



---

# University of Pretoria Yearbook 2019

---

## BScHons Medicinal Plant Science (02240706)

**Minimum duration of study** 1 year

**Total credits** 135

### Programme information

#### Renewal of registration

- i. Subject to exceptions approved by the Dean, on the recommendation of the relevant 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.
- ii. 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 relevant 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 department if the candidate did not major in Plant science. A minimum of 60% in Phytomedicine 365 (BOT 365), which is offered at third-year level in the Department of Plant and Soil Science.

The recommended modules at BSc third-year level are as follows:

1. BOT 366 Plant diversity (Department of Plant and Soil Science)
2. BOT 356 Plant ecophysiology (Department of Plant and Soil Science)
3. BCM 368 Molecular basis for disease (Department of Biochemistry)
4. BCM 357 Biocatalysis and integration of metabolism (Department of Biochemistry)
5. FAR 382 Pharmacology (Department of Pharmacology)
6. CMY 282 Physical chemistry (Department of Chemistry)
7. CMY 284 Organic chemistry (Department of Chemistry)

### 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

Minimum credits: 135

Core credits: 105

Elective credits: 30

### Other programme-specific information:

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

Apart from the compulsory and elective modules, a project, leading to a research report (60 credits), forms an essential part of the 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.

## Core modules

### Phytopharmacology 748 (BOT 748)

#### Module content:

Pharmacological action of low molecular plant constituents and high molecular weight compounds. Plant constituents as anticancer, antibacterial, antiviral, hypoglycaemic, freeradical scavengers, hypotensive and as anti-inflammatory agents. Cell culturing, cell growth and apoptosis, cell mediated immune responses. Drug development in TB as models for research. Enzymes, receptors and plant constituents. The unique challenges of plant-based medicines.

**Module credits** 10.00

**Prerequisites** No prerequisites.

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

**Language of tuition** Module is presented in English

**Department** Department of Plant and Soil Sciences

**Period of presentation** Semester 1

### Pharmacognosy/Phytotherapy 749 (BOT 749)

#### Module content:

Basic concepts of toxicology. Systemic, developmental, genetic and organ-specific toxic effects. Hallucinogenic, allergenic, teratogenic and other toxic plants. Plant constituents, contradictions and interactions. Phytotoxicity unrelated to plant constituents. Safety and efficacy issues of commonly used Phyto-drugs with emphasis on pharmaceutical applications. Practical aspects related to the manufacture of good quality plant-based medicines. Phyto-drug formulation, standardisation and aspects concerning different dosage forms.

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Contact time** 1 practical per week, 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>	Semester 1

### Advanced phytomedicine 761 (BOT 761)

#### 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.

<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>	Module is presented in English
<b>Department</b>	Department of Plant and Soil Sciences
<b>Period of presentation</b>	Semester 2

### Research report 782 (BOT 782)

#### Module content:

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

<b>Module credits</b>	60.00
<b>Prerequisites</b>	No prerequisites.
<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

### Seminar 783 (BOT 783)

#### Module content:

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

<b>Module credits</b>	15.00
<b>Prerequisites</b>	No prerequisites.
<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



## Elective modules

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

#### 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.

<b>Module credits</b>	15.00
<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

### Plant nomenclature 712 (BOT 712)

#### Module content:

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

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	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>	Semester 1

### Seed ecology 714 (BOT 714)

#### 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.

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 practical per week, 1 lecture per week, 1 web-based period 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

### Plant morphology 717 (BOT 717)

#### Module content:

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

<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>	Module is presented in English
<b>Department</b>	Department of Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1

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

#### 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.

<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>	Module is presented in English
<b>Department</b>	Department of Plant and Soil Sciences
<b>Period of presentation</b>	Semester 1

### Primary plant metabolism 719 (BOT 719)

#### Module content:

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

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 web-based period per week, 1 practical per week, 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>	Semester 1

### Plant taxonomy 741 (BOT 741)

#### Module content:

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

<b>Module credits</b>	10.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	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>	Semester 2

### Plant classification and phytogeography 742 (BOT 742)

#### Module content:

An overview of phylogenetics sets the scene, and sources of taxonomic information (morphology, anatomy, chemotaxonomy, cytogenetics, reproductive biology, palynology, ethnobotany and paleobotany) and how these data are used are discussed. This is followed by a section on the use of phylogenies as tools to understand ecological and geographical patterns and processes. Modern plant distribution patterns are assessed from the framework of the competing explanations of dispersal and vicariance.

<b>Module credits</b>	20.00
<b>Prerequisites</b>	BOT 366
<b>Contact time</b>	2 lectures 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>	Semester 2

### Applications in plant biotechnology 746 (BOT 746)

#### Module content:

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

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



---

<b>Contact time</b>	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>	Semester 2

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

#### Module content:

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

**Module credits** 10.00

**Prerequisites** No prerequisites.

**Language of tuition** Module is presented in English

**Department** Department of Plant and Soil Sciences

**Period of presentation** Semester 2

### Practical plant identification 786 (BOT 786)

#### 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.

**Module credits** 10.00

**Prerequisites** BSc with first year Botany/Plant Science

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

**Language of tuition** Module is presented in English

**Department** Department of Plant and Soil Sciences

**Period of presentation** Semester 1

### Spatial analysis in ecology 788 (BOT 788)

#### 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.

**Module credits** 10.00

**Prerequisites** No prerequisites.



---

<b>Contact time</b>	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

---

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.