.1 has passed less than 25% of the modules in that Part of the Programme, or
- 9.6.1.2 has failed the same Part of the Programme twice, or
- 9.6.1.3 has failed two different Programmes, will be required to withdraw.
- 9.6.2 'Withdraw' means that the student must withdraw from the University. Once 'withdrawn' the student may not apply for admission until after a period of two years has elapsed.

10.0 INDUSTRIAL ATTACHMENT

- 10.1 Programmes at the University shall normally include one academic year of supervised Industrial Attachment approved by the appropriate Departmental Board, in the penultimate year of the undergraduate course. Exception will be in the MBBS programme, where the period of this attachment shall be determined by the Faculty Board.
- 10.2 The implementation of Industrial Attachment programme shall be as provided by Faculty Regulations.
- 10.3 Assessment of the Industrial Attachment programme will be carried out in accordance with the following regulations:
 - 10.3.1 To obtain an overall pass, a student must pass both the Continuous Assessment and the Final Assessment components of the Industrial Attachment.
 - 10.3.2 A student who fails the Continuous Assessment component will be required to repeat.
 - 10.3.3 The Overall Assessment shall be as follows:-
 - 50% Continuous Assessment and 50% Final Assessment.

- 10.3.4 The Continuous Assessment mark shall be determined by the Departmental Panel of Examiners from the marks awarded by the industrial and academic supervisors on the appropriate forms.
- 10.3.5 The Final Assessment mark shall be determined on the basis of the final report assessment (40%) and oral presentation assessment (10%).
- 10.3.6 Two copies of the final report in a form approved by the University must be submitted to the Department within two weeks of the end of the lecture period for the second semester of the academic year.
- 10.3.7 A student who fails to meet the required date for submission of the final report will normally be considered to have failed the Final Assessment.
- 10.3.8 A Student who fails the Final Assessment but has passed the Continuous Assessment component may be allowed to resubmit the industrial attachment report within two months, and be reassessed. Unless otherwise determined by Senate, the maximum mark allowable for such referred work shall be 50%.
- 10.3.9 The General Academic Regulations on repeat, discontinue and withdraw shall apply to industrial attachment.
- 10.4 A student who fails the Industrial Attachment Part shall not proceed to the Final Year of the Degree Programme.

11.0 INDUSTRIAL ATTACHMENT GENERAL GUIDELINES FOR STUDENTS

GUIDELINES FOR STUDENTS

- 11.1 The student is subject to university regulations and the company regulations during the industrial attachment.
- 11.2 The student is expected to:-
 - 11.2.1 conform to the company's regulations, working time and discipline;

- 11.2.2 fulfil the supervisor's instructions concerning the training process and carrying out of the industrial research project;
- 11.2.3 write a log book on a daily basis and submit a report after finishing the training in a given department (or training unit);
- 11.2.4 take part only with educational purpose in mind according to the ultimate instructions of the supervisor;
- 11.2.5 put his/her best efforts to acquire extensive knowledge and skills in order to achieve the required standard of training;
- 11.2.6 keep good relations with all the staff of the company;
- 11.2.7 promote the good name of NUST.
- 11.3 The choice of a company for the industrial attachment will not be based on any probable monetary benefits the students may stand to gain.
- 11.4 The student must always bear in mind that his/her conduct during the industrial attachment period will reflect not only on him/her but also on NUST and that it may also affect considerably the future Industrial attachment placements and the relationship between NUST and the company.

12.0 GUIDELINES FOR THE INDUSTRY ON THE TREATMENT OF THE STUDENT DURING THE INDUSTRIAL ATTACHMENT

- 12.1 The student will be subject to the company's regulations and is expected to function like a full time employee of the company.
- 12.2 For the period of the industrial attachment the student will have an insurance and medical aid cover from the University.
- 12.3 The company is requested to provide the student every opportunity to function like a full-time employee and permit him/her to actively participate in all aspects of the business including management and administration except where confidentiality constraints may not permit his/her participation.

- Wherever possible, the company is requested to assist the student by providing welfare measures such as providing help in finding suitable accommodation close to the company, access to canteen facilities, company transport facilities etc.
- 12.5 If the company wishes to pay the student an extra allowance, the arrangement is only between the two parties, that is the student and the company involved.

13.0 APPEALS AGAINST TERMINATION OF STUDIES

- Any candidate who, having failed to satisfy the Examiners, is required to withdraw from the University or discontinue a programme, has a right to appeal.
- 13.2 A committee shall be established by the Senate to consider such an appeal.
- 13.3 Any candidate who wishes to lodge an appeal against withdrawal or discontinuation must do so in writing to the Registrar within 21 days after the publication of the Examination results.
- On appeal, the candidate must state clearly the grounds of the appeal. Medical grounds must be substantiated in writing by a medical practitioner registered in terms of the Health Professions Act. Any other evidence which the candidate wishes to submit in support of his/her case must also be lodged with the written appeal.
- 13.5 The Registrar will refer all timeous appeals to the Appeals Committee for consideration.
- 13.6 The Appeals Committee will consider, as legitimate grounds for appeal, new evidence of mitigating circumstances (except mere lack of diligence or other fault on the part of the student) which was not previously available to the Examiners. Extenuating circumstances of a force majeure' nature, which explain and are directly relevant to the student's academic performance and which he/she could not reasonably have been expected to have foreseen or avoided, will be considered.
- 13.7 The Committee shall be empowered to hear an appellant orally and to seek all such information or evidence as it may consider pertinent.
- 13.8 No right to automatic oral hearing is conferred upon appeals and the University will not reimburse any expenses incurred by an appellant in making a personal appearance

before the Committee.

13.9 The Committee shall make recommendations in each case, as it deems appropriate.

Its recommendations shall be submitted to the Senate for approval, or to the Academic Board or the Vice-Chancellor on behalf of the Senate for consideration.

14.0 AEGROTAT PROVISIONS

- 14.1. If a candidate, having completed a substantial component of a Part of his/her Programme, is prevented by serious illness or other sufficiently substantiated cause, from completing the prescribed requirements for that Part of the Programme, he/she may be deemed by the Senate to have satisfied the examiners for that Part upon the recommendation of the Board of Examiners concerned and upon such other conditions as the Senate may decide, provided that:-
 - 14.1.1 The candidate will not normally be exempted from presenting a thesis or dissertation where such is prescribed.
 - 14.1.2 The award of an Aegrotat Degree shall be without classification.
- 14.2 Where a student qualifies for an Aegrotat Degree, he/she may opt instead to write a special examination in order that an overall grade may be determined and formally credited to the student. Application for such an option must be submitted in writing to the Registrar not later than four weeks before the scheduled examinations.
- 14.3 The Senate may require any candidate, irrespective of his/her Programme or Faculty, whose examination performance has been adversely affected by sufficiently substantiated circumstances of 'force majeure' nature to write a special examination at an appropriate future date, normally not later than three months after the date of the last examination missed.
 - In such a case, unless otherwise stipulated by the Senate, the mark obtained in the special examination will be counted in the overall assessment for purposes of degree classification.
- 14.4 A candidate who wishes to be considered for an Aegrotat Degree must apply in writing, together with written substantiation for his/her case, to the Registrar normally within ten days of the end of the University Examinations for the Programme concerned. Appeals which are submitted on medical grounds must be supported by

a certificate from a medical practitioner registered in terms of the Health Professions Act.

14.5 A candidate who is awarded an Aegrotat Degree may not re-enter the examination for that same degree, but shall be eligible to apply to proceed to an appropriate higher degree.

15.0 PLAGIARISM

15.1 Definition

Plagiarism is the unacknowledged use of another person's material or ideas. As such, plagiarism is an academic offence in the sense that theft is in ordinary daily life.

15. 2 Recommendations on the severity of the penalty shall be determined by the appropriate Departmental Board or Board of Examiners. Cases of plagiarism shall be handled in the following manner:-

15.3 Minor Cases of Plagiarism

- 15.3.1 **FIRST OFFENCE**: In the case of plagiarism being discovered in a piece of work such as an essay or laboratory report or Dissertation the student shall get a Chairman's warning but shall be given an opportunity to re-do and resubmit an acceptable piece of work after one week and shall be awarded a maximum of 50%.
- 15.3.2 **SECOND OFFENCE**: The student shall get a Dean's warning and shall be awarded a mark of zero for the submitted work.
- 15.3.3 **THIRD OFFENCE**: The Senate shall take disciplinary measures such as suspension or expulsion of the student who will have been awarded a mark of zero.

15.4 Major Cases of Plagiarism

- 15.4.1 In the case of plagiarism being discovered in a project at the end of the year the candidate shall be denied the opportunity to resubmit the project, but will be required to submit a new project.
- 15.4.1.1 The new project shall be submitted not later than June of the following year.

- 15.4.1.2 The new project will be awarded a maximum mark of 50%
- 15.4.2 In the case of plagiarism being discovered in a project for the second time and after re-submission, a mark of zero shall be awarded and recorded, and the Senate shall take disciplinary action either to suspend or expel the student.

16.0 MISCONDUCT AT EXAMINATIONS

Subject to Ordinance 30, any candidate found using unauthorised material, or attempting to obtain information from other candidates or their papers, or otherwise guilty of misconduct during the examination shall be disqualified not only in that examination and subject, but in the whole examination, and further disciplinary action may be taken by the University.

17.0 PUBLICATION OF RESULTS

- 17.1 The Registrar shall be responsible for the publication of the results of University Examinations as approved by the Senate.
- 17.2 Results lists shall be published individually to the student's web portal, and where necessary, shall be posted on University Notice Boards.

18.0 ACADEMIC TRANSCRIPT

On leaving the University each student may obtain, on application to the Registrar, one copy of a formal transcript of his/her complete academic record at the University.

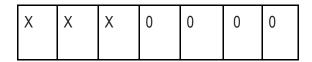
19.0 AWARD OF DEGREES

The award of Degrees of the University shall be subject to approval by the University Council.

Candidates completing the requirements for such award will be entitled to receive a formal certificate of the University, bearing the University seal and signed by the Vice-Chancellor and the Registrar, confirming the award.

20.0 NUST COURSE CODING SYSTEM

The NUST coding system is based on a format of Three Alphabetical Letters and Four Figures **i.e.**



Three Letters are explained as follows:

- First letter stands for the Faculty.
- Subsequent two letters stand for the department.

The Four Figures are explained as follows:

The First "digit" or figure from the last letter denotes the year of study i.e.

PART I CODE 1

PART II CODE 2

PART III CODE 3

PART IV CODE 4

PART V CODE 5

The Second "digit" or figure from the last letter denotes the semester, i.e.

0 - (Zero) whole year course

1 - First semester course

2 - Second semester course

The last two "digits" or figures denote the course number

However, it must be noted that fixing semesters for subjects does not deny the department flexibility to offer these subjects at any other point of the programme as long as it accords the relevant sequence in the teaching

The last two positions (figures) are designated for the different subjects offered by the departments. Each subject number is at the discretion and choice of the department concerned.

The need for two positions for each subject arose as a concern for department that have more than nine subjects on offer although normally not more than nine subjects can be on offer per given semester.

DEFERMENT AND LEAVE OF STUDIES POLICY

PURPOSE

The formulation of the policy on deferment of studies is an acknowledgement that students enrolled at the National University of Science and Technology (NUST) may apply for a deferment of studies and take leave from studies.

The policy is developed with the objective of ensuring that students are able to apply for deferment or leave of studies. In addition this policy will facilitate efficient and effective management of deferment of studies by the University.

SCOPE

This policy shall allow the Deferment and Leave of Studies in all programmes offered by NUST. Students who have been formally offered a place to study at the University and have notregistered, have the option to defer the offer while students who have registered and havecommenced studies may apply to take Leave from studies at any time.

Applications by students with pending disciplinary cases shall be considered after finalisation of their disciplinary cases. Applications for Deferment and Leave of studies shall be considered by the University according to their respective individual merits. Conditions listed on the offer Letter of Admission must be satisfied before an application for Deferment or Leave of Studies is considered.

1. This Policy shall allow Deferment and Leave of Studies from the National University of Science and Technology Undergraduate and Postgraduate degree programmes.

2. Definitions

Deferment: Postponement of studies for a period of up to 12 months, normally

covering the Academic Year, for a person who has been offered a place, or a person who is allowed to proceed to the next part of the programme

and has not registered.

Leave of Studies: A period of 6 to 12 months covering the normal teaching period when a

registered student is excused from formal study. Leave applies to students

that have commenced studies.

Offer: When an applicant is informed in writing that he has been offered a place

in a programme to study.

Programme: A plan of study lasting over a period of time which leads to the award

of a diploma or a degree of the University.

DEFERMENT AND LEAVE OF STUDIES

3. Deferment

Applicants who have received a written offer of a place or applicants who have been allowed to proceed to the next part of the programme and have not registered, **MAY** be granted deferment of studies on application, a written application in the prescribed form must be submitted before the end of the registration period.

The maximum period of deferment shall be one Academic Year (12 months). A period of the semester of six months may be granted where appropriate. Deferment shall not be granted once a student is registered. Granting of a deferment of studies shall be on condition that the applicant has paid part of the prescribed fees. Application for deferment during the First Semester where there are course prerequisites for the Second Semester shall **NOT** be granted and the applicant shall not register for the Second semester.

4. Leave of Studies

When a student has registered and commenced studies, he may apply for Leave of Studies for a period of between one and two semesters in an academic year. An application in the prescribed form for Leave of Studies shall be granted upon recommendation of the Department and the Faculty. In the case of Higher Degrees, the Faculty Higher Degrees Committee shall consider the application for leave of Studies and recommend to the Academic Board in accordance with the General Academic Regulations for Higher Degrees. Application

for Leave of Studies during the First Semester where there are course prerequisites for the Second Semester shall **NOT** be granted and the applicant shall not register for the Second semester. Such applicants shall apply for Leave of studies for the whole academic year (Semester I and Semester II)

IMPORTANT NOTES

The following are the circumstances under which Deferment or Leave of Study shall be considered:

- 1. Medical reasons and special circumstances (such as family crisis, tuition fees and national duty) are normally the acceptable reasons for Deferment or Leave of Studies.
- 2. A student may indicate in which semester he would like to resume his studies; however, the actual resumed semester will be subject to the discretion of the University. Normally the maximum Deferment or Leave of Studies period shall be two semesters.
- 3. If a student has completed some coursework requirements before Deferment or Leave of Study is granted, the Department offering the degree programme has the discretion to decide whether he shall be required to resubmit these requirements upon resuming his studies.
- 4. No refund of fees shall be given to students whose applications are approved. Students whose deferment is made before the start of a semester or Block shall have their fees credited to their accounts.
- 5. In the event that there is an increase in programme fees during the deferment period, a student will not be required to pay the difference if their deferment is approved.
- 6. A student should continue with their studies until a formal approval has been received from the University.
- 7. If the programme, for which Deferment or Leave of Study is approved, is not on offer when one is due to resume studies, the University reserves the right to transfer the student to another degree programme subject to the student meeting of entry requirements for this other programme.
- 8. A student may not defer a course but instead should defer studies for a whole semester.
- 9. Where a Leave of Study is granted, the fees paid shall be credited on a pro-rata basis. In a case of a student who has attended more than 75% of the lectures, the student shall not be credited with fees paid for the semester which a Leave of studies has been granted.

GENERAL REGULATIONS FOR POSTGRADUATE DIPLOMAS MASTERS DEGREES BY COURSEWORK,

MASTER OF PHILOSOPHY DEGREES DOCTOR OF PHILOSOPHY DEGREES HIGHER DOCTORATE DEGREES

1.0 PREAMBLE

- 1.1 The Senate shall be the final authority for the interpretation of these Regulations.
- 1.2 The Senate reserves the right to alter, amend, repeal, suspend or replace any of these Regulations.
- 1.3 The Senate has the power to exempt any student from any of the Regulations.
- 1.4 A student who has started a programme of study following one set of Regulations shall not be affected by Regulations subsequently adopted unless agreed to in writing by the student.
- 1.5 There shall be Academic Regulations for each Faculty which shall be subject to approval by the Senate and which shall include provision for admission to Programmes.
- 1.6 The General Academic Regulations shall take precedence over the Faculty Regulations.
- 1.7 In these Regulations the following terms shall be used as described:-

"Continuous Assessment" - Prescribed assignments to be completed within a given period and forming a part of a module.

"Module" - A component which is separately examinable within a subject.

"Part" - A defined portion of a Programme.

"Programme" - A plan of study lasting over a period of time which leads to the award of a diploma or

degree of the University.

"Project" - A defined practical assignment which is

separately examinable.

"Subject" - A field of study offered by a Department.

"Credit" - Quantified means of expressing the volume

of learning based on the workload students need in order to achieve the expected

outcomes of a module.

"Credit Accumulation" - The process of collecting credits awarded for

achieving the learning outcomes of a module

component of a programme

A schedule of Programmes, Subjects and Modules and their codes shall be maintained by the Registrar. These codes shall be alpha/numeric; alphabetical codes being used to identify Programmes and Subjects, with prefixing numerical module codes being used to indicate the level of study and individual examination components (units) within that module.

2.0 PROGRAMMES

2.1 Postgraduate Diploma Programmes

The University may offer Post Graduate Diploma Programmes in the following fields of study:

2.1.1 Faculty of Applied Science

Applied Biology

Applied Biochemistry

Applied Chemistry

Applied Mathematics

Applied Physics

Computer Science

Radiography

Sports Science and Coaching

Environmental Science and Health

Forest Resources and Wildlife Management

2.1.2 Faculty of Commerce

Accounting
Actuarial Science
Banking
Management
Marketing
Finance
Risk Management and Insurance

2.1.3 Faculty of Engineering

Chemical Engineering
Civil and Water Engineering
Electronic Engineering
Industrial and Manufacturing Engineering
Fibre and Polymer Engineering

2.1.4 Faculty of the Built Environment

Architecture
Construction Project Management
Landscape Architecture
Quantity Surveying
Urban Design

2.1.5 Faculty of Communication and Information Science

Journalism and Media Studies
Library and Information Science
Publishing Media Studies
Records and Archives Management

2.1.6 Faculty of Science and Technology Education

Art, Design and Technology Education Science Mathematics and Technology Education Technical and Engineering Education and Training

2.2 MASTERS DEGREE PROGRAMMES BY COURSEWORK

The Masters Degree Programmes by Coursework shall normally consist of prescribed lectures, practicals and assignments, a dissertation and written examinations.

The University may offer Masters Degree Programmes by Coursework in the following fields of

study:-

2.2.1 Faculty of Applied Sciences

Master of Science in:

Applied Biology

Applied Biochemistry

Computer Science

Applied Mathematics

Operations Research and Statistics

Applied Physics

Radiography

Sports and Coaching

Environmental Science and Health

Forest Resources and Wildlife Management

2.2.2 Faculty of Commerce

Master of Business Administration

Development Studies

Disaster Management

Master of Science in:

Accounting

Actuarial Science

Banking

Finance

Management

Marketing

Risk Management and Insurance

2.2.3 Faculty of Engineering

Master of Engineering in:

Chemical Engineering

Civil and Water Engineering

Electronic Engineering

Industrial and Manufacturing Engineering

Fibre and Polymer Engineering

2.2.4 Faculty of the Built Environment

Architecture

Construction

Landscape Architecture

Quantity Surveying

Urban Design

2.2.5 Faculty of Communication and Information Science

Journalism and Media Studies

Library and Information Science

Publishing Media Studies

Records and Archives Management

2.2.6 Faculty of Medicine

Medicine

Midwifery

2.2.7 Faculty of Science and Technology Education

Accounting and Business Studies

Art

Biology

Chemistry

Civil and Construction Engineering

Clothing Textile

Computer Science

Design and Technology

Electrical and Electronic Engineering

Mechanical and Industrial Engineering

Mathematics

Physics

Technical Graphics

Wood Science

2.3 MASTER OF PHILOSOPHY DEGREE PROGRAMMES

The University may offer Master of Philosophy Degree Programmes in the following fields of study:-

2.3.1 Faculty of Applied Science

Applied Biology

Applied Biochemistry

Applied Chemistry

Applied Mathematics

Applied Physics

Computer Science

Operations Research and Statistics

Operations Research

Statistics

Radiography

Sports Science and Coaching

Environmental Science and Health

Forest Resources and Wildlife Management

2.3.2 Faculty of Commerce

Accounting

Actuarial Science

Banking

Finance

Management

Marketing

Risk Management

2.3.3 Faculty of Engineering

Chemical Engineering

Civil and Water Engineering

Electronic Engineering

Industrial and Manufacturing Engineering

Fibre and Polymer Engineering

2.3.4 Faculty of the Built Environment

Architecture

Construction Project Management

Landscape Architecture

Quantity Surveying

Urban Design

2.3.5 Faculty of Communication and Information Science

Journalism and Media Studies

Library and information Science
Publishing Media Studies
Records and Archives Management

2.3.6 Faculty of Medicine

Medicine

2.3.7 Faculty of Science and Technology Education

Accounting and Business Studies

Art

Biology

Chemistry

Civil and Construction Engineering

Clothing Textile

Computer Science

Design and Technology

Electrical and Electronic Engineering

Mechanical and Industrial Engineering

Mathematics

Physics

Technical Graphics

Wood Science

2.4 DOCTOR OF PHILOSOPHY DEGREE PROGRAMMES

The University may offer Doctor of Philosophy Degree Programmes in the following fields study:-

2.4.1 Faculty of Applied Sciences

Applied Biology

Applied Biology and Biochemistry

Applied Mathematics

Applied Physics

Computer Science

Radiography

Operations Research and Statistic

Operations Research

Statistics

Sports Science and Coaching

Environmental Science and Health Forest Resources and Wildlife Management

2.4.2 Faculty of Commerce

Accounting

Actuarial Science

Banking

Finance

Management

Marketing

Risk Management

2.4.3 **Faculty of Engineering**

Chemical Engineering

Civil and Water Engineering

Electronic Engineering

Industrial and Manufacturing Engineering

Textile Technology

2.4.4 Faculty of the Built Environment

Architecture

Construction Project Management

Landscape Architecture

Quantity Surveying

Urban Design

2.4.5 Faculty of Communication and Information Science

Journalism and Media Studies

Library and information Science

Publishing Media Studies

Records and Archives Management

2.5 **HIGHER DOCTORATE DEGREE PROGRAMMES**

The University may offer Doctor of Science Degree in the following fields of study:-

2.5.1 Faculty of Applied Sciences

Applied Biology

Applied Biochemistry

Applied Chemistry

Applied Mathematics

Applied Physics

Computer Science

Operations Research and Statistics

Operations Research

Statistics

Radiography

Sports Science and Coaching

Environmental Science and Health

Forest Resources and Wildlife Management

2.5.2 Faculty of Commerce

Accounting

Actuarial Science

Banking

Finance

Management

Marketing

Risk Management

2.5.3 Faculty of Engineering

Chemical Engineering

Civil and Water Engineering

Electronic Engineering

Industrial and Manufacturing Engineering

Textile Technology

2.5.4 Faculty of the Built Environment

Architecture

Construction Project Management

Landscape Architecture

Quantity Surveying

Urban Design

2.5.5 Faculty of Communication and Information Science

Journalism and Media Studies Library and information Science Publishing Media Studies Records and Archives Management

2.5.6 Other Higher Doctorates include the Doctor of Laws and Doctor of Literature (D.Litt.) which may be offered in the Faculties of Humanities and Commerce.

2.5.7 **Faculty of Medicine**

Medicine

2.5.8 Faculty of Science and Technology Education

Accounting and Business Studies

Art

Biology

Chemistry

Civil and Construction Engineering

Clothing Textile

Computer Science

Design and Technology

Electrical and Electronic Engineering

Mechanical and Industrial Engineering

Mathematics

Physics

Technical Graphics

Wood Science

3.0 ENTRY REGULATIONS

3.1 **POSTGRADUATE DIPLOMAS**

The normal minimum entry requirements shall be an appropriate First Degree or approved equivalent qualification.

3.1.1 Other qualifications may be considered by the Senate on the recommendation of the Department and Faculty concerned.

Normally, for such qualifications the University shall require proof of relevant experience and may require applicants to pass a qualifying examination to decide on their acceptability for admission.

3.1.2 For admission to a particular programme of study and/or for subjects/courses within the programme there may be specific restrictions on the choice of subjects in the general requirements and/or additional requirements shall prescribe such additional requirements.

3.2 MASTERS DEGREES BY COURSE WORK

The normal entrance requirement shall be an appropriate Honours Degree or approved equivalent qualification.

- 3.2.1 Other qualifications may be considered by the Senate on the recommendation of the Department and Faculty concerned.
 - Normally, for such qualifications the University shall require proof of relevant experience and may require applicants to pass a qualifying examination to decide on their acceptability for admission.
- 3.2.2 For admission to a particular programme of study and/or for subjects/courses within the programme there may be specific restrictions on the choice of subjects in the general requirements and/or additional requirements shall prescribe such additional requirements.

3.3 MASTER OF PHILOSOPHY DEGREES

- 3.3.1 The normal entrance requirements shall be an appropriate Honours Degree in the first or Upper Second Division.
- 3.3.2 An appropriate Honors Degree in the Lower Second Division or Third Division may be considered provided performance in the intended field of study was in the First or Upper Second Division.
- 3.3.3 Other qualifications may be considered by the Senate on the recommendation of the Department and Faculty concerned. Normally, for such qualifications the University shall require applicants to pass a qualifying examination to decide on their acceptability for admission.

3.4 TRANSFER FROM MASTER OF PHILOSOPHY TO DOCTOR OF PHILOSOPHY DEGREE

A student who is registered for the Master of Philosophy Degree may apply, after

completing one year, if his/her Supervisor so recommends, to transfer his/her registration and to proceed to Doctor of Philosophy Degree programme. Retrospective registration may be permitted.

On recommendation of the Supervisor (s) the Departmental Board may recommend to Senate through the Faculty Higher Degrees Committee that a student, who is registered for the Master of Philosophy degree transfers his/her registration and proceeds to the Doctor of Philosophy programme.

3.5 TRANSFER FROM DOCTOR OF PHILOSOPHY TO MASTER OF PILOSOPHY

A student who is registered for the Doctor of Philosophy Degree but wishes to proceed to the Master of Philosophy Degree, may apply if his/her Supervisor so recommends, to transfer his/her registration and to proceed to the Master of Philosophy Degree Programme. The length of requisite further study, if any, shall be prescribed.

On recommendation of the Supervisor(s) the Departmental Board may recommend to Senate through the Faculty Higher Degrees Committee that a student who is registered for the Doctor of Philosophy degree transfers his/her registration and proceeds to the Master of Philosophy programme.

3.6 **DOCTOR OF PHILOSOPHY**

The normal entrance requirement shall be an appropriate Masters Degree.

3.7 HIGHER DOCTORATE DEGREES

Applicants shall be approved graduates in the tenth or subsequent year after the date of their graduation and must have published work of an exceptionally high standard such as would confer on them an authoritative and international standing in their subject and in their particular field of research.

4.0 FACULTY REGULATIONS

There shall be Faculty Regulations which should be read in conjunction with the General `Academic Regulations.

For admission to a Programme of study and/or for Subject/Course within the Programme there may be specific restrictions on the choice of subjects and additional requirements for entry. Faculty Regulations may prescribe additional requirements

5.0 SUBMISSION OF APPLICATIONS

5.1 POST GRADUATE DIPLOMAS AND MASTERS DEGREES BY COURSEWORK

- 5.1.1 Applications shall be submitted on the official forms.
- 5.1.2 Application forms shall be submitted by the closing dates as advertised.
- 5.1.3 Late applications may be considered upon payment of the prescribed late application fee.

5.2 MASTER OF PHILOSOPHY AND DOCTOR OF PHILOSOPHY DEGREES

- 5.2.1 Applications shall be submitted on the official forms.
- 5.2.2 There shall be no deadlines for the submission of applications.
- 5.2.3 Acceptances and rejections shall be determined by the Senate on the recommendations by the Departmental Board through the appropriate Faculty Higher Degrees Committee.

5.3 **HIGHER DOCTORATE DEGREES**

- 5.3.1 Applications shall be made on the official forms.
- 5.3.2 An eligible candidate may make an application at any time and shall, at the same time, submit evidence of his qualifications; such evidence shall consist of published work, papers or books containing original contribution to the advancement of knowledge.
- 5.3.3 Where a part of the work submitted is not in a candidate's sole name, the candidate shall produce satisfactory evidence of his/her part in the initiation, direction and conduct of the work.
- 5.3.4 A candidate shall indicate what part, if any, of the work has been submitted for a Degree in this or any other university, by himself/herself or in the case of joint work, by any of his co-authors.
- 5.3.5 The term 'published' in these Regulations shall mean printed in a periodical or as a pamphlet or book which has been available for criticism by relevant experts. The Examiners shall be given discretion to disregard any of the work submitted, if any, in their opinion, the work has not been so available for criticism either on account of its in access or because it has been submitted for the Degree at too short an interval after it publication.
- 5.3.6 The application and supporting documentation shall be submitted to the appropriate Departmental Board for preliminary consideration. The Departmental Board shall make recommendations to the Faculty Higher

Degrees Committee.

5.3.7 If the Faculty Higher Degrees Committee considers that the application has sufficient merit, it shall recommend to Senate the appointment of both Internal and External Examiners and that the applicant be formally registered as a candidate for examination.

6.0 STRUCTURE AND DURATION OF PROGRAMMES

6.1 **POSTGRADUATE DIPLOMAS**

The minimum duration of the Postgraduate Diploma Programmes shall be:-

Full-time - 1 year Part-time - 2 years

6.2 MASTERS DEGREES BY COURSEWORK

The minimum duration of the Masters Programme by Coursework shall be:-

Full-time/modular - 1 year Part-time - 2 years

6.3 MASTER OF PHILOSOPHY DEGREE

The duration of the Master of Philosophy Programmes shall be:-

Full-time - 18 months

3 years maximum

Part-time - 3 years

5 years maximum

6.4 **DOCTOR OF PHILOSOPHY DEGREES**

The duration of the Doctor of Philosophy Degree Programmes shall be:-

Full-time - 3 years

4 years maximum

Part-time - 5 years

6 years maximum

6.5 Maximum Time Allowable for Postgraduate Degree Programmes by Coursework.

The maximum limit of study allowable to complete a Postgraduate Degree by Coursework shall be as follows:

For a Full-time mode of study, the maximum limit of study allowable to complete shall be the normal duration period plus 1 year.

For a Part-time mode of study, the maximum limit of study allowable to complete shall be the normal duration period plus 1 year.

6.6 Process of Requesting for an Extension of Programme Time Limit for Postgraduate Degree Programmes by Coursework

A student who reaches the maximum time limits allowed for a Programme shall submit an Application in writing for an Extension of the Programme Time Limit in the prescribed Form to the Department and payment of a fee determined by the University. The Department shall recommend its decision to the Faculty which in turn shall recommend to the Academic Board. The application shall be considered by the Academic Board on behalf of the Senate, which may approve or reject the application. The decision of the Academic Board shall be final.

A student who is differently abled may apply for a time limit extension for reasons directly related to their disability. Such an application shall be in the prescribed Form and must be accompanied by a supporting letter from a Medical Doctor. Such an application for an extension due to a disability shall be exempt from payment of an application fee.

An application to extend a time limit shall be submitted before the programme Time Limit expires.

6.7 Process of requesting for an Extension of Programme Time Limit for Postgraduate Research Degree.

- 6.7.1 If a student reaches his/her time limit and has not submitted his/her thesis, the student's registration status shall automatically lapse and may be withdrawn from the University. Only in very exceptional circumstances shall a student be granted a time limit extension after submitting an application.
- 6.7.2 An application for an extension using a prescribed Form, shall be considered on its merits by the Department and Faculty Higher Degrees Committee which shall recommend to the Senate through the Academic Board.

- 6.7.3 In his/her application, a student must clearly state the reason why he/she failed to submit the thesis on time and demonstrate how he/she shall use the requested extension period effectively in order to complete the writing of the thesis and meet the new deadline.
- 6.7.4 An application to extend a time limit shall be submitted three months before the programme Time Limit expires and shall be considered by the Academic Board on behalf of the Senate. The decision of the Academic Board shall be final.

If a student's application is approved and the student fails to submit the thesis at the end of the final extension period, the student shall be withdrawn. Any data or material gathered during the period of study prior to the withdrawal shall remain the property of the University.

7.0 PROGRAMME AND STUDY OF MASTER OF PHILOSOPHY AND DOCTOR OF PHILOSOPHY DEGREES

- 7.1 Applications for the Master of Philosophy and Doctor of Philosophy studies shall not follow the normal University calendar. Faculty Higher Degrees Committees can receive and process these anytime of the Year.
- 7.2 Registration/Enrolment for the Master of Philosophy and Doctor of Philosophy Degrees shall follow after acceptance of submitted proposals and suggested supervisors by the Academic Board.
- 7.1 Each student shall be required to pursue a prescribed programme of study under the direction of a supervisor, who shall be a member of the academic staff of the University in the appropriate discipline. Normally, one or more Associate Supervisors will also be appointed.
- 7.3 Each student shall be required to pursue a prescribed programme of study under the direction of a Supervisor who shall be a member of the academic staff of the University in the appropriate discipline. If the need arises, a Co-supervisor and an Associate Supervisor(s) may also be appointed.
- 7.4 The appointment of all Supervisors shall be made by the Senate on the recommendations of the appropriate Faculty Higher Degrees Committee.
- 7.3 The Supervisor shall report on each student's progress every six months to the Faculty Higher Degrees Committee through the appropriate Departmental Board.

- 7.5 A student shall maintain regular contact with the supervising Department and shall be required to attend for certain periods at the University as directed by their approved Supervisor (s).
- 7.4 Students shall maintain regular contact with the supervising Department and shall be required to attend for certain periods at the University as directed by their approved Supervisor (s). Replaces 7.3 as above
- 7.6 The student shall complete the relevant Progress Report Form and submit it after every six months to the Supervisor. The Supervisor shall report on each student's progress every six months to the Faculty Higher Degrees Committee through the appropriate Departmental Board.
- 7.7 The Faculty Higher Degrees Committee shall recommend and submit the student's progress report to the Academic Board for publication.
- 7.8 A student who fails to submit a progress report within a six-month period of study shall receive a written warning from the Chairperson of the Department.
- 7.9 No break in the normal continuity of study shall be permitted, except by permission of the Senate on the recommendation of the Faculty Higher Degrees Committee.
- 7.10 A student who fails to submit a progress report within a twelve-month period of study shall be regarded as having had a break in the normal continuity of study and may be deregistered from the programme.
- 7.11 A full-time student may be engaged in limited teaching at the University.
- 7.12 A student who is employed outside the University, or a staff member employed in the University, other than on the research programme for which he/she proposes to be registered, may normally be accepted for registration only on a part-time basis.
- 7.13 If a student does not begin his/her studies for the Master of Philosophy or Doctor of Philosophy Degree within one calendar year from the date of approval, his/her registration shall lapse, and he/she will be required to re-apply to the University if he/she still desires to proceed.
- 7.14 A student may be required, as part of their Programme, to complete elements of course work to enhance their research studies, provided that such course work shall amount to not more than 25% of the minimum period allowed for the full programme.

The prescription of any coursework element shall require the approval of the Senate on the recommendation of the Departmental Board through the Higher Degrees Committee concerned. Where such course work is prescribed, the Department concerned shall ensure that the student is informed in writing of the precise requirements for satisfactory completion of the course work for reporting in due course to the Board of Examiners.

7.15 **SUBMISSION OF THESIS**

The Supervisor and the Chairman of the Faculty of Higher Degrees Committee shall satisfy themselves that the thesis is in a form suitable for submission for examination and that, where items of course work have been set, the candidate has satisfactorily completed these items.

The Chairman of the Department and the Chairman of the Faculty Higher Degrees Committee shall request that the thesis be subjected to professional proofreading and editing before submission.

Plagiarism is an academic offence in the sense that theft is in ordinary daily life hence every submission shall be checked for originality. An originality report showing the similarity index shall be submitted together with the thesis.

A thesis whose originality report shows an unacceptably high level of similarity index shall not be accepted for examination by the Faculty Higher Degrees Committee.

A soft copy, together with four hard copies of the thesis, in loose-bound form shall be submitted by the Department to the Deputy Registrar Academic Affairs for examination.

After examination, the Deputy Registrar Academic Affairs shall submit one corrected loose-bound copy of the thesis to the Academic Board.

After approval by the Academic Board, a soft copy together with five hard copies of the final thesis, in hard-bound form shall be submitted by the Department to the Deputy Registrar Academic Affairs.

8.0 MARKING SCHEME AND CLASSIFICATION

8.1 POSTGRADUATE DIPLOMAS AND MASTERS DEGREES BY COURSEWORK

Postgraduate diplomas and Masters Degrees by Coursework shall be awarded in the

categories; distinction, merit, credit and pass.

The following Grading Scheme shall be used for the Modules and Programmes:

80% and above -		DISTINCTION	(D)
70% - 79%	-	MERIT	(M)
60% - 69%	-	CREDIT	(C)
50% - 59%	-	PASS	(P)
Below 50%	_	FAIL	(F)

8.2 MASTER OF PHILOSOPHY DEGREES

The Master of Philosophy Degrees shall not be classified.

8.3 **DOCTOR OF PHILOSOPHY DEGREES**

The Doctor of Philosophy Degrees shall not be classified.

8.4 HIGHER DOCTORATE DEGREES

The Higher Doctorate Degrees shall not be classified.

9.0 ASSESSMENT OF CANDIDATES

9.1 MODE OF ASSESSMENT

- 9.1.1 Normally, evaluation shall be based on continuous assessment, dissertation and formal examinations. The percentage allocation of each component of the assessment shall be set by the Senate on the recommendation of the appropriate Faculty Board;
- 9.1.2 Satisfactory completion of modules may require submission of written work, attendance at lectures, seminars, tutorials, industrial attachment and other activities as stated in the Faculty Regulations;
- 9.1.3 Each Department shall determine which items of the module shall be included in the continuous assessment and shall define the relative weighting assigned to each item. Each Department shall inform the students of these details at the beginning of the module and shall maintain written records of each student's performance in these elements of continuous

- assessment. Items incorporated in the continuous assessment include assignments, tests, essays and projects;
- 9.1.4 External Examiners shall be appointed to moderate all formal examinations;
- 9.1.5 All matters relating to the conduct of formal examinations shall be the responsibility of the Registrar;
- 9.1.6 To be admitted to any formal examination, a candidate shall:
 - a) be registered as a student of the University in accordance with the General Academic Regulations;
 - b) have satisfactorily completed approved modules of study at the University.
- 9.1.7 Exclusion from a formal examination shall require the authority of the Senate.
- 9.1.8 The Examiners may require any candidate to attend an oral examination and/or write a special examination.

9.2 **CREDIT ACCUMULATION**

- 9.2.1 The following Credit Accumulation regulations shall apply to all Modules and Programmes:
- 9.2.2 A Credit shall be equivalent to 10 notional study hours of learning.
- 9.2.3 All programmes offered by the University shall use an academic credit allocation system approved from time to time by the Senate. The University shall adopt the following SADC qualification framework as prescribed by the Zimbabwe Council for Higher Education for all programmes offered:

SADC-QF LEVEL	QUALIFICATION
10	Doctorate
9	Masters

9.2.4 A student who completes a module shall be awarded the credits approved for the module at the assigned level.

9.2.5 Award of Credit

A student who passes a module shall be awarded the approved credit for that module.

9.2.6 Credit Accumulation and Degree Qualification

A student shall progressively accumulate credits for modules that they successfully complete. A Student shall be required to accumulate sufficient credits to progress through the programme and shall be required to gain the total credits required for the award of the degree qualification as prescribed in the Faculty Regulations.

9.2.7 Accreditation of Prior Learning

A student who is exempted from the first year of study shall be awarded credit determined by the Faculty recognising prior learning that matches the learning outcomes of the programme gained from an accredited institution and relevant work experience.

9.3 MASTER OF PHILOSOPHY AND DOCTOR OF PHILOSOPHY DEGREES

9.3.1 **THESIS**

9.3.1.1 TITLE OF THESIS

A candidate shall submit to the Faculty Higher Degrees Committee, the title of his/ her thesis for approval by Senate at least six months before final submission of the thesis. After the title has been approved, it may not be changed except with the permission of the Senate.

9.3.2 SUBMISSION OF THESIS

The Supervisor and the Chairman of the Faculty Higher Degrees Committee

- shall satisfy themselves that the thesis is in a form suitable for submission for examination and that, where items of coursework have been set, the candidate has satisfactorily completed these items. Four copies of the thesis, in loose-bound form shall be submitted to the Deputy Registrar (Academic Affairs).
- 9.3.3 After completing the study, a student shall submit a thesis which should comply with the following conditions:
 - 9.3.3.1 The greater portion of the work submitted shall have to be done by the student after registration for the degree.
 - 9.3.3.2 The presentation of the thesis shall be of an acceptably high standard.
 - 9.3.3.3 A Master of Philosophy thesis shall provide evidence that the candidate has mastered relevant research techniques, has shown scholarship, has developed a capacity for criticism of his/her own and other work, and has widened his/her knowledge and understanding of literature of his field of study.
 - 9.3.3.4 A Doctor of Philosophy thesis shall constitute an original and substantial contribution to the advancement of knowledge in the Subject chosen, and show evidence of a greater depth of scholarship than that required for the Master of Philosophy degree described above.
 - 9.3.3.5 The length of the thesis shall normally be established in consultation with the Supervisor and the Faculty Higher Degrees Committee.
 - 9.3.3.6 The thesis shall be written in English.
 - 9.3.3.7 The literary form of the thesis shall be satisfactory.
 - 9.3.3.8 The thesis shall consist of the candidate's own account of his/her research.
 - 9.3.3.9 The thesis may describe work done in conjunction with the candidate's Supervisor(s), and include material obtained or produced with technical or other assistance, provided that the candidate shall state clearly his/her personal share in the investigation and specifically acknowledge all such assistance. This statement shall be certified by his/her Supervisor and bound as part of the preface of the thesis.

Work done jointly with persons other than the candidate's Supervisor(s) may be accepted as a thesis, or part of a thesis, in certain circumstances, provided the candidate's share is clearly certified.

- 9.3.3.10 Work already published, including that published in Joint names, may be included only if it forms an integral part of the thesis. A series of publications alone shall not be acceptable as a thesis.
- 9.3.3.11 An abstract of the thesis, in single spacing form, not exceeding one page shall be incorporated as part of the preface to the thesis.
- 9.3.4 A candidate shall not be permitted to submit as his/her thesis, a thesis which had been submitted to another university. However, a candidate shall not be precluded from incorporating work which he/she shall indicate on his/her thesis for entry to the examination and also in his/her thesis, any work which has been so incorporated.
- 9.3.5 The format of the thesis submitted for examination shall be as follows: Typed, or printed, double-spacing form or reproduced there from, (except for the abstract which shall be in single-spacing form) in the following format:-
 - 9.3.5.1 Size of paper: International A4: (210 mm x 297 mm). No restriction shall be placed on the drawing of maps.
 - 9.3.5.2 There shall be a margin of 40 mm on the left-hand side of the page, to allow for binding, a margin of 10 mm on the right-hand side and a margin of 20 mm at the top and at the bottom of the page.
- 9.3.6 A candidate may submit as subsidiary matter in support of his/her candidature, any publications or contributions to the advancement of his/her subject which he/she may have published independently or jointly. In the event of a candidate submitting such subsidiary matter, he/she shall be required to state fully his/her own share in any joint work. Where there is a substantial computing content in the thesis, a machine readable copy of the source programme shall be submitted together with the copies of the thesis.
- 9.3.7 After the completion of the examination process, a candidate shall

submit four copies of the successful thesis which shall be bound in accordance with University Regulations.

10.0 DETERMINATION OF CANDIDATES' RESULTS

10.1 POSTGRADUATE DIPLOMA AND MASTERS DEGREE BY COURSEWORK

- 10.1.1 Results shall be determined by the Senate on recommendation of Faculty Boards of Examiners.
- 10.1.2 Departmental Panels of Examiners shall comprise all full-time lecturing staff in that Department, the External Examiner(s) and, where appropriate, as determined by the Departmental Panel, Part-time Lecturers for the course/subject concerned.
- 10.1.3 Faculty Boards of Examiners shall consist of the Dean and Deputy Dean of the Faculty, the Chairman of each Department, the External Examiner for the Department and normally one other academic member of the Department, nominated by the Departmental Panel from each Department involved in the subjects for that examination.

The Departmental Panel of Examiners shall:

- 10.1.3.1 agree, for each candidate, marks in terms of percentages, for continuous assessment, for the dissertation where applicable, for the formal examination and overall course work in terms of the Faculty Regulations for courses.
- 10.1.3.2 recommend to the Faculty Board of Examiners whether a candidate should pass or fail the relevant module(s) and subject(s) taken, and recommend the category of passing.
- 10.1.3.3 where subject/module prizes are available for award, make recommendations for the award these prizes.
- 10.1.4 The Faculty Board of Examiners shall:
 - 10.1.4.1 consider the recommendations of the Panels of Examiners and recommend to the Senate an overall result for each candidate and any other conditions as it may deem appropriate;

10.1.4.2 make recommendations to the Senate with regard to the award of any prizes which may be available for candidates within the programme.

10.2 MASTER OF PHILOSOPHY AND DOCTOR OF PHILOSOPHY DEGREES

10.2.1 EXAMINATION AND DETERMINATION OF CANDIDATES' RESULTS

Results shall be determined by the Senate on the recommendation of the Faculty Board of Examiners which shall consists of the following:

10.2.1.1 the Dean or Deputy Dean of the Faculty (Chairman), the Chairman of the Faculty Higher Degrees Committee, the Chairman of Department concerned, Supervisor(s), one Internal Examiner who is an expert in the field.

THE EXTERNAL EXAMINER: The External Examiner need not be present at the Board of Examiners Meeting for the Master of Philosophy Degrees.

- 10.2.1.2 candidates shall be assessed on the merits of their thesis but where elements of course work have been prescribed, they shall also satisfy the examiners that this has been satisfactorily completed.
- 10.2.1.3 when a candidate is ready to submit his/her dissertation in detail for examination, the Departmental Board shall recommend to the Senate through the Faculty Higher Degrees Committee, the appointment of Examiners, one being an External Examiner and two being members of staff of the University who are specialists in the field of study concerned. These Examiners shall assess the dissertation in detail and shall each submit a written report with comments and recommendations to the Dean of the Faculty concerned. A member of staff who has been appointed as Supervisor for the dissertation may not be appointed as one of these Examiners.
- 10.2.1.4 on receipt of reports of the Examiners, the Dean of the Faculty concerned shall refer these reports to the Board of Examiners.
- 10.2.1.5 the Board of Examiners shall normally examine the candidate orally. The Board of Examiners may require further examination through written papers, or practical examination, or both, on the subject of the

- thesis and, if they see fit, subjects relevant thereto.
- 10.2.1.6 after the Board of Examiners has considered the written reports of the Examiners it may recommend to the Senate that the candidate be passed or failed.
- 10.2.1.7 If the thesis is adequate, but the candidate fails to satisfy the Examiners at the oral or other examination, the Board of Examiners may recommend to the Senate that the candidate be permitted to represent the same thesis and submit to further oral or other examination within a period of one calendar year.
- 10.2.1.8 the candidate may be required to make editorial amendments to his/her thesis to the satisfaction of the Chairman of the Board of Examiners, after consultation with the Chairman of the Department concerned before lodgement of the final bound copies of the dissertation.
- 10.2.1.9 if the thesis, though inadequate, shall seem of sufficient merit to justify such action, the Board of Examiners may recommend to the Senate that the candidate be permitted to represent his/her thesis in a revised form within one calendar year from the decision of the Senate with regard thereto. The Board of Examiners shall not, however, make such recommendation without submitting the candidate to any oral examination or, exceptionally, if an oral examination is impracticable, a written examination.
- 10.2.1.10 in the event of a disagreement between Examiners on the merits of the work, the Board of Examiners may refer the thesis to a second External Examiner.

10.3 HIGHER DOCTORATE DEGREES

10.3.1 The Board of Examiners shall consist of the following persons:

The Dean or Deputy dean of the Faculty (Chairman), All Professors in the Faculty, The Chairman of the Faculty Higher Degrees Committee, The Chairman of the Department concerned, The Internal Examiners and, where appropriate, one or more suitably qualified persons who shall, normally be members of the academic staff. Such persons may be appointed to the Board at the discretion of the Dean after consultation with the Chairman of the Department concerned.

- 10.3.2 Assessment of the work submitted by the candidate shall be made initially by two or more External Examiners and by two or more Internal examiners appointed by the Senate on the recommendation of the appropriate Faculty Higher Degrees Committee.
- 10.3.3 Each External Examiner shall be required to submit a formal written report on the submission, to the Deputy Registrar (Academic Affairs) with his/her recommendations.
- 10.3.4 On receipt of the report from the External Examiner(s), the Deputy Registrar (Academic Affairs) shall refer it to the Chairman of the Department concerned, through the Dean of the Faculty, for consideration by the Internal Examiners.
- 10.3.5 Having read the submission and the report(s) from the External Examiners, the Internal Examiners shall report formally and make recommendations to a Board of Examiners which shall, in turn, report and recommend to the Senate.

11.0 FAILURE TO SATISFY EXAMINERS

- 11.1 A candidate who fails to satisfy the examiners in terms of the Faculty Regulations may be required by the Senate to 'repeat' or to 'withdraw'.
- 11.2 'Repeat' means that the student may apply for readmission into the same Programme and his/her application shall be considered through the normal procedures. This measure would normally be taken in respect of a student who has failed in a Programme. Such a candidate shall be re-admitted only if a place is available after normal entry candidates have registered. If a student is repeating a module(s), he/she shall only be credited with the marks obtained during the 'repeat' examination. Nevertheless where this is provided in the Faculty Regulations a 'repeat' student may be exempted from re-attendance and re-examination in any module(s) in which he/she previously passed, or may take another approved course or other approved modules instead of the module(s) previously passed. Exemptions shall be granted only in those cases where a candidate has scored credit or better pass.
- 11.3 'Withdraw' means that the student shall withdraw from the University. This measure would normally be taken in respect of a student who has either failed in two

- programmes failed overall twice in one Part of one Programme. Once 'withdrawn' the student shall not apply again for admission until after a period of two years has elapsed.
- 11.4 Where a dissertation or a project is prescribed in any programme, candidates shall be informed in advance of the deadline for submission of such dissertation or project. Unless prior permission for an extension of this deadline has been granted by the Academic Board, any candidate who fails to meet this submission deadline shall normally fail and would be required to repeat the dissertation or project. A candidate who fails the dissertation or project but obtains a mark of 40% 49% shall on the recommendation of the Examiners, be permitted to submit the dissertation or project at a later date, normally within three months of the publication of the results. Unless otherwise determined by the Senate, the maximum mark allowable for such referred work shall be 50%.

12.0 APPEALS AGAINST TERMINATION OF STUDIES

- Any candidate who, having failed to satisfy the Examiners, is required to withdraw from the University or discontinue a programme, has a right to appeal.
- 12.2 A committee shall be established by the Senate to consider such an appeal.
- 12.3 Any candidate who wishes to lodge an appeal against withdrawal or discontinuation must do so in writing to the Registrar within 21 days after the publication of the Examination results.
- On appeal, the candidate must state clearly the grounds of the appeal. Medical grounds must be substantiated in writing by a medical practitioner registered in terms of the Health Professions Act. Any other evidence which the candidate wishes to submit in support of his/her case must also be lodged with the written appeal.
- 12.5 The Registrar will refer all timeous appeals to the Appeals Committee for consideration.
- 12.6 The Appeals Committee will consider, as legitimate grounds for appeal, new evidence of mitigating circumstances (except mere lack of diligence or other fault on the part of the student) which was not previously available to the Examiners. Extenuating circumstances of a force majeure' nature, which explain and are directly relevant to the

- student's academic performance and which he/she could not reasonably have been expected to have foreseen or avoided, will be considered.
- 12.7 The Committee shall be empowered to hear an appellant orally and to seek all such information or evidence as it may consider pertinent.
- 12.8 No right to automatic oral hearing is conferred upon appeals and the University will not reimburse any expenses incurred by an appellant in making a personal appearance before the Committee.
- 12.9 The Committee shall make recommendations in each case, as it deems appropriate.

 Its recommendations shall be submitted to the Senate for approval, or to the Academic Board or the Vice-Chancellor on behalf of the Senate for consideration.

13.0 AEGROTAT PROVISIONS

- 13.1. If a candidate, having completed a substantial component of a Part of his/her Programme, is prevented by serious illness or other sufficiently substantiated cause, from completing the prescribed requirements for that Part of the Programme, he/she may be deemed by the Senate to have satisfied the examiners for that Part upon the recommendation of the Board of Examiners concerned and upon such other conditions as the Senate may decide, provided that:-
 - 13.1.1 The candidate will not normally be exempted from presenting a thesis or dissertation where such is prescribed.
 - 13.1.2 The award of an Aegrotat Degree shall be without classification.
- Where a student qualifies for an Aegrotat Degree, he/she may opt instead to write a special examination in order that an overall grade may be determined and formally credited to the student. Application for such an option must be submitted in writing to the Registrar not later than four weeks before the scheduled examinations.
- 13.3 The Senate may require any candidate, irrespective of his/her Programme or Faculty,
 Whose examination performance has been adversely affected by sufficiently substantiated circumstances of 'force majeure' nature to write a special examination at

an appropriate future date, normally not later than three months after the date of the last examination missed.

In such a case, unless otherwise stipulated by the Senate, the mark obtained in the special examination will be counted in the overall assessment for purposes of degree classification.

- 13.4 A candidate who wishes to be considered for an Aegrotat Degree must apply in writing, together with written substantiation for his/her case, to the Registrar normally within ten days of the end of the University Examinations for the Programme concerned. Appeals which are submitted on medical grounds must be supported by a certificate from a medical practitioner registered in terms of the Health Professions Act.
- 13.5 A candidate who is awarded an Aegrotat Degree may not re-enter the examination for that same degree, but shall be eligible to apply to proceed to an appropriate higher degree.

14.0 PLAGIARISM

14.1 **Definition**

Plagiarism is the unacknowledged use of another person's material or ideas. As such, plagiarism is an academic offence in the sense that theft is in ordinary daily life.

14. 2 Recommendations on the severity of the penalty shall be determined by the appropriate Departmental Board or Board of Examiners. Cases of plagiarism shall be handled in the following manner:-

14.3 Minor Cases of Plagiarism

14.3.1 **FIRST OFFENCE**: In the case of plagiarism being discovered in a piece of work such as an essay or laboratory report or Dissertation the student shall get a Chairman's warning but shall be given an opportunity to re-do and resubmit an acceptable piece of work after one week and shall be maximum of 50%.

awarded a

14.3.2 **SECOND OFFENCE**: The student shall get a Dean's warning and shall be awarded a mark of zero for the submitted work.

14.3.3 **THIRD OFFENCE**: The Senate shall take disciplinary measures such as suspension or expulsion of the student who will have been awarded a mark of zero.

14.4 Major Cases of Plagiarism

- 14.4.1 In the case of plagiarism being discovered in a project at the end of the year the candidate shall be denied the opportunity to resubmit the project, but will be required to submit a new project.
 - 14.4.1.1 The new project shall be submitted not later than June of the following year.
 - 14.4.1.2 The new project will be awarded a maximum mark of 50%
- 14.4.2 In the case of plagiarism being discovered in a project for the second time and after resubmission, a mark of zero shall be awarded and recorded, and the Senate shall take disciplinary action either to suspend or expel the student.

15.0 MISCONDUCT AT EXAMINATIONS

15.1 Subject to Ordinance 30, any candidate found using unauthorised material, or attempting to obtain information from other candidates or their papers, or otherwise guilty of misconduct during the examination shall be disqualified not only in that examination and subject, but in the whole examination, and further disciplinary action may be taken by the University.

16.0 PUBLICATION OF RESULTS

- 16.1 The Registrar shall be responsible for the publication of the results of University Examinations as approved by the Senate.
- Results lists shall be published individually to the student's web portal, and where necessary, shall be posted on University Notice Boards.

17.0 ACADEMIC TRANSCRIPT

On leaving the University each student may obtain, on application to the Registrar, one

copy of a formal transcript of his/her complete academic record at the University.

18.0 AWARD OF DEGREES

The award of Degrees of the University shall be subject to approval by the University Council.

Candidates completing the requirements for such award will be entitled to receive a formal

certificate of the University, bearing the University seal and signed by the Vice-Chancellor

and the Registrar, confirming the award.

DEFERMENT AND LEAVE OF STUDIES POLICY

PURPOSE

The formulation of the policy on deferment of studies is an acknowledgement that students enrolled at the National University of Science and Technology (NUST) may apply for a deferment of studies and take leave from studies.

The policy is developed with the objective of ensuring that students are able to apply for deferment or leave of studies. In addition this policy will facilitate efficient and effective management of deferment of studies by the University.

SCOPE

This policy shall allow the Deferment and Leave of Studies in all programmes offered by NUST. Students who have been formally offered a place to study at the University and have notregistered, have the option to defer the offer while students who have registered and havecommenced studies may apply to take Leave from studies at any time.

Applications by students with pending disciplinary cases shall be considered after finalisation of their disciplinary cases. Applications for Deferment and Leave of studies shall be considered by the University according to their respective individual merits. Conditions listed on the offerLetter of Admission must be satisfied before an application for Deferment or Leave of Studiesis considered.

1. This Policy shall allow Deferment and Leave of Studies from the National University of Science and Technology Undergraduate and Postgraduate degree programmes.

2. Definitions

Deferment: Postponement of studies for a period of up to 12 months, normally covering the Academic Year, for a person who has been offered a place, or a person who is allowed to proceed to the next part of the programme and has not registered.

Leave of Studies: A period of 6 to 12 months covering the normal teaching period when a registered student is excused from formal study. Leave applies to students that have commenced studies.

Offer: When an applicant is informed in writing that he has been offered a place in a programme to study.

Programme: A plan of study lasting over a period of time which leads to the award of a diploma or a degree of the University.

LIBRARY

1.0 INTRODUCTION

The Library is the nerve centre of academic activity, working to enrich the total study experience by utilising new and emerging technologies in the provision of information services. It creates learning spaces both physical and virtual using state of the art tools and methods to stimulate learning and respond to student needs.

2.0 HISTORICAL BACKGROUND

The NUST Library was established in 1992 with a small collection of 2000 books and two members of Staff. It has since grown to over 55 000 books, more than 54 electronic databases, 50 000 plus e-books and 50 members of staff. The Library computerised its systems by installing INNOPAC Millennium, an Integrated Library Management System in 2003 through the assistance from SIDA/SAREC which availed a grant to NUST.

3.0 Physical Address

The Main Library is located at 114 Fort Street, in the city centre of Bulawayo until the construction of a new-state- of- The-art Library is completed.

3.1 **Physical expansion**

Resources are not the only expansion witnessed at the NUST Library. Apart from the main Library, there has since been established 3 more branch libraries:

- 3.1.1The Graduate School of Business Library
- 3.1.2FOBE Library (Faculty of the Built Environment)
- 3.1.3 Faculty of Medicine Library (located at Mpilo Hospital in Bulawayo)

3.2The Library is an institutional member of:

- ZIMLA (Zimbabwe Library Association),
- One of the inaugural Members of ZULC (Zimbabwe University Libraries Consortium),
- IFLA (International Federation of Library Associations and Institutions)
- AFLIA (African Library and Information Associations and Institutions) and
- EIFL (Electronic Information for Libraries)

4.0 Who Can Use the Library?

4.1.1. All full-time and part-time registered NUST students, NUST members of staff, visiting academics and NUST Members of Council are eligible for membership of the Library.

4.1.2. Students and staff from other Universities, researchers from both the private and public sectors can apply for readership.

4.2. Is the Library easily accessible?

Yes it is. The Library opens up to 2100hrs during the semester. Online services like electronic resources are accessible 24 hours a day through remote access.

5.0 SERVICES

5.1 Reference Services

The Reference Section or Help Desk provides personal assistance to library users. It is essentially concerned with helping patrons locate relevant information pertinent to their needs, either within or outside the Library. Queries range from patron registration, accessing past examination papers, using the Library catalogue and assistance in using the library's electronic databases.

5.2 Ask the Librarian facility

This is an e-mail based reference service for those seeking assistance with library and research related questions. This service is accessible via the Library website.

5.3 **Library Chat facility**

This is a virtual reference service that opens doors for students, faculty members and researchers to connect with the library's reference team and receive real time library and research assistance through chat. This service is accessible via the Library website.

5.4 **E-Resources**

The Library provides access to over 54 scholarly databases that comprise of e-journals and more than 50 000 electronic books. These resources can be accessed from within campus as long as you are on the NUST network. They are also accessible 'remotely OR off campus' as long as you are a registered NUST student or member of staff with a University I.D.

Advantages of using these resources are that:

- They are convenient, can be accessed from anywhere
- They provide both current and retrospective information in one click
- They allow multiple access to a single resource
- They are quicker to search or browse AND
- They come in mixed media, e.g images, video, audio and so on.

The Library also provides access to other numerous e-resources like thesis and dissertations, past examination papers, subject guides and the Institutional Repository access is 24/7 round the clock.

5.5 **Faculty Liaison**

The Library has a team that works in partnership with academic units. Their role is to:

- 5.5.1. Provide information services
- 5.5.2. Keep faculties up to date with library developments and activities
- 5.5.3. Engage in collection development
- 5.5.4. Conduct e-resources training
- 5.5.5 Conduct information literacy skills training
- 5.5.6. Ensure there is effective and efficient use of library resources by staff and students.

5.6 **Institutional Repository**

This is a digital depository of NUST's intellectual output. It

- 5.6.1. Creates global visibility to NUST's scholarly research.
- 5.6.2. Collects content in a single location.
- 5.6.3. Provides access to institutional research output by self archiving it.
- 5.6.4. Stores and preserves the other institution's digital assets.

5.7 **Past Examination Papers**

Past examination papers are accessible online from the Library homepage.

5.8 Information Literacy Skills (ILS)

The Library conducts ILS training programmes to equip students with the requisite skills necessary for the effective use of online information.

It enables students to:

- Identify the different sources of information
- Use online search strategies,
- Evaluate information and its sources critically
- Understand the economic, legal and social issues surrounding the use of information.

Faculty Librarians are responsible for organising and conducting training.

5.9 **Circulation Services**

The Circulation Services of the Library encompass activities offered at the circulation/issue desk and the reserve section of the library. The aim is to ensure the proper movement of library material among patrons. The following are some of the services in the unit:

5.9.1 Short loan/Reserve Service

Books in high demand can be placed on Short term Loan or Reserve at the recommendation of academic staff.

5.9.2 Long Term Loans

Library material that may be required for constant use in a department can be placed on Long Term Loan at the request of the chairperson of the department.

5.10 **Library Fines**

Reading material borrowed from the Library should be returned on or before the due date. Overdue material attracts a fine at a rate to be determined by the Library from time to time. Different levels of fines shall apply on Ordinary Loans, Short term Loans, Library use Only/Reserved Material, Overdue items (15 days) or more and lost material.

5.11 **Book Requests**

Academic units are to make requests for books to be purchased at the beginning of the year or upon introduction of a new course. The Library will only consider requests that have been signed and authorised by the chairperson of the department.

5.12 **Photocopying Services**

The Library has outsourced photocopying services for the convenience of library users. A small fee is levied for the service. All photocopying is subject to the Copyright Act.

6.0 RULES AND REGULATIONS

6.1 **General Rules**

- 6.1.1 Users must present a valid University Identity Card, to the Security Guard upon entering Library premises.
- 6.1.2 For security reasons, bags, cases, etc, do not go inside the Library. Bags should be left at the baggage bay accessible through the side entrance.
- 6.1.3 Smoking, eating, and drinking are strictly prohibited.
- 6.1.4 Cell phones must be switched off or put on silent so that they do not distract others
- 6.1.5 Viewing of pornographic sites is prohibited in the library.
- 6.1.6 Readers are expected to observe silence in the library. Conversation and any other behavior likely to disturb or inconvenience others must be avoided in the reading areas.
- 6.1.7 All losses of and damage to library materials must be reported to the Library promptly.
- 6.1.8 All items taken in or out of the Library are subject to a security check.
- 6.1.9 The Library will confiscate any material not belonging to NUST Library if there is no proof it was borrowed legally from the lending institution.
- 6.1.10 Users are required to comply with the provisions of the Copyright Law. The Library and its resources are to be used for the purpose of Academic Learning and Research and not for the other forms of commercial gain.
- 6.1.11 Results for students with overdue material and unpaid fines will be withheld until payment is received in full.

- 6.1.12 Breaking into the University Library Computer system will attract a heavy fine or suspension from the library.
- 6.1.13 Personal belongings may be brought into the library at the user's own risk. The Library will not be held responsible for loss of, or damage to personal property.
- 6.1.14 Repeated infringement of the above rules would result in the Librarian suspending and or referring the matter to the University Proctor.

6.2 **Borrowing Regulations**

- 6.2.1. Only registered users can borrow material from the Library.
- 6.2.2. All items taken out of the Library must bear the current Library Due Date Stamp and a receipt.
- 6.2.3. Fines will accrue on all overdue material.
- 6.2.4. Library material shall not be issued to persons who hold overdue books or with outstanding fines.
- 6.2.5. Items not in demand may be renewed once/except for Short loan books.
- 6.2.6. All items are subject to RECALL if in demand.
- 6.2.7. Periodicals, Reference Books, Thesis, Dissertations and material stamped 'Library Use Only' may not be taken out the Library.
- 6.2.8. Members of staff going for staff development must return all books before proceeding for study leave.
- 6.2.9. Library users terminating membership of the Library must return all outstanding material and clear all fines before they can be cleared.

For more information, visit us at: *library.nust.ac.zw*