

# University of Pretoria Yearbook 2022

## 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.

## Curriculum: Final year

**Minimum credits: 135**

Core credits: 60

Elective credits: 75

### Core modules

#### Statistics for biological sciences 780 (BME 780)

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

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

<b>Module credits</b>	15.00
<b>NQF Level</b>	08

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

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

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

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

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

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

#### Module content

Study of the latest trends and developments in plant nutrition, soil biology and soil fertility.

### Fruit tree crops 780 (HSC 780)

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

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

<b>Module credits</b>	15.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 discussion class per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Department of Plant and Soil Sciences
<b>Period of presentation</b>	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)

<b>Module credits</b>	15.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 discussion class per week, 1 lecture per week, 1 practical per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Department of Plant and Soil Sciences
<b>Period of presentation</b>	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)

<b>Module credits</b>	15.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	WDE 320
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	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.

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