University of Pretoria Yearbook 2016

BSc Environmental and Engineering Geology (02133042)

Duration of study	3 years
Total credits	432

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	32

Candidates who do not comply with the minimum admission requirements 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 102 (the same content presented over 2 semesters).

Students will be informed timeously of compulsory excursions that could take place during the vacations. The attendance of excursions for first-year students is compulsory, while excursions of longer duration are compulsory for senior students.

Electives can be chosen from the following departments: Geography, Geoinformatics and Meteorology, Plant Production and Soil Science, Chemistry, Mathematics and Applied Mathematics and Physics.

Electives are chosen as follows:

Second year – 36 credits

Third year – 28 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 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.

Transitional measures

Transitional measures for Mathematics modules for 2016

- Students who would have registered for any of the degrees BSc in Environmental Sciences, Geography, Geoinformatics, BCom, BCom in Economics/Statistics or BScIT Information and Knowledge Systems prior to 2016, and not successfully completed WTW 114, WTW 126 or WTW 128 will be allowed to register for WTW 134, WTW 146 and WTW 148, respectively.
- Students who would have registered for BSc in Geology prior to 2016, and not successfully completed WTW 114, WTW 126 or WTW 128 will be allowed to register for WTW 158, WTW 164 or WTW 124 or WTW 148, respectively.
- Students who registered prior to 2016, and who failed both WTW 126 and WTW 128 will register for WTW 124 in 2016 if they wish to continue with mathematics at 200 level, or if WTW 126 and WTW 128 are required for their respective degree programmes.
- Students who do not qualify for WTW 146 and WTW 148 in terms of their degree programmes, and failed one of WTW 126 or WTW 128, will be allowed to register for the respective module in 2016, and will attend the

relevant lectures and tutorials of WTW 124. They will write separate semester tests and exams, covering just the relevant material from WTW 124.
- Students who registered prior to 2016 and passed WTW 126 but not WTW 128, will be allowed to continue with WTW 211 and COS 344 in 2016.
- Students who registered prior to 2016 and passed WTW 128 but not WTW 126, will be allowed to continue with the modules WTW 220, IAS 211 and GLY 265 in 2016, if they also meet the additional entry requirements.
- Students who registered prior to 2016, and who failed both WTW 161 and WTW 168 will register for WTW 164 in 2016.
- Students who failed one of WTW 161 or WTW 168, will be allowed to register for the respective module in 2016, and will attend the relevant lectures and tutorials of WTW 164. They will write separate semester tests and exams, covering just the relevant material from WTW 164.

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

General chemistry 117 (CMY 117) - Credits: 16.00
General chemistry 127 (CMY 127) - Credits: 16.00
Historical geology 161 (GLY 161) - Credits: 8.00
Environmental and hazard geology 162 (GLY 162) - Credits: 8.00
Mechanics 122 (SWK 122) - Credits: 16.00
Calculus 158 (WTW 158) - Credits: 16.00
Introduction to geology 155 (GLY 155) - Credits: 16.00
First course in physics 114 (PHY 114) - Credits: 16.00
Mathematics 164 (WTW 164) - Credits: 16.00

Curriculum: Year 2

Minimum credits: 148

Core modules

Introductory soil science 250 (GKD 250) - Credits: 12.00
Sedimentology 253 (GLY 253) - Credits: 12.00
Structural geology 254 (GLY 254) - Credits: 12.00
Igneous petrology 261 (GLY 261) - Credits: 12.00
Metamorphic petrology 262 (GLY 262) - Credits: 12.00
Groundwater 265 (GLY 265) - Credits: 12.00
Strength of materials 210 (SWK 210) - Credits: 16.00
Fundamental and applied mineralogy 255 (GLY 255) - Credits: 24.00

Elective 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
Process geomorphology 252 (GGY 252) - Credits: 12.00
Geomorphology of the built environment 265 (GGY 265) - Credits: 12.00
Geographic data analysis 220 (GIS 220) - Credits: 12.00
Geographic information systems introduction 221 (GIS 221) - Credits: 12.00
Remote sensing 220 (GMA 220) - Credits: 16.00
General physics 263 (PHY 263) - Credits: 24.00
Surveying 210 (SUR 210) - Credits: 16.00
Surveying 220 (SUR 220) - Credits: 16.00
Site surveying 213 (TRN 213) - Credits: 12.00
Physical meteorology 261 (WKD 261) - Credits: 14.00
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
Differential equations 256 (WTW 256) - Credits: 8.00
Calculus 258 (WTW 258) - Credits: 8.00
Numerical methods 263 (WTW 263) - Credits: 8.00
Discrete structures 285 (WTW 285) - Credits: 12.00
Differential equations 286 (WTW 286) - Credits: 12.00
Waves, thermodynamics and modern physics 255 (PHY 255) - Credits: 24.00
City structure, environment and society 266 (GGY 266) - Credits: 24.00
Basic principles of pasture science 253 (WDE 253) - Credits: 18.00
Vector analysis 248 (WTW 248) - Credits: 12.00
Introduction to dynamic meteorology 263 (WKD 263) - Credits: 14.00
Differential equations 264 (WTW 264) - Credits: 12.00

Curriculum: Final year

Minimum credits: 144

Core modules

Soil chemistry 320 (GKD 320) - Credits: 14.00
Soil classification and surveying 350 (GKD 350) - Credits: 14.00
Ore deposits 361 (GLY 361) - Credits: 18.00
Geostatistics and ore reserve calculations 362 (GLY 362) - Credits: 18.00
Engineering geology 363 (GLY 363) - Credits: 18.00
Soil mechanics 311 (SGM 311) - Credits: 16.00
Rock mechanics 364 (GLY 364) - Credits: 18.00

Elective 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
Environmental geomorphology 361 (GGY 361) - Credits: 18.00
Applied geomorphology 363 (GGY 363) - Credits: 12.00
Geographic information systems 310 (GIS 310) - Credits: 24.00
Spatial analysis 320 (GIS 320) - Credits: 24.00
Remote sensing 320 (GMA 320) - Credits: 24.00
Geometrical and space geodesy 310 (GMC 310) - Credits: 24.00
Soil-water relationship and irrigation 350 (PGW 350) - Credits: 16.00
Statistical mechanics, solid state physics and modelling 364 (PHY 364) - Credits: 36.00
Principles of veld management 310 (WDE 310) - Credits: 14.00
Planted pastures and fodder crops 320 (WDE 320) - Credits: 14.00
Atmospheric vorticity and divergence 352 (WKD 352) - Credits: 18.00
Quasi-geostrophic analysis 361 (WKD 361) - Credits: 18.00
Multivariate analysis 311 (WST 311) - Credits: 18.00
Stochastic processes 312 (WST 312) - Credits: 18.00
Time-series analysis 321 (WST 321) - Credits: 18.00
Actuarial statistics 322 (WST 322) - Credits: 18.00
Analysis 310 (WTW 310) - Credits: 18.00
Complex analysis 320 (WTW 320) - Credits: 18.00
Financial engineering 354 (WTW 354) - Credits: 18.00
Financial engineering 364 (WTW 364) - Credits: 18.00
Algebra 381 (WTW 381) - Credits: 18.00
Dynamical systems 382 (WTW 382) - Credits: 18.00
Numerical analysis 383 (WTW 383) - Credits: 18.00
Partial differential equations 386 (WTW 386) - Credits: 18.00
Continuum mechanics 387 (WTW 387) - Credits: 18.00
Geometry 389 (WTW 389) - Credits: 18.00
Electronics, electromagnetism and quantum mechanics 356 (PHY 356) - Credits: 36.00
Sustainable development 356 (GGY 356) - Credits: 18.00
Development frameworks 366 (GGY 366) - Credits: 18.00

Human environmental interactions 301 (ENV 301) - Credits: 18.00
Fundamentals of weather forecasting 366 (WKD 366) - Credits: 36.00