



University of Pretoria Yearbook 2019

BScAgric Animal Science (02133411)

Minimum duration of study 4 years

Total credits 560

Admission requirements

- The following persons will be considered for admission: a candidate who is in possession of a certificate that is deemed by the University to be equivalent to the required Grade 12 certificate with university endorsement, a candidate who is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution, and a candidate who is a graduate of another faculty at the University of Pretoria.
- Life Orientation is excluded in the calculation of the Admission Point Score (APS).
- Grade 11 results are used for the conditional admission of prospective students. Final admission is based on the Grade 12 results.

Minimum requirements

Achievement level

English Home

Language or

English First

Additional

Language

Language or English First		Mathematics		Physical Science		APS
NSC/IEB	AS Level	NSC/IEB	AS Level	NSC/IEB	AS Level	
5	C	5	C	5	C	30

* Cambridge A level candidates who obtained at least a D in the required subjects, will be considered for admission. International Baccalaureate (IB) HL candidates who obtained at least a 4 in the required subjects, will be considered for admission.

Candidates who do not comply with the minimum admission requirements for BScAgric (Animal Science), may be considered for admission to the BSc – Extended programme for the Biological and Agricultural Sciences. The BSc – Extended programme takes one year longer to complete.

BSc Extended Programme for the Biological and Agricultural Sciences

Minimum requirements

Achievement level

English Home

Language or

English First

Additional

Language

Language or English First		Mathematics		Physical Science		APS
NSC/IEB	AS Level	NSC/IEB	AS Level	NSC/IEB	AS Level	
4	D	4	D	4	D	24



Other programme-specific information

Compilation of curriculum

Students must register for elective modules in consultation with the head of department who must ensure that the modules do not clash on the set timetable.

The Dean may, in exceptional cases and on recommendation of the relevant head of department, approve deviations from the prescribed curriculum.

Promotion to next study year

A student will be promoted to the following year of study if he or she passed 100 credits of the prescribed credits for a year of study, unless the Dean on the recommendation of the relevant head of department decides otherwise. A student who does not comply with the requirements for promotion to the following year of study, retains the credit for the modules already passed and may be admitted by the Dean, on recommendation of the relevant head of department, to modules of the following year of study to a maximum of 48 credits, provided that it will fit in with both the lecture and examination timetable.

Pass with distinction

The BScAgric degree is conferred with distinction if a student obtains a weighted average of at least 75% in the modules of the major subjects in the third and the fourth year of study, with a weighted average of at least 65% in the other modules of the third and the fourth year of study.



Curriculum: Year 1

Minimum credits: 140

Minimum credits: 140

Fundamental = 12

Core = 128

Additional information:

Students who do not qualify for AIM 102 must register for AIM 111 and AIM 121.

Students intending to apply for the **BVSc** selection have to enrol for MTL 180(12)

Fundamental modules

Academic information management 102 (AIM 102)

Module content:

Find, evaluate, process, manage and present information resources for academic purposes using appropriate technology. Apply effective search strategies in different technological environments. Demonstrate the ethical and fair use of information resources. Integrate 21st-century communications into the management of academic information.

Module credits 6.00

Service modules

Faculty of Education
Faculty of Economic and Management Sciences
Faculty of Humanities
Faculty of Law
Faculty of Health Sciences
Faculty of Natural and Agricultural Sciences
Faculty of Theology and Religion
Faculty of Veterinary Science

Prerequisites No prerequisites.

Contact time 2 lectures per week

Language of tuition Module is presented in English

Department Information Science

Period of presentation Semester 2

Academic information management 111 (AIM 111)

Module content:

Find, evaluate, process, manage and present information resources for academic purposes using appropriate technology.

Module credits 4.00



Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Economic and Management Sciences Faculty of Humanities Faculty of Law Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Theology and Religion
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 1

Academic information management 121 (AIM 121)

Module content:

Apply effective search strategies in different technological environments. Demonstrate the ethical and fair use of information resources. Integrate 21st-century communications into the management of academic information.

Module credits 4.00

Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Economic and Management Sciences Faculty of Humanities Faculty of Law Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Theology and Religion Faculty of Veterinary Science
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 2

Language and study skills 110 (LST 110)

Module content:

The module aims to equip students with the ability to cope with the reading and writing demands of scientific disciplines.

Module credits 6.00



Service modules	Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Unit for Academic Literacy
Period of presentation	Semester 1

Academic orientation 102 (UPO 102)

Module credits	0.00
Language of tuition	Module is presented in English
Department	Natural and Agricultural Sciences Deans Office
Period of presentation	Year

Core modules

Biometry 120 (BME 120)

Module content:

Simple statistical analysis: Data collection and analysis: Samples, tabulation, graphical representation, describing location, spread and skewness. Introductory probability and distribution theory. Sampling distributions and the central limit theorem. Statistical inference: Basic principles, estimation and testing in the one- and two-sample cases (parametric and non-parametric). Introduction to experimental design. One- and twoway designs, randomised blocks. Multiple statistical analysis: Bivariate data sets: Curve fitting (linear and non-linear), growth curves. Statistical inference in the simple regression case. Categorical analysis: Testing goodness of fit and contingency tables. Multiple regression and correlation: Fitting and testing of models. Residual analysis. Computer literacy: Use of computer packages in data analysis and report writing.

Module credits	16.00
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science
Prerequisites	At least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both Statistics 113, 123
Contact time	1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Statistics
Period of presentation	Semester 2



Plant biology 161 (BOT 161)

Module content:

Basic plant structure and function; introductory plant taxonomy and plant systematics; principles of plant molecular biology and biotechnology; adaptation of plants to stress; medicinal compounds from plants; basic principles of plant ecology and their application in natural resource management.

Module credits 8.00

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education

Prerequisites MLB 111 GS

Contact time 2 lectures per week, fortnightly practicals

Language of tuition Module is presented in English

Department Department of Plant and Soil Sciences

Period of presentation Semester 2

General chemistry 117 (CMY 117)

Module content:

General introduction to inorganic, analytical and physical chemistry. Atomic structure and periodicity. Molecular structure and chemical bonding using the VSEOR model. Nomenclature of inorganic ions and compounds. Classification of reactions: precipitation, acid-base, redox reactions and gas-forming reactions. Mole concept and stoichiometric calculations concerning chemical formulas and chemical reactions. Principles of reactivity: energy and chemical reactions. Physical behaviour gases, liquids, solids and solutions and the role of intermolecular forces. Rate of reactions: Introduction to chemical kinetics.

Module credits 16.00

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Health Sciences
Faculty of Veterinary Science

Prerequisites A candidate must have Mathematics for at least 60% and 60% for Physical Sciences.

Contact time 1 practical per week, 4 lectures per week

Language of tuition Module is presented in English

Department Chemistry

Period of presentation Semester 1

General chemistry 127 (CMY 127)

Module content:

Theory: General physical-analytical chemistry: Chemical equilibrium, acids and bases, buffers, solubility



equilibrium, entropy and free energy, electrochemistry. Organic chemistry: Structure (bonding), nomenclature, isomerism, introductory stereochemistry, introduction to chemical reactions and chemical properties of organic compounds and biological compounds, i.e. carbohydrates and aminoacids. Practical: Molecular structure (model building), synthesis and properties of simple organic compounds.

Module credits 16.00

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Health Sciences
Faculty of Veterinary Science

Prerequisites Natural and Agricultural Sciences students: CMY 117 GS or CMY 154 GS Health Sciences students: none

Contact time 4 lectures per week, 1 practical per week

Language of tuition Module is presented in English

Department Chemistry

Period of presentation Semester 2

Introductory genetics 161 (GTS 161)

Module content:

Chromosomes and cell division. Principles of Mendelian inheritance: locus and alleles, dominance interactions, extensions and modifications of basic principles.. Probability studies. Sex determination and sex linked traits. Pedigree analysis. Genetic linkage and chromosome mapping. Chromosome variation.

Module credits 8.00

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Veterinary Science

Prerequisites MLB 111 GS

Contact time 2 lectures per week, fortnightly tutorials

Language of tuition Module is presented in English

Department Biochemistry, Genetics and Microbiology

Period of presentation Semester 2

Introduction to microbiology 161 (MBY 161)

Module content:

The module will introduce the student to the field of Microbiology. Basic Microbiological aspects that will be covered include introduction into the diversity of the microbial world (bacteria, archaea, eukaryotic microorganisms and viruses), basic principles of cell structure and function, microbial nutrition and microbial growth and growth control. Applications in Microbiology will be illustrated by specific examples i.e. bioremediation, animal-microbial symbiosis, plant-microbial symbiosis and the use of microorganisms in



industrial microbiology. Wastewater treatment, microbial diseases and food will be introduced using specific examples.

Module credits	8.00
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	MLB 111 GS
Contact time	2 lectures per week, fortnightly tutorials
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 2

Molecular and cell biology 111 (MLB 111)

Module content:

Introduction to the molecular structure and function of the cell. Basic chemistry of the cell. Structure and composition of prokaryotic and eukaryotic cells. Ultrastructure and function of cellular organelles, membranes and the cytoskeleton. General principles of energy, enzymes and cell metabolism. Selected processes, e.g. glycolysis, respiration and/or photosynthesis. Introduction to molecular genetics: DNA structure and replication, transcription, translation. Cell growth and cell division.

Module credits	16.00
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Health Sciences Faculty of Veterinary Science
Prerequisites	A candidate who has passed Mathematics with at least 60% in the Grade 12 examination
Contact time	1 practical/tutorial per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 1

Physics for biology students 131 (PHY 131)

Module content:

Units, vectors, one dimensional kinematics, dynamics, work, equilibrium, sound, liquids, heat, thermodynamic processes, electric potential and capacitance, direct current and alternating current, optics, modern physics, radio activity.

Module credits	16.00
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Service modules	Faculty of Education Faculty of Health Sciences Faculty of Veterinary Science
Prerequisites	A candidate must have passed Mathematics with at least 60% in the Grade 12 examination
Contact time	1 discussion class per week, 1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Physics
Period of presentation	Semester 1

Mathematics 134 (WTW 134)

Module content:

**Students will not be credited for more than one of the following modules for their degree: WTW 134, WTW 165, WTW 114, WTW 158. WTW 134 does not lead to admission to Mathematics at 200 level and is intended for students who require Mathematics at 100 level only. WTW 134 is offered as WTW 165 in the second semester only to students who have applied in the first semester of the current year for the approximately 65 MBChB, or the 5-6 BChD places becoming available in the second semester and who were therefore enrolled for MGW 112 in the first semester of the current year.*

Functions, derivatives, interpretation of the derivative, rules of differentiation, applications of differentiation, integration, interpretation of the definite integral, applications of integration. Matrices, solutions of systems of equations. All topics are studied in the context of applications.

Module credits 16.00

Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Veterinary Science
Prerequisites	50% for Mathematics in Grade 12
Contact time	4 lectures per week, 1 tutorial per week
Language of tuition	Module is presented in English
Department	Mathematics and Applied Mathematics
Period of presentation	Semester 1

Animal diversity 161 (ZEN 161)

Module content:

Animal classification, phylogeny, organization and terminology. Evolution of the various animal phyla, morphological characteristics and life cycles of parasitic and non-parasitic animals. Structure and function of reproductive, respiratory, excretory, circulatory and digestive systems.

Module credits 8.00



Service modules	Faculty of Education Faculty of Veterinary Science
Prerequisites	MLB 111 GS or permission from the HOD.
Contact time	2 lectures per week, fortnightly practicals
Language of tuition	Module is presented in English
Department	Zoology and Entomology
Period of presentation	Semester 2



Curriculum: Year 2

Minimum credits: 147

Minimum credits: 147

Core = 147

Core modules

Introduction to proteins and enzymes 251 (BCM 251)

Module content:

Structural and ionic properties of amino acids. Peptides, the peptide bond, primary, secondary, tertiary and quaternary structure of proteins. Interactions that stabilise protein structure, denaturation and renaturation of proteins. Introduction to methods for the purification of proteins, amino acid composition, and sequence determinations. Enzyme kinetics and enzyme inhibition. Allosteric enzymes, regulation of enzyme activity, active centres and mechanisms of enzyme catalysis. Examples of industrial applications of enzymes and in clinical pathology as biomarkers of diseases. Introduction to practical laboratory techniques and Good Laboratory Practice. Techniques for the quantitative and qualitative analysis of biological molecules, enzyme activity measurements. Processing and presentation of scientific data.

Module credits 12.00

Service modules Faculty of Health Sciences

Prerequisites CMY 117 GS and CMY 127 GS and MLB 111 GS

Contact time 1 tutorial per week, 2 lectures per week

Language of tuition Module is presented in English

Department Biochemistry, Genetics and Microbiology

Period of presentation Semester 1

Carbohydrate metabolism 252 (BCM 252)

Module content:

Carbohydrate structure and function. Blood glucose measurement in the diagnosis and treatment of diabetes. Bioenergetics and biochemical reaction types. Glycolysis, gluconeogenesis, glycogen metabolism, pentose phosphate pathway, citric acid cycle and electron transport. Total ATP yield from the complete oxidation of glucose. A comparison of cellular respiration and photosynthesis. Practical techniques for the study and analysis of metabolic pathways and enzymes. PO ratio of mitochondria, electrophoresis, extraction, solubility and gel permeation techniques. Scientific method and design.

Module credits 12.00

Service modules Faculty of Education
Faculty of Health Sciences

Prerequisites CMY 117 GS and CMY 127 GS and MLB 111 GS



Contact time	1 tutorial per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 1

Lipid and nitrogen metabolism 261 (BCM 261)

Module content:

Biochemistry of lipids, membrane structure, anabolism and catabolism of lipids. Total ATP yield from the complete catabolism of lipids. Nitrogen metabolism, amino acid biosynthesis and catabolism. Biosynthesis of neurotransmitters, pigments, hormones and nucleotides from amino acids. Catabolism of purines and pyrimidines. Therapeutic agents directed against nucleotide metabolism. Examples of inborn errors of metabolism of nitrogen containing compounds. The urea cycle, nitrogen excretion. Practical training in scientific reading skills: evaluation of a scientific report. Techniques for separation analysis and visualisation of biological molecules. Hypothesis design and testing, method design and scientific controls.

Module credits	12.00
Service modules	Faculty of Health Sciences
Prerequisites	CMY 117 GS and CMY 127 GS and MLB 111 GS
Contact time	2 lectures per week, 1 tutorial per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 2

Biochemical principles of nutrition and toxicology 262 (BCM 262)

Module content:

Biochemistry of nutrition and toxicology. Proximate analysis of nutrients. Review of energy requirements and expenditure, starvation, marasmus and kwashiorkor. Respiratory quotient. Requirements and function of water, vitamins and minerals. Interpretation and modification of RDA values for specific diets, eg growth, exercise, pregnancy and lactation, aging and starvation. Interactions between nutrients. Cholesterol, polyunsaturated, essential fatty acids and dietary anti-oxidants. Oxidation of fats. Biochemical mechanisms of water- and fat-soluble vitamins and assessment of vitamin status. Mineral requirements, biochemical mechanisms, imbalances and diarrhoea. Biochemistry of xenobiotics: absorption, distribution, metabolism and excretion (ADME); detoxification reactions: oxidation/reduction (Phase I), conjugations (Phase II), export from cells (Phase III); factors affecting metabolism and disposition. Examples of genetic abnormalities, phenotypes and frequencies. Examples of toxins: biochemical mechanisms of common toxins and their antidotes. Natural toxins from fungi, plants and animals: goitrogens, cyanogens, cholinesterase inhibitors, ergotoxin, aflatoxins Practical training in scientific writing skills: evaluating scientific findings. Introduction to practical techniques in nutrition and toxicology. Experimental design and calculations in experiments: determining nutritional value of metabolites and studying the ADME of toxins.



Module credits	12.00
Service modules	Faculty of Health Sciences
Prerequisites	CMY 117 GS and CMY 127 GS and MLB 111 GS
Contact time	1 tutorial per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 2

Animal anatomy and physiology 200 (DAF 200)

Module content:

The body cavities, the origin of trunk wall and the principle arrangement of other anatomical structures as explained by the basic embryological development of mammals. Introduction to anatomy and anatomical terminology. Introduction to basic histology of cells, epithelial tissue and connective tissue. Basic anatomy of tissues, organs, systems and joints. Anatomy of the musculo-skeletal system integrated, the histology of connective tissue and muscles. The anatomy and histology of the integument and skin structures, the cardiovascular, respiratory, immune, endocrine, urogenital and digestive systems all of which serves as basis for the physiology component of the module. General species differences of the anatomy and histology where applicable.

Module credits	32.00
Prerequisites	CMY 127 or permission from head of department
Contact time	4 lectures per week, 1 practical every 2nd week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Year

Introductory soil science 250 (GKD 250)

Module content:

Origin and development of soil, weathering and soil formation processes. Profile differentiation and morphology. Physical characteristics: texture, structure, soil water, atmosphere and temperature. Chemical characteristics: clay minerals, ion exchange, pH, buffer action, soil acidification and salinisation of soil. Soil fertility and fertilisation. Soil classification. Practical work: Laboratory evaluation of simple soil characteristics. Field practicals on soil formation in the Pretoria area.

Module credits	12.00
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	CMY 117 GS or permission from the HOD
Contact time	3 lectures per week, 1 practical per week



Language of tuition	Separate classes for Afrikaans and English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 1

Molecular genetics 251 (GTS 251)

Module content:

The chemical nature of DNA. The processes of DNA replication, transcription, RNA processing, translation. Control of gene expression in prokaryotes and eukaryotes. Recombinant DNA technology and its applications in gene analysis and manipulation.

Module credits	12.00
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education
Prerequisites	GTS 161 GS
Contact time	fortnightly tutorials, 2 lectures per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 1

Genetic diversity and evolution 261 (GTS 261)

Module content:

Chromosome structure and transposable elements. Mutation and DNA repair. Genomics and proteomics. Organelle genomes. Introduction to genetic analysis of populations: allele and genotypic frequencies, Hardy Weinberg Law, its extensions and implications for different mating systems. Introduction to quantitative and evolutionary genetics.

Module credits	12.00
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education
Prerequisites	GTS 251 GS
Contact time	2 lectures per week, fortnightly tutorials
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 2

Sustainable crop production and agroclimatology 251 (PPK 251)

Module content:



Influence of climate on cropping systems in South Africa. The surface energy balance. Hydrological cycles and the soil water balance. Sustainable crop production. Simple radiation and water limited models. Potential yield, target yield and maximum economic yield. Crop nutrition and fertiliser management. Principles of soil cultivation and conservation. Climate change and crop production – mitigation and adaptation.

Module credits	15.00
Prerequisites	BOT 161
Contact time	fortnightly practicals, 3 lectures per week
Language of tuition	Separate classes for Afrikaans and English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 2

Animal science 250 (VKU 250)

Module content:

A brief perspective on the South African livestock industry. South African biomes in which animal production is practised. Animal ecological factors that influence regional classification. Introduction to adaptation physiology with reference to origin and domestication of farm and companion animals. Livestock species, breed development and breed characterisation. Basic principles of animal breeding and genetics, animal nutrition. Practical work includes identification and classification of different breeds of livestock.

Module credits	8.00
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 1

Animal Science 260 (VKU 260)

Module content:

Introduction to the concepts of animal production systems in South African production environments. Principles and requirements for extensive, semi-intensive and intensive livestock production with reference to large- and small stock, poultry and pigs. Principles of communal farming systems in Southern Africa. Game management systems with reference to conservation and game farming. The role of the human in livestock production systems and sustainable production.

Module credits	8.00
Prerequisites	VKU 250 GS or permission from the HOD.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences



Period of presentation Semester 2



Curriculum: Year 3

Minimum credits: 140

Minimum credits: 140

Core = 140

Core modules

Biometry 210 (BME 210)

Module content:

Analysis of variance: Multi-way classification. Testing of model assumptions, graphics. Multiple comparisons. Fixed, stochastic and mixed effect models. Block experiments. Estimation of effects. Experimental design: Principles of experimental design. Factorial experiments: Confounding, single degree of freedom approach, hierarchical classification. Balanced and unbalanced designs. Split-plot designs. Analysis of covariance. Computer literacy: Writing and interpretation of computer programmes. Report writing.

Module credits 24.00

Service modules Faculty of Natural and Agricultural Sciences

Prerequisites BME 120

Contact time 4 lectures per week, 1 practical per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 1

Animal physiology 311 (DFS 311)

Module content:

Homeostasis and Homeorhesis in animals: Thermoregulation. Adaptation of glucose, lipid and protein metabolism in response to short and long-term changes in the supply and balance of nutrients and to changes in tissue demand for nutrients during different physiological states. Deviations from normal homeostasis, metabolic diseases and the prevention thereof. Pathogenesis of inflammation and infections; immunity.

Module credits 10.00

Prerequisites DAF 200

Contact time 2 lectures per week

Language of tuition Separate classes for Afrikaans and English

Department Animal and Wildlife Sciences

Period of presentation Semester 1



Growth physiology 320 (DFS 320)

Module content:

Functional anatomy, growth and development of tissues and organ systems. The underlying physiological processes in growth and development. Pre- and postnatal growth and factors which determine growth rate: growth curves, stimulants of growth, age, nutrition, breed, sex. Changes during maturation, reproduction, the post-partum period and lactation. Ageing and tissue changes with erosion diseases. The influence of hormones, production and reproduction on conformation and a critical evaluation of assessment of animals for functional efficiency.

Module credits	12.00
Prerequisites	DFS 311
Contact time	1 practical every 2nd week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2

Introduction to agricultural economics 210 (LEK 210)

Module content:

Introduction to financial management in agriculture: Farm management and agricultural finance, farm management information; analysis and interpretation of farm financial statements; risk and farm planning. Budgets: partial, break-even, enterprise, total, cash flow and capital budgets. Time value of money. Introduction to production and resource use: the agricultural production function, total physical product curve, marginal physical product curve, average physical product curve, stages of production. Assessing short-term business costs; Economics of short-term decisions. Economics of input substitution: Least-cost use of inputs for a given output, short-term least-cost input use, effects of input price changes. Least-cost input use for a given budget. Economics of product substitution. Product combinations for maximum profit. Economics of crop and animal production.

Module credits	12.00
Service modules	Faculty of Economic and Management Sciences
Prerequisites	No prerequisites.
Contact time	3 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Agricultural Economics Extension and Rural Develo
Period of presentation	Semester 1

Reproduction science 310 (RPL 310)

Module content:

Theriogenology, spermatogenesis, zoogenesis, the female sexual cycle. Species differences. Hormonal control of



the sexual functions.

Module credits	8.00
Prerequisites	DAF 200
Contact time	1 lecture per week, 1 practical per week
Language of tuition	Separate classes for Afrikaans and English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 1

Reproduction science 320 (RPL 320)

Module content:

Artificial insemination. Semen collection techniques, the evaluation, dilution and conservation of semen. Collection, conservation and transfer of embryos. Collection of ova and in vitro fertilization. Handling of apparatus and practical insemination, oestrus observation and determination of gestation.

Module credits	10.00
Prerequisites	RPL 310
Contact time	2 lectures per week, 1 practical per week
Language of tuition	Separate classes for Afrikaans and English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2

Animal breeding 320 (TLR 320)

Module content:

Karyotyping of farm animals; breed and specie differences and the influence on classification of breeds. Influence of chromosomal aberrations. Phenotypic expression of genes and gene-interaction in farm animals. Single gene, major genes and polygenes. Variation in traits of economic importance and statistical description. Use of genetic variation. Estimation of breeding values and family indices on traits determined by single genes. Principles of breeding systems.

Module credits	12.00
Prerequisites	GTS 261
Contact time	fortnightly practicals, 2 lectures per week
Language of tuition	Separate classes for Afrikaans and English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2



Nutrition science 310 (VGE 310)

Module content:

Basic principles of chemistry, biochemistry of feed constituents, digestion and metabolism in all livestock species. Description of the characteristics of commonly used feedstuffs, such as forages, silage and hay protein and energy concentrates and by-products.

Module credits	14.00
Prerequisites	BCM 261 and BCM 262 and DAF 200 and VKU 250 and VKU 260
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 1

Nutrition Science 320 (VGE 320)

Module content:

Evaluation of energy and nutrient content of feedstuffs and assessment of nutritional requirements, and feeding standards for maintenance, growth, reproduction and lactation.

Module credits	14.00
Prerequisites	VGE 320
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2

Principles of veld management 310 (WDE 310)

Module content:

The influence of biotic and abiotic factors on the productivity of different strata and components of natural pastures. This will enable the student to advise users, with the necessary motivation, on the appropriate use of these strata and components and will form a basis for further research on this system. The principles of veld management and the influence of management practices on sustainable animal production from natural pastures. This will enable the student to advise users on veld management and veld management principles. It will also form a basis for further research on veld management.

Module credits	12.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week, fortnightly practicals
Language of tuition	Afrikaans and English are used in one class



Department Department of Plant and Soil Sciences

Period of presentation Semester 1

Planted pastures and fodder crops 320 (WDE 320)

Module content:

The establishment and use of planted pastures species and fodder crops and the conservation of fodder. This will enable students to advise users on establishment and utilization of planted pastures species as well as farmers on the production, conservation and optimum use of fodder. This will also form a basis for further research on planted pastures.

Module credits 12.00

Prerequisites WDE 310

Contact time 2 lectures per week, fortnightly practicals

Language of tuition Afrikaans and English are used in one class

Department Department of Plant and Soil Sciences

Period of presentation Semester 2



Curriculum: Final year

Minimum credits: 133

Minimum credits: 133

Core = 133

Core modules

Large stock nutrition and production 420 (GVK 420)

Module content:

Production management of large stock. Aspects of business management of the large-stock enterprise. Management programmes, production systems and techniques applicable to beef cattle, dairy cattle and horses. Specialised nutrition of beef and dairy cattle according to production systems. The use of computer systems in feeding management. Design and planning of farm buildings and structures. Storage and handling of fodder. The handling and management of refuse. Hygiene and herd health programmes. Practical work: This will include compiling rations based on requirements and least cost formulations, specialised assignments and on-farm experiential training.

Module credits	18.00
Prerequisites	RPL 320, VGE 320, VKU 250 and VKU 260
Contact time	4 lectures per week, 1 practical per week
Language of tuition	Afrikaans and English are used in one class
Department	Animal and Wildlife Sciences
Period of presentation	Semester 1

Small stock nutrition and production 420 (KVK 420)

Module content:

Specialised small stock and game nutrition. Principles of creep feeding, drought feeding, winter and supplementary feeding. Feeding pen nutrition and final nutritional preparation of lambs. Influence of nutrition on wool, pelts and mohair. Fodder-flow planning. Small stock management, making arrangements for shearing and preparing sheds and equipment, pens, dipping, drinking and feeding facilities. Preparation and marketing of hides, wool, mohair and karakul. Lambing seasons and herd management. Management programmes for the production of wool, meat, karakul pelt and mohair according to the particular ecological region and for conditions of drought. Herd health programmes. Practical work: Formulation of lowest cost rations and practical work with small ruminants.

Module credits	18.00
Prerequisites	RPL 320, VGE 320, VKU 250 and VKU 260
Contact time	4 lectures per week, 1 practical per week
Language of tuition	Afrikaans and English are used in one class



Department Animal and Wildlife Sciences

Period of presentation Semester 2

Poultry nutrition and production 420 (PVK 420)

Module content:

Specialised nutrition of poultry in different physiological stages and production systems. Industrial science and management of production systems and feeding systems in poultry production units. Applied breeding of poultry. Design and utilisation of equipment and housing facilities. Product quality and marketing of poultry products. Hygiene and health programmes. Practical work: The use of computer systems in feeding management of poultry in different production systems. Management of different poultry production systems.

Module credits 18.00

Prerequisites VGE 320 and VKU 250

Contact time 1 practical per week, 4 lectures per week

Language of tuition Afrikaans and English are used in one class

Department Animal and Wildlife Sciences

Period of presentation Semester 1

Animal breeding 411 (TLR 411)

Module content:

Components of animal performance. Sources of variation, population parameters and the estimation thereof. Introduction to matrix algebra for application in animal breeding. Selection indices theory. Statistical models in estimation of breeding values. Application of breeding values and prerequisites for accuracy. Breeding and selection for reproduction and growth. Principles of QTLs.

Module credits 12.00

Prerequisites TLR 320 and simultaneously register for GVK 420, PVK420, KVK420

Contact time 1 practical per week, 2 lectures per week

Language of tuition Module is presented in English

Department Animal and Wildlife Sciences

Period of presentation Semester 1

Applied animal breeding 420 (TLR 420)

Module content:

Formulation and application of breeding objectives. Animal recording systems and international guidelines for evaluation. Species-specific breeding systems. Breeding objectives and selection programmes for beef and dairy cattle, small stock, poultry, pigs and companion animals. Selection of traits of economic importance and the efficiency thereof. Crossbreeding systems in meat producing farm animals. Breed development.



Module credits	12.00
Prerequisites	TLR 411
Contact time	fortnightly practicals, 2 lectures per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2

Monogastric nutrition and production 411 (VGE 411)

Module content:

Specialised nutrition of monogastric animals: poultry, pigs, horses and selected freshwater aquatic organisms. Pig production and management - sow, boar and growing pigs. Feeding and housing systems. Hygiene and herd health programmes, product quality and marketing. Practical work: The use of computer systems in managing the feeding of selected monogastric animals.

Module credits	16.00
Prerequisites	VGE 320
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2

Research methodology 400 (VKU 400)

Module content:

Introduction to research methodology. Principles and terminology related to research in animal science. Scientific writing skills and communication. Popular articles, seminars and preparation of scientific manuscripts. Project proposals: approach to problem solving, methodology and appropriate referencing and reporting. Presentation of seminar. Multidisciplinary case studies in a Southern African context.

Module credits	16.00
Prerequisites	Simultaneously register GVK 420, TLR 411
Contact time	2 lectures per week, 1 seminar per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Year

Meat and dairy science 420 (VSX 420)

Module content:



Meat industry. Meat species. Composition of carcass and meat, slaughtering process, meat quality, and the consumer. Dairy industry. Composition and nutritional value of milk and factors that influence it. Milk production, milk quality and distribution.

Module credits	8.00
Prerequisites	DFS 320
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Animal and Wildlife Sciences
Period of presentation	Semester 2

Advanced pasture science 450 (WDE 450)

Module content:

The production potential and quality of pastures as influenced by botanical composition, vegetation cover, livestock grazing and browsing potential, soil chemical, physical and biological conditions in addition to other important environmental processes are addressed. Pasture selection for different purposes and the importance of pasture management requirements within a planned livestock fodder flow system are taught. Monitoring pastures (both natural and cultivated) in different biomes of Southern Africa, through different assessment techniques to understand the health, production potential and quality thereof is explained. The different utilisation methods of pastures, as influenced by the livestock factor and their effects on the pastures regrowth potential, in addition to soil quality aspects are important principles that determine the value of pastures. The evaluation of grasses and other vegetation types in terms of adaptation, acceptability and adaptability to environmental and management conditions are important to an integrated and adaptive pasture and livestock production system.

Module credits	15.00
Prerequisites	WDE 320
Contact time	2 lectures per week, 3 practicals per week
Language of tuition	Separate classes for Afrikaans and English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 1

The information published here is subject to change and may be amended after the publication of this information. The [General Regulations \(G Regulations\)](#) apply to all faculties of the University of Pretoria. It is expected of each student to familiarise himself or herself well with these regulations as well as with the information contained in the [General Rules](#) section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.