



University of Pretoria Yearbook 2016

BSc Genetics (03133051)

Duration of study 3 years

Total credits 428

Admission requirements

- In order to register NSC/IEB/Cambridge candidates must comply with the minimum requirements for degree studies as well as the minimum requirements for the relevant study programme.
- Life Orientation is excluded in the calculation of the Admission Point Score (APS).
- Grade 11 results are used for the provisional admission of prospective students. Final admission is based on the Grade 12 results.

Minimum requirements for 2016												
Achievement level												
Afrikaans or English				Mathematics				Physical Sciences				APS
NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	
5	3	C	C	5	3	C	C	5	3	C	C	30

Candidates who do not comply with the minimum admission requirements above because they obtained a NSC/IEB achievement level of 4 in one of the prescribed prerequisite subjects are required to write the NBT and may be considered for admission to the BSc or the BSc (Four-year Programme) based on the results of the NBT.

Other programme-specific information

Students may enrol for AIM 111 and AIM 121 instead of AIM 101 (the same content presented over 2 semesters).

Electives are chosen as follows:

Second year – 12 credits

Third year – 54 credits

- **Electives in the second year may be chosen from: BCM 262, GGY 283, PLG 262, MBY 262.**
- **Students interested in combining Genetics in a dual major with Microbiology must take PLG 262.**
- **Students interested in combining Genetics in a dual major with Biochemistry must take BCM 262 and may replace [BOT 251 + BOT 261] and [ZEN 251 + ZEN 261] with [CMY 282 + CMY 284 + CMY**

283 + CMY 285].

Single major track:

Electives may be chosen from any combination of:

BCM 356, BCM 357, BCM 367, BCM 368, BOT 356, BOT 358, BOT 365, MBY 351, MBY 355, MBY 364, MBY 365, PLG 351, PLG 363, ZEN 361, ZEN 363.

Dual major track:

- Genetics and Biochemistry combination:

Students must replace BTC 361 with Biochemistry modules and must take [BCM 356 + BCM 357] and [BCM 367 + BCM 368] to a total value of 72 credits.

- Genetics and Microbiology combination:

Students must replace either GTS 368 or BTC 361 with Microbiology modules, and must take [MBY 351 + MBY 355] and [MBY 364 + MBY 365] to a total value of 72 credits.

- Genetics and Plant Science combination:

Students must take [BOT 356 + BOT 358] and [BOT 365] to a value of 54 credits. Students may also choose to replace GTS 368 with BOT 366.

- Genetics and Zoology combination:

Students must replace either BTC 361 or GTS 368 with Zoology modules, and must take [any 2 modules of ZEN 351 or ZEN 352 or ZEN 353 or ZEN 354] and [ZEN 361 + ZEN 363] to a total value of 72 credits.

- Genetics and Entomology combination:

Students must replace either BTC 361 or GTS 368 with Zoology modules, and must take [ZEN 355 + ZEN 351 or ZEN 353 or ZEN 354] and [ZEN 361 + ZEN 365] to a total value of 72 credits.

A student must pass all the minimum prescribed and elective module credits as set out at the end of each year within a programme as well as the total required credits to comply with the particular degree programme. Please refer to the curricula of the respective programmes. At least 144 credits must be obtained at 300-/400-level, or otherwise as indicated by curriculum. The minimum module credits needed to comply with degree requirements is set out at the end of each study programme. Subject to the programmes as indicated a maximum of 150 credits will be recognised at 100-level. A student may, in consultation with the Head of Department and subject to the permission by the Dean, select or replace prescribed module credits not indicated in BSc three-year study programmes to the equivalent of a maximum of 36 module credits.

It is important that the total number of prescribed module credits is completed during the course of the study programme. The Dean may, on the recommendation of the Head of Department, approve deviations in this regard. Subject to the programmes as indicated in the respective curricula, a student may not register for more than 75 module credits per semester at first-year level subject to permission by the Dean. A student may be permitted to register for up to 80 module credits in the first semester during the first year provided that he or she obtained a final mark of no less than 70% for grade 12 Mathematics and achieved an APS of 34 or more in the NSC.

Students who are already in possession of a bachelor's degree, will not receive credit for modules of which the content overlap with modules from the degree that was already conferred. Credits will not be considered for more than half the credits passed previously for an uncompleted degree. No credits at the final-year or 300- and 400-level will be granted.

The Dean may, on the recommendation of the programme manager, approve deviations with regard to the composition of the study programme.

Please note: Where elective modules are not specified, these may be chosen from any modules appearing in the list of modules.

It remains the student's responsibility to ascertain, prior to registration, whether they comply with the prerequisites of the modules they want to register for.

The prerequisites are listed in the Alphabetical list of modules.

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 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 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 Senior Appeals Committee.
- Any decision taken by the Senior Appeals Committee is final.

Pass with distinction

A student obtains his or her degree with distinction if all prescribed modules at 300-level (or higher) are passed in one academic year with a weighted average of at least 75%, and obtain at least a subminimum of 65% in each of the relevant modules.



Curriculum: Year 1

Minimum credits: 140

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

Academic information management 102 (AIM 102) - Credits: 6.00

Core modules

Biometry 120 (BME 120) - Credits: 16.00

Plant biology 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

Animal diversity 161 (ZEN 161) - Credits: 8.00



Curriculum: Year 2

Minimum credits: 144

Core modules

Introduction to proteins and enzymes 251 (BCM 251) - Credits: 12.00
Carbohydrate metabolism 252 (BCM 252) - Credits: 12.00
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
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
Invertebrate biology 251 (ZEN 251) - Credits: 12.00
African vertebrates 261 (ZEN 261) - Credits: 12.00

Elective modules

Biochemical principles of nutrition and toxicology 262 (BCM 262) - 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
Introductory geographic information systems 283 (GGY 283) - Credits: 12.00
Introduction to crop protection 251 (PLG 251) - Credits: 12.00
Principles of plant pathology 262 (PLG 262) - Credits: 12.00
Food microbiology 262 (MBY 262) - Credits: 12.00



Curriculum: Final year

Minimum credits: 144

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
- Genetics in human health 368 (GTS 368) - Credits: 18.00
- Plant genetics and crop biotechnology 361 (BTC 361) - Credits: 18.00

Elective modules

- 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
- Physical chemistry 382 (CMY 382) - Credits: 18.00
- Analytical chemistry 383 (CMY 383) - Credits: 18.00
- Organic chemistry 384 (CMY 384) - Credits: 18.00
- Inorganic chemistry 385 (CMY 385) - Credits: 18.00
- Virology 351 (MBY 351) - Credits: 18.00
- Genetic manipulation of microbes 364 (MBY 364) - Credits: 18.00
- General plant pathology 351 (PLG 351) - Credits: 18.00
- Plant disease control 363 (PLG 363) - Credits: 18.00
- Population ecology 351 (ZEN 351) - Credits: 18.00
- Mammalogy 352 (ZEN 352) - Credits: 18.00
- Community ecology 353 (ZEN 353) - 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
- Evolution and phylogeny 362 (ZEN 362) - Credits: 18.00
- Behavioural ecology 363 (ZEN 363) - Credits: 18.00
- Conservation ecology 364 (ZEN 364) - Credits: 18.00
- Applied entomology 365 (ZEN 365) - Credits: 18.00
- Microbe interactions 365 (MBY 365) - Credits: 18.00
- Bacterial genetics 355 (MBY 355) - Credits: 18.00
- 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

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 students to familiarise themselves 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.