



# University of Pretoria Yearbook 2016

## BScAgric Agricultural Economics: Agribusiness Management (03130050)

**Duration of study** 4 years

**Total credits** 602

### Admission requirements

- In order to register NSC/IEB/Cambridge candidates must comply with the minimum requirements for degree studies as well as the minimum requirements for the relevant study programme.
- Life Orientation is excluded in the calculation of the Admission Point Score (APS).
- Grade 11 results are used for the provisional admission of prospective students. Final admission is based on the Grade 12 results.

Minimum requirements for 2016												
Achievement level												
Afrikaans or English				Mathematics				Physical Sciences				APS
NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	
5	3	C	C	5	3	C	C	5	3	C	C	30

Candidates who do not comply with the minimum admission requirements may be considered for admission to the BScAgric or the BSc (Four-year Programme) based on the results of the NBT. Please note that students who are placed in the BSc (Four-year Programme) will take a minimum of five years to complete the BSc Agric study programme.

### Other programme-specific information

Students may enrol for AIM 111 and AIM 121 instead of AIM 101 (the same content presented over 2 semesters).

Students who do not qualify for STK 110 must register for STK 113 and STK 123

Elective modules can be chosen from the following: STK 310 (take note of the prerequisites), STK 320, STK 353, WDE 320, EKN 325 and any modules from Animal and Wildlife Sciences and Plant Production and Soil Sciences on 400-level that do not clash on the lecture, practical or examination timetable.



Electives are chosen as follows:

Third year – 24 credits

Fourth year – 20 credits

### **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 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 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 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: 122**

### Fundamental modules

#### 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

**Prerequisites** No prerequisites.

**Contact time** MAMELODI, 2 lectures per week

**Language of tuition** Both Afr and Eng

**Academic organisation** 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  
Faculty of Veterinary Science

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week, MAMELODI



<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Information Science
<b>Period of presentation</b>	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.

<b>Module credits</b>	6.00
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Unit for Academic Literacy
<b>Period of presentation</b>	Semester 1

### Academic orientation 102 (UPO 102)

<b>Module credits</b>	0.00
<b>Language of tuition</b>	Double Medium
<b>Academic organisation</b>	Natural + Agric Sciences Dean
<b>Period of presentation</b>	Year

### 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.

<b>Module credits</b>	6.00
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<b>Service modules</b>	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 Faculty of Veterinary Science
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Information Science
<b>Period of presentation</b>	Semester 2

## Core modules

### 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.

<b>Module credits</b>	8.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education
<b>Prerequisites</b>	MLB 111 GS
<b>Contact time</b>	fortnightly practicals, 2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	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.

<b>Module credits</b>	16.00
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<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Health Sciences Faculty of Veterinary Science
<b>Prerequisites</b>	Final Grade 12 marks of at least 60% for Mathematics and 60% for Physical Sciences.
<b>Contact time</b>	1 practical per week, 4 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Chemistry
<b>Period of presentation</b>	Semester 1

## General chemistry 127 (CMY 127)

### Module content:

Theory: General physical-analytical chemistry: Physical behaviour of gases, liquids and solids, intermolecular forces, solutions. Principles of reactivity: energy and chemical reactions, 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 amino acids. Practical: Molecular structure (model building), synthesis and properties of simple organic compounds.

**Module credits** 16.00

<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Health Sciences Faculty of Veterinary Science
<b>Prerequisites</b>	Natural and Agricultural Sciences students: CMY 117 GS or CMY 154 GS Health Sciences students: none
<b>Contact time</b>	1 practical per week, 4 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Chemistry
<b>Period of presentation</b>	Semester 2

## Financial accounting 111 (FRK 111)

### Module content:

The nature and function of accounting; the development of accounting; financial position; financial result; the recording process; processing of accounting data; treatment of VAT; elementary income statement and balance sheet; flow of documents; accounting systems; introduction to internal control and internal control measures; bank reconciliations; control accounts; adjustments; financial statements of a sole proprietorship; the accounting framework.



<b>Module credits</b>	10.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Law Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	4 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Accounting
<b>Period of presentation</b>	Semester 1

### Financial accounting 121 (FRK 121)

#### Module content:

Property, plant and equipment; intangible assets; inventories; liabilities; presentation of financial statements; enterprises without profit motive; partnerships; companies; close corporations; cash flow statements; analysis and interpretation of financial statements.

<b>Module credits</b>	12.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	FRK 111 GS
<b>Contact time</b>	4 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Accounting
<b>Period of presentation</b>	Semester 2

### Introductory genetics 161 (GTS 161)

#### Module content:

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

<b>Module credits</b>	8.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Veterinary Science
<b>Prerequisites</b>	MLB 111 GS



<b>Contact time</b>	fortnightly practicals, 2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Genetics
<b>Period of presentation</b>	Semester 2

## Molecular and cell biology 111 (MLB 111)

### Module content:

Introductory study of the ultra structure, function and composition of representative cells and cell components. General principles of cell metabolism, molecular genetics, cell growth, cell division and differentiation.

<b>Module credits</b>	16.00
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<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Health Sciences Faculty of Veterinary Science
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<b>Prerequisites</b>	Refer to Regulation 1.2: A candidate who has passed Mathematics with at least 50% in the Grade 12 examination
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<b>Contact time</b>	4 lectures per week, 1 practical per week
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<b>Language of tuition</b>	Both Afr and Eng
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<b>Academic organisation</b>	Genetics
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<b>Period of presentation</b>	Semester 1
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## 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.

<b>Module credits</b>	16.00
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<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Veterinary Science
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<b>Prerequisites</b>	Refer to Regulation 1.2: At least 50% for Mathematics in the Grade 12 examination .
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<b>Contact time</b>	4 lectures per week, 1 tutorial per week
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<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Mathematics and Applied Maths
<b>Period of presentation</b>	Semester 1



## Curriculum: Year 2

**Minimum credits: 127**

### Core modules

#### Economics 110 (EKN 110)

**Module content:**

This module deals with the core principles of economics. A distinction between macroeconomics and microeconomics is made. A discussion of the market system and circular flow of goods, services and money is followed by a section dealing with microeconomic principles, including demand and supply analysis, consumer behaviour and utility maximisation, production and the costs thereof, and the different market models and firm behaviour. Labour market institutions and issues, wage determination, as well as income inequality and poverty are also addressed. A section of money, banking, interest rates and monetary policy concludes the course.

**Module credits** 10.00

**Service modules**

Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Humanities  
Faculty of Natural and Agricultural Sciences

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week, 1 discussion class per week

**Language of tuition** Both Afr and Eng

**Academic organisation** Economics

**Period of presentation** Semester 1

#### Economics 120 (EKN 120)

**Module content:**

This module deals with the core principles of economics, especially macroeconomic measurement the private and public sectors of the South African economy receive attention, while basic macroeconomic relationships and the measurement of domestic output and national income are discussed. Aggregate demand and supply analysis stands core to this course which is also used to introduce students to the analysis of economic growth, unemployment and inflation. The microeconomics of government is addressed in a separate section, followed by a section on international economics, focusing on international trade, exchange rates and the balance of payments. The economics of developing countries and South Africa in the global economy conclude the course.

**Module credits** 10.00

**Service modules**

Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Humanities  
Faculty of Natural and Agricultural Sciences

**Prerequisites** EKN 110 GS or EKN 113 GS and at least 4 (50-59%) in Mathematics in the Grade 12 examination or 60% in STK 113 and concurrently registered for STK 123



<b>Contact time</b>	2 lectures per week, 1 discussion class per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Economics
<b>Period of presentation</b>	Semester 2

## Introduction to food science and technology 250 (FST 250)

### Module content:

Lectures: Food Science as a discipline. Activities of Food Scientists and Nutritionists. How food is produced, processed and distributed (food pipeline). World food problem. Human nutrition and human food requirements. Constituents of foods: Functional properties. Food quality. Food deterioration and control (food preservation). Unit operations in food processing. Food safety, risks and hazards. Principles of food packaging. Food legislation and labelling. Food processing and the environment. Practicals: Group assignments applying the theory in practice; practical demonstrations in pilot plants; guest lecturers on the world of food scientists and nutritionists; factory visit/videos of food processing.

<b>Module credits</b>	12.00
<b>Prerequisites</b>	CMY 117 and CMY 127 and PHY 131 and WTW 134 or WTW 165 or TDH
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Food Science
<b>Period of presentation</b>	Semester 1

## 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.

<b>Module credits</b>	12.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology
<b>Prerequisites</b>	CMY 117 GS or TDH
<b>Contact time</b>	1 practical per week, 3 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 1



## 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.

<b>Module credits</b>	12.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	Double Medium
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Semester 1

## Agricultural economics 220 (LEK 220)

### Module content:

The agribusiness system; the unique characteristics of agricultural products; marketing functions and costs; market structure; historical evolution of agricultural marketing in South Africa. Marketing environment and price analysis in agriculture: Introduction to supply and demand analysis. Marketing plan and strategies for agricultural commodities; market analysis; product management; distribution channels for agricultural commodities, the agricultural supply chain, the agricultural futures market.

<b>Module credits</b>	12.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	[LEK 210 ] or [EKN 113 and/or EKN 120]
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	Double Medium
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	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.

<b>Module credits</b>	15.00
<b>Prerequisites</b>	BOT 161
<b>Contact time</b>	3 lectures per week, fortnightly practicals
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 2

## Statistics 110 (STK 110)

### Module content:

Descriptive statistics:

Sampling and the collection of data; frequency distributions and graphical representations. Descriptive measures of location and dispersion.

Probability and inference:

Introductory probability theory and theoretical distributions. Sampling distributions. Estimation theory and hypothesis testing of sampling averages and proportions (one and two-sample cases). Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

<b>Module credits</b>	13.00
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<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
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<b>Prerequisites</b>	At least 5 (60-69%) in Mathematics in the Grade 12 examination. Candidates who do not qualify for STK 110 must register for STK 113 and STK 123
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<b>Contact time</b>	1 tutorial per week, 1 practical per week, 3 lectures per week
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<b>Language of tuition</b>	Both Afr and Eng
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<b>Academic organisation</b>	Statistics
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<b>Period of presentation</b>	Semester 1
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## Statistics 120 (STK 120)

### Module content:

Multivariate statistics:

Analysis of variance, categorical data analysis, distribution-free methods, curve fitting, regression and correlation, the analysis of time series and indices.

Statistical and economic applications of quantitative techniques:

Systems of linear equations: drafting, matrices, solving and application. Optimisation; linear functions (two and



more independent variables), non-linear functions (one and two independent variables). Marginal and total functions. Stochastic and deterministic variables in statistical and economic context: producers' and consumers' surplus, distribution functions, probability distributions, probability density functions. Identification, use, evaluation, interpretation of statistical computer packages and statistical techniques.

This module is also presented as an anti-semester bilingual module.

<b>Module credits</b>	13.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	STK 110 GS or both STK 113 GS and STK 123 GS or both WST 133 and WST 143 or STK 133 and STK 143 or STK 133 and STK 143
<b>Contact time</b>	1 practical per week, 3 lectures per week, 1 tutorial per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Statistics
<b>Period of presentation</b>	Semester 2

## Animal science 250 (VKU 250)

### Module content:

Origin and domestication of farm and companion animals. The ecological environment in which animal production and development is practised. Animal ecological factors that influence regional classification. Livestock species, breeds and breed characterisation and genetic variation. Basic principles of nutrition, physiology, breeding and production organisation of the livestock industry and relevant legislation. Practical work includes identification and classification of different breeds of livestock, as well as the general care and handling of farm stock.

<b>Module credits</b>	12.00
<b>Contact time</b>	2 lectures per week, 1 practical per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Animal and Wildlife Sciences
<b>Period of presentation</b>	Semester 1

## Animal Science 260 (VKU 260)

### Module content:

Livestock ecology, interaction between genotype and environment. Production regions and systems. Animal ecological factors to be considered in production factors, planning and management of different livestock production systems. Applied principles of livestock production, production management and systems (large livestock, small stock, pigs and poultry). Conservation farming and adapted farming and management systems; environmental conservation. Practical work will consist of compulsory farm practical during vacation after the 1st year and or during the 2nd year of study in order to understand different animal production systems as well as



the general care and handling of farm stock.

<b>Module credits</b>	12.00
<b>Prerequisites</b>	VKU 250 GS or TDH
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Animal and Wildlife Sciences
<b>Period of presentation</b>	Semester 2

## Elective modules

### Statistics 113 (STK 113)

#### Module content:

\*On its own, STK 113 and 123 will not be recognised for degree purposes, but exemption will be granted for STK 110.

Data operations and transformations:

Introductory concepts, the role of statistic, various types of data and the number system. Concepts underlying linear, quadratic, exponential, hyperbolic, logarithmic transformations of quantitative data, graphical representations, solving of equations, interpretations. Determining linear equations in practical situations. Characteristics of logarithmic functions. The relationship between the exponential and logarithmic functions in economic and related problems. Systems of equations in equilibrium. Additional concepts relating to data processing, functions and inverse functions, sigma notation, factorial notation, sequences and series, inequalities (strong, weak, absolute, conditional, double) and absolute values.

Descriptive statistics – Univariate:

Sampling and the collection of data, frequency distributions and graphical representations. Descriptive measures of location and dispersion. Introductory probability theory. Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

The weekly one hour practical is presented during the last seven weeks of the semester.

<b>Module credits</b>	11.00
<b>Service modules</b>	Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 tutorial per week, 1 practical per week, 3 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Statistics
<b>Period of presentation</b>	Semester 1

### Statistics 123 (STK 123)



**Module content:**

\*On its own, STK 113 and 123 will not be recognized for degree purposes, but exemption will be granted for STK 110.

Optimisation techniques with economic applications: Data transformations and relationships with economic applications, operations and rules, linear, quadratic, exponential, hyperbolic and logarithmic functions; systems of equations in equilibrium, system of linear inequalities, solving of linear programming problems by means of the graphical and extreme point methods. Applications of differentiation and integration in statistic and economic related problems: the limit of a function, continuity, rate of change, the derivative of a function, differentiation rules, higher order derivatives, optimisation techniques, the area under a curve and applications of definite integrals. Probability and inference: Theoretical distributions. Sampling distributions. Estimation theory and hypothesis testing of sampling averages and proportions (one-sample and two-sample cases). Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques. The weekly one hour practical is presented during the last seven weeks of the semester.

**Module credits** 12.00

**Service modules** Faculty of Education  
Faculty of Humanities  
Faculty of Natural and Agricultural Sciences

**Prerequisites** STK 113 GS

**Contact time** 1 tutorial per week, 1 practical per week, 3 lectures per week

**Language of tuition** Both Afr and Eng

**Academic organisation** Statistics

**Period of presentation** Semester 2





## Curriculum: Year 3

**Minimum credits: 192**

### Core modules

#### Communication 421 (AGV 421)

**Module content:**

Communication: Definition and clarification of concepts. Theory and elements of communication. Verbal and non-verbal communication. Determinants of interpersonal communication. Abating factors impeding communication. Nature, classification and efficiency of communication channels.

<b>Module credits</b>	20.00
<b>Prerequisites</b>	Second Year - Academic level
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Semester 2

#### Business law 210 (BER 210)

**Module content:**

Basic principles of law of contract. Law of sales, credit agreements, lease.

<b>Module credits</b>	16.00
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Economic and Management Sciences Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week, 1 discussion class per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Mercantile Law
<b>Period of presentation</b>	Semester 1

#### Economics 224 (EKN 224)

**Module content:**

Microeconomics

Microeconomic insight is provided into: consumer and producer theory, general microeconomic equilibrium, Pareto-optimality and optimality of the price mechanism, welfare economics, market forms and the production structure of South Africa. Statistic and econometric analysis of microeconomic issues.



<b>Module credits</b>	16.00
<b>Service modules</b>	Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	EKN 110 GS and EKN 120 or EKN 113 GS and EKN 123; and STK 110 GS and 120 GS
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Economics
<b>Period of presentation</b>	Semester 1

### Principles and practices 351 (HSC 351)

#### Module content:

The organised nursery industry in South Africa. Principles: seed production; seed germination; rooting of cuttings; budding and grafting; propagation using specialised organs; micro propagation (tissue culturing). Practices: Greenhouse construction, lighting in the nursery; cooling and heating; soil-based and soil-less growing media; container types; irrigation and fertilisation; growth manipulation; pest and disease management. Management, economic and marketing aspects of a typical nursery operation. Students will get hands-on experience and will visit nurseries.

<b>Module credits</b>	14.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	fortnightly practicals, 2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 1

### Agricultural economics 310 (LEK 310)

#### Module content:

Historical evolution of South African agricultural policy. Agriculture and the state: reasons for government intervention. Theoretical aspects of agricultural policy. Introduction to agricultural policy analysis. Welfare principles, pareto optimality. Macroeconomic policy and the agricultural sector. International agricultural trade.

<b>Module credits</b>	12.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	[LEK 210 or EKN 110] and [EKN 120]
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	Double Medium



**Academic organisation** Agric Econ, Ext + Rural Dev

**Period of presentation** Semester 1

## Agricultural economics 320 (LEK 320)

### Module content:

The modern food and agribusiness system. Key drivers in the global context. Whole farm planning and budget development The financial analysis of farm financial, financial modelling, the financing decision: capital acquisition, creditworthiness, different capital sources, capital structures. The investment decision and working capital management. Value chains in agribusiness. Risk management. Strategic management and marketing principles in agribusiness. Operational management and human resources management. Business planning for agribusiness.

**Module credits** 18.00

**Service modules** Faculty of Economic and Management Sciences

**Prerequisites** LEK 220, LEK 210

**Contact time** 3 lectures per week, 2 practicals per week

**Language of tuition** Double Medium

**Academic organisation** Agric Econ, Ext + Rural Dev

**Period of presentation** Semester 2

## Statistics 210 (STK 210)

### Module content:

Counting techniques. Probability theory: Sample spaces, events, rules of probability, conditional probabilities, independent events and Bayes' theorem. Probability distributions and probability densities: cumulative distribution functions, marginal distributions, joint distributions, conditional distributions and independence. Expected values: Moments, Chebyshev's theorem, moment-generating functions, product moments, moments of linear combinations of random variables and conditional expectations. Transformation techniques of random variables. Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

**Module credits** 20.00

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Humanities  
Faculty of Natural and Agricultural Sciences

**Prerequisites** STK 110, STK 120

**Contact time** 1 practical per week, 3 lectures per week

**Language of tuition** Double Medium

**Academic organisation** Statistics

**Period of presentation** Semester 1



## Statistics 220 (STK 220)

### Module content:

Special probability distributions: the discrete uniform distribution, Bernoulli distribution, binomial distribution, negative binomial and geometric distribution, the hypergeometric distribution, Poisson distribution and multinomial distribution. Special probability densities: Uniform distribution, gamma, exponential and chi-square distributions, the beta distribution, the normal distribution and the bivariate normal distribution. Functions of random variables. Sampling distributions, point estimation, interval estimation and hypothesis testing. Regression Analysis. Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

**Module credits** 20.00

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Humanities  
Faculty of Natural and Agricultural Sciences

**Prerequisites** STK 210 GS

**Contact time** 3 lectures per week, 1 practical per week

**Language of tuition** Double Medium

**Academic organisation** Statistics

**Period of presentation** Semester 2

## Economics 244 (EKN 244)

### Module content:

Microeconomics

From general equilibrium and economic welfare to uncertainty and asymmetric information. In this module we apply the principles learned in EKN 224 on the world around us by looking at the microeconomic principles of labour and capital markets, as well as reasons why the free market system could fail. We touch on the government's role in market failures. The course includes topics of the mathematical and econometric analysis of microeconomic issues.

**Module credits** 16.00

**Service modules** Faculty of Humanities  
Faculty of Natural and Agricultural Sciences

**Prerequisites** EKN 224, STK 120

**Contact time** 3 lectures per week

**Language of tuition** English

**Academic organisation** Economics

**Period of presentation** Semester 2



## Elective modules

### Field crops 361 (AGR 361)

#### Module content:

Botanical characteristics, classification, growth requirements, production practices and utilization of crops rich in starch, oil and protein, fibre crops, tobacco, sugarcane and medicinal plants. Visits to research institutions and producers.

<b>Module credits</b>	14.00
<b>Prerequisites</b>	PPK 251
<b>Contact time</b>	2 lectures per week, fortnightly practicals
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 2

### Soil-water relationship and irrigation 350 (PGW 350)

#### Module content:

Quantitative description and measurement of soil water content and potential as well as saturated and unsaturated hydraulic conductivity. Modelling water flow in soil (Darcy's law, Richards's equation). Infiltration, redistribution, evaporation, runoff and percolation. Irrigation in South Africa. Modelling and managing the soil water balance. Plant water consumption and the soil-plant-atmosphere continuum. Irrigation scheduling (soil, plant and atmosphere approaches). Managing poor quality water. Irrigation systems. The module includes a field trip to an irrigation scheme.

<b>Module credits</b>	16.00
<b>Prerequisites</b>	GKD 250
<b>Contact time</b>	fortnightly practicals, 2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 1

### Statistics 310 (STK 310)

#### Module content:

Regression analysis: simple and multiple regression; nonlinear regression; correlation and the use of dummy variables. Multivariate distributions: normal, multinomial and poisson distribution. Linear combinations of normal variables. Analysis of variance and covariance. Categorical data analysis. Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

<b>Module credits</b>	25.00
<b>Service modules</b>	Faculty of Humanities



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<b>Prerequisites</b>	STK 210, STK 220
<b>Contact time</b>	1 practical per week, 3 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Statistics
<b>Period of presentation</b>	Semester 1

## Statistics 320 (STK 320)

### Module content:

Regression analysis extensions: heteroscedasticity, serial correlation and lag structures. Time-series analysis. Applications of matrices, differentiation and integration in the economic and management sciences. Evaluation of simple economic models. Theory and applications of time-series models: univariate time series. Stationary and non-stationary time series. ARMA and ARIMA models. Regression models. Model identification and estimation. Spectrum and periodogram. Forecasting with time-series models. Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques. Student seminars.

<b>Module credits</b>	25.00
<b>Service modules</b>	Faculty of Humanities
<b>Prerequisites</b>	STK 310 GS
<b>Contact time</b>	3 lectures per week, 1 practical per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Statistics
<b>Period of presentation</b>	Semester 2

## 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.

<b>Module credits</b>	14.00
<b>Prerequisites</b>	WDE 310
<b>Contact time</b>	2 lectures per week, fortnightly practicals
<b>Language of tuition</b>	Double Medium
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 2



## Curriculum: Final year

**Minimum credits: 161**

### Core modules

#### Agriculture and rural development studies 480 (ARD 480)

**Module content:**

Overview of the concepts and theories of rural development; the role of agriculture in rural development. Rural livelihood systems: household farming systems; decisions and the operation of farming systems; non-farm enterprises and SMMEs in the rural economy; household food security. Rural institutions: definitions and role of institutions; land tenure; rural financial markets; local institutional development; human capital, knowledge systems. Methodologies for rural development: the farming systems approach; participatory techniques; assessment of land use patterns (zoning techniques); typology techniques; technology transfer and decision-making support; communication for rural development; planning rural development at local level.

<b>Module credits</b>	40.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Year

#### Economics 314 (EKN 314)

**Module content:**

International trade/finance

International economic insight is provided into international economic relations and history, theory of international trade, international capital movements, international trade politics, economic and customs unions and other forms or regional cooperation and integration, international monetary relations, foreign exchange markets, exchange rate issues and the balance of payments, as well as open economy macroeconomic issues.

<b>Module credits</b>	20.00
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	EKN 234, EKN 244
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Economics
<b>Period of presentation</b>	Semester 1



## Agricultural market and price analysis 410 (LEK 410)

### Module content:

This module will focus on the fundamentals of demand, supply and agricultural price analysis. After providing an appropriate background in the theoretical concepts of demand and supply these basics will be applied in the generation of econometric simulation models. This will include the identification of supply and demand shifters as well as the elasticities, flexibilities, and impact multipliers. Practical experience in the formulation of these models will be attained from practical sessions. The student will submit a project in which he/she must analyse the demand or supply patterns of a commodity of his/her choice by generating an econometric model.

Agricultural price analysis: price determination under different market structures followed by practical sessions on measuring market structures in various ways. This will include the calculation of market concentration. Price trend analysis and measurement of price changes by using indexes, and especially seasonal indexing. All of this will be supported by the relevant practical sessions.

<b>Module credits</b>	24.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	LEK 220 and LEK 210
<b>Contact time</b>	2 practicals per week, 3 lectures per week
<b>Language of tuition</b>	Double Medium
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Semester 1

## Agricultural economics 415 (LEK 415)

### Module content:

Derivative instruments in agriculture: To prepare students for taking the SAFEX Agricultural Markets Division brokerage exam. Giving an in-depth knowledge on the importance of hedging. Giving an in-depth knowledge on designing and implementation of low/zero risk hedging strategies. Introduction to the mathematics of portfolio management and mathematical modelling of derivatives. Working knowledge of the mathematical relationships in the management of a hedged portfolio. Working knowledge on the applicable software for managing derivative portfolios. Introduction into the management of option portfolios. To expand the thinking on the uses of derivatives, by also dealing with the hedging of diesel cost, interest rates and weather events.

<b>Module credits</b>	18.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	EKN 110, LEK 220 and WTW 134 or WTW 165
<b>Contact time</b>	3 lectures per week, 1 practical per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Semester 1





## Agricultural economics 421 (LEK 421)

### Module content:

Price and production function analysis. Input -output, input -input and product -product relationships; profit maximization; the production process through time, economies of size; decision making in agriculture under risk and uncertain circumstances; linear programming.

<b>Module credits</b>	24.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	LEK 410 and STK 210
<b>Contact time</b>	2 practicals per week, 3 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Semester 2

## Introduction to resource economics 424 (LEK 424)

### Module content:

This module reviews the origins and evolution of natural and environmental resource economics and its present-day main paradigms. Sources of externalities and causes of environmental degradation are examined. An introduction to the concepts and methods backing the design and implementation of environmental policies are provided. Economic valuation of natural and environmental resources is introduced.

<b>Module credits</b>	15.00
<b>Service modules</b>	Faculty of Economic and Management Sciences
<b>Prerequisites</b>	LEK 210
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Agric Econ, Ext + Rural Dev
<b>Period of presentation</b>	Semester 2

## Elective modules

### Environmental resource assessment and management 450 (WDE 450)

#### Module content:

Determining the resource potential of land on the basis of botanical composition, vegetation cover, animal grazing and browsing potential, water quality, soil quality, chemical, physical and biological soil degradation, soil erosion and other important environmental processes etc. which are essential for integrated agricultural land use practices. Evaluation of grasses and other vegetation types in terms of environmental adaptation, acceptability and adaptability to a sustainable utilization system and the management requirements of an integrated and adaptive management system.



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<b>Module credits</b>	20.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	fortnightly practicals, 3 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 1

### Wildlife science 420 (WKE 420)

#### Module content:

Introductory aspects of wildlife conservation, habitat management, wildlife nutrition and keeping wildlife in zoological gardens.

<b>Module credits</b>	10.00
<b>Prerequisites</b>	VEG 301 or TDH
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Double Medium
<b>Academic organisation</b>	Animal and Wildlife Sciences
<b>Period of presentation</b>	Semester 2

### Vegetable crops 410 (AGR 410)

#### Module content:

Integration of agronomic, pedological, botanical, economic and management considerations in crop production systems with a view to sustainable maximum economic yield. Case studies of specific crops.

<b>Module credits</b>	14.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	fortnightly practicals, 2 lectures per week
<b>Language of tuition</b>	Both Afr and Eng
<b>Academic organisation</b>	Plant Production and Soil Sc
<b>Period of presentation</b>	Semester 1

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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.

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