University of Pretoria Yearbook 2018

BSc Chemistry (02133173)

Minimum duration of study	3 years
Total credits	428

Admission requirements

- The following persons will be considered for admission: a candidate who is in possession of a certificate that is deemed by the University to be equivalent to the required Grade 12 certificate with university endorsement; a candidate who is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution; and a candidate who is a graduate of another faculty at the University of Pretoria.
- 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												
Achievement level												
Afrikaans or English				Mathematics				Physical Science				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	32

Candidates who do not comply with the minimum admission requirements for BSc (Chemistry), may be considered for admission to the BSc – Extended programme for the Physical Sciences. The BSc – Extended programme takes place over a period of four years instead of the normal three years.

Admission requirements for BSc Extended programme for Physical Sciences:

Minimum requirements												
Achievement level												
Afrikaans or English				Mathematics				Physical Science				APS
NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	
4	3	D	D	4	3	D	D	4	3	D	D	26

Other programme-specific information

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 a 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 acertain, 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

Minimum credits:

Fundamental = 12

Core = 96

Electives = 32

Additional information:

Students who do not qualify for AIM 102 must register for AIM 111 and AIM 121.

Students must select elective modules with a total number of at least 32 credits. Depending on a student's second major and other interests, the following combinations of modules are recommended (deviations allowed with permission from the head of department):

- **Second major in biochemistry:** MLB 111, GTS 161, MBY 161 (32 credits)
- **Second major in plant science:** MLB 111, BOT 161, MBY 161 (32 credits)
- **Second major in geology:** GLY 155, GLY 163 (32 credits)
- **Second major in physics with an interest in applied mathematics:** WTW 115, WTW 152, WTW 162, WTW 123 (32 credits)
- **Second major in physics with an interest in statistics:** WST 111, WST 121 (32 credits)
- **Second major in physics with an interest in biology:** MLB 111, BME 120 (32 credits)
- **Second major in geography:** ENV 101, GGY 156, GGY 166, WKD 164 (32 credits)
- **Second major in mathematics:** WTW 115, WTW 123, WTW 152, WTW 162 (32 credits)
- **Second major in statistics:** WST 111, WST 121 (32 credits)

Fundamental modules

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

General chemistry 117 (CMY 117) - Credits: 16.00
General chemistry 127 (CMY 127) - Credits: 16.00
First course in physics 114 (PHY 114) - Credits: 16.00
First course in physics 124 (PHY 124) - Credits: 16.00
Calculus 114 (WTW 114) - Credits: 16.00
Mathematics 124 (WTW 124) - Credits: 16.00

Elective modules

Biometry 120 (BME 120) - Credits: 16.00
Plant biology 161 (BOT 161) - Credits: 8.00
Aspects of human geography 156 (GGY 156) - Credits: 8.00
Southern African geomorphology 166 (GGY 166) - Credits: 8.00
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
Atmospheric structure and processes 155 (WKD 155) - Credits: 16.00
Climate and weather of Southern Africa 164 (WKD 164) - Credits: 8.00
Discrete structures 115 (WTW 115) - Credits: 8.00
Dynamical processes 162 (WTW 162) - Credits: 8.00
Animal diversity 161 (ZEN 161) - Credits: 8.00

Curriculum: Year 2

Minimum credits: 144

Minimum credits:

Core = 48

Elective = 96

Additional information:

Students must select elective modules with a total number of at least 96 credits. Depending on a student's second major and other interests, the following modules are recommended (deviations allowed with permission from the head of department):

- **Second major in biochemistry:** BCM 251, BCM 252, BCM 261, BCM 262, GTS 251, GTS 261, MBY 251 or WTW 211, BME 120 (100 credits)
- **Second major in plant science:** BOT 251, BOT 261, MBY 251, MBY 261, BCM 251, BCM 252, BME 120 and either BCM 261 or BCM 262 (100 credits).
- **Second major in physics:** PHY 255, PHY 263, WTW 211, WTW 218, WTW 220, WTW 248 (96 credits).
- **Second major in geology:** GLY 253, GLY 255, GLY 261, GLY 262, GLY 266, GGY 252, GKD 22, GIS 221 (90 credits).
- **Second major in geography:** GGY 252, GGY 283, GGY 266, GKD 220, GIS 220, GMC 110, and either GLY 253 or GLY 255 (98 credits).
- **Second major in mathematics with an interest in physics:** WTW 211, WTW 218, WTW 220, WTW 221, PHY 255, PHY 263 (96 credits).
- **Second major in mathematics or applied mathematics:** WTW 211, WTW 218, WTW 220, WTW 221, WTW 285, WTW 286, WTW 248 (84 credits – select another 12 credits short).
- **Second major in statistics:** WST 211, WST 221, WTW 211, WTW 218, WTW 220, WTW 221 (96 credits)

Core modules

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

Elective 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
Biochemical principles of nutrition and toxicology 262 (BCM 262) - Credits: 12.00
South African flora and vegetation 251 (BOT 251) - Credits: 12.00
Plant physiology and biotechnology 261 (BOT 261) - Credits: 12.00
Introductory and neurophysiology 211 (FLG 211) - Credits: 12.00
Circulatory physiology 212 (FLG 212) - Credits: 12.00
Lung and renal physiology, acid-base balance and temperature 221 (FLG 221) - Credits: 12.00
Digestion, endocrinology and reproductive systems 222 (FLG 222) - Credits: 12.00

City structure, environment and society 266 (GGY 266) - Credits: 24.00
Geographic data analysis 220 (GIS 220) - Credits: 14.00
Introductory soil science 250 (GKD 250) - 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
Linear algebra 211 (WTW 211) - Credits: 12.00
Calculus 218 (WTW 218) - Credits: 12.00
Analysis 220 (WTW 220) - Credits: 12.00
Linear algebra 221 (WTW 221) - Credits: 12.00
Vector analysis 248 (WTW 248) - Credits: 12.00
Discrete structures 285 (WTW 285) - Credits: 12.00
Differential equations 286 (WTW 286) - Credits: 12.00

Curriculum: Final year

Minimum credits: 144

Minimum credits:

Core = 72

Elective = 72

Students must select elective modules with a total number of at least 72 credits. Depending on a student's second major and other interests, the following modules are recommended (deviations allowed with permission from the head of department):

- **Second major in biochemistry:** BCM 356, BCM 357, BCM 367, BCM 368 (72 credits)
- **Second major in plant science:** BOT 356, BOT 358, and any two of BOT 365, BOT 366 and BTC 361 (72 credits).
- **Second major in physics:** PHY 356, PHY 364 (72 credits).
- **Second major in geology:** GLY365, GLY366, GLY367, GLY 368 (78 credits).
- **Second major in geography:** ENV 301, GGY 356, GGY 363, GGY 366 (66 credits – 6 credits short). Note that in order to qualify for BSc Honours in Geography, students need to change their registration to BSc Geography at the start of the third year to replace core chemistry modules with additional Geography modules.
- **Second major in mathematics:** WTW 310, WTW 320, WTW 381 and WTW 389 (72 credits).
- **Second major in applied mathematics:** WTW 310, WTW 382, WTW 383, WTW 386 and WTW 387 (90 credits – 18 credits extra).
- **Second major in statistics:** WST 311, WST 312, WST 321, STK 353 (79 credits)

Core modules

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

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
Sustainable development 356 (GGY 356) - Credits: 18.00
Applied geomorphology 363 (GGY 363) - Credits: 12.00
Development frameworks 366 (GGY 366) - Credits: 18.00
Geographic information systems 310 (GIS 310) - Credits: 22.00
Spatial analysis 320 (GIS 320) - Credits: 22.00
Numerical analysis 383 (WTW 383) - Credits: 18.00
Geometry 389 (WTW 389) - 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.