

University of Pretoria Yearbook 2023

BScAgricHons (Crop Science) (02241004)

Department Plant Science

Minimum duration of study 1 year

Total credits 135

NQF level 08

Admission requirements

1. BScAgric (Applied Plant and Soil Sciences) degree **or** relevant bachelor's degree
2. A weighted average of at least 60% at final-year level

Other programme-specific information

Electives can be chosen out of the modules listed or any other 700-module that is presented in the Faculty of Natural and Agricultural Sciences, chosen in consultation with the Head of Department of Plant and Soil Science.

General information

University of Pretoria Programme Qualification Mix (PQM) verification project

The higher education sector has undergone an extensive alignment to the Higher Education Qualification Sub-Framework (HEQF) across all institutions in South Africa. In order to comply with the HEQSF, all institutions are legally required to participate in a national initiative led by regulatory bodies such as the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and the South African Qualifications Authority (SAQA). The University of Pretoria is presently engaged in an ongoing effort to align its qualifications and programmes with the HEQSF criteria. Current and prospective students should take note that changes to UP qualification and programme names, may occur as a result of the HEQSF initiative. Students are advised to contact their faculties if they have any questions.

Curriculum: Final year

Minimum credits: 135

Core credits: 60

Elective credits: 75

Core modules

Statistics for biological sciences 780 (BME 780)

Module credits	15.00
NQF Level	08
Service modules	Faculty of Natural and Agricultural Sciences
Prerequisites	No prerequisites.
Contact time	2 Block weeks
Language of tuition	Module is presented in English
Department	Statistics
Period of presentation	Semester 1

Module content

The principles of experimental design as required for the selection of an appropriate research design. Identification of the design limitations and the impact thereof on the research hypotheses and the statistical methods. Identification and application of the appropriate statistical methods needed. Interpreting of statistical results and translating these results to the biological context.

Research project in crop science 701 (PGW 701)

Module credits	30.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 discussion class per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Year

Module content

Students will design, execute and write up a research project in any one of the subdisciplines of Crop science, eg Agronomy, Horticultural science or Pasture science.

Scientific communication 702 (PGW 702)

Module credits	15.00
NQF Level	08

Prerequisites	No prerequisites.
Contact time	1 lecture per week, 2 seminars
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Year

Module content

Principles of the scientific process. Literature accessing and article assessment. Manuscript preparation and presentation of seminars. Use of visual aids.

Elective modules

Crop production systems (I): Field crops 785 (AGR 785)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 2

Module content

Integrated agronomic, climatic, soil, botanical, economic and managerial considerations in crop production systems aimed at maximum economic yield and sustainability. The use of conservation agriculture (CA) in field crop production is becoming ever increasingly important, especially since it is directly related to Sustainable Development Goals (SDGs) 2 (food), 6 (water), 7 (energy) 13 (climate) and 15 (soil). During the semester applicable AC and SDG examples will be highlighted in case studies of specific field crops. Practicals will consist out of a trial on the experimental farm.

Crop production systems (II): Vegetable crops 786 (AGR 786)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 1

Module content

Integrating agronomic, climatic, soil, botanical, economic and managerial considerations in crop production systems aimed at maximum economic yield and sustainability. The importance of vegetables in Sustainable Development Goals 1 (poverty), 2 (food), 3 (health), 4 (education), and 12 (reduced wastage) will be highlighted in case studies of specific vegetable crops. Practicals will consist out of a trial on the experimental farm and a visit to the Tshwane fresh produce market.

Crop physiology 761 (APS 761)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	2 lectures per week, Fortnightly practicals
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 2

Module content

An overview of photosynthesis and respiration, with the aim of examining the physiological basis of yield in cropping systems. This includes an assessment of parameters for determining plant growth, factors governing yield, partitioning of photoassimilates within plants and opportunities for increasing yield. Crop growth and yield will be put into context of a changing global climate. Evaluation of the manner in which plants respond to various abiotic stresses and how plants sense changing environments. The various roles of plant growth regulators in plants and the importance of these compounds in agriculture.

Plants, people and planet 789 (BOT 789)

Module credits	5.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	3 lectures/tutorials (1 hour each) per week, Presentation of proposal (1 hour), Self study
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Year

Module content

Introduction to Community Engagement (CE) in the South African and University of Pretoria context; plant blindness. Identification of community engagement topic and activities, field work and submission of report on these activities.

Soil fertility, soil microbiology and plant nutrition 773 (GDK 773)

Module credits	15.00
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NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 2

Module content

Soil ultimately controls nutrient supply to plants and organisms. The health and resilience of biota are therefore closely linked to the interaction between the pedosphere and the biosphere. This course deals with the availability and uptake of macro and micro nutrients in the plant - microbial- soil system, nutrient deficiencies and toxicities, as well as soil properties and soil environmental conditions that influence soil fertility and its suitability to act as a growth medium. Practical work includes the laboratory evaluation of soil fertility and greenhouse pot trials to investigate nutrient uptake as well as deficiencies and toxicities symptoms in plants.

Fruit tree crops 780 (HSC 780)

Module credits	30.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 2

Module content

An overview of the South African fruit industry indicating economic importance and the areas of production of the various crops. Principles governing orchard establishment and orchard management, including location and site selection, crop and cultivar choices, site preparation, orchard layout and design, irrigation, fertilisation, pruning and training, the application of plant growth regulators and disease and pest management. Harvesting practices and the post-harvest physiology of fruit which determines storage protocols and the quality of the fruit reaching the consumer. Climatic requirements, phenological models, cultivars and rootstocks, fruit manipulation, physiological disorders and pest and disease complexes of subtropical and deciduous fruit crops produced in South Africa. The important role fruit production can play in achieving the Sustainable Development Goals will be highlighted, with emphasis placed on the sustainable use of resources.

Environmental biophysics 750 (LKM 750)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 practical per week, 2 lectures per week

Language of tuition Module is presented in English

Department Department of Plant and Soil Sciences

Period of presentation Semester 1

Module content

Environmental variables. Quantitative description and measurements of atmospheric environmental variables and water in organisms. Mass and energy fluxes. Quantitative description of energy fluxes in organisms' environments. Energy balances of animals and plant communities will be derived.

Plant production: Herbicides and control 712 (PPR 712)

Module credits 15.00

NQF Level 08

Prerequisites No prerequisites.

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

Language of tuition Module is presented in English

Department Department of Plant and Soil Sciences

Period of presentation Semester 2

Module content

Weeds and their importance in Southern Africa. Properties and uses of herbicides. Herbicides in soils and their mode of action in plants.

Agroforestry 713 (PPR 713)

Module credits 15.00

NQF Level 08

Prerequisites No prerequisites.

Contact time 1 discussion class per week, 1 lecture per week, 1 practical per week

Language of tuition Module is presented in English

Department Department of Plant and Soil Sciences

Period of presentation Year

Module content

Agro-ecological zones (climate and soil); trees for fruit, fodder, fuel and/or timber; intercropping or alley cropping with grains, vegetables or pastures; management (including aspects such as nursery production, establishment, fertilization, pest control) and utilization/marketing.

Advanced pasture science 751 (WDE 751)

Module credits 15.00

NQF Level 08

Prerequisites WDE 320

Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 1

Module content

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

Rangeland management 781 (WDE 781)

Module credits	15.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	1 lecture per week
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Year

Module content

The development of rangeland management strategies integrating ecological and physiological principles with economic and sociological constraints to achieve desired objectives whilst ensuring sustainability in different vegetation types for both livestock and wildlife systems; range evaluation and monitoring techniques for rangeland health and to guide adaptive management; rangeland restoration/rehabilitation; interactions among herbivores, including integrated livestock/wildlife systems.

Regulations and rules

The regulations and rules for the degrees published here are subject to change and may be amended after the publication of this information.

The [General Academic Regulations \(G Regulations\)](#) and [General Student Rules](#) apply to all faculties and registered students of the University, as well as all prospective students who have accepted an offer of

a place at the University of Pretoria. On registering for a programme, the student bears the responsibility of ensuring that they familiarise themselves with the General Academic Regulations applicable to their registration, as well as the relevant faculty-specific and programme-specific regulations and information as stipulated in the relevant yearbook. Ignorance concerning these regulations will not be accepted as an excuse for any transgression, or basis for an exception to any of the aforementioned regulations.

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