University of Pretoria Yearbook 2019

BScHons Biotechnology (02240393)

Minimum duration of study	1 year
Total credits	135

Programme information

BScHons (Biotechnology) is a unique interdepartmental programme aimed at enabling students to pursue their interest in molecular biotechnology through relevant research areas offered within fields of biochemistry, plant science, microbiology and plant pathology, plant production, as well as genetics. Students within this programme will be registered and will conduct their studies within the department of their choice. A student's choice of research programme will determine which of the respective departments will mentor their honours degree programme.

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 Biotechnology or equivalent degree including at least three final-year modules with a strong molecular biology focus. The following UP modules or their equivalent will be considered: GTS 351, GTS 354, GTS 368, BCM 356, MBC 357, BCM 367, MBY 355, MBY 364, MBY 365, BTC 361.
- Students must have completed four final-year modules in the disciplinary field within which the honours degree will be registered.
- An average pass mark of 60% or more at final-year level or permission by the head of department. 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.

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

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Fundamental credit: 16

Core credits: 30

Elective credits: 105

Other programme-specific information:

- The curriculum for the balance of the credits will be determined by the heads of the participating departments.
- Additional modules may be prescribed by the head of the department where deemed necessary. Honours students may also be required to complete a biometry or equivalent module, if they have not already done so during their undergraduate training.

Core modules

Biotechnology in the workplace 701 (BTW 701)

Module credits	15.00
Prerequisites	No prerequisites.
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	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 and cellular biology 721 (MLB 721)

Module credits	15.00
Prerequisites	No prerequisites.
Contact time	2 discussion classes per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Semester 2

Module content

Principles and applications of recombinant DNA, and other novel molecular and genomics technologies, to address questions in the biological sciences and/or biotechnology. Strong emphasis is placed on the principles of research planning, including identifying suitable research objectives, formulating a research strategy and understanding the relevance and feasibility of research. The module is assessed by means of a research project proposal, conceived and formulated by each student. The proposal must focus on the use of molecular technologies in addressing realistic questions in biology and/or biotechnology. There is also an oral defense of the project proposal.
This module is jointly presented in the Departments of Biochemistry, Genetics and Microbiology.

Elective modules

Research project and report 773 (BCM 773)

Module credits	60.00
Prerequisites	No prerequisites.
Contact time	1 other contact session per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Year

Research methods 774 (BCM 774)

Module credits	30.00
Prerequisites	Admission into BSc Hons Biochemistry, Biotechnology, Genetics, Microbiology, Bioinformatics or Human Physiology
Contact time	2 web-based periods per week, 4 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Year

Module content

Students are guided through the methodology of research planning and data handling, as well as science communication skills. They are offered hands-on experience in a range of advanced techniques employed in biochemistry, molecular technologies and biochemical analysis. Scientific writing and presentation skills required for research in biochemistry, are also addressed. Ethical and philosophical issues in the broader field of the Cellular and Molecular Sciences are also addressed. Several of these aspects will be presented collaboratively by the Department of Genetics and the Department of Microbiology and Plant Pathology.

Molecular techniques 705 (BOT 705)

Module credits	15.00
Prerequisites	Admission into BSc Hons in Plant Science (Plant Biotechnology/Physiology)
Contact time	1 discussion class per week, 1 lecture per week, 5 practical per week

Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	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.

Research report 782 (BOT 782)

Module credits	60.00
Prerequisites	No prerequisites.
Language of tuition	Module is presented in English
Department	Department of Plant and Soil Sciences
Period of presentation	Semester 1

Module content

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

Research project 703 (GTK 703)

Module credits	60.00
Prerequisites	No prerequisites.
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Year

Module content

A mini-dissertation with well-defined limits is undertaken under the guidance of a supervisor. The students are allowed to choose from a number of projects from the different research programmes in the department. The module also has a strong theoretical component since emphasis is placed on writing and presenting a comprehensive literature review and project proposal. Additional technical and analytical training is provided. The project is concluded with a final report, presented in the format of a short manuscript, as well as a poster and an oral presentation.

Research methods 705 (GTK 705)

Module credits	30.00
Prerequisites	No prerequisites.
Contact time	10 discussion classes per week, 5 web-based periods per week, 5 practicals per week, 5 lectures per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology

Period of presentation	Year

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. Scientific writing and presentation skills, required for research in genetics, are also addressed.

Research methods 751 (MCP 751)

Module credits	30.00
Prerequisites	No prerequisites.
Contact time	7 lectures per week, 5 practicals per week
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Year

Module content

The module provides students with planning, data handling, writing, and presentation skills required for microbiological research. In addition, students are provided with hands-on experience in the advanced techniques utilised in research and analysis. Ethnical and philosophical issues in the broader field of Microbiology and Plant Pathology are also addressed.

Research project and literature study 754 (MCP 754)

Module credits	60.00
Prerequisites	No prerequisites.
Language of tuition	Module is presented in English
Department	Biochemistry, Genetics and Microbiology
Period of presentation	Year

Module content

The module includes both practical and theoretical components. In addition to an individual research project with well-defined limits that is undertaken under the guidance of a lecturer, the module also acquaint the student with the theoretical aspects relevant to a specific research topic. The research project is thus preceded by the presentation of an in-depth review of the relevant literature, and the project is concluded with a progress report, presented in the format of a short publication and an oral presentation.