

# University of Pretoria Yearbook 2017

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

**Duration of study** 3 years

**Total credits** 468

### 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       | 30  |

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 for the Biological and Agricultural Sciences. The BSc - Extended programme takes place over a period of four years instead of the normal three years.

### BSc - Extended programme for the Biological and Agricultural 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       | 24  |

### 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 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**

**Minimum credits:**

Fundamental = 12

Core = 128

**Additional information:**

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

Students intending to apply for the 65 MBChB, or the 5 BChD places that become available in the second semester, may only 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.

**Please note:** ANA modules can only be taken by BSc (Medical Science) students.

## Fundamental modules

### Academic information management 111 (AIM 111)

|                               |   |
|-------------------------------|---|
| <b>Module credits</b>         | 4.00  |
| <b>Service modules</b>        | Faculty of Engineering, Built Environment and Information Technology<br>Faculty of Education<br>Faculty of Economic and Management Sciences<br>Faculty of Humanities<br>Faculty of Law<br>Faculty of Health Sciences<br>Faculty of Natural and Agricultural Sciences<br>Faculty of Theology |
| <b>Prerequisites</b>          | No prerequisites.   |
| <b>Contact time</b>           | MAMELODI, 2 lectures per week   |
| <b>Language of tuition</b>    | Separate classes for Afrikaans and English  |
| <b>Academic organisation</b>  | Information Science   |
| <b>Period of presentation</b> | 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



|                        |  |
|------------------------|--|
| <b>Service modules</b> | Faculty of Engineering, Built Environment and Information Technology<br>Faculty of Education<br>Faculty of Economic and Management Sciences<br>Faculty of Humanities<br>Faculty of Law<br>Faculty of Health Sciences<br>Faculty of Natural and Agricultural Sciences<br>Faculty of Theology<br>Faculty of Veterinary Science |
|------------------------|--|

|                      |                   |
|----------------------|-------------------|
| <b>Prerequisites</b> | No prerequisites. |
|----------------------|-------------------|

|                     |                               |
|---------------------|-------------------------------|
| <b>Contact time</b> | 2 lectures per week, MAMELODI |
|---------------------|-------------------------------|

|                            |  |
|----------------------------|--|
| <b>Language of tuition</b> | Separate classes for Afrikaans and English |
|----------------------------|--|

|                              |             |
|------------------------------|-------------|
| <b>Academic organisation</b> | Informatics |
|------------------------------|-------------|

|                               |            |
|-------------------------------|------------|
| <b>Period of presentation</b> | 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)

|                       |      |
|-----------------------|------|
| <b>Module credits</b> | 6.00 |
|-----------------------|------|

|                        |   |
|------------------------|---|
| <b>Service modules</b> | Faculty of Natural and Agricultural Sciences<br>Faculty of Veterinary Science |
|------------------------|---|

|                      |                   |
|----------------------|-------------------|
| <b>Prerequisites</b> | No prerequisites. |
|----------------------|-------------------|

|                     |                     |
|---------------------|---------------------|
| <b>Contact time</b> | 2 lectures per week |
|---------------------|---------------------|

|                            |                                |
|----------------------------|--------------------------------|
| <b>Language of tuition</b> | Module is presented in English |
|----------------------------|--------------------------------|

|                              |                            |
|------------------------------|----------------------------|
| <b>Academic organisation</b> | Unit for Academic Literacy |
|------------------------------|----------------------------|

|                               |            |
|-------------------------------|------------|
| <b>Period of presentation</b> | 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)

|                       |      |
|-----------------------|------|
| <b>Module credits</b> | 0.00 |
|-----------------------|------|

|                            |  |
|----------------------------|--|
| <b>Language of tuition</b> | Afrikaans and English is used in one class |
|----------------------------|--|

|                              |                               |
|------------------------------|-------------------------------|
| <b>Academic organisation</b> | Natural + Agric Sciences Dean |
|------------------------------|-------------------------------|

|                               |      |
|-------------------------------|------|
| <b>Period of presentation</b> | Year |
|-------------------------------|------|

### Academic information management 102 (AIM 102)

|                       |      |
|-----------------------|------|
| <b>Module credits</b> | 6.00 |
|-----------------------|------|



### Service modules

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  
Faculty of Veterinary Science

### Contact time

2 lectures per week

### Language of tuition

Separate classes for Afrikaans and English

### Academic organisation

Information Science

### Period of presentation

Semester 2

### Module content

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

## Core modules

### Biometry 120 (BME 120)

#### Module credits

16.00

### Service modules

Faculty of Engineering, Built Environment and Information Technology  
Faculty of Natural and Agricultural Sciences  
Faculty of Veterinary Science

### Prerequisites

At least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both Statistics 113, 123

### Contact time

1 practical per week, 4 lectures per week

### Language of tuition

Separate classes for Afrikaans and English

### Academic organisation

Statistics

### Period of presentation

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 twoway 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)

**Module credits** 16.00

|                        |   |
|------------------------|---|
| <b>Service modules</b> | Faculty of Engineering, Built Environment and Information Technology<br>Faculty of Education<br>Faculty of Health Sciences<br>Faculty of Veterinary Science |
|------------------------|---|

|                      |   |
|----------------------|---|
| <b>Prerequisites</b> | Final Grade 12 marks of at least 60% for Mathematics and 60% for Physical Sciences. |
|----------------------|---|

|                     |   |
|---------------------|---|
| <b>Contact time</b> | 1 practical per week, 4 lectures per week |
|---------------------|---|

|                            |  |
|----------------------------|--|
| <b>Language of tuition</b> | Separate classes for Afrikaans and English |
|----------------------------|--|

|                              |           |
|------------------------------|-----------|
| <b>Academic organisation</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

|                        |   |
|------------------------|---|
| <b>Service modules</b> | Faculty of Engineering, Built Environment and Information Technology<br>Faculty of Education<br>Faculty of Health Sciences<br>Faculty of Veterinary Science |
|------------------------|---|

|                      |   |
|----------------------|---|
| <b>Prerequisites</b> | Natural and Agricultural Sciences students: CMY 117 GS or CMY 154 GS Health Sciences students: none |
|----------------------|---|

|                     |   |
|---------------------|---|
| <b>Contact time</b> | 1 practical per week, 4 lectures per week |
|---------------------|---|

|                            |  |
|----------------------------|--|
| <b>Language of tuition</b> | Separate classes for Afrikaans and English |
|----------------------------|--|

|                              |           |
|------------------------------|-----------|
| <b>Academic organisation</b> | Chemistry |
|------------------------------|-----------|

|                               |            |
|-------------------------------|------------|
| <b>Period of presentation</b> | 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

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

**Prerequisites** MLB 111 GS

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Genetics

**Period of presentation** Semester 2

### Module content

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

## Molecular and cell biology 111 (MLB 111)

**Module credits** 16.00

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

**Prerequisites** Refer to Regulation 1.2: A candidate who has passed Mathematics with at least 50% in the Grade 12 examination

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Genetics

**Period of presentation** Semester 1

### Module content

Introductory study of the ultra structure, function and composition of representative cells and cell components. General principles of cell metabolism, molecular genetics, cell growth, cell division and differentiation.

## Physics for biology students 131 (PHY 131)

**Module credits** 16.00

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

**Prerequisites** Refer to Regulation 1.2: A candidate must have passed Mathematics with at least 50% in the Grade 12 examination

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



**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** 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

**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** Separate classes for Afrikaans and English

**Academic organisation** 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

**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 lectures per week, 2 discussion classes per week

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** 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

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

**Prerequisites** Refer to Regulation 1.2: At least 50% for Mathematics in the Grade 12 examination .

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Mathematics and Applied Maths

**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: 160**

**Minimum credits:**

Core = 160

### Additional information:

Students intending to apply for the BSocSciHons (Psychology) programme must complete the following research modules: RES 210 and RES 320.

## Core modules

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

|                               |   |
|-------------------------------|---|
| <b>Module credits</b>         | 12.00   |
| <b>Service modules</b>        | Faculty of Health Sciences                        |
| <b>Prerequisites</b>          | [CMY117 GS] and [CMY127 GS] and [MLB111 GS]       |
| <b>Contact time</b>           | 2 lectures per week, 90 minute practical per week |
| <b>Language of tuition</b>    | Afrikaans and English is used in one class        |
| <b>Academic organisation</b>  | Biochemistry                                      |
| <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. Introduction to enzyme kinetics and enzyme inhibition. Allosteric enzymes, regulation of enzyme activity, active centres and mechanisms of enzyme catalysis. Examples of industrial applications of enzymes. Practical training in laboratory techniques and Good Laboratory Practice. Techniques for the quantitative and qualitative analysis of biological molecules. Processing and presentation of scientific data.

### Carbohydrate metabolism 252 (BCM 252)

|                               |  |
|-------------------------------|--|
| <b>Module credits</b>         | 12.00  |
| <b>Service modules</b>        | Faculty of Education<br>Faculty of Health Sciences |
| <b>Prerequisites</b>          | [CMY117 GS] and [CMY127 GS] and [MLB111 GS]        |
| <b>Contact time</b>           | 90 minute practical per week, 2 lectures per week  |
| <b>Language of tuition</b>    | Afrikaans and English is used in one class         |
| <b>Academic organisation</b>  | Biochemistry                                       |
| <b>Period of presentation</b> | Semester 1   |

## Module content

Biochemistry of carbohydrates. Thermodynamics and bioenergetics. Glycolysis, citric acid cycle and electron transport. Glycogen metabolism, pentose-phosphate pathway, gluconeogenesis and photosynthesis. Practical training in study and analysis of metabolic pathways and enzymes. Scientific method and design: Hypothesis design and testing, method design and scientific controls.

## Lipid and nitrogen metabolism 261 (BCM 261)

**Module credits** 12.00

**Service modules** Faculty of Health Sciences

**Prerequisites** [CMY117 GS] and [CMY127 GS] and [MLB111 GS]

**Contact time** 2 lectures per week, 90 minute practical per week

**Language of tuition** Afrikaans and English is used in one class

**Academic organisation** Biochemistry

**Period of presentation** Semester 2

## Module content

Biochemistry of lipids, membrane structure, anabolism and catabolism of lipids. Nitrogen metabolism, amino acid biosynthesis and catabolism. Biosynthesis of neurotransmitters, pigments, hormones and nucleotides from amino acids. Catabolism of purines and pyrimidines. Therapeutic agents directed against nucleotide metabolism. Examples of inborn errors of metabolism of nitrogen containing compounds. The urea cycle, nitrogen excretion. Practical training in scientific writing skills: evaluation of a scientific report. Techniques for separation and analysis of biological molecules

## Biochemical principles of nutrition and toxicology 262 (BCM 262)

**Module credits** 12.00

**Service modules** Faculty of Health Sciences

**Prerequisites** [CMY117 GS] and [CMY127 GS] and [MLB111 GS]

**Contact time** 2 lectures per week, 90 minute practical per week

**Language of tuition** Afrikaans and English is used in one class

**Academic organisation** Biochemistry

**Period of presentation** Semester 2

## Module content

Biochemistry of nutrition and toxicology. Proximate analysis of nutrients. Review of energy requirements and expenditure. Respiratory quotient. Requirements and function of water, vitamins and minerals. Interpretation and modification of RDA values for specific diets, eg growth, exercise, pregnancy and lactation, aging and starvation. Interactions between nutrients. Comparison of monogastric and ruminant metabolism. Cholesterol, polyunsaturated, essential fatty acids and dietary anti-oxidants. Oxidation of fats. Biochemical mechanisms of water- and fat-soluble vitamins and assessment of vitamin status. Mineral requirements, biochemical mechanisms, imbalances and diarrhoea. Biochemistry of xenobiotics: absorption, distribution, metabolism and excretion (ADME); detoxification reactions: oxidation/reduction (Phase I), conjugations (Phase II), export from cells (Phase III); factors affecting metabolism and disposition. Toxic responses: tissue damage and physiological effects, teratogenesis, immunotoxicity, mutagenesis and carcinogenesis. Examples of toxins: biochemical mechanisms of common toxins and their antidotes. Antibiotics and resistance. Natural toxins from fungi, plants and animals: goitrogens, cyanogens, cholinesterase inhibitors, ergotoxin, aflatoxins Practical training in analyses of nutrients, fatty acids separations, antioxidant determination, and enzyme activity measurements, PO ratio of mitochondria, electrophoresis, extraction, solubility and gel permeation techniques.

## Introductory and neurophysiology 211 (FLG 211)

|                               |  |
|-------------------------------|--|
| <b>Module credits</b>         | 12.00  |
| <b>Service modules</b>        | Faculty of Natural and Agricultural Sciences |
| <b>Prerequisites</b>          | CMY 117, CMY 127, MLB 111 and PHY 131        |
| <b>Contact time</b>           | 2 lectures per week, 1 practical per week    |
| <b>Language of tuition</b>    | Module is presented in English               |
| <b>Academic organisation</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>Service modules</b>        | Faculty of Natural and Agricultural Sciences |
| <b>Prerequisites</b>          | CMY 117, CMY 127, MLB 111 and PHY 131        |
| <b>Contact time</b>           | 1 practical per week, 2 lectures per week    |
| <b>Language of tuition</b>    | Module is presented in English               |
| <b>Academic organisation</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)

**Module credits** 12.00

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

**Prerequisites** FLG 211 and FLG 212

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

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

**Academic organisation** Physiology

**Period of presentation** 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)

**Module credits** 12.00

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

**Prerequisites** FLG 211 and FLG 212

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

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

**Academic organisation** 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

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

**Prerequisites** GTS 161 GS

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

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

**Academic organisation** Genetics



**Period of presentation** Semester 1

**Module content**

Chemical nature of DNA. Replication transcription, RNA processing and 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

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

**Prerequisites** GTS 251 GS

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

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

**Academic organisation** Genetics

**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

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

**Prerequisites** SLK 110, SLK 120(GS)

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Psychology

**Period of presentation** 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)

**Module credits** 20.00

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

**Prerequisites** SLK 110, SLK 120(GS) and (RES 210 recommended)

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Psychology

**Period of presentation** 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.

## Social research: Introductory methodology 210 (RES 210)

**Module credits** 20.00

**Service modules** Faculty of Engineering, Built Environment and Information Technology  
Faculty of Economic and Management Sciences  
Faculty of Natural and Agricultural Sciences

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Psychology

**Period of presentation** Semester 1

### Module content

The module introduces methods of inquiry in the social sciences and humanities. The purpose of this module is to introduce students to the research process in order to equip them with the necessary competence to:

- identify social problems, formulate research questions and hypotheses;
- have a basic understanding of writing the literature review and research proposal;
- know and select relevant methods of inquiry;
- be aware of the necessity of conducting ethically sound research; and
- interpret and present data graphically.

## Curriculum: Final year

**Minimum credits: 168**

**Minimum credits:**

Core = 168

**Additional information:**

Students intending to apply for the BSocSciHons (Psychology) programme must complete the following research modules: RES 210 and RES 320.

Students intending to apply for BScHons (Genetics) must also complete the module GTS 367 in their third year.

## Core modules

### Higher neurological functions 327 (FLG 327)

|                               |   |
|-------------------------------|---|
| <b>Module credits</b>         | 18.00   |
| <b>Service modules</b>        | Faculty of Natural and Agricultural Sciences                        |
| <b>Prerequisites</b>          | BCM 251 GS, BCM 252 GS, BCM 261 GS, BCM 262 GS, FLG 221 and FLG 222 |
| <b>Contact time</b>           | 2 lectures per week, 1 practical per week                           |
| <b>Language of tuition</b>    | Module is presented in English                                      |
| <b>Academic organisation</b>  | Physiology  |
| <b>Period of presentation</b> | Semester 1  |

#### Module content

Overview of higher cognitive functions and the relationship between psyche, brain and immune system. Practical work: Applied practical work.

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

|                               |   |
|-------------------------------|---|
| <b>Module credits</b>         | 18.00                                     |
| <b>Prerequisites</b>          | GTS 251 GS and GTS 261 GS                 |
| <b>Contact time</b>           | 1 practical per week, 2 lectures per week |
| <b>Language of tuition</b>    | Module is presented in English            |
| <b>Academic organisation</b>  | Genetics                                  |
| <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 embryonic development and differentiation, cancer and other diseases in humans.



## Psychology 310 (SLK 310)

**Module credits** 30.00

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

**Prerequisites** SLK 210(GS), SLK 220(GS)

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Psychology

**Period of presentation** 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.

## Psychology 320 (SLK 320)

**Module credits** 30.00

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

**Prerequisites** SLK 310(GS)

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

**Language of tuition** Separate classes for Afrikaans and English

**Academic organisation** Psychology

**Period of presentation** Semester 2

### Module content

This module deals with a community psychological perspective on human behaviour and psychological interventions and also critically explores the contribution of various perspectives in psychology. The module focuses on themes such as definitions of key concepts, principles and aims of community psychology, and the role of the community psychologist as well as the impact of earlier thought frameworks on contemporary perspectives. The implications of these ideas for practical initiatives focussed on mental health in communities, are discussed. The module further focuses on critical psychology. Critical psychology is an orientation towards psychology that is critical towards the assumptions and practices of psychology as it is practiced in the mainstream. It attempts to address power issues as they manifest in the practice of mainstream psychology. The focus is on examining how the practice and theories of mainstream psychology contribute to these power issues impacting on marginalised groups.

## Genome evolution and phylogenetics 354 (GTS 354)

|                               |  |
|-------------------------------|--|
| <b>Module credits</b>         | 18.00  |
| <b>Service modules</b>        | Faculty of Engineering, Built Environment and Information Technology |
| <b>Prerequisites</b>          | GTS 251 GS and GTS 261 GS  |
| <b>Contact time</b>           | 1 practical per week, 2 lectures per week                            |
| <b>Language of tuition</b>    | Module is presented in English                                       |
| <b>Academic organisation</b>  | Genetics   |
| <b>Period of presentation</b> | Semester 1   |

### Module content

Mechanisms involved in the evolutions of genomes. Comparison of the molecular organisation of viral, archaea, eubacterial and eukaryotic genomes. Genome project design, DNA sequencing methods and annotation. Molecular evolution. Phylogenetic inference methods. Applications of phylogenetics and contemporary genome research.

## Genetics in human health 368 (GTS 368)

|                               |   |
|-------------------------------|---|
| <b>Module credits</b>         | 18.00                                     |
| <b>Prerequisites</b>          | GTS 251 and GTS 261 GS                    |
| <b>Contact time</b>           | 1 practical per week, 2 lectures per week |
| <b>Language of tuition</b>    | Module is presented in English            |
| <b>Academic organisation</b>  | Genetics                                  |
| <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.

## Social research: Methodological thinking 320 (RES 320)

|                               |  |
|-------------------------------|--|
| <b>Module credits</b>         | 30.00  |
| <b>Service modules</b>        | Faculty of Natural and Agricultural Sciences |
| <b>Prerequisites</b>          | RES 210                                      |
| <b>Contact time</b>           | 2 lectures per week                          |
| <b>Language of tuition</b>    | Module is presented in English               |
| <b>Academic organisation</b>  | Psychology                                   |
| <b>Period of presentation</b> | Semester 2                                   |

## Module content

The module introduces methods of inquiry in the social sciences and humanities. The purpose of this module is to introduce students to the research process in order to equip them with the necessary competence to:

- identify social problems, formulate research questions and hypotheses;
- have a basic understanding of writing the literature review and research proposal;
- know and select relevant methods of inquiry;
- be aware of the necessity of conducting ethically sound research; and
- interpret and present data graphically.

## Applied and pathophysiology 332 (FLG 332)

|                               |   |
|-------------------------------|---|
| <b>Module credits</b>         | 18.00   |
| <b>Service modules</b>        | Faculty of Natural and Agricultural Sciences                        |
| <b>Prerequisites</b>          | BCM 251 GS, BCM 252 GS, BCM 261 GS, BCM 262 GS, FLG 221 and FLG 222 |
| <b>Contact time</b>           | 2 lectures per week, 1 practical per week                           |
| <b>Language of tuition</b>    | Module is presented in English                                      |
| <b>Academic organisation</b>  | Physiology  |
| <b>Period of presentation</b> | Semester 2  |

## Module content

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

## Elective modules

### Population and evolutionary genetics 367 (GTS 367)

|                               |  |
|-------------------------------|--|
| <b>Module credits</b>         | 18.00  |
| <b>Service modules</b>        | Faculty of Engineering, Built Environment and Information Technology |
| <b>Prerequisites</b>          | GTS 251 and GTS 261  |
| <b>Contact time</b>           | 1 practical per week, 2 lectures per week                            |
| <b>Language of tuition</b>    | Module is presented in English                                       |
| <b>Academic organisation</b>  | Genetics   |
| <b>Period of presentation</b> | Semester 2   |

## Module content

Genetic and phenotypic variation. Organisation of genetic variation. Random genetic drift. Mutation and the neutral theory. Darwinian selection. Inbreeding, population subdivision and migration. Evolutionary quantitative genetics. Population genomics. Human population genetics. Levels of selection and individuality. Arms races and irreversibility. Complexity. Applied evolution.

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.