

BSc (Hons) Food Science and Technology (Minor: Food Microbiology) (Full-Time)

1. Objectives

The programme is designed to develop the necessary attitude and competence for the application of scientific principles in food processing, with particular emphasis on the use and control of microorganisms, in order to respond to the need to ensure food quality and mitigate the incidence of food poisoning outbreaks in the country. It aims at preparing graduates for the food sector including food industries, small and medium food enterprises, food authorities, food laboratories and food research institutions. Teaching will impart knowledge, skills and values to develop employability and produce lifelong learners who can think and act creatively. Teaching methods will facilitate practical, interactive, critical, reflective and integrative learning. Teaching modes of delivery will include modules comprising all face-to-face activities, and modules with a mix of face-to-face and on-line activities through e-learning platforms.

The programme offers students the opportunity to undertake a 6-month work placement in a food organisation which has a food microbiology laboratory, to contextualise learning within real-life situations. Effective teaching and learning will contribute to national capacity building towards enhancing food safety, quality and security, as well as sustainable food production to fulfil consumer, business, economic, social, ethical and environmental requirements.

On completion of this programme, learners will be able to:

- Explain the microbiological, chemical, physical, nutritional and sensory properties of food, and the factors which affect these properties during manufacture and storage;
- Describe the structure, characteristics, role and significance of microorganisms in foods;
- Explain the importance of food safety, quality, security and sustainable food production systems;
- Apply scientific principles to control the microbiological, chemical, physical, nutritional and sensory properties of food during manufacture and storage;
- Apply methods of preservation and sustainable processing technologies to control deterioration and microbiological spoilage in foods;
- Apply effective decontamination technologies and control of proliferation of foodborne pathogens to produce safe foods;
- Describe key food laws and standards which impact on food business activities and the environment, with particular emphasis on food hygiene, process hygiene and microbiological criteria;
- Apply methods of food analysis to assess quality, nutritive value, safety and compliance with legal requirements and standards;
- Carry out sampling and laboratory procedures to isolate, enumerate, detect, identify and characterise microorganisms throughout the food chain, with particular emphasis on food products and hygiene assessment of food processing plants;

- Interpret microbiological data for necessary corrective and preventive actions;
- Use microbiological data and information to perform food safety risk assessment;
- Participate in the development, implementation and maintenance of sustainable food safety management systems to protect consumer health and life;
- Apply scientific principles in the use of microorganisms to develop new food ingredients and products;
- Participate in the application of epidemiological methods in the investigation of food poisoning outbreaks;
- Apply acquired knowledge and skills to the implementation of tasks and problem-solving in a food-related work environment;
- Participate in interactive communication and team-working to ensure effectiveness and efficiency of academic as well as professional activities;
- Apply the steps involved in a research process;
- Demonstrate effective written and oral scientific communication skills;
- Make a positive contribution to the successful development of small and medium food enterprises, food industries and catering organisations;
- Engage in enhancing the effectiveness and sustainability of the national food control system;
- Embark on training programmes at postgraduate level.

2. **General Entry Requirements**

In accordance with General Entry Requirements for Admission to the University for Undergraduate Degrees.

3. **Programme Requirements**

SC : Credit in Mathematics and Chemistry

Preference will be given to candidates also holding an ‘O’ Level in Biology.

2 GCE 'A' Level passes in related approved Science subjects (Mathematics, Chemistry, Physics, Biology, Food Studies).

Preference will be given to candidates holding ‘A’ Levels in Biology and either Food Studies or Chemistry or Physics.

4. **Programme Duration**

	Normal (Years)	Maximum (Years)
Degree	3.5	5.5

5. **Credits Per Year:** Minimum 18 credits, Maximum 48 credits subject to Regulation 4.

6. Minimum Credits Required For Award of Undergraduate Degree: 106

Breakdown as follows:

	Credits		
	Core Modules	Project	Work Placement
Degree	91	9	6

Students may exit with a

- (a) Certificate after having earned 30 credits in core modules
- (b) Diploma after having earned 60 credits in core modules

7. Assessment

Each module will be assessed over 100 marks (i.e. expressed as %) with details as follows (unless otherwise specified).

Assessment will be based on a Written Examination of 2-3 hour duration, carrying a weighting of 70%, and Continuous Assessment carrying 30% of total marks for AGRI modules. Continuous Assessment will be based on laboratory/field work, and/or assignments, and should include at least 1 class test. Written examinations for all AGRI modules will normally be carried out at the end of the academic year (unless otherwise specified).

An overall total of 40% for combined Continuous Assessment and Written Examination components would be required to pass the module, without minimum thresholds within the individual Continuous Assessment and Written Examination.

Modules will carry the weightings of 1, 3 or 5 depending on their status (Introductory, Intermediate or Advanced). Weighting for a particular module is indicated within parentheses in the module code. Each module will carry credits in the range of 3 to 6. Project - AGRI 3000Y(5) will carry 9 credits. The module Food Product Development - AGRI 3069Y(5) will carry 1 credit.

Students who do not have 'O' level pass in Biology will be required to follow the module Structure and Function of Multicellular Organisms and Ecosystem – AGRI 1000 in the first semester of the first year of the programme of study. Assessment will be based on a Written Examination carrying a weighting of 70%, and Continuous Assessment carrying 30% of total marks. The Written examination for this module will be carried out at the end of the first semester of the first year of the programme of study. The module will carry no credits. For satisfactory completion of the module, a minimum of 40% should be attained. Students not obtaining 40% will have to retake same in the second semester of the first year of the programme of study

Assessment of the module Scientific Communication Skills and Methods - AGRI 2130 will be based on continuous assessment throughout the module and/or submission of a portfolio, as per Faculty's guidelines. The module will carry no

credits. For satisfactory completion of the module, a minimum of 40% should be attained.

Assessment of the module Food Product Development – AGRI 3069Y(5) will be based on group presentation and submission of group portfolio in the first week of the second semester of the final year.

Assessment of the Work Placement – AGRI 2103Y(5) will be by continuous assessment solely and will be based on employer's assessment report, submission of work placement report and a presentation, as per guidelines of the Faculty of Agriculture Work Placement Handbook. A minimum of 50% should be attained to pass this module.

8. Academic Teaching in Case of an Emergency

To ensure minimal disruption of normal academic teaching in case of an emergency (e.g. closure of the University for more than 2 weeks), the i.Learn e-Learning Platform of VCILT will be used to deliver Teaching and Learning content. Relevant learning resources will be posted on the Platform. Assignments (if any) will be submitted using the online submission box. Arrangements will be made to register students on the e-Learning Platform at the beginning of the academic year.

9. List of Modules

CORE MODULES

Module Code	Module Name	Hr/Yr L+P	Credits
AGRI 1010Y(1)	Basic Food Engineering	60+60	6
AGRI 1012Y(1)	Biochemistry and Nutrition	75+30	6
AGRI 1014Y(1)	Food Chemistry and Food Analysis I	60+60	6
AGRI 1041Y(1)	Introduction to Agricultural Production	45+0	3
AGRI 1058Y(1)	Cell Biology	60+30	5
AGRI 1071Y(1)	Data Handling and Research Methodology	30+30	3
AGRI 1072Y(1)	Introduction to Management in Food Industries	30+30	3
AGRI 1090Y(1)	Molecular genetics and pathogenesis	45+30	4
AGRI 1083Y(1)	Food Microbiology I	30+30	3
AGRI 2015Y(3)	Food Chemistry and Food Analysis II	75+30	6
AGRI 2018Y(3)	Unit Operations in Food Processing	30+30	3
AGRI 2065Y(3)	Molecular Biology and Biotechniques	60+60	6
AGRI 2087Y(3)	Food Quality Management	45+30	4
AGRI 2105Y(3)	Food Processing	75+30	6
AGRI 2112Y(3)	Experimental Designs and Sampling Techniques	30+30	3
AGRI 2114Y(3)	Food Hygiene and Safety	45+30	4
AGRI 2418Y(3)	Food Microbiology II	30+30	3
AGRI 2130	Scientific Communication Skills and Methods	35+0	-
AGRI 3000Y(5)	Project	-	9
AGRI 3014Y(5)	Food Legislation	45+0	3
AGRI 3017Y(5)	Developments in Food Science and Technology	45+0	3
AGRI 3069Y(5)	Food Product Development	15+0	1
AGRI 3088Y(5)	Postharvest Management	45+0	3
AGRI 3124Y(5)	Advances in Food Microbiology	45+30	4
AGRI 3125Y(5)	Epidemiology and Food Safety	30+30	3

WORK PLACEMENT

AGRI 2103Y(5)	Work Placement	6 months	6
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BASIC MODULE IN BIOLOGY FOR STUDENTS WHO DO NOT HAVE 'O' LEVEL BIOLOGY

AGRI 1000	Structure and Function of Multicellular Organisms and Ecosystems	45+0	-
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TOTAL NUMBER OF CREDITS	106
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10. Programme Plan – BSc (Hons) Food Science and Technology (Minor: Food Microbiology) (with 6-month work placement)

YEAR 1

Code	Module Name	Hr/Yr L+P	Credits
AGRI 1010Y(1)	Basic Food Engineering	60+60	6
AGRI 1012Y(1)	Biochemistry and Nutrition	75+30	6
AGRI 1014Y(1)	Food Chemistry and Food Analysis I	60+60	6
AGRI 1041Y(1)	Introduction to Agricultural Production	45+0	3
AGRI 1058Y(1)	Cell Biology	60+30	5
AGRI 1071Y(1)	Data Handling and Research Methodology	30+30	3
AGRI 1072Y(1)	Introduction to Management in Food Industries	30+30	3
AGRI 1090Y(1)	Molecular genetics and pathogenesis	45+30	4
AGRI 1083Y(1)	Food Microbiology I	30+30	3
AGRI 1000*	Structure and Function of Multicellular Organisms and Ecosystems	45+0	-

***: ONLY for students who do not have ‘O’ Level Biology**

YEAR 2

Code	Module Name	Hr/Yr L+P	Credits
AGRI 2015Y(3)	Food Chemistry and Food Analysis II	75+30	6
AGRI 2018Y(3)	Unit Operations in Food Processing	30+30	3
AGRI 2065Y(3)	Molecular Biology and Biotechniques	60+60	6
AGRI 2087Y(3)	Food Quality Management	45+30	4
AGRI 2105Y(3)	Food Processing	75+30	6
AGRI 2112Y(3)	Experimental Designs and Sampling Techniques	30+30	3
AGRI 2114Y(3)	Food Hygiene and Safety	45+30	4
AGRI 2148Y(3)	Food Microbiology II	30+30	3
AGRI 2130	Scientific Communication Skills and Methods	35+0	-

AGRI 2103Y(5)	Work Placement	6 months	6
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YEAR 3

Code	Module Name	Hr/Yr L+P	Credits
AGRI 3000Y(5)	Project	-	9
AGRI 3014Y(5)	Food Legislation	45+0	3
AGRI 3017Y(5)	Developments in Food Science and Technology	45+0	3
AGRI 3069Y(5)	Food Product Development	15+0	1
AGRI 3088Y(5)	Postharvest Management	45+0	3
AGRI 3124Y(5)	Advances in Food Microbiology	45+30	4
AGRI 3125Y(5)	Epidemiology and Food Safety	30+30	3

TOTAL NUMBER OF CREDITS	106
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