

# NATIONAL DIPLOMA: VETERINARY TECHNOLOGY

## (Extended curriculum programme with foundation provision)

### Qualification code: NDVEF0 - NQF Level 6

Campus where offered: Arcadia Campus (day classes)  
 Last year of new intake: 2019  
 Teach-out (phase-out) date: 31 December 2023

Students registered for this qualification should complete their studies according to the teach-out date prescribed for the qualification, subject to the stipulations of Regulation 3.1.11 and 3.1.13 in the Students' Rules and Regulations.

Information on phased-out programmes can be obtained from the TUT website, [www.tut.ac.za](http://www.tut.ac.za).

Key to asterisks:

\* Information does not correspond to information in Report 151.  
 (Deviations approved by the Senate in September 2015.)

## CURRICULUM

Consult the 2019 Faculty Prospectus for the full contents of the qualification.

### FIRST YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FPCLS01	Chemistry IB: Extended	(0,165)	
FPMLB01	Microbiology I: Extended	(0,150)	
FPMLS01	Mathematics IB: Extended	(0,165)	
FPPLS01	Physics IB: Extended	(0,120)	

#### FIRST SEMESTER

FPLSK02	Foundation Life Skills	(0,080)	
IVT101T	Introduction to Veterinary Technology	(0,080)	

#### SECOND SEMESTER

FPENG05	Foundation English	(0,090)	
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TOTAL CREDITS FOR THE FIRST YEAR: **0,850**

### SECOND YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
<b>FIRST SEMESTER</b>			
CSK101B	Computer Skills I	(0,100)	
IML211T	Immunology II	(0,100)	Chemistry IB: Extended Physics IB: Extended
MBI241B	Microbiology II	(0,100)	Chemistry IB: Extended Microbiology I: Extended
VDA111T	Food Animals Anatomy and Physiology I	(0,150)	
TOTAL CREDITS FOR THE SEMESTER:		0,450	

#### SECOND SEMESTER

BCH221T	Biochemistry II	(0,100)	Chemistry IB: Extended
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HTL201T	Histology	(0,100)	Food Animals Anatomy and Physiology I
HVS201T	Haematology: Veterinary Science	(0,100)	Immunology II
VTM301T	Veterinary Microbiology III	(0,100)	Microbiology II
TOTAL CREDITS FOR THE SEMESTER:		0,400	
TOTAL CREDITS FOR THE SECOND YEAR:		<b>0,850</b>	

### THIRD YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
<b>FIRST SEMESTER</b>			
BCQ101T	Biochemistry Techniques	(0,100)	Biochemistry II
EAT211T	Experimental Animal Technology II	(0,100)	Food Animals Anatomy and Physiology I
LMQ101T	Lab Management and Quality	(0,100)	Mathematics IB: Extended
PZY301T	Protozoology III	(0,100)	Veterinary Microbiology III
TOTAL CREDITS FOR THE SEMESTER:		0,400	
<b>SECOND SEMESTER</b>			
HEM301T	Helminthology III	(0,100)	Veterinary Microbiology III
MLB301T	Molecular Biology III	(0,100)	Biochemistry II Biochemistry Techniques
VIR311T	Virology III	(0,100)	Immunology II
VTE301T	Veterinary Entomology III	(0,100)	Veterinary Microbiology III
TOTAL CREDITS FOR THE SEMESTER:		0,400	
TOTAL CREDITS FOR THE THIRD YEAR:		<b>0,800</b>	

### FOURTH YEAR

**On completion of the above subjects. If a student has one subject outstanding such a case will be reviewed and permission might be granted in collaboration with a specific employer.**

CODE	SUBJECT	CREDIT
<b>FIRST OR SECOND SEMESTER</b>		
EXP1VET	Work-Integrated Learning*	(0,500)
TOTAL CREDITS FOR THE FOURTH YEAR:		<b>0,500</b>
TOTAL CREDITS FOR THE QUALIFICATION:		<b>3,000</b>

## SUBJECT INFORMATION (OVERVIEW OF SYLLABUS)

The syllabus content is subject to change to accommodate industry changes. Please note that a more detailed syllabus is available at the Department or in the study guide that is applicable to a particular subject. At time of publication, the syllabus content was defined as follows:

### B

#### **BIOCHEMISTRY II (BCH221T) 1 X 3-HOUR PAPER**

*(Subject custodian: Department of Biomedical Sciences)*

Nucleic acids, pH and buffers carbohydrates, amino acids and proteins, enzymes and lipids, DNA replication, transcription and protein synthesis. (Total tuition time: ± 90 hours)

#### **BIOCHEMISTRY TECHNIQUES (BCQ101T) 1 X 3-HOUR PAPER**

*(Subject custodian: Department of Biomedical Sciences)*

Introduction to clinical chemistry. Specimen collection. Sample analysis (enzymes and minerals). Laboratory instruments, automation and maintenance. A brief description of cellular macromolecules (proteins, lipids, carbohydrates, nucleic acids). (Total tuition time: ± 90 hours)

### C

#### **CHEMISTRY IB: EXTENDED (FPCLS01) 1 X 3-HOUR PAPER**

*(Subject custodian: Department of Chemistry)*

Scientific methodology and its use in discovering chemistry. Numbers in chemistry. The use of SI units. Matter. Atomic structure. Compounds in chemistry. The mole concept and chemical calculations. The electronic structure of the atom and electronic configurations within the periodic table. Chemical bonding. The states of matter and the binding forces within matter. Basic concepts of the gas laws. Solutions in chemistry. Acids, bases and salts. Oxidation and reduction and the balancing of equations. Organic chemistry: introduction, alkanes, alkenes, aromates, alkanols, phenols, halogen compounds, alkanolates, alkynes, aldehydes, ketones and alkanolic acids. (Total tuition time: ± 160 hours)

#### **COMPUTER SKILLS I (CSK101B) CONTINUOUS ASSESSMENT**

*(Subject/Module custodian: End User Computing Unit)*

Students have to acquire theoretical knowledge (computing fundamentals) and practical skills as an end-user in operating systems and MS Office Suite applications (MS Word, MS Excel and MS PowerPoint) on an introductory level. Students will do online and computer based tests. The modules are mapped with SAQA and IC3 Essential Skills for Digital Literacy (international certification). (Total tuition time: ± 40 hours)

### E

#### **EXPERIMENTAL ANIMAL TECHNOLOGY II (EAT211T) 1 X 3-HOUR PAPER**

*(Subject custodian: Department of Biomedical Sciences)*

Handling, care, husbandry, nutrition, breeding of experimental animals, e.g. mice, rats, guinea-pigs and rabbits, and the prevention of diseases. Design of captivity facilities. Feeding, ventilation and sterilisation systems. Genetics and legislation concerning experimental animals. (Total tuition time: ± 90 hours)

### F

#### **FOOD ANIMALS ANATOMY AND PHYSIOLOGY I (VDA111T) 1 X 3-HOUR PAPER**

*(Subject custodian: Department of Biomedical Sciences)*

Microscopic and macroscopic study of all structures and organs in the bodies of food animals, as well as the functioning of these organs and structures. (Total tuition time: ± 90 hours)

#### **FOUNDATION ENGLISH (FPENG05) 1 X 3-HOUR PAPER**

*(Subject custodian: Department of Applied Languages)*

Interpret, relate and reflect on all available and relevant resource material in proper English. Communicate orally in a comprehensible and clear manner in both general and subject-specific communication. Demonstrate intermediate-level of proficiency in written English. (Total tuition time: ± 160 hours)



**FOUNDATION LIFE SKILLS (FPLSK02)****CONTINUOUS ASSESSMENT****(Subject custodian: Department of Management and Entrepreneurship)**

Campus ethics, learning styles and whole-brain thinking, self-image and assertive behaviour, time management, self-motivation, conflict management, sexuality and relationships, problem-solving skills, managing stress, the multicultural society, techniques for summarising and memorising, how to cope with assessments and assignments, creativity, and many more. The life-skills sessions are participative, with group discussions and personal application to optimise student's learning experience. (Total tuition time: ± 128 hours)

**H****HAEMATOLOGY: VETERINARY SCIENCE (HVS201T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Biomedical Sciences)**

Morphology and functions of erythrocytes, leucocytes and thrombocytes, applicable laboratory tests. Abnormal morphology and functions of blood cells, causes and laboratory findings of anaemias and coagulation defects. (Total tuition time: ± 90 hours)

**HELMINTHOLOGY III (HEM301T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Biomedical Sciences)**

Identification of parasitic helminths on the grounds of diagnostic characteristics. The life cycle of helminths and prevention and control measures are studied in detail. Recognition and pathology of diseases. Laboratory techniques are introduced. (Total tuition time: ± 90 hours)

**HISTOLOGY (HTL201T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Biomedical Sciences)**

Fixation, embedding and cutting of tissue. Staining and mounting of histological slide preparations. Preparations are used for diagnosis. Cell structures and basic tissue types. (Total tuition time: ± 90 hours)

**I****IMMUNOLOGY II (IML211T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Biomedical Sciences)**

Specific and non-specific immunity. Antigens. Classification and characteristics of antibodies. Lymphoid organs of antibody production. Antigen-antibody reactions, including complement, precipitation, phagocytosis and agglutination. Cellular and humoral immunity. Serological techniques. Immunopathology. (Total tuition time: ± 90 hours)

**INTRODUCTION TO VETERINARY TECHNOLOGY (IVT101T)****CONTINUOUS ASSESSMENT****(Subject custodian: Department of Biomedical Sciences)**

Introduction to laboratory practices, terminology, accreditation and safety in the laboratory. (Total tuition time: ± 60 hours)

**L****LAB MANAGEMENT AND QUALITY (LMQ101T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Biomedical Sciences)**

Personnel and financial managements. Communication. Leadership. Laboratory safety. Quality control. Quality assurance. Quality standards. Quality terminology. Documentation. Accreditation. (Total tuition time: ± 45 hours)

**M****MATHEMATICS IB: EXTENDED (FPMLS01)****1 X 3-HOUR PAPER****(Subject custodian: Department of Mathematics and Statistics)**

Arithmetic. Graphs. Functions. Basic algebra. Trigonometry. Differentiation. Mensuration. Basic statistics. (Total tuition time: ± 190 hours)

**MICROBIOLOGY I: EXTENDED (FPMLB01) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biotechnology and Food Technology)**

General microbiology, chemical and physical control, environmental microbiology, food microbiology, occupational microbiology and microbiology ecology. Practical microbiological techniques. (Total tuition time: ± 248 hours)

**MICROBIOLOGY II (MBI241B) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biomedical Sciences)**

Enrichment culture techniques and long-term preservation of micro-organisms. Advanced composition and structure of prokaryotes. Introduction to the genetics of micro-organisms. Microbial metabolism. Identification of the more important groups of bacteria, using biochemical and serological tests. (Total tuition time: ± 90 hours)

**MOLECULAR BIOLOGY III (MLB301T) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biomedical Sciences)**

Amino acids and proteins. DNA/RNA. Molecular biology principles and techniques as it applies to the veterinary laboratory for use in diagnosis of disease. Techniques include isolation of nucleic acids from biological fluids, electrophoresis, PCR, viral load testing and DNA sequencing. (Total tuition time: ± 90 hours)

**P**

**PHYSICS IB: EXTENDED (FPPLS01) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Physics)**

A general physics qualification with applications in the biological sciences: remedial mathematics, fundamental units, vectors and scalars, kinetics, mechanics, dynamics, momentum, work, energy and power, fluids, temperature and heat, gas laws, waves and sound, optics, electricity, magnetism, radioactivity. Practical: experiments related to the theory. (Total tuition time: ± 160 hours)

**PROTOZOOLOGY III (PZY301T) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biomedical Sciences)**

Identification of parasitic protozoa and recognition of the diseases they cause in food animals and pets. Diagnostic characteristics, life cycles, pathology, prevention and control. Laboratory techniques are introduced. (Total tuition time: ± 90 hours)

**V**

**VETERINARY ENTOMOLOGY III (VTE301T) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biomedical Sciences)**

Identification of parasitic insects and the recognition of diseases transferred and caused by them. Life cycles of insects and environmental factors that influence those cycles. Prevention and control, as well as chemical control. Acarology (ticks and mites). (Total tuition time: ± 90 hours)

**VETERINARY MICROBIOLOGY III (VTM301T) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biomedical Sciences)**

Micro-organisms (bacteria and fungi) that cause veterinary diseases. Emphasis is placed on the isolation and identification of organisms. (Total tuition time: ± 90 hours)

**VIROLOGY III (VIR311T) 1 X 3-HOUR PAPER**

**(Subject custodian: Department of Biomedical Sciences)**

Morphology and structure of viruses. Physical and chemical characteristics. Cytopathology. Distribution and transmission of viruses. Immunisation and chemotherapy. Cultivation of viruses. Immunology. Diagnosis with the aid of serological and biological methods. General epidemiology and pathogenesis. Classification. (Total tuition time: ± 90 hours)

**W**

**WORK-INTEGRATED LEARNING (EXP1VET) WORK-INTEGRATED LEARNING**

**(Subject custodian: Department of Biomedical Sciences)**

A training programme is drawn up in collaboration with the supervisor at an accredited laboratory. (Total tuition time: six months)