

University of Pretoria Yearbook 2022

BSc (Genetics) (02133402)

Department Genetics

Minimum duration of study 3 years

Total credits 430

NQF level 07

Admission requirements

Important information for all prospective students for 2022

- The admission requirements apply to students who apply for admission to the University of Pretoria with a **National Senior Certificate (NSC) and Independent Examination Board (IEB) qualifications.**
- Applicants with qualifications other than the abovementioned** should refer to:
 - Brochure:** Undergraduate Programme Information 2022: Qualifications other than the NSC and IEB, available at [click here](#).
- Citizens from countries other than South Africa (applicants who are not South African citizens)** should also refer to:
 - Brochure:** Newcomer's Guide 2021, available at [click here](#).
 - Website:** [click here](#).
- School of Tomorrow (SOT), Accelerated Christian Education (ACE) and General Education Development Test (GED):** The University of Pretoria no longer accepts qualifications awarded by these institutions.
- National Certificate (Vocational) (NCV) Level 4:** The University of Pretoria may consider NCV candidates, provided they meet the exemption for bachelor's status criteria and the programme requirements.

Transferring students

A transferring student is a student who, at the time of application for a degree programme at the University of Pretoria (UP) –

- is a registered student at another tertiary institution, **or** was previously registered at another tertiary institution and did not complete the programme enrolled for at that institution, and is not currently enrolled at a tertiary institution, **or** has completed studies at another tertiary institution, but is not currently enrolled at a tertiary institution, **or** has started with tertiary studies at UP, then moved to another tertiary institution and wants to be readmitted at UP.

A transferring student will be considered for admission based on

- an NSC or equivalent qualification with exemption to bachelor's or diploma studies (whichever is applicable); **and** meeting the minimum faculty-specific subject requirements at NSC or tertiary level; **or** having completed a higher certificate at a tertiary institution with faculty-specific subjects/modules passed (equal to or more than 50%), as well as complying with faculty rules on admission;
- previous academic performance (must have passed all modules registered for up to the closing date of

application) or as per faculty regulation/promotion requirements;

- a certificate of good conduct.

Note: Students who have been dismissed at the previous institution due to poor academic performance, will not be considered for admission to UP.

Returning students

A returning student is a student who, at the time of application for a degree programme –

- is a registered student at UP, and wants to transfer to another degree at UP, **or** was previously registered at UP and did not complete the programme enrolled for, and did not enrol at another tertiary institution in the meantime (including students who applied for leave of absence), **or** has completed studies at UP, but is not currently enrolled or was not enrolled at another tertiary institution after graduation.

A returning student will be considered for admission based on

- an NSC or equivalent qualification with exemption to bachelor's or diploma studies (whichever is applicable); **and** meeting the minimum faculty-specific subject requirements at NSC or tertiary level; **or** previous academic performance (should have a cumulative weighted average of at least 50% for the programme enrolled for);
- having applied for and was granted leave of absence.

Note: Students who have been excluded/dismissed from a faculty due to poor academic performance may be considered for admission to another programme at UP. The Admissions Committee may consider such students if they were not dismissed more than twice. Only ONE transfer between UP faculties will be allowed, and a maximum of two (2) transfers within a faculty.

Important faculty-specific information on undergraduate programmes for 2022

- The closing date is an administrative admission guideline for non-selection programmes. Once a non-selection programme is full and has reached the institutional targets, then that programme will be closed for further admissions, irrespective of the closing date. However, if the institutional targets have not been met by the closing date, then that programme will remain open for admissions until the institutional targets are met.
- The following persons will be considered for admission: Candidates who have a certificate that is deemed by the University to be equivalent to the required National Senior Certificate (NSC) with university endorsement; candidates who are graduates from another tertiary institution or have been granted the status of a graduate of such an institution, and candidates who are graduates of another faculty at the University of Pretoria.
- Life Orientation is excluded when calculating the Admission Point Score (APS).
- Grade 11 results are used for the conditional admission of prospective students. Final admission is based on the final NSC/IEB results.

University of Pretoria website: [click here](#)

Minimum requirements

Achievement level

English Home

Language or

English First

Additional

Language

NSC/IEB

5

Mathematics

NSC/IEB

5

Physical Sciences

NSC/IEB

5

APS

32

Candidates who do not comply with the minimum admission requirements for BSc (Genetics), may be considered for admission to the BSc – Extended programme – Biological and Agricultural Sciences, which requires an additional year of study.

BSc - Extended Programme - Biological and Agricultural Sciences

Minimum requirements

Achievement level

English Home

Language or

English First

Additional

Language

NSC/IEB

4

Mathematics

NSC/IEB

4

Physical Sciences

NSC/IEB

4

APS

26

Note:

*The BSc - Extended programmes are not available for students who meet all the requirements for the corresponding mainstream programme.

*Please note that only students who apply in their final NSC or equivalent qualification year will be considered for admission into any of the BSc - Extended programmes.

Other programme-specific information

1.1 Requirements for specific modules

A candidate who:

- does not qualify for STK 110, must enrol for STK 113 and STK 123;
- registers for Mathematical Statistics (WST) and Statistics (STK) modules must take note that WST and STK modules, except for STK 281, may not be taken simultaneously in a programme; a student must take one and only one of the following options:
 - WST 111, WST 121, WST 212, WST 211, WST 221, WST 311, WST 312, WST 322, WST 321, and STK 353
or
 - WST 111, WST 121, WST 212, WST 211, WST 221, WST 311, WST 312, WST 322, STK320, STK353.
or
 - STK 110, STK 122, STK 210, STK 220, WST 212, STK 310, STK 320, STK 353.
- registers for a module presented by another faculty must take note of the timetable clashes, prerequisites for that module, subminimum required in examination papers, supplementary examinations, etc.

1.2 Fundamental modules

- It is compulsory for all new first-year students to satisfactorily complete the Academic orientation (UPO 102) and to take Academic information management modules (AIM 111 and AIM 121) and Language and study skills (LST 110). Please see curricula for details.
- Students who intend to apply for admission to MBChB or BChD in the second semester, when places become available in those programmes, may be permitted to register for up to 80 module credits and 4 core modules in the first semester during the first year provided that they obtained a final mark of no less than 70% for Grade 12 Mathematics and achieved an APS of 34 or more in the NSC.

Promotion to next study year

A student will be promoted to the following year of study if he or she passed 100 credits of the prescribed credits

for a year of study, unless the Dean on the recommendation of the relevant head of department decides otherwise. A student who does not comply with the requirements for promotion to the following year of study, retains the credit for the modules already passed and may be admitted by the Dean, on recommendation of the relevant head of department, to modules of the following year of study to a maximum of 48 credits, provided that it will fit in with both the lecture and examination timetable.

General promotion requirements in the faculty

All students whose academic progress is not acceptable can be suspended from further studies.

- A student who is excluded from further studies in terms of the stipulations of the abovementioned regulations, will be notified in writing by the Dean or Admissions Committee at the end of the relevant semester.
- A student who has been excluded from further studies may apply in writing to the Admissions Committee of the Faculty of Natural and Agricultural Sciences for re-admission.
- Should the student be re-admitted by the Admissions Committee, strict conditions will be set which the student must comply with in order to proceed with his/her studies.
- Should the student not be re-admitted to further studies by the Admissions Committee, he/she will be informed in writing.
- Students who are not re-admitted by the Admissions Committee have the right to appeal to the Senate Appeals Committee.
- Any decision taken by the Senate Appeals Committee is final.

Curriculum: Year 1

Minimum credits: 142

Fundamental modules = 14

Core modules = 128

Additional information:

- Students intend applying for **MBChB**, or **BChD** selection, have to enrol for FIL 155(6), MGW 112(6) and MTL 180(12) with the understanding that:
 - they obtained an APS of at least 34 and passed grade 12 Mathematics with at least 70%; and
 - they may defer doing WTW 134 in the first semester, however, should they not be selected and want to continue with a BSc programme, WTW 165 must be taken in the second semester of the first year.
- Students intending to apply for the **BVSc** selection have to enrol for MTL 180(12).
- **Please note:** ANA modules can only be taken by BSc (Medical Science) students.

Fundamental modules

Academic information management 111 (AIM 111) - Credits: 4.00

Academic information management 121 (AIM 121) - Credits: 4.00

Language and study skills 110 (LST 110) - Credits: 6.00

Academic orientation 102 (UPO 102) - Credits: 0.00

Core modules

Biometry 120 (BME 120) - Credits: 16.00

Plants and society 161 (BOT 161) - Credits: 8.00

General chemistry 117 (CMY 117) - Credits: 16.00

General chemistry 127 (CMY 127) - Credits: 16.00

Introductory genetics 161 (GTS 161) - Credits: 8.00

Introduction to microbiology 161 (MBY 161) - Credits: 8.00

Molecular and cell biology 111 (MLB 111) - Credits: 16.00

Physics for biology students 131 (PHY 131) - Credits: 16.00

Mathematics 134 (WTW 134) - Credits: 16.00

Mathematics 165 (WTW 165) - Credits: 16.00

Animal diversity 161 (ZEN 161) - Credits: 8.00



Curriculum: Year 2

Minimum credits: 144

Core modules = 84

Elective modules = 60

Additional information:

Single major track:

- Students must take BOT 251, BOT 261, ZEN 251, ZEN 261 and must choose one additional elective from BCM 261, PLG 262 or MBY 262.
- Students must ensure that their selection of electives will meet the prerequisites for the modules they plan to take in third year.

Dual major track:

- **Genetics and Biochemistry combination:** Students must take BCM 261 and must take either [BOT 251, BOT 261, ZEN 251, ZEN 261] or [CMY 282, CMY 284, CMY 283, CMY 285].
- **Genetics and Microbiology combination:** Students must take BOT 251, BOT 261, MBY 262, ZEN 251, ZEN 261.
- **Genetics and Plant Science combination:** Students must take BOT 251, BOT 261, ZEN 251, ZEN 261 and must choose one additional elective from BCM 261, PLG 262 or MBY 262.
- **Genetics and Zoology / Entomology combination:** Students must take BOT 251, BOT 261, GIS 221, ZEN 251, ZEN 261.

Core modules

[Introduction to proteins and enzymes 251](#) (BCM 251) - Credits: 12.00

[Carbohydrate metabolism 252](#) (BCM 252) - Credits: 12.00

[Introductory biochemistry 257](#) (BCM 257) - Credits: 12.00

[Molecular genetics 251](#) (GTS 251) - Credits: 12.00

[Genetic diversity and evolution 261](#) (GTS 261) - Credits: 12.00

[Bacteriology 251](#) (MBY 251) - Credits: 12.00

[Mycology 261](#) (MBY 261) - Credits: 12.00

Elective modules

[Lipid and nitrogen metabolism 261](#) (BCM 261) - Credits: 12.00

[South African flora and vegetation 251](#) (BOT 251) - Credits: 12.00

[Plant physiology and biotechnology 261](#) (BOT 261) - Credits: 12.00

[Physical chemistry 282](#) (CMY 282) - Credits: 12.00

[Analytical chemistry 283](#) (CMY 283) - Credits: 12.00

[Organic chemistry 284](#) (CMY 284) - Credits: 12.00

[Inorganic chemistry 285](#) (CMY 285) - Credits: 12.00

[Geographic information systems introduction 221](#) (GIS 221) - Credits: 12.00

[Food microbiology 262](#) (MBY 262) - Credits: 12.00

[Principles of plant pathology 262](#) (PLG 262) - Credits: 12.00

[Invertebrate biology 251](#) (ZEN 251) - Credits: 12.00

[African vertebrates 261](#) (ZEN 261) - Credits: 12.00

Curriculum: Final year

Minimum credits: 144

Core = 54

Elective = 90

Additional information:

Single major track:

- Students must take either BTC 361 or GTS 368, and must choose the balance of their electives from any combination of BCM 356, BCM 357, BCM 367, BCM 368, BOT 356, BOT 358, BOT 365, BTC 361, GTS 368, MBY 351, MBY 355, MBY 364, MBY 365, PLG 351, PLG 363, ZEN 361, ZEN 363.
- Students can only take a module if they comply with all the prerequisites.

Dual major track:

- **Genetics and Biochemistry combination:** Students must take BCM 356, BCM 357, BCM 367, BCM 368, GTS 368.
- **Genetics and Microbiology combination:** Students must take MBY 351, MBY 355, MBY 364, MBY 365 and either GTS 368 or BTC 361.
- **Genetics and Plant Science combination:** Students must take BTC 361, BOT 356, BOT 358, BOT 365 and either GTS 368 or BOT 366.
- **Genetics and Zoology combination:** Students must take ZEN 352, ZEN 354, ZEN 361, ZEN 363 and either BTC 361 or GTS 368.
- **Genetics and Entomology combination:** Students must take ZEN 354, ZEN 355, ZEN 361, ZEN 365 and either BTC 361 or GTS 368.

Core modules

Eukaryotic gene control and development 351 (GTS 351) - Credits: 18.00

Genome evolution and phylogenetics 354 (GTS 354) - Credits: 18.00

Population and evolutionary genetics 367 (GTS 367) - Credits: 18.00

Elective modules

Macromolecules of life: structure-function and bioinformatics 356 (BCM 356) - Credits: 18.00

Biocatalysis and integration of metabolism 357 (BCM 357) - Credits: 18.00

Cell structure and function 367 (BCM 367) - Credits: 18.00

Molecular basis of disease 368 (BCM 368) - Credits: 18.00

Plant ecophysiology 356 (BOT 356) - Credits: 18.00

Plant ecology 358 (BOT 358) - Credits: 18.00

Phytomedicine 365 (BOT 365) - Credits: 18.00

Plant diversity 366 (BOT 366) - Credits: 18.00

Plant genetics and crop biotechnology 361 (BTC 361) - Credits: 18.00

Genetics in human health 368 (GTS 368) - Credits: 18.00

Virology 351 (MBY 351) - Credits: 18.00

Bacterial genetics 355 (MBY 355) - Credits: 18.00

Genetic manipulation of microbes 364 (MBY 364) - Credits: 18.00

Microbe interactions 365 (MBY 365) - Credits: 18.00

General plant pathology 351 (PLG 351) - Credits: 18.00

Plant disease control 363 (PLG 363) - Credits: 18.00

[Mammalogy 352](#) (ZEN 352) - Credits: 18.00
[Evolutionary physiology 354](#) (ZEN 354) - Credits: 18.00
[Insect diversity 355](#) (ZEN 355) - Credits: 18.00
[Physiological processes 361](#) (ZEN 361) - Credits: 18.00
[Behavioural ecology 363](#) (ZEN 363) - Credits: 18.00
[Applied entomology 365](#) (ZEN 365) - Credits: 18.00

The regulations and rules for the degrees published here are subject to change and may be amended after the publication of this information.

The [General Academic Regulations \(G Regulations\)](#) and [General Student Rules](#) apply to all faculties and registered students of the University, as well as all prospective students who have accepted an offer of a place at the University of Pretoria. On registering for a programme, the student bears the responsibility of ensuring that they familiarise themselves with the General Academic Regulations applicable to their registration, as well as the relevant faculty-specific and programme-specific regulations and information as stipulated in the relevant yearbook. Ignorance concerning these regulations will not be accepted as an excuse for any transgression, or basis for an exception to any of the aforementioned regulations.