

# Department of Biochemistry, Genetics & Microbiology - Division of Genetics -

## HONOURS in GENETICS HONOURS in BIOTECHNOLOGY



### OBJECTIVES OF THE PROGRAMME

The Honours programme is designed to provide graduates with comprehensive, career-oriented training, which should enable them to work as geneticists in a variety of applied research fields. The most important study objective of our Honours programme is to enable students to read, think, strategize, and communicate in their chosen field of study. The following specific objectives can be identified:

- ▲ To cultivate an integrated perspective of Genetics, with its diverse sub-disciplines and range of applications, and to develop conceptual thinking skills;
- ▲ To collate and critically evaluate literature, as well as to effectively assimilate the relevant information;
- ▲ To communicate effectively in a scientific context about genetics and genetic research, as well as science in general;
- ▲ To understand how hypothesis-driven research is conceptualized, planned, conducted, assessed and reported;
- ▲ To master the technical aspects necessary to work in the field of genetics as a researcher;
- ▲ To cultivate an ethos of teamwork, while also encouraging independent thinking and individual responsibility.

The Division of Genetics currently offers two Honours degree programmes:

- A **BScHons (Genetics)** following completion of a recognized research-oriented BSc study programme with Genetics as a major. This Honours programme is a one-year, fulltime degree presented at NQF level 8.
- A **BScHons (Biotechnology)** following completion of a recognized research-oriented BSc study programme with Genetics as major. This Honours programme is a one-year, fulltime degree presented at NQF level 8. (Please see separate information brochure.)

### GENERAL INFORMATION

Our BSc(Hons) is a full-time programme that commences in January and concludes early December. Honours students are expected to be engaged in their studies on a full-time basis during the year and will be provided with desk and laboratory space in which to work. Only in very exceptional cases and in strict consultation with the Chair of the Division of Genetics, might it be possible to complete selected components of the programme, such as the research project, on a part-time basis.

**Hons Programme Coordinator for 2024 is:**

- Prof Jaco Greeff

### Requirements for Admission:

Applicants must have a research-oriented Bachelor of Science degree in the biological sciences (NQF level 7) with clear evidence of an advanced background in Genetics. We require *at least* a 60% average across all

final year Genetics modules, as well as a 60% GPA (lower second) across all final year modules for the preceding BSc degree. In-house students who wish to apply must have completed at least 36 credits of genetics modules at 300-level, including GTS 351 and GTS 367, and must be actively registered for, or have completed, at least another 36 credits in genetics which includes GTS354.

Note that the study programme is presented in English and it is essential that all students to be fully proficient in this language.

Only a limited number of students are annually admitted to our Hons programme and preference is given to students who attained excellent academic results at undergraduate level. All applications for admission are screened on an individual basis.

Students with an appropriate four year BSc(Agric) degree, who comply with the admission requirements, may apply directly for a Masters degree. However, such students will still be required to complete selected components from the Honours programme as part of the requirements for their MSc degree. Students with a BTech degree (or equivalent) will likely be required to apply in the Hons programme - please contact the Division regarding admission requirements.

### **Application Process:**

#### **▲ In-house students:**

Please apply for postgraduate study online through your **Student Portal** (MyTuks login) or at NAS Student Administration in the foyer of the Agricultural Sciences building. Ensure that your correct contact details (email and cell nr) are updated on your Student Portal. Hons applications opened 1 April and close 31 October. Please take note of the attached closing dates for more details.

#### **▲ Students from institutions other than UP:**

Interested persons may apply by completing the **online UP application** at <https://www.up.ac.za/online-application>. Please ensure that you provide the correct contact details and address. It is essential that a **CV** and up-to-date **academic record** is attached as supporting documentation (see "step 10" of the online UP application process). If you do not have your final marks as yet, please include your official progress marks and ensure that we receive your final marks as soon as possible! Note that applications *will not* be processed based on 1<sup>st</sup> and 2<sup>nd</sup> year marks only; only hand in your academic record after the 1<sup>st</sup> semester of your final year is complete. Online Hons applications opened 1 April and close 31 October. Please take note of the attached closing dates for more details. Non-SA applications must be submitted by the end of August and will be processed as soon as possible thereafter.

### **Admission Process:**

There are only a limited number of Honours positions available each year and is strictly dependent on the supervisory capacity in the Division. The admissions panel will consist of all the lecturing personnel in the Division and attention will be given to the applicant's undergraduate background, their academic achievement and English language proficiency. There will be two rounds of selections - the first will take place early August and the second in November/December. Successful (and short listed?) candidates will be notified via email.

During the first round of selections only ±15 places will be filled based solely on academic merit. (First round selection criteria: must have completed two 300-level modules in Genetics; final year GPA ≥ 65% with no 300-level module below 60%.) Applicants who were admitted during the first round will receive provisional admission, pending their final examination results. Provisionally accepted candidates **MUST** notify the Division of their intention to accept or decline their Hons position no later than 10 November. Note that provisional admission can be revoked if the candidate no longer complies with the minimum admission requirements, as stated above, based on their final examination results or if they failed to notify the Division in time of their intent to accept the position. All applications that do not comply or were unsuccessful during this round will be included for consideration during the second round.

Candidates admitted during the second round of selections must either accept or decline their offered positions in the programme by the stated due date. Unconfirmed positions at that date will be retracted and may be awarded to shortlisted candidates. Late applications may be considered if and when positions become available prior to the start of the programme and after attention has been given to short listed candidates. The

admissions panel reserves the right to invite shortlisted candidates for a selection oral or to write an admission examination to verify basic genetics background and/or level of understanding.

Hons students are expected to complete their registration as soon as possible, but preferably no later than the end of January. Some of the early assignments require access to ClickUP and the UP Library, which can only be effected after registration has been completed.

### **Bursaries:**

A limited number of UP postgraduate bursaries are potentially available to students with an exceptional undergraduate final year weighted average. (The cut-off percentage will vary depending on the availability of funds; bursaries are **not** guaranteed). There are also NRF and a few other bursaries available for students who have excelled in their undergraduate studies. Please consult the University's bursaries office for more information or see <https://www.up.ac.za/student-funding>. Please talk to the Hons Coordinator as soon as possible if you encounter serious financial constraints!!

## **COMPOSITION OF THE PROGRAMME**

The Honours programme serves as the first level of postgraduate training in Genetics and therefore covers the broader field of Genetics. Students are strongly advised to use the Hons programme as an opportunity to grow and enhance their skills and knowledge in all aspects of Genetics. The Genetics Honours programme currently consists of:

- **GTK 702: Scientific Communication (15 credits)**

During this module students are expected to both present several short "journal club"-type presentations of selected articles, and to write several longer essays. The objective of the module is to teach students how to effectively search literature databases, use referencing software and condense collated information into the format of either a short oral presentation or a more detailed oral and written report. A main outcome for this module is that students understand the process through which information is accumulated, evaluated, processed and communicated.

- **GTK 704: Trends in Genetics (20 credits)**

A short series of discussions and essays focusing on a selection of advanced topics, as well as recent advances in the field of genetics, and with an emphasis on contextualising these developments within the broader framework of the Biosciences and its role in modern society. Ethical and philosophical issues in genetics are debated.

Students registered in the Biotechnology programme replace this module with BTW 701 - Biotechnology in the Workplace.

- **GTK 705: Research Methods (25 credits)**

Students are guided through the methodology of research planning and data handling. The *joint techniques course* covers all basic recombinant DNA techniques and related technologies such as centrifugation, electrophoresis, gene cloning, hybridization, protein analysis, as well as PCR, sequencing and basic bioinformatics training. This course is followed by a selection of *advanced technique courses*. The module is assessed by means of reports and tutorial assignments.

- **GTK 703: Research Project (60 credits)**

An Honours research project has well defined limits and aims to teach students the basic concepts involved in research planning, how to develop appropriate strategies and how to use diverse technologies to answer well defined questions. The module also has a strong theoretical component since emphasis is placed on writing and presenting a comprehensive literature review and project proposal, as well as a workshop on aspects of career-development.

The projects will give students exposure to a range of cutting-edge technologies to which they will be exposed in the workplace. Students are first introduced to the various research focus areas and then allowed to select a project from one of the research areas. The project is usually conducted under the direct mentorship of a senior postgraduate student and the Honours student forms part of the research programme's team. The research project is the main activity during the second half of the year and is assessed in the form of a written

report in the format of a research article, a formal presentation and a research poster. In some instances it may be possible to extend the Honours project to develop into an MSc project. This might reduce the time necessary to complete the MSc.

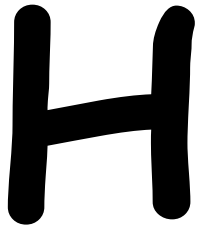
• **MLB 721: Molecular and Cellular Biology** **(15 credits)**

The module addresses the principles and applications of molecular biotechnology. Very 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 of the students. 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 something that is directly related to their own field of interest, postgraduate specialization or future career commitments. There is also an oral defense based on the proposal submitted.

**Students are welcome to approach any of the lecturing staff in the Division of Genetics if you have any more questions regarding the Honours programme. Alternatively, enquiries can be directed to Lucille Hermann (LUCILLE.HERMANN@up.ac.za).**

**For more about the research programmes in the Department, please see the departmental webpage:**

**<https://www.up.ac.za/biochemistry-genetics-and-microbiology/article/2625232/research-focus-areas>.**



# ONOURS in GENETICS ONOURS in BIOTECHNOLOGY

## Important Dates - HONS 2024

Please refer to the Programme Information brochures for details on how to apply for the BScHons Genetics and BScHons Biotechnology programmes.

Note that these dates might be subject to change if and when the current situation necessitates it. We will let you know.

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|---|-------------------|
| • <b>1<sup>st</sup> round applications*</b> - closing date for Hons in 2024:                          | 31 July 2023      |
| • 1 <sup>st</sup> round notification of acceptance:   | by 31 August 2023 |
| • Final date for <b>1<sup>st</sup> round</b> accepted students to confirm <i>intent to register</i> : | 10 Nov 2023       |
| • <b>2<sup>nd</sup> round applications*</b> - closing date for Hons in 2024:                          | 31 Oct 2023       |
| • 2 <sup>nd</sup> round notification of acceptance:   | by 11 Dec 2023    |
| • Final date for accepted students to confirm <i>intent to register</i> :                             | 18 Dec 2023       |
| • Start of Hons Programme in 2024 (to be confirmed) <sup>#</sup> :                                    | about 15 Jan 2024 |

\* **Please note:** Only candidates with a **completed UP online application for postgraduate study** in 2024 will be considered for selection. The Division reserves the right to request an interview with applicants if deemed necessary. The Division may also decide to shortlist candidates for if and when places become available at short notice. All shortlisted candidates will receive final notification by 5 January 2024 at the very latest.

# **Please note:** Access to electronic resources, such as ClickUP and the UP library, can only be activated after registration. Delays in registration will therefore result in a delay in accessing these important resources. We kindly request that persons admitted to the Hons programme please finalise registration **no later than the end of January**.

### Application Process for in-house students:

- Please **apply for postgraduate study** online through your Student Portal or at NAS Student Administration in the foyer of the Agricultural Sciences building.
- All open applications not provisionally accepted during the first round, will automatically be included for consideration during the second round in December. Please do not apply again.
- Please ensure that your **personal contact details** (email and cell nr) are updated and correct on your Student Portal when completing your online application.