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# University of Pretoria Yearbook 2016

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## BScHons Plant Science (03241091)

**Duration of study** 1 year

**Total credits** 135

### Programme information

The programme consists of compulsory modules and elective modules. Students may register for modules to the maximum of 20 credits presented by another department, which forms part of the elective modules.

The following fields are presented in the BScHons in Plant Science programme:

- Plant Diversity (D)
- Plant Biotechnology/Physiology (PB)
- Plant Ecology (E)
- Option: Medicinal Plant Science

Apart from the compulsory and elective modules, a project, leading to a research report (60 credits), forms an essential part of the training programme. One seminar (15 credits) must also be written and presented. Field excursions are undertaken.

In addition to the compulsory modules, electives are selected in consultation with the supervisor.

Suitably qualified candidates may also apply for the interdepartmental BScHons in Biotechnology degree (Code 02240392) with a supervisor in the Department of Plant Science.

Please consult Prof P Bloomer, Tel: +27 12 420 3259, for further details.

### Renewal of registration

- Subject to exceptions approved by the Dean, on the recommendation of the head of department, and in the case of distance education where the Dean formulates the stipulations that will apply, a student may not sit for an examination for the honours degree more than twice in the same module.
- A student for an honours degree must complete his or her study, in the case of full-time students, within two years and, in the case of after-hours students, within three years of first registering for the degree and, in the case of distance education students, within the period stipulated by the Dean. Under special circumstances, the Dean, on the recommendation of the head of department, may give approval for a limited extension of this period.

In calculating marks, General Regulation G.12.2 applies.

Apart from the prescribed coursework, a research project is an integral part of the study.

### Admission requirements

BSc in Plant Science, or a recommendation from the head of the department if the candidate did not major in Plant Science. Preference will be given to applicants with the highest final grade point averages for their preceding degree and qualifying applicants may be subjected to an entrance evaluation examination. Admission is furthermore contingent on the availability of supervisors and/or research projects within the participating departments.



## Other programme-specific information

- BOT 705 and BTW 701 are for BScHons (Biotechnology) students. PB students who wish to take one of these modules as an elective need to apply to the programme leader.
- BOT 790 is for BScHons (Wildlife Management) students.

The curriculum for the balance of the credits will be determined by the heads of department of the interdepartmental BScHons (Biotechnology) degree programme (Code 02240392).

## Pass with distinction

The BScHons degree is awarded with distinction to a candidate who obtains a weighted average of at least 75% in all the prescribed modules and a minimum of 65% in any one module.



## Curriculum: Final year

Minimum credits: 135

### Core modules

#### Research report 782 (BOT 782)

<b>Module credits</b>	60.00
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1

#### Module content

Teaching and planning, execution and documentation of a research project.

#### Seminar 783 (BOT 783)

<b>Module credits</b>	15.00
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1

#### Module content

Literature study, discussion and oral presentation of a subject related to the main discipline.

#### Trends in plant science 784 (BOT 784)

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 2

#### Module content

Literature study of recent publications in a subject related to one of the elective disciplines.

### Elective modules

#### Plant nomenclature 712 (BOT 712)

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.



**Contact time** 1 practical per week, 1 lecture per week

**Language of tuition** English

**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 1

#### **Module content**

The regulations of the International Code for Botanical Nomenclature. Principles of nomenclature. History of plant collecting. Type specimens.

### **Seed ecology 714 (BOT 714)**

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Contact time** 1 lecture per week, 1 practical per week, 1 web-based period per week

**Language of tuition** English

**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 2

#### **Module content**

Regeneration of plants from seed under natural conditions. Early stages in the life of a plant from ovule to established seedling: seed production; seed predation; seed dispersal; seed germination and dormancy, seed bank dynamics and seedling establishment.

### **Plant morphology 717 (BOT 717)**

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Contact time** 1 practical per week, 1 lecture per week

**Language of tuition** English

**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 1

#### **Module content**

Speciation in flowering plants; plant variation. Sex determination in flowering plants. Reproductive systems in flowering plants.

### **Introduction to plant biotechnology 718 (BOT 718)**

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Contact time** 1 practical per week, 1 lecture per week

**Language of tuition** English



**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 1

**Module content**

Plant genome: structure and composition of the plant genome (nuclear, mitochondrial and chloroplast); applications in plant biotechnology: plant tissue culture (micropropagation, somatic embryogenesis and cell suspension cultures). Genetic manipulation and gene transfer technology (Agrobacterium-based and other) and DNA-marker technology.

**Primary plant metabolism 719 (BOT 719)**

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Contact time** 1 discussion class per week, 1 web-based period per week, 1 practical per week

**Language of tuition** English

**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 1

**Module content**

Regulation and interaction of primary plant metabolic pathways on the sub-cellular and whole plant level.

**Plant taxonomy 741 (BOT 741)**

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Contact time** 1 lecture per week, 1 practical per week

**Language of tuition** English

**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 2

**Module content**

Classification, identification and nomenclature, methodology of a revision study, analysis and presentation of taxonomic information, evolution, phylogeny and cladistics.

**Plant classification 742 (BOT 742)**

**Module credits** 20.00

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week, 1 practical per week

**Language of tuition** English

**Academic organisation** Plant and Soil Sciences

**Period of presentation** Semester 2



## Module content

Sources of taxonomic information; morphology, anatomy, chemotaxonomy, cytogenetics, reproductive biology, plant geography, palynology, ethnobotany and paleobotany. Importance of different characteristics, methods to obtain information and interpretation of observed patterns in variation.

## Applications in plant biotechnology 746 (BOT 746)

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 practical per week, 1 lecture per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 2

## Module content

Creation of genetically modified plants and their impact on modern agriculture.

## Advanced phytomedicine 761 (BOT 761)

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 practical per week, 1 lecture per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 2

## Module content

Metabolism and functions of secondary compounds such as tannins, alkaloids, terpenoids, flavonoids and free amino acids. Importance of secondary compounds in the defence mechanisms of plants. Isolation and identification of medicinal bioactive compounds from plants. Their current scope and potential applications in ethnobotany. Strategies to discover new pharmaceuticals from ethnomedicine.

## Practical plant identification 786 (BOT 786)

<b>Module credits</b>	10.00
<b>Prerequisites</b>	BSc with first year Botany/Plant Science
<b>Contact time</b>	2 lectures per week, 2 practicals per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1



## Module content

Principles of identification, classification and nomenclature; identification of plants; family recognition; collection of plant specimens for identification; herbarium as a source of information. Variation in seed plants and breeding systems. Practical work involves an excursion.

## Spatial analysis in ecology 788 (BOT 788)

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 2

## Module content

Mapping and analysing spatial data. Theory and basic techniques of analysing and manipulating spatial data using geographical information systems. Mapping of vegetation types, species distributions and diversity, species traits. Understanding the spatial drivers of biodiversity patterns. The influence of scale on biodiversity analyses. Relevance for conservation planning for mapping biodiversity risk and prioritising conservation, especially in a South African context.

## Biotechnology in the workplace 701 (BTW 701)

<b>Module credits</b>	15.00
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Genetics
<b>Period of presentation</b>	Year

## Module content

Introduction to the principles and realities of working in the field of biotechnology. Discussions on various aspects, including entrepreneurship; intellectual property; patent rights; financial management; grant applications and product marketing. The module will be assessed by way of a simulated grant application for the development of a hypothetical biotechnological venture.

## Molecular techniques 705 (BOT 705)

<b>Module credits</b>	15.00
<b>Prerequisites</b>	Admission into BSc Hons in Plant Science (Plant Biotechnology/Physiology)
<b>Contact time</b>	5 practical per week, 1 lecture per week, 1 discussion class per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1



## Module content

Students are guided through the methodology of research planning and data handling. They are offered hands-on experience in a range of advanced techniques employed in molecular research and analysis.

### Plant ecology and conservation 730 (BOT 730)

<b>Module credits</b>	20.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week, 5 ppw
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1

## Module content

Applications of plant ecology principles in plant conservation: species-distribution modelling, alien plant invasions, conservation planning, threatened ecosystems, South African environmental legislation. Experimental design and vegetation survey techniques. Discussion of relevant topics in plant ecology. This module includes a compulsory 5-day field component.

### Plant ecology and conservation for wildlife management 790 (BOT 790)

<b>Module credits</b>	10.00
<b>Contact time</b>	2 lectures per week, 2 practicals per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1

## Module content

Applications of plant ecology principles in plant conservation: species-distribution modelling, alien plant invasions, conservation planning, threatened ecosystems, South African environmental legislation. Discussion of relevant topics in plant ecology.

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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 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.