

# University of Pretoria Yearbook 2018

## BSc Nutrition (02133322)

**Minimum duration of study** 4 years

**Total credits** 541

### Programme information

The BSc (Nutrition) degree programme is offered by the Faculty of Natural and Agricultural Sciences. Students are, however, enrolled for modules in both the Faculty of Natural and Agricultural Sciences and the Faculty of Health Sciences.

It is expected of students following the Public Health Nutrition option to undergo internship training. The module FNH 480 will be administered by the Department of Human Nutrition in the Faculty of Health Sciences

Also consult the General Regulations.

### 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.
- Students will be able to register as natural scientists with SACNASP and may continue with a research-based MSc in Nutrition.

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	

Candidates who do not comply with the minimum admission requirements for BSc (Nutrition), may be considered for admission to the BSc - Extended programme for the Biological and Agricultural Sciences. The BSc - Extended programme takes one year longer to complete.

### 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	
BSc – Extended programme for the Biological and Agricultural Sciences	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: 132**

**Minimum credits:**

Fundamental = 12

Core = 120

**Additional information:**

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

## Fundamental modules

### Academic information management 102 (AIM 102)

**Module credits** 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 and Religion  
Faculty of Veterinary Science

**Prerequisites** No prerequisites.

**Contact time** 2 lectures per week

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

**Department** 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.

### Academic information management 111 (AIM 111)

**Module credits** 4.00

**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

<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Separate classes for Afrikaans and English
<b>Department</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)

<b>Module credits</b>	4.00
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<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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<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Separate classes for Afrikaans and English
<b>Department</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
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<b>Service modules</b>	Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science
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<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</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.

## 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

#### Department

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

#### Service modules

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

#### Prerequisites

A candidate must have Mathematics for at least 60% and 60% for Physical Sciences.

#### Contact time

1 practical per week, 4 lectures per week

#### Language of tuition

Separate classes for Afrikaans and English

#### Department

Chemistry

#### Period of presentation

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

**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** Separate classes for Afrikaans and 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.

## Introduction to food, nutrition and health 121 (FNH 121)

**Module credits** 8.00

**Prerequisites** Natural and Agricultural Sciences students

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

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

**Department** Food Science

**Period of presentation** Semester 2

## Module content

By 2050 the world will have to feed more than 8 billion people. This module provides the initial science base in Food, Nutrition and Health and introduces some scientific principles and fundamental concepts.

Lectures: Introduction to food choice as affected by social factors, religious influences, ethnicity, health, safety, economics, food sensory properties; Introduction to the food supply chain with special emphasis on the nutritional, environmental, ethical and safety issues that are of importance to consumers; Hunger - food needs, including food and nutrition security, nature of nutritional problems, approaches to combat over- and undernutrition; Introduction to nutrition: Nutrients in foods; nutrient composition of foods; bioavailability of nutrients; diet and chronic diseases; the keys to healthy eating; Introduction to functional chemical components of food; Introduction to food processing and preservation; Introduction to food safety, hazards and risks; Introduction to food quality and consumer preferences; Importance of food legislation to ensure a healthy and safe food supply including nutritional labelling; health and nutrition claims; Food, Nutrition and Health issues in the News.

Practical work: Principles and practice of basic concepts in food, nutrition and health.

## 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** 2 lectures per week, fortnightly practicals

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

**Department** 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.

## Introduction to microbiology 161 (MBY 161)

**Module credits** 8.00

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

**Prerequisites** MLB 111 GS

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

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

**Department** Microbiology and Plant Pathology

**Period of presentation** Semester 2



### Module content

The module will introduce the student to the field of Microbiology. Basic Microbiological aspects that will be covered include introduction into the diversity of the microbial world (bacteria, archaea, eukaryotic microorganisms and viruses), basic principles of cell structure and function, microbial nutrition and microbial growth and growth control. Applications in Microbiology will be illustrated by specific examples i.e. bioremediation, animal-microbial symbiosis, plant-microbial symbiosis and the use of microorganisms in industrial microbiology. Wastewater treatment, microbial diseases and food will be introduced using specific examples.

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

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

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

**Department** 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** 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** Separate classes for Afrikaans and 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.



## 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** 1 tutorial per week, 4 lectures per week

**Language of tuition** Separate classes for Afrikaans and 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: 147**

**Minimum credits:**

Core = 147

### Core modules

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

**Module credits** 12.00

**Service modules** Faculty of Health Sciences

**Prerequisites** CMY 117 GS and CMY 127 GS and MLB 111 GS

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

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

**Department** Biochemistry

**Period of presentation** 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)

**Module credits** 12.00

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

**Prerequisites** CMY 117 GS and CMY 127 GS and MLB 111 GS

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

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

**Department** Biochemistry

**Period of presentation** 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** CMY 117 GS and CMY 127 GS and MLB 111 GS

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

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

**Department** 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** CMY 117 GS and CMY 127 GS and MLB 111 GS

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

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

**Department** 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>	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>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>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)

**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

**Department** 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

**Department** 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.

## Human nutrition 210 (HNT 210)

**Module credits** 27.00

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

**Prerequisites** 2nd-year status

**Contact time** 1 discussion class per week, 1 lecture per week

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

**Department** Human Nutrition



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**Period of presentation** Semester 1

**Module content**

Application of scientific principles in human nutrition.  
Standards, guidelines and food composition tables.

**Human nutrition 220 (HNT 220)**

**Module credits** 24.00

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

**Prerequisites** FLG 211 GS FLG 212 GS BCM 253 BCM 254 BCM 255 BCM 256 VDG 250 HNT 210

**Contact time** 1 discussion class per week, 3 lectures per week

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

**Department** Human Nutrition

**Period of presentation** Semester 2

**Module content**

Human nutrition in the life cycle: Nutritional screening, nutritional needs, nutrition problems and prevention thereof, growth monitoring and meal/menu planning.

## Curriculum: Year 3

**Minimum credits: 120**

**Minimum credits:**

Core = 120

### Core modules

#### Macromolecules of life: Structure-function and Bioinformatics 356 (BCM 356)

<b>Module credits</b>	18.00
<b>Prerequisites</b>	BCM 251 and BCM 252
<b>Contact time</b>	180 minute practical per week, 2 lectures per week
<b>Language of tuition</b>	Afrikaans and English are used in one class
<b>Department</b>	Biochemistry
<b>Period of presentation</b>	Semester 1

##### Module content

Perspectives on the flow of information from nucleic acids to proteins, the structure and functions of nucleic acids and proteins and their organisation into hierarchical, interdependent systems. Nucleic acid structure as observed in fibres and crystals as well as global DNA and RNA analyses (methods and bioinformatic analyses). Biochemical analyses of nucleotides. DNA-DNA recognition: non-standard and higher order DNA structures. The RNA structural world, RNAi, miRNA and ribosomes. Cellular functions of coding and non-coding nucleic acids. Principles of small molecule-DNA recognition. Principles of protein-DNA recognition and interactions. Bioinformatics predictions of protein and small molecule DNA interactions. Chemical reactivity of amino acids. Domain structures of proteins and Ramachandran plots. Protein folding, sequence motifs and domains, higher order and supramolecular structure, self-assembly, conjugated proteins, post-translational modifications, conjugated proteins and bioinformatics predictions. Principles of protein function and protein structure relationships. Protein-ligand and protein-protein interactions. Protein aggregation in disease. Examples of the diverse functions of proteins and peptides, including enzymes, hormones, neurotransmitters, antibodies, receptors, transport and membrane proteins. Global analysis of proteins through proteomics. Basic principles of nuclear magnetic resonance, mass spectrometry and X-ray crystallography. Protein purification and characterization including, pl, molecular mass, amino acid composition and sequence. Practical training will include interactive computer-guided demonstrations of protein analysis, hands-on practical sessions for nucleic acid purification and chemical structure characterisation, protein expression and purification (including SDS-PAGE), protein sequence analysis including mass spectrometry, protein structure analysis by 3D protein modelling and protein folding (Bioinformatics).

#### Molecular basis of disease 368 (BCM 368)

<b>Module credits</b>	18.00
<b>Prerequisites</b>	BCM 251 and BCM 252 and BCM 261
<b>Contact time</b>	180 minute practical per week, 2 lectures per week





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

**Department** Biochemistry

**Period of presentation** Semester 2

### Module content

Normal and abnormal regulation of the cell cycle: The biochemistry of proliferation, quiescence, senescence, differentiation and apoptosis, illustrated by cancer. Host-Pathogen co-evolution: How adaptive immunity emerged from innate immunity. Infection: Molecular and cellular immunobiochemistry of protection against viral, bacterial and parasitic pathogens. Auto-immunity: Molecular mechanisms of the maintenance and failure of the recognition of foreign in the context of self in the mammalian body. Practical training includes debate on ethics of research on animal and human diseases, experimental design and execution of an immunoassay to test for a biomarker antibody of an infectious disease, tutorials to determine the performance of a diagnostic test for disease, including the principle of ROC curve analysis, positive and negative predictiveness, sensitivity, specificity and accuracy, applications of polyclonal and monoclonal antibodies for characterisation of disease with fluorescence, confocal and electron microscopy, flow cytometry and biosensors.

## Food and nutrition security 320 (FNH 320)

**Module credits** 8.00

**Prerequisites** Second year status or TDH

**Contact time** 3 lectures per week

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

**Department** Food Science

**Period of presentation** Quarter 3

### Module content

Global food system and food security, Livelihoods and household dynamics, Gender Issues.

## Food chemistry 351 (FST 351)

**Module credits** 18.00

**Prerequisites** BCM 251 and BCM 252 and BCM 261 and BCM 262 or TDH

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

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

**Department** Food Science

**Period of presentation** Semester 1

### Module content

Lectures - Chemistry of major food components: Carbohydrates. Proteins. Lipids. Water. Chemical and nutritional aspects of food processing: implications of different processing techniques on the major food components. Functional properties of the major food components. Modification of functional properties of the major food components. Food analysis methodology. Practical work: Food analysis.

## Food chemistry (2) 352 (FST 352)

<b>Module credits</b>	18.00
<b>Prerequisites</b>	BCM 251 and BCM 252 and BCM 261 and BCM 262 or TDH
<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>	Food Science
<b>Period of presentation</b>	Semester 1

### Module content

Lectures - Basic food analysis and chemistry of the minor food components: Basic food analysis, vitamins, minerals, additives, contaminants. Chemical and nutritional aspects of food processing: implications of different processing techniques on minor food components. Functional properties of the minor food components. Food analysis methodology. Practical work: Food analysis.

## Nutritional assessment 314 (NTA 314)

<b>Module credits</b>	22.00
<b>Prerequisites</b>	Third-year status
<b>Contact time</b>	1 discussion class per week, 4 lectures per week
<b>Language of tuition</b>	Afrikaans and English are used in one class
<b>Department</b>	Human Nutrition
<b>Period of presentation</b>	Semester 1

### Module content

Evaluation of nutritional assessment.

Nutrition care process; overview of evaluation of nutritional status. Scientific principles of evaluation of nutritional status; nutritional screening; clinical, biochemical and dietary evaluation of nutritional status.

## Food composition and applied nutritional programmes 364 (VWV 364)

<b>Module credits</b>	18.00
<b>Prerequisites</b>	FST 351 and FST 352 or TDH
<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>	Food Science
<b>Period of presentation</b>	Semester 2

### Module content

Generation, interpretation and application of food composition data in nutrition programmes. Chemical composition of foods: sampling for food analysis, assessing methods of food analysis for inclusion in food composition data. Interpretation of food composition data. Nutritional labeling of food. Use of nutritional data in food formulations. Dietary supplementation, enrichment and fortification of foods.

## Curriculum: Final year

**Minimum credits: 142**

**Minimum credits:**

Core = 142

### Core modules

#### Biometry 210 (BME 210)

**Module credits** 24.00

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

**Prerequisites** BME 120

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

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

**Department** Statistics

**Period of presentation** Semester 1

#### Module content

Analysis of variance: Multi-way classification. Testing of model assumptions, graphics. Multiple comparisons. Fixed, stochastic and mixed effect models. Block experiments. Estimation of effects. Experimental design: Principles of experimental design. Factorial experiments: Confounding, single degree of freedom approach, hierarchical classification. Balanced and unbalanced designs. Split-plot designs. Analysis of covariance. Computer literacy: Writing and interpretation of computer programmes. Report writing.

#### Research project 400 (FNH 400)

**Module credits** 40.00

**Prerequisites** Third-year status

**Contact time** 1 lecture per week, 2 practicals per week

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

**Department** Food Science

**Period of presentation** Semester 1

#### Module content

A laboratory-based, analytical research project on an approved topic in nutritional sciences is planned, executed and presented in the form of a written report.

#### Advanced food, nutrition and health 420 (FNH 420)

**Module credits** 20.00

**Prerequisites** Third-year status or TDH



<b>Contact time</b>	1 discussion class per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Food Science
<b>Period of presentation</b>	Semester 2

#### Module content

Discussion classes in advanced level of nutritional sciences in topics including Micronutrient metabolism in human health and disease, Nutritional Bioavailability, Nutrigenomics, Nutrition intervention, Nutrition and the metabolic syndrome. Problem solving and literature discussion.

### International nutrition 421 (FNH 421)

<b>Module credits</b>	20.00
<b>Prerequisites</b>	Third year status
<b>Contact time</b>	2 discussion classes per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Food Science
<b>Period of presentation</b>	Semester 1 or Semester 2

#### Module content

Discussion classes in International Nutrition focus on the the most important current nutrition issues affecting populations worldwide. It includes identifying nutrition challenges and trends in both developing and developed countries. The course includes aspects of epidemiology, disease etiology, and consequences of under-nutrition and over-nutrition.

### Research methodology and seminar 400 (FST 400)

<b>Module credits</b>	20.00
<b>Prerequisites</b>	Third-year status or TDH
<b>Contact time</b>	1 day seminar in semester 2, 1 workshop of 5 days in semester 1
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Food Science
<b>Period of presentation</b>	Year

#### Module content

Lectures and assignments: Research methodology. Literature study and seminar presentations on topics in food science and/or technology. The student must also pass an oral examination at the end of the module.

### Advanced human nutrition 411 (HNT 411)

<b>Module credits</b>	18.00
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	4th-year status

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<b>Contact time</b>	1 discussion class per week, 3 lectures per week
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<b>Language of tuition</b>	Module is presented in English
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<b>Department</b>	Human Nutrition
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<b>Period of presentation</b>	Semester 1
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**Module content**

Seminars and case studies (theory and practical application): Eating behaviour, eating disorders, nutrient/nutrition supplementation, sports nutrition, vegetarianism, food safety, nutrition of the disabled, prevention of non-communicable disease of lifestyle; nutrition and immunity; nutrition and genetics.

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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.