



# University of Pretoria Yearbook 2022

## BSc (Human Physiology, Genetics and Psychology) (02133396)

**Department** Physiology

**Minimum duration of study** 3 years

**Total credits** 428

**NQF level** 07

**SAQA ID** 14387

### 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

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- Candidates who do not comply with the minimum admission requirements for BSc (Human Physiology, Genetics and Psychology), 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:

- a. does not qualify for STK 110, must enrol for STK 113 and STK 123;
- b. 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, STC 122, STK 210, STK 220, WST 212, STK 310, STK 320, STK 353.
- c. 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**

- a. 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.
- b. 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.



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## 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**

Core modules = 128

Fundamental modules = 14

### 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 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)

**Module credits** 4.00

**NQF Level** 05

#### Service modules

Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Economic and Management Sciences  
Faculty of Humanities  
Faculty of Law  
Faculty of Health Sciences  
Faculty of Natural and Agricultural Sciences  
Faculty of Theology and Religion

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Information Science

**Period of presentation** Semester 1

#### Module content

Find, evaluate, process, manage and present information resources for academic purposes using appropriate technology.

### Academic information management 121 (AIM 121)

**Module credits** 4.00

**NQF Level** 05



<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Economic and Management Sciences Faculty of Humanities Faculty of Law Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Theology and Religion Faculty of Veterinary Science
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**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Informatics

**Period of presentation** Semester 2

### Module content

Apply effective search strategies in different technological environments. Demonstrate the ethical and fair use of information resources. Integrate 21st-century communications into the management of academic information.

## Language and study skills 110 (LST 110)

**Module credits** 6.00

**NQF Level** 05

**Service modules** Faculty of Natural and Agricultural Sciences  
Faculty of Veterinary Science

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Unit for Academic Literacy

**Period of presentation** Semester 1

### Module content

The module aims to equip students with the ability to cope with the reading and writing demands of scientific disciplines.

## Academic orientation 102 (UPO 102)

**Module credits** 0.00

**NQF Level** 00

**Language of tuition** Module is presented in English

**Department** Natural and Agricultural Sciences Deans Office

**Period of presentation** Year



## Core modules

### Biometry 120 (BME 120)

<b>Module credits</b>	16.00
<b>NQF Level</b>	05
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science
<b>Prerequisites</b>	At least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both Statistics 113, 123
<b>Contact time</b>	1 practical per week, 4 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Statistics
<b>Period of presentation</b>	Semester 2

#### Module content

Simple statistical analysis: Data collection and analysis: Samples, tabulation, graphical representation, describing location, spread and skewness. Introductory probability and distribution theory. Sampling distributions and the central limit theorem. Statistical inference: Basic principles, estimation and testing in the one- and two-sample cases (parametric and non-parametric). Introduction to experimental design. One- and two-way designs, randomised blocks. Multiple statistical analysis: Bivariate data sets: Curve fitting (linear and non-linear), growth curves. Statistical inference in the simple regression case. Categorical analysis: Testing goodness of fit and contingency tables. Multiple regression and correlation: Fitting and testing of models. Residual analysis. Computer literacy: Use of computer packages in data analysis and report writing.

### General chemistry 117 (CMY 117)

<b>Module credits</b>	16.00
<b>NQF Level</b>	05
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Health Sciences Faculty of Veterinary Science
<b>Prerequisites</b>	A candidate must have Mathematics for at least 60% and 60% for Physical Sciences.
<b>Contact time</b>	1 practical per week, 4 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Chemistry
<b>Period of presentation</b>	Semester 1



## Module content

General introduction to inorganic, analytical and physical chemistry. Atomic structure and periodicity. Molecular structure and chemical bonding using the VSEOR model. Nomenclature of inorganic ions and compounds. Classification of reactions: precipitation, acid-base, redox reactions and gas-forming reactions. Mole concept and stoichiometric calculations concerning chemical formulas and chemical reactions. Principles of reactivity: energy and chemical reactions. Physical behaviour gases, liquids, solids and solutions and the role of intermolecular forces. Rate of reactions: Introduction to chemical kinetics.

## General chemistry 127 (CMY 127)

**Module credits** 16.00

**NQF Level** 05

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Health Sciences  
Faculty of Veterinary Science

**Prerequisites** Natural and Agricultural Sciences students: CMY 117 GS or CMY 154 GS Health Sciences students: none

**Contact time** 1 practical per week, 4 lectures per week

**Language of tuition** Module is presented in English

**Department** Chemistry

**Period of presentation** Semester 2

## Module content

Theory: General physical-analytical chemistry: Chemical equilibrium, acids and bases, buffers, solubility equilibrium, entropy and free energy, electrochemistry. Organic chemistry: Structure (bonding), nomenclature, isomerism, introductory stereochemistry, introduction to chemical reactions and chemical properties of organic compounds and biological compounds, i.e. carbohydrates and aminoacids. Practical: Molecular structure (model building), synthesis and properties of simple organic compounds.

## Introductory genetics 161 (GTS 161)

**Module credits** 8.00

**NQF Level** 05

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Veterinary Science

**Prerequisites** MLB 111 GS

**Contact time** 2 lectures per week, fortnightly tutorials

**Language of tuition** Module is presented in English

**Department** Biochemistry, Genetics and Microbiology

**Period of presentation** Semester 2





## Module content

Chromosomes and cell division. Principles of Mendelian inheritance: locus and alleles, dominance interactions, extensions and modifications of basic principles.. Probability studies. Sex determination and sex linked traits. Pedigree analysis. Genetic linkage and chromosome mapping. Chromosome variation.

## Molecular and cell biology 111 (MLB 111)

**Module credits** 16.00

**NQF Level** 05

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Health Sciences  
Faculty of Veterinary Science

**Prerequisites** A candidate who has passed Mathematics with at least 60% in the Grade 12 examination

**Contact time** 1 practical/tutorial per week, 4 lectures per week

**Language of tuition** Module is presented in English

**Department** Biochemistry, Genetics and Microbiology

**Period of presentation** Semester 1

## Module content

Introduction to the molecular structure and function of the cell. Basic chemistry of the cell. Structure and composition of prokaryotic and eukaryotic cells. Ultrastructure and function of cellular organelles, membranes and the cytoskeleton. General principles of energy, enzymes and cell metabolism. Selected processes, e.g. glycolysis, respiration and/or photosynthesis. Introduction to molecular genetics: DNA structure and replication, transcription, translation. Cell growth and cell division.

## Physics for biology students 131 (PHY 131)

**Module credits** 16.00

**NQF Level** 05

**Service modules** Faculty of Education  
Faculty of Health Sciences  
Faculty of Veterinary Science

**Prerequisites** A candidate must have passed Mathematics with at least 60% in the Grade 12 examination

**Contact time** 1 discussion class per week, 1 practical per week, 4 lectures per week

**Language of tuition** Module is presented in English

**Department** Physics

**Period of presentation** Semester 1



## Module content

Units, vectors, one dimensional kinematics, dynamics, work, equilibrium, sound, liquids, heat, thermodynamic processes, electric potential and capacitance, direct current and alternating current, optics, modern physics, radio activity.

## Psychology 110 (SLK 110)

**Module credits** 12.00

**NQF Level** 05

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Health Sciences  
Faculty of Natural and Agricultural Sciences

**Prerequisites** No prerequisites.

**Contact time** 2 discussion classes per week, 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Psychology

**Period of presentation** Semester 1

## Module content

This module is a general orientation to Psychology. An introduction is given to various theoretical approaches in Psychology, and the development of Psychology as a science is discussed. Selected themes from everyday life are explored and integrated with psychological principles. This module focuses on major personality theories. An introduction is given to various paradigmatic approaches in Psychology.

## Psychology 120 (SLK 120)

**Module credits** 12.00

**NQF Level** 05

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Health Sciences  
Faculty of Natural and Agricultural Sciences

**Prerequisites** No prerequisites.

**Contact time** 2 discussion classes per week, 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Psychology

**Period of presentation** Semester 2



## Module content

This module introduces the student to a basic knowledge and understanding of the biological basis of human behaviour. The module addresses the key concepts and terminology related to the biological subsystem, the rules and principles guiding biological psychology, and identification of the interrelatedness of different biological systems and subsystems. In this module various cognitive processes are studied, including perception, memory, thinking, intelligence and creativity. Illustrations are given of various thinking processes, such as problem solving, critical, analytic and integrative thinking.

## Mathematics 134 (WTW 134)

**Module credits** 16.00

**NQF Level** 05

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education  
Faculty of Veterinary Science

**Prerequisites** 50% for Mathematics in Grade 12

**Contact time** 1 tutorial per week, 4 lectures per week

**Language of tuition** Module is presented in English

**Department** Mathematics and Applied Mathematics

**Period of presentation** Semester 1

## Module content

*\*Students will not be credited for more than one of the following modules for their degree: WTW 134, WTW 165, WTW 114, WTW 158. WTW 134 does not lead to admission to Mathematics at 200 level and is intended for students who require Mathematics at 100 level only. WTW 134 is offered as WTW 165 in the second semester only to students who have applied in the first semester of the current year for the approximately 65 MBChB, or the 5-6 BChD places becoming available in the second semester and who were therefore enrolled for MGW 112 in the first semester of the current year.*

Functions, derivatives, interpretation of the derivative, rules of differentiation, applications of differentiation, integration, interpretation of the definite integral, applications of integration. Matrices, solutions of systems of equations. All topics are studied in the context of applications.



## Curriculum: Year 2

**Minimum credits: 148**

Core modules = 148

### Core modules

#### Introduction to proteins and enzymes 251 (BCM 251)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Health Sciences
<b>Prerequisites</b>	CMY 117 GS and CMY 127 GS and MLB 111 GS
<b>Contact time</b>	1 tutorial per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Biochemistry, Genetics and Microbiology
<b>Period of presentation</b>	Semester 1

#### Module content

Structural and ionic properties of amino acids. Peptides, the peptide bond, primary, secondary, tertiary and quaternary structure of proteins. Interactions that stabilise protein structure, denaturation and renaturation of proteins. Introduction to methods for the purification of proteins, amino acid composition, and sequence determinations. Enzyme kinetics and enzyme inhibition. Allosteric enzymes, regulation of enzyme activity, active centres and mechanisms of enzyme catalysis. Examples of industrial applications of enzymes and in clinical pathology as biomarkers of diseases. Online activities include introduction to practical laboratory techniques and Good Laboratory Practice; techniques for the quantitative and qualitative analysis of biological molecules; enzyme activity measurements; processing and presentation of scientific data.

#### Carbohydrate metabolism 252 (BCM 252)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Education Faculty of Health Sciences
<b>Prerequisites</b>	BCM 251 GS and BCM 257 GS.
<b>Contact time</b>	1 tutorial per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Biochemistry, Genetics and Microbiology
<b>Period of presentation</b>	Semester 2



## Module content

Carbohydrate structure and function. Blood glucose measurement in the diagnosis and treatment of diabetes. Bioenergetics and biochemical reaction types. Glycolysis, gluconeogenesis, glycogen metabolism, pentose phosphate pathway, citric acid cycle and electron transport. Total ATP yield from the complete oxidation of glucose. A comparison of cellular respiration and photosynthesis. Online activities include techniques for the study and analysis of metabolic pathways and enzymes; PO ratio of mitochondria, electrophoresis, extraction, solubility and gel permeation techniques; scientific method and design.

## Introductory biochemistry 257 (BCM 257)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Prerequisites</b>	CMY 117 GS and CMY 127 GS and MLB 111 GS
<b>Contact time</b>	1 tutorial per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Biochemistry, Genetics and Microbiology
<b>Period of presentation</b>	Semester 1

## Module content

Chemical foundations. Weak interactions in aqueous systems. Ionisation of water, weak acids and weak bases. Buffering against pH changes in biological systems. Water as a reactant and function of water. Carbohydrate structure and function. Biochemistry of lipids and membrane structure. Nucleotides and nucleic acids. Other functions of nucleotides: energy carriers, components of enzyme cofactors and chemical messengers. Introduction to metabolism. Bioenergetics and biochemical reaction types. Online activities include introduction to laboratory safety and Good Laboratory Practice; basic biochemical calculations; experimental method design and scientific controls, processing and presentation of scientific data.

## Introductory and neurophysiology 211 (FLG 211)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	CMY 127 GS and MLB 111 GS
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Physiology
<b>Period of presentation</b>	Semester 1

## Module content

Orientation in physiology, homeostasis, cells and tissue, muscle and neurophysiology, cerebrospinal fluid and the special senses.  
Practical work: Practical exercises to complement the theory.



## Circulatory physiology 212 (FLG 212)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	CMY 127 GS and MLB 111 GS
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Physiology
<b>Period of presentation</b>	Semester 1

### Module content

Body fluids; haematology; cardiovascular physiology and the lymphatic system. Practical work: Practical exercises to complement the theory.

## Lung and renal physiology, acid-base balance and temperature 221 (FLG 221)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	FLG 211 GS and FLG 212 GS
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Physiology
<b>Period of presentation</b>	Semester 2

### Module content

Structure, gas exchange and non-respiratory functions of the lungs; structure, excretory and non-urinary functions of the kidneys, acid-base balance, as well as the skin and body temperature control. Practical work: Practical exercises to complement the theory.

## Digestion, endocrinology and reproductive systems 222 (FLG 222)

<b>Module credits</b>	12.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	FLG 211 GS and FLG 212 GS
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Physiology



**Period of presentation** Semester 2

**Module content**

Nutrition, digestion and metabolism; hormonal control of the body functions and the reproductive systems. Practical work: Practical exercises to complement the theory.

**Molecular genetics 251 (GTS 251)**

**Module credits** 12.00

**NQF Level** 06

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education

**Prerequisites** GTS 161 GS

**Contact time** 2 lectures per week, fortnightly tutorials

**Language of tuition** Module is presented in English

**Department** Biochemistry, Genetics and Microbiology

**Period of presentation** Semester 1

**Module content**

The chemical nature of DNA. The processes of DNA replication, transcription, RNA processing, translation. Control of gene expression in prokaryotes and eukaryotes. Recombinant DNA technology and its applications in gene analysis and manipulation.

**Genetic diversity and evolution 261 (GTS 261)**

**Module credits** 12.00

**NQF Level** 06

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Education

**Prerequisites** GTS 251 GS

**Contact time** 2 lectures per week, fortnightly tutorials

**Language of tuition** Module is presented in English

**Department** Biochemistry, Genetics and Microbiology

**Period of presentation** Semester 2

**Module content**

Chromosome structure and transposable elements. Mutation and DNA repair. Genomics and proteomics. Organelle genomes. Introduction to genetic analysis of populations: allele and genotypic frequencies, Hardy Weinberg Law, its extensions and implications for different mating systems. Introduction to quantitative and evolutionary genetics.

**Psychology 210 (SLK 210)**

**Module credits** 20.00



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<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Health Sciences Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	SLK 110, SLK 120(GS)
<b>Contact time</b>	2 discussion classes per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Psychology
<b>Period of presentation</b>	Semester 1

### Module content

In this module human development from conception through adolescence to adulthood is discussed with reference to various psychological theories. Incorporated are the developmental changes related to cognitive, physical, emotional and social functioning of the individual and the context of work in adulthood. Traditional and contemporary theories of human development explaining and describing these stages are studied in order to address the key issues related to both childhood and adulthood.

### Psychology 220 (SLK 220)

<b>Module credits</b>	20.00
<b>NQF Level</b>	06
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Health Sciences Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	SLK 110, SLK 120(GS).
<b>Contact time</b>	2 discussion classes per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Psychology
<b>Period of presentation</b>	Semester 2

### Module content

This module is a social-psychological perspective on interpersonal and group processes. Themes that are covered include communication, pro-social behaviour, social influence and persuasion, political transformation, violence, and group behaviour.





## Curriculum: Final year

**Minimum credits: 138**

Core modules = 138

### Additional information:

- Students who intend to apply for the BSocSciHons (Psychology) programme must complete SLK 320 and RES 320.
- Students who intend to apply for BScHons (Genetics) must complete the module GTS 367.
- Please note that these modules are not listed as electives, as they have to be registered for non-degree purposes.

## Core modules

### Higher neurological functions 327 (FLG 327)

**Module credits** 18.00

**NQF Level** 07

**Service modules** Faculty of Natural and Agricultural Sciences

**Prerequisites** BCM 251 GS, BCM 252 GS, BCM 257 GS, FLG 221 GS and FLG 222 GS

**Contact time** 1 practical per week, 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Physiology

**Period of presentation** Semester 1

#### Module content

Overview of higher cognitive functions and the relations between psyche, brain and the immune system. Practical work: Applied practical work with specific examples drawn from South African case studies taught within the framework of the UN Sustainable Development Goal 3 (Good Health and Well-being).

### Exercise and nutrition science 331 (FLG 331)

**Module credits** 18.00

**NQF Level** 07

**Service modules** Faculty of Natural and Agricultural Sciences

**Prerequisites** BCM 251 GS, BCM 252 GS, BCM 257 GS, FLG 221 GS and FLG 222 GS

**Contact time** 1 practical per week, 2 lectures per week

**Language of tuition** Module is presented in English

**Department** Physiology

**Period of presentation** Semester 2



## Module content

Mechanisms of muscle contraction and energy sources. Cardio-respiratory changes, thermo-regulation and other adjustments during exercise. Use and misuse of substances to improve performance. Practical work: Applied practical work with exercise descriptions for the South African context taught within the framework of the UN Sustainable Development Goal 3 (Good Health and Well-being).

## Applied and pathophysiology 332 (FLG 332)

<b>Module credits</b>	18.00
<b>NQF Level</b>	07
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	BCM 251 GS, BCM 252 GS, BCM 257 GS, FLG 221 GS and FLG 222 GS
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Physiology
<b>Period of presentation</b>	Semester 2

## Module content

Integration of all the human physiological systems. Practical work: Applied practical work.

## Eukaryotic gene control and development 351 (GTS 351)

<b>Module credits</b>	18.00
<b>NQF Level</b>	07
<b>Prerequisites</b>	GTS 251 GS and GTS 261 GS
<b>Contact time</b>	1 practical/tutorial per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Biochemistry, Genetics and Microbiology
<b>Period of presentation</b>	Semester 1

## Module content

Regulation of gene expression in eukaryotes: regulation at the genome, transcription, RNA processing and translation levels. DNA elements and protein factors involved in gene control. The role of chromatin structure and epigenetic changes. Technology and experimental approaches used in studying eukaryotic gene control. Applications of the principles of gene control in eg cell signaling pathways, development cancer and other diseases in humans.

## Genome evolution and phylogenetics 354 (GTS 354)

<b>Module credits</b>	18.00
<b>NQF Level</b>	07
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology



<b>Prerequisites</b>	GTS 251 and GTS 261 GS
<b>Contact time</b>	1 practical/tutorial per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Biochemistry, Genetics and Microbiology
<b>Period of presentation</b>	Semester 2

#### Module content

A unifying framework for biology. Mechanisms involved in the evolution of genes, genomes and species. Comparative genomics across the kingdoms of life. Phylogenetic inference. Applications of phylogenetics and evolutionary genomics research, including relevance to sustainable development goals for food security, good health and the biosphere.

### Genetics in human health 368 (GTS 368)

<b>Module credits</b>	18.00
<b>NQF Level</b>	07
<b>Prerequisites</b>	GTS 251 and GTS 261 GS
<b>Contact time</b>	1 practical/tutorial per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Biochemistry, Genetics and Microbiology
<b>Period of presentation</b>	Semester 2

#### Module content

Application of modern genetics to human variability, health and disease. Molecular origin of Mendelian and multifactorial diseases. The use of polymorphisms, gene mapping, linkage and association studies in medical genetics. Genetic diagnosis: application of cytogenetic, molecular and genomic techniques. Congenital abnormalities, risk assessment and genetic consultation. Prenatal testing, population screening, treatment of genetic diseases and gene-based therapy. Pharmacogenetics and cancer genetics. Ethical aspects in medical genetics.

### Psychology 310 (SLK 310)

<b>Module credits</b>	30.00
<b>NQF Level</b>	07
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	SLK 210(GS), SLK 220(GS)
<b>Contact time</b>	2 discussion classes per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Psychology
<b>Period of presentation</b>	Semester 1



## Module content

Identification of abnormal behaviour in children based on knowledge of normal childhood development; introduction to the study of various models pertaining to abnormal behaviour; understanding and application of basic concepts in child psychopathology. This module also provides an introduction to psychopathology and symptomatology of adult abnormal behaviour. Terminology, definitions of abnormal behaviour, problems in diagnosis, labelling, and myths regarding abnormal behaviour are discussed. Neurosis as a specific mental disorder is studied critically from a multidimensional perspective, including intrapsychic, interpersonal and social-cultural explanations.

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