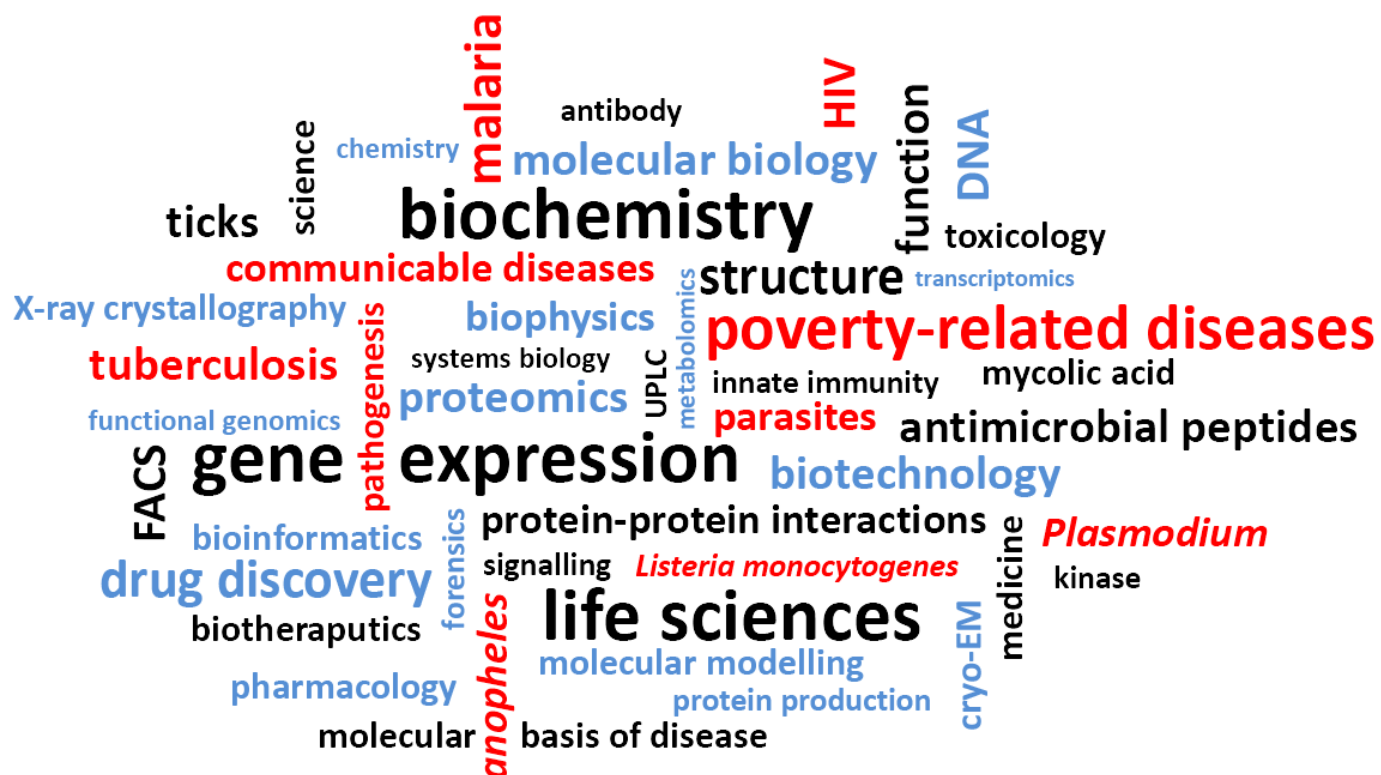


UNIVERSITY OF PRETORIA

DEPARTMENT OF BIOCHEMISTRY



BSc. HONOURS

IN

BIOCHEMISTRY

2016

OBJECTIVES OF THE PROGRAMME

The Honours programme in Biochemistry provides students with an advanced, hands-on and career-oriented training to equip them to

- work as biochemists in a wide range of applied fields
- cultivate an integrated perspective of Biochemistry and Molecular Biology
- identify and critically evaluate the scientific literature
- effectively assimilate relevant information
- develop conceptual and analytical thinking
- communicate effectively on research and science in general
- understand how hypothesis-driven research is planned, conducted, assessed and reported.
- master the technical aspects necessary to a researcher;
- work independently
- cultivate an ethic of teamwork, while also encouraging independent thinking within a research environment.

The Department of Biochemistry presents two, one-year Honours degree programmes:

- BSc. Hons (Biochemistry) – concentrating on fundamental and applied biochemistry and molecular biology
- BSc. Hons (Biotechnology) – combining biotechnological aspects with a strong basis in biochemistry and molecular biology.

GENERAL INFORMATION

BSc Honours (Biochemistry or Biotechnology) is a one-year, full-time programme that commences in January and concludes at the end of November of the same calendar year. Honours students are engaged in theoretical and practical work within the Department on a full-time basis. For this purpose the department provides office and laboratory space. Only under exceptional circumstances and only with explicit permission from the Head of Department, may components of the programme such as the research project be completed on a part-time basis.

ADMISSION REQUIREMENTS:

All applicants must have successfully completed a Bachelor of Science degree (NQF level 7) in Biochemistry, Molecular Biology or closely related fields. Students must have at least a 60% average across all relevant final year modules.

A maximum of 25 students are admitted to the Honours in Biochemistry programme per year and preference is given to excellent academic achievers at undergraduate level. Each application is screened and evaluated individually.

Where necessary, the Department may prescribe one or more undergraduate modules to redress deficiencies in a candidate's undergraduate training.

Please note: The language of this programme is English. We correspondingly require students to be fully proficient in both spoken and written English.

Students with a BTech degree may apply for admission to the BSc. Honours (Biochemistry) programme. However, if selected, they will need to register for and pass appropriate third-year modules alongside the Honours programme. Similarly, students with a four-year BSc. degree, who fulfil the admission criteria for a Masters degree, may be required to complete selected components from the Honours programme as part of the requirements for their MSc degree.

APPLICATION PROCESS:

- Students continuing at the University of Pretoria:

Please apply for postgraduate study online through the Student Portal on PeopleSoft. In addition, also submit the internal application form to Ms Saronda Fillis (Agricultural Sciences, Rm 7-12) along with your full, up-to-date academic record. Please double-check your contact details as these will be used to inform you of your acceptance. Note, 1st and 2nd year marks alone are not sufficient to apply for Honours. Please take note of the attached closing dates for applications.

- Students from outside the University of Pretoria:

Please complete the online application form on the University of Pretoria Web Page (www.up.ac.za, choose Quick Links “New Students” at the top and then “Postgraduate students” on the left and “Apply at UP”, etc. Please upload a CV and a complete academic record as supporting documentation. If you do not yet have your final marks, please include your official progress marks and ensure that we receive your final marks as soon as possible! Please adhere to the application deadlines.

PLEASE NOTE: Students that have completed their degree at a non-South African institution need to obtain a SAQA certificate stating the level of their qualification. The department will additionally cross-check to verify that suitable courses have been completed, before a student is admitted to the programme.

Students that require a visa to enter South Africa must apply during the 1st round of applications (closing date 1 August 2015).

ADMISSION PROCESS:

To accommodate the best students for the limited number of Honours positions available each year, the departmental admissions panel will concentrate on the undergraduate achievement and English language proficiency. A first, preliminary round of selection will take place in early August and a second one in December. Successful and short listed candidates will be notified of their conditional acceptance by the middle of August or December.

Applicants selected during the first cycle of selections will be provisionally accepted pending their final marks. Accepted candidates must accept or decline their position in the programme by the

middle of December 2015. Unconfirmed positions will then be withdrawn and awarded to shortlisted candidates by the end of December 2015.

Late applications will be considered if and when positions become available and once short listed candidates have been accommodated. Any candidate may be invited to an interview to verify their level of proficiency in biochemistry / molecular biology and in communication.

Honours students must complete their registration no later than the middle of February. Most assignments are submitted via ClickUP, which is only activated upon finalization of registration.

BURSARIES:

A range of bursaries are available to selected students. These include NRF block bursaries and UP postgraduate bursaries. However, please note that :

- Acceptance into the Honours programme is not linked to the granting of a bursary.
- Bursaries, where granted, will often not cover all costs associated with the degree (course fees and subsistence).
- Students need to identify sources of income independent of those provided by the NRF and the university.
- Some NRF grant-holder-linked bursaries will be provided by individual supervisors.
- Please consult the University bursary office for more information.
- Please contact the Department if you encounter serious financial constraints.

THE HONOURS PROGRAMME:

The Honours programme constitutes the first level of postgraduate training in Biochemistry and therefore covers the entire field of Biochemistry and Molecular Biology. At the beginning of the Honours programme students will be interviewed individually to discuss preferences and expectations. While students are asked to select up to three areas of specialization for their research project, the final decision is taken by the department based on the availability of supervisors and other factors. Students are encouraged to see the Honours programme as an opportunity to grow and enhance their skills and knowledge in all aspects of Biochemistry and Molecular Biology.

COURSES:

- BCM 771: Trends in Biochemical Research (15 credits)

This module consists of two parts: A Journal Club (7.5 credits) and a course on Scientific Communication (7.5 credits). The Journal Club involves the critical reading, understanding and debating of topical papers from the literature by the students and the supervisors. The course on Scientific Communication supports students in reading, writing and verbal communication about science in general and biochemistry and molecular biology in particular.

- BCM 773: Research Project and Report (60 credits)

Students complete a research project in one of the research groups in the department. They become full members of that research group and complete an agreed project under the guidance of the

project leader. Other postgraduate and postdoctoral students may also be involved in supporting the project. Students learn how to break down a larger project into manageable experiments. They learn to plan and structure their experiments to achieve their particular aims. They are then called upon to interpret the results of a particular experiment and draw conclusions about whether the results support/confirm their anticipated outcome and if not, why this should be the case.

The project is finally written up in a formal document comprising the Introduction/Background, Aim, Materials and Methods, Results, Discussion, Conclusion and Outlook

•BCM 774: Research Methods (30 credits)

In this postgraduate course on Research Methods students are guided through the methodology of research planning and data handling and are provided with a solid basis of techniques required for their research projects. They are offered hands-on experience in a range of advanced techniques employed in biochemistry and molecular biology. Ethical and philosophical issues in the broader field of the cellular and molecular sciences are also addressed. This module consists of two parts: a practical technique course running from mid Jan to mid Feb (15 credits) and additional advanced research methods (15 credits).

•BCM 775: Advanced Biochemistry (15 credits)

This module will be made up of a series of 15 lectures plus an appropriate self-study assignment on distinct topics in biochemistry and molecular biology with particular emphasis on modern techniques and methodologies such as systems biology, functional genomics, transcriptomics, proteomics, mass spectrometry, metabolomics, large-scale protein production, macromolecular structure determination, working with isotopes, etc.

•MLB 721: Molecular and Cellular Biology (15 credits)

The module addresses the principles and applications of molecular biology. Strong emphasis is placed on the principles of research planning and the use of molecular technology to address questions in the biological sciences. The module is assessed by means of a research project proposal submitted by each student. This proposal should focus on the use of recombinant DNA technology in addressing questions in the biological sciences. Students may choose their own research proposal topic and are encouraged to choose a topic directly related to their own field of interest, postgraduate specialization or future career. The proposal will form the basis of an oral examination.

•BTW 701: Biotechnology in the Workplace (15 credits)

BIOTECHNOLOGY students only. This module focuses on the realities of working in the field of Biotechnology. This component includes aspects such as entrepreneurship development, economic implications and financing, intellectual property and patents, bioethics, biotechnology and public understanding. Knowledge and insights gained from this course will be assessed by means of a simulated grant application for the development of a hypothetical biotechnological venture.

Students may approach the Honours course coordinator (Dr. Jandeli Niemand, jandeli.niemand@up.ac.za), the Head of Department (Prof. Wolf-Dieter Schubert, [wolf-](#)

dieter.schubert@up.ac.za) or any other academic member of the Department with questions regarding the Honours programme or the research programmes in the Department of Biochemistry.

Queries can also be directed to biochem.hons@up.ac.za

Last updated: June 2015