

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 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

Module content

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

Academic information management 121 (AIM 121)

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

Language of tuition Both Afr and Eng

Academic organisation Information Science

Period of presentation Semester 2



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.

Language and study skills 110 (LST 110)

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 English

Academic organisation Unit for Academic Literacy

Period of presentation Semester 1

Module content

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

Academic orientation 102 (UPO 102)

Module credits 0.00

Language of tuition Double Medium

Academic organisation Natural + Agric Sciences Dean

Period of presentation Year

Academic information management 102 (AIM 102)

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
Faculty of Veterinary Science

Contact time 2 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Information Science

Period of presentation Semester 2



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.

Core modules

Plant biology 161 (BOT 161)

Module credits 8.00

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

Prerequisites MLB 111 GS

Contact time fortnightly practicals, 2 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Plant and Soil Sciences

Period of presentation Semester 2

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.

General chemistry 117 (CMY 117)

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 Final Grade 12 marks of at least 60% for Mathematics and 60% for Physical Sciences.

Contact time 1 practical per week, 4 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Chemistry

Period of presentation Semester 1



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.

General chemistry 127 (CMY 127)

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 1 practical per week, 4 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Chemistry

Period of presentation Semester 2

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.

Financial accounting 111 (FRK 111)

Module credits 10.00

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Law
Faculty of Natural and Agricultural Sciences

Prerequisites No prerequisites.

Contact time 4 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Accounting

Period of presentation Semester 1



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.

Financial accounting 121 (FRK 121)

Module credits 12.00

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

Prerequisites FRK 111 GS

Contact time 4 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Accounting

Period of presentation Semester 2

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.

Introductory genetics 161 (GTS 161)

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 fortnightly practicals, 2 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Genetics

Period of presentation Semester 2

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.

Molecular and cell biology 111 (MLB 111)

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	Refer to Regulation 1.2: A candidate who has passed Mathematics with at least 50% in the Grade 12 examination
Contact time	4 lectures per week, 1 practical per week
Language of tuition	Both Afr and Eng
Academic organisation	Genetics
Period of presentation	Semester 1

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.

Mathematics 134 (WTW 134)

Module credits 16.00

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

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.



Curriculum: Year 2

Minimum credits: 127

Core modules

Economics 110 (EKN 110)

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

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.

Economics 120 (EKN 120)

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

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 2



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.

Introduction to food science and technology 250 (FST 250)

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

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.

Introductory soil science 250 (GKD 250)

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

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.



Introduction to agricultural economics 210 (LEK 210)

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

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.

Agricultural economics 220 (LEK 220)

Module credits	12.00
Service modules	Faculty of Economic and Management Sciences
Prerequisites	[LEK 210] or [EKN 113 and/or EKN 120]
Contact time	3 lectures per week
Language of tuition	Double Medium
Academic organisation	Agric Econ, Ext + Rural Dev
Period of presentation	Semester 2

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.

Sustainable crop production and agroclimatology 251 (PPK 251)

Module credits	15.00
Prerequisites	BOT 161
Contact time	3 lectures per week, fortnightly practicals



Language of tuition	Both Afr and Eng
Academic organisation	Plant Production and Soil Sc
Period of presentation	Semester 2

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.

Statistics 110 (STK 110)

Module credits	13.00
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Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
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Prerequisites	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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Contact time	1 tutorial per week, 1 practical per week, 3 lectures per week
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Language of tuition	Both Afr and Eng
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Academic organisation	Statistics
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Period of presentation	Semester 1
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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.

Statistics 120 (STK 120)

Module credits	13.00
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Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
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Prerequisites	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
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Contact time	1 practical per week, 3 lectures per week, 1 tutorial per week
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Language of tuition	Both Afr and Eng
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Academic organisation Statistics

Period of presentation Semester 2

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.

Animal science 250 (VKU 250)

Module credits 12.00

Contact time 2 lectures per week, 1 practical per week

Language of tuition Both Afr and Eng

Academic organisation Animal and Wildlife Sciences

Period of presentation Semester 1

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.

Animal Science 260 (VKU 260)

Module credits 12.00

Prerequisites VKU 250 GS or TDH

Contact time 2 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Animal and Wildlife Sciences

Period of presentation Semester 2



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.

Elective modules

Statistics 113 (STK 113)

Module credits 11.00

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

Prerequisites No prerequisites.

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 1

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.

Statistics 123 (STK 123)

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

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.



Curriculum: Year 3

Minimum credits: 192

Core modules

Communication 421 (AGV 421)

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

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.

Business law 210 (BER 210)

Module credits	16.00
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Economic and Management Sciences 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	Mercantile Law
Period of presentation	Semester 1

Module content

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

Economics 224 (EKN 224)

Module credits	16.00
Service modules	Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
Prerequisites	EKN 110 GS and EKN 120 or EKN 113 GS and EKN 123; and STK 110 GS and 120 GS
Contact time	3 lectures per week



Language of tuition Both Afr and Eng

Academic organisation Economics

Period of presentation Semester 1

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.

Principles and practices 351 (HSC 351)

Module credits 14.00

Prerequisites No prerequisites.

Contact time fortnightly practicals, 2 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Plant Production and Soil Sc

Period of presentation Semester 1

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.

Agricultural economics 310 (LEK 310)

Module credits 12.00

Service modules Faculty of Economic and Management Sciences

Prerequisites [LEK 210 or EKN 110] and [EKN 120]

Contact time 3 lectures per week

Language of tuition Double Medium

Academic organisation Agric Econ, Ext + Rural Dev

Period of presentation Semester 1

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.



Agricultural economics 320 (LEK 320)

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

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.

Statistics 210 (STK 210)

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

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.

Statistics 220 (STK 220)

Module credits	20.00
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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

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.

Economics 244 (EKN 244)

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

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.

Elective modules

Field crops 361 (AGR 361)

Module credits 14.00

Prerequisites PPK 251



Contact time 2 lectures per week, fortnightly practicals

Language of tuition Both Afr and Eng

Academic organisation Plant Production and Soil Sc

Period of presentation Semester 2

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.

Soil-water relationship and irrigation 350 (PGW 350)

Module credits 16.00

Prerequisites GKD 250

Contact time fortnightly practicals, 2 lectures per week

Language of tuition Both Afr and Eng

Academic organisation Plant Production and Soil Sc

Period of presentation Semester 1

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.

Statistics 310 (STK 310)

Module credits 25.00

Service modules Faculty of Humanities

Prerequisites STK 210, STK 220

Contact time 1 practical per week, 3 lectures per week

Language of tuition English

Academic organisation Statistics

Period of presentation Semester 1

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.



Statistics 320 (STK 320)

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

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.

Planted pastures and fodder crops 320 (WDE 320)

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

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.



Curriculum: Final year

Minimum credits: 161

Core modules

Agriculture and rural development studies 480 (ARD 480)

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

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.

Economics 314 (EKN 314)

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

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.

Agricultural market and price analysis 410 (LEK 410)

Module credits	24.00
Service modules	Faculty of Economic and Management Sciences



Prerequisites	LEK 220 and LEK 210
Contact time	2 practicals per week, 3 lectures per week
Language of tuition	Double Medium
Academic organisation	Agric Econ, Ext + Rural Dev
Period of presentation	Semester 1

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.

Agricultural economics 415 (LEK 415)

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

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.

Agricultural economics 421 (LEK 421)

Module credits	24.00
Service modules	Faculty of Economic and Management Sciences
Prerequisites	LEK 410 and STK 210
Contact time	2 practicals per week, 3 lectures per week



Language of tuition	Both Afr and Eng
Academic organisation	Agric Econ, Ext + Rural Dev
Period of presentation	Semester 2

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.

Introduction to resource economics 424 (LEK 424)

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

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.

Elective modules

Environmental resource assessment and management 450 (WDE 450)

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

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.



Wildlife science 420 (WKE 420)

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

Module content

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

Vegetable crops 410 (AGR 410)

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

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.

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 students to familiarise themselves 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.