

DIPLOMA IN FOOD TECHNOLOGY

Qualification code: DPFT19 - NQF Level 6 (360 credits)

SAQA ID: 100978, CHE NUMBER: H16/14269/HEQSF

Campus where offered:

Arcadia Campus

REMARKS

a. *Admission requirement(s) and selection criteria:*

Please take note that all completed applications received within the published due dates will be ranked. After consideration of the Departmental Student Enrolment Plan, only the top ranking applicants will be selected. Once a programme is full, a waiting list will be in place to provide an opportunity for applicants to fill places of those who did not register on time. Applicants will be informed of their status per official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

• **APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

Admission requirement(s):

A Senior Certificate or an equivalent qualification, with an E symbol at Higher Grade or a D symbol at Standard Grade for English, Mathematics and Physical Science.

Recommended subject(s):

Biology.

Assessment procedure:

Applicants who meet the minimum requirements will be invited to submit a portfolio and to write an academic proficiency test. The APS will contribute 80% to the final admission score and the academic proficiency test will contribute 20%.

• **APPLICANTS WITH A NATIONAL SENIOR CERTIFICATE OBTAINED IN OR AFTER 2008:**

Admission requirement(s):

A National Senior Certificate with a bachelor's degree or a diploma endorsement, or an equivalent qualification, with an achievement level of at least 4 for English (home language or first additional language) and 4 for Mathematics or Technical Mathematics, 4 for Physical Sciences or Technical Sciences and 3 for Life Sciences.

Recommended subject(s):

None.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least 21 (excluding Life Orientation).

Assessment procedure:

Applicants with a score of 24 or more will be automatically accepted. Applicants with a score of 21 to 23 will be considered for admission, and will be invited to write an academic proficiency test. The APS will contribute 80% to the final admission score and the academic proficiency test will contribute 20%.

b. *Recognition of Prior Learning (RPL), equivalence and status:*

See Chapter 30 of Student's Rules and Regulations.

c. *Intake for the qualification:*

January only.



- d. *Presentation:*
Day classes.
- e. *Minimum duration:*
Three years.
- f. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations.
- g. *WIL in Food Technology I:*
See Chapter 5 of Students' Rules and Regulations.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CAP105X	Communication for Academic Purposes	(5)	(10)	
CHM105X	Chemistry I	(5)	(24)	
CPL105X	Computer Literacy	(5)	(10)	
GMA105D	General Mathematics I	(5)	(24)	
GPH105D	General Physics I	(5)	(24)	
INI125D	Information Literacy I (block module)	(5)	(2)	
LFI125X	Life Skills I (block module)	(5)	(2)	
MIB105D	Microbiology I	(5)	(24)	

FIRST SEMESTER

FTP115D Food Technology Preservation I (5) (12)

TOTAL CREDITS FOR THE FIRST YEAR: **132**

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FPD206D	Food Product Development I	(6)	(24)	Chemistry I Food Technology Preservation I Microbiology I
FTC206D	Food Technology Commodities II	(6)	(24)	Food Technology Preservation I Microbiology I
MLB206D	Molecular Biology II	(6)	(15)	Microbiology I

FIRST SEMESTER

BAC216D Bioanalytical Chemistry II (6) (12) Chemistry I

BCH216D Biochemistry II (6) (12) Chemistry I

SECOND SEMESTER

FCM216D Food Chemistry II (6) (12) Bioanalytical Chemistry II
Biochemistry II
Chemistry I

MBT216D Microbial Taxonomy II (6) (15) Microbiology I

TOTAL CREDITS FOR THE SECOND YEAR: **114**

THIRD YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
FIM316D	Food Industry Management I	(6)	(12)	
FOM316D	Food Microbiology III	(6)	(15)	Microbial Taxonomy II Molecular Biology II
FPE316D	Food Process Engineering I	(6)	(12)	General Mathematics I General Physics I
FQA316D	Food Quality Assurance I	(6)	(15)	Food Technology Commodities II Microbiology I
TOTAL CREDITS FOR THE SEMESTER:			60	
SECOND SEMESTER				
On completion of all the modules. If a student has one outstanding module, that particular case will be reviewed and permission might be granted in collaboration with the specific employer.				
WFT316D	WIL in Food Technology I (first- or second-semester module)	(6)	(60)	
TOTAL CREDITS FOR THE SEMESTER:			60	
TOTAL CREDITS FOR THE THIRD YEAR:			114	
TOTAL CREDITS FOR THE QUALIFICATION:			360	

MODULE INFORMATION (OVERVIEW OF SYLLABUS)

The syllabus content is subject to change to accommodate industry changes. Please note that a more detailed syllabus is available at the Department or in the study guide that is applicable to a particular module. At time of publication, the syllabus content was defined as follows:

B

BIOANALYTICAL CHEMISTRY II (BAC216D) 1 X 3-HOUR PAPER (Module custodian: Department of Chemistry)

Introduction to bioanalytical chemistry. The role and importance of analytical chemistry in everyday life. Perform analytical chemistry calculations. Calculate the amount required to prepare accurate concentrations of solutions. Apply titration method to quantify the content of acid or a base. Apply appropriate procedure to determine unknown analyte quantity in a given sample. Identify and explain the functions of the components of spectrophotometer and chromatographic instrument. Apply the fundamental laws of photometry to solve spectroscopic problems. Separate and identify analytes by applying appropriate chromatographic principles. Compile and present report. (Total tuition time: ± 120 hours)

BIOCHEMISTRY II (BCH216D) 1 X 3-HOUR PAPER (Module custodian: Department of Biomedical Sciences)

The Organisation of a cell. Molecular structure of amino acids and proteins. Enzyme Kinetics. Carbohydrates. Lipids. Nucleic acids. Reagents, pH and buffers. (Total tuition time: ± 80 hours)

C

CHEMISTRY I (CHM105X) 1 X 3-HOUR PAPER (Module custodian: Department of Chemistry)

The role and importance of chemistry in everyday life. Classification and properties of matter. Units of measurement. Atoms, molecules and ions. The modern view of atomic structure and the use of electron configurations in chemical bonding. The periodic table of elements. The use of IUPAC rules for naming inorganic compounds.



Application of the mole concept in stoichiometric calculations. Reactions in aqueous solutions. Chemical equilibrium. Fundamental concepts in electrochemistry. Organic nomenclature. (Total tuition time: ± 240 hours)

COMMUNICATION FOR ACADEMIC PURPOSES (CAP105X)

1 X 3-HOUR PAPER

(Module custodian: Department of Applied Languages)

A workable knowledge of English is an essential skill for any graduate who is required to conduct themselves successfully in a professional working environment. This module will equip students with the competencies required to compose a selection of written texts related to communicating both internally and externally within a professional environment. In addition, the module includes strategies that are essential for the effective communication in various situations, including small groups to avoid unproductive conflict, a multicultural context, etc. (Total tuition time: not available)

COMPUTER LITERACY (CPL105X)

CONTINUOUS ASSESSMENT

(Module custodian: End User Computing Unit)

Introduction of information literacy. Development of a search strategy and application of a search string to search engines and academic databases. Evaluation of information sources. Ethical and legal use of information. (Total tuition time: not available)

F

FOOD CHEMISTRY II (FCM216D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Study of the major chemical components of food, the chemical changes they undergo during processing and storage and methods used to analyse them. Major chemical components include: sugars. Polysaccharides, lipids, proteins, colours, flavours, water, and Laboratory safety and rules. Guidelines for practical report writing. (Total tuition time: ± 120 hours)

FOOD INDUSTRY MANAGEMENT I (FIM316D)

1 X 3-HOUR PAPER

(Module custodian: Department of Management and Entrepreneurship)

Introduction to business and its challenges. The business environment. The task of management. Operations management. Logistics management. Financial management. Human resources management. Marketing management. Entrepreneurship. The business plan. (Total tuition time: ± 120 hours)

FOOD MICROBIOLOGY III (FOM316D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Importance of food microbiology, microbial and mycological spoilage of food, factors influencing microbial spoilage of foods will be covered including: Microbial growth, survival and death. Spores and their significance. Detection and enumeration of microbes in food. Indicator microorganisms and microbiological criteria. Gram negative foodborne pathogenic bacteria. Gram positive foodborne pathogenic bacteria and other detrimental organisms associated with food. Microorganisms used in fermented foods. Spoilage organisms. Molds. Chemical preservatives. (Total tuition time: ± 120 hours)

FOOD PROCESS ENGINEERING I (FPE316D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Units, dimensions and definitions. Material balances. Energy and Energy balances. Steam and Steam tables. Psychrometrics. Fluid flow and properties. (Total tuition time: ± 120 hours)

FOOD PRODUCT DEVELOPMENT I (FPD206D)

CONTINUOUS ASSESSMENT

(Module custodian: Department of Biotechnology and Food Technology)

Introduction to and development of new food products. Phases in new food product development: Defining objectives and perceived need of the market. Idea generation and screening of the ideas. The development process. Ingredient and product formulations. Nutritional composition of food. Product costing. Product labelling. Analytical techniques for safety and quality evaluation. Food product development project. (Total tuition time: ± 120 hours)

FOOD QUALITY ASSURANCE I (FQA316D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Introduction to food quality assurance. Quality concepts and terminology. Defining food quality. Customer requirements. Customer feedback and service. Product specifications. Food labelling and shelf life. Good Manu-



facturing Practices (GMP). HACCP and microbiological control. Managing the organisation. ISO 9000 and ISO 14001. Verification and plant inspection. Continuous improvement. (Total tuition time: ± 150 hours)

FOOD TECHNOLOGY COMMODITIES II (FTC206D) 1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

The nutritional composition and processing of major food commodities, including: Milk and milk products. Meat, fish, poultry and eggs. Fats, oils and related products. Beverages. Confectionery and chocolate products. Cereal, grains, legumes and oilseeds. Vegetables and fruits. In addition, the principles of food packaging and sensory evaluation principles and techniques will be covered. The use of selected unit operations to prepare different foods will be demonstrated and communicated in the form of group work, presentations and/or scientific reports. (Total tuition time: ± 150 hours)

FOOD TECHNOLOGY PRESERVATION I (FTP115D) 1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Introduction to Food Science and Technology as a discipline. Characteristics of the Food Industry. Constituents of Foods: Properties and Significance. Nutritive Aspects of Food Constituents. Unit Operations in Food Processing. Quality Factors in Foods. Food Deterioration and its Control. Heat Preservation and Processing. Cold Preservation and Processing. Food Dehydration and Concentration. Fermentations and other Uses of Microorganisms. Report Writing and Scientific Referencing. Metric system and formulations conversions. (Total tuition time: ± 120 hours)

G

GENERAL MATHEMATICS I (GMA105D) 1 X 3-HOUR PAPER

(Module custodian: Department of Mathematics and Statistics)

Do numerical computations. Apply knowledge of mensuration to calculate perimeters, areas and volumes of two- and three-dimensional objects. Apply knowledge of functions and equations to solve well-defined problems. Use basic calculus rules to solve well-defined problems. Use Excel to organise given data in charts and calculate descriptive measures. Do basic regression analysis and curve fitting using Excel and a scientific calculator; and Implement basic probability theories to predict outcomes of events. (Total tuition time: ± 120 hours)

GENERAL PHYSICS I (GPH105D) 1 X 3-HOUR PAPER

(Module custodian: Department of Physics)

Basic mathematical concepts for physics and measurements. Motion in one dimension. Motion in a plane (projectile motion). Forces and Newton's Law of Motion. Equilibrium condition and torque. Work, energy and power. Linear momentum and impulse. Properties of static and dynamic fluids. Temperature and heat. Heat transfer. General properties of waves. Reflection. Refraction. Electrostatics. Electric circuits. Basic nuclear physics. (Total tuition time: not available)

I

INFORMATION LITERACY I (INI125D) CONTINUOUS ASSESSMENT

(Module custodian: Directorate of Library and Information Services)

Introduction of information literacy. Development of a search strategy and application of a search string to search engines and academic databases. Evaluation of information sources. Ethical and legal use of information. (Total tuition time: not available)

L

LIFE SKILLS I (LFI125X) CONTINUOUS ASSESSMENT

(Module custodian: Directorate of Student Development and Support)

Academic, personal and socio-emotional skills development for students in higher education. Personal and social dimensions address: effective planning and self-management (goal setting and time management); Adjusting to university life (student life, diversity and change); Intra- and interpersonal skills development (conflict management, self-esteem, relationship management); Effective living (healthy living, HIV education, substance abuse); Academic dimension addresses: academic skills for university (e.g. critical thinking, creativity, managing assignments and assessments). (Total tuition time: not available)



M

MICROBIAL TAXONOMY II (MBT216D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Introduction to microbial taxonomy. Fundamentals of taxonomy including identification, classification and nomenclature. Classification systems. Phylogenetic. Phenetic. Levels of classification. Evolutionary processes and the species concept. The three-domain alternative. The kingdom systems (5 and 7). The concept and definition of microbial species. The groups of techniques applied in taxonomy. The classical characteristics. Ecological. Biochemical, Physiological. Molecular based techniques. Microbial phylogeny. Phylogenetic trees. Molecular markers. Endosymbiotic theory. Bergey's manual. (Total tuition time: ± 150 hours)

MICROBIOLOGY I (MIB105D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

History and scope of Microbiology. The study of microbial structure. Prokaryotic cell structure and function. Microbial nutrition. Microbial growth. The control of microorganisms by physical and chemical agents. Viruses and other acellular agents. Infection and pathogenicity. Eukaryotic cell structure and function. Fungi. Protists. Microbiology of air. (Total tuition time: ± 240 hours)

MOLECULAR BIOLOGY II (MLB206D)

1 X 3-HOUR PAPER

(Module custodian: Department of Biotechnology and Food Technology)

Genes: Structure, Replication and Expression. Microbial Genetics: Regulation of gene expression. Microbial Genetics: Mechanisms of genetic variation. Recombinant DNA Technology. Microbial Genomics. (Total tuition time: ± 240 hours)

W

WIL IN FOOD TECHNOLOGY I (WFT316D)

WORK-INTEGRATED LEARNING

(Module custodian: Department of Biotechnology and Food Technology)

The student is exposed to as many techniques and apparatus and as much industrial experience as possible in order to further prepare for the industry. The student must be exposed to many aspects relevant to the field of food technology and the food industry as a whole. Students must be subjected to at least two of the following areas relevant to the food industry: Research and product development, production, processing, manufacturing and quality control and quality assurance (70%). Stock Control and Marketing can form a minor part (30%) of the training programme. (Total tuition time: ± 600 hours)