# BNU-HKBU

# UNITED INTERNATIONAL COLLEGE

# UNDERGRADUATE HANDBOOK

# 2017-2018

# Division of Science and Technology

# Food Science and Technology Programme

## Contents

## 1. Introduction

This student handbook provides general information about the **Food Science and Technology Programme** under the Division of Science and Technology, BNU-HKBU United International College. Students can also find specific information about the programme curriculum, structure, degree requirements, etc. in this handbook. Students should read this handbook carefully and discuss any queries with their mentors, teachers, Programme Director, or the Division Dean. The contents of this handbook are for reference only, and are subject to change without notice.

## 2. Programme Title

Bachelor of Science (Honours) in Food Science and Technology.

## 3. Philosophy/Rationale

The food industry in China has developed rapidly since the opening up of China to the world in the 1980s and the adoption of the new economic reform policies by the Chinese Government. It now constitutes one of the largest employment sectors, involving more than 10 million people. The rapid rise in the living standard in China and the globalisation of the food industries have led to a high demand for well-trained food scientists, technologists, regulatory specialists and other food professionals by government agencies, local food industries as well as foreign food companies establishing sales and manufacturing facilities in China.

We intend to produce graduates who are competent in dealing with issues related to food science and nutritional science and who are also knowledgeable in food production, marketing and management, etc. There are numerous opportunities for our graduates to gain employment in food industries, public health institutions, government regulatory agencies, food service providers and educational institutions. Since the medium of instruction at UIC is in English, our students can meet the demand from staff of Chinese companies with a focus on international business as well as that of foreign companies moving into the China's market. The "whole person education" of the College provides the students with leadership skills and teaches them to be responsible citizens in and out of their workplace. Our training also prepares students to pursue higher degrees in food science and related disciplines in universities both in China and overseas. Since the inception in 2007, our graduates have been successfully employed as civil servants and technologists in private companies. For those who decided to pursue a higher degree, some of them have been admitted to Master's degree programmes in renowned universities such as Cornell University, the University of British Columbia, the University of Hong Kong and Lund University.

Our Food Science curriculum covers areas of general sciences, including Biology, Chemistry, Biochemistry, Microbiology, and Analytical Chemistry, giving students a solid foundation in Food Science and Technology. In addition, students are required to take a group of core courses such as Food Chemistry, Food Process Engineering, Food Analysis, Food Materials Science, Food Science Laboratory and Nutrition. Other core courses include Nutrition in Medical Therapy, Food Toxicology, Food Product Development, Food Safety and Quality Management, etc. To prepare students for management positions in food industries, the Programme offers courses jointly with the Division of Business and Management such as Financial Management, Principles of Microeconomics, Foundations of Chinese Economy, Marketing Management in China, Human Resource Management, and Principles of Law. Our curriculum maintains a

current approach, encompassing the latest scientific, technological and industrial developments, aiming at providing the necessary human resources for the development of the food industry in China.

## 4. The Division of Science and Technology

The primary academic objective of the Division is to provide students with a number of four-year Honours Degree Programmes. Seven major programmes are currently offered:

| Programme | Degree[①] | Years of Study |
|---|---|---|
| Applied Psychology<br>應用心理學 | BSc (Hons) (i)<br>理學士（榮譽） | 4 |
| Computer Science and Technology<br>計算機科學與技術 | BSc (Hons) (ii)<br>理學士（榮譽） | 4 |
| Data Science<br>數據科學 | BSc (Hons) (iii)<br>理學士（榮譽） | 4 |
| Environmental Science<br>環境科學 | BSc (Hons) (iv)<br>理學士（榮譽） | 4 |
| Financial Mathematics<br>金融數學 | BSc(Hons) (v)<br>理學士（榮譽） | 4 |
| Food Science and Technology<br>食品科學與工程 | BSc (Hons) (vi)<br>理學士（榮譽） | 4 |
| Statistics<br>統計學 | BSc (Hons) (vii)<br>理學士（榮譽） | 4 |

## 5. The Food Science and Technology Programme

The Food Science and Technology Programme at UIC is committed to quality, leading-edge education, and research. It offers the Bachelor of Science (Honours) in Food Science and Technology.

### *5.1. Teaching Methods and Medium of Instruction*

Teaching will be mainly by formal lectures. Tutorials and laboratory sessions will also be organised to complement formal lectures. The most up-to-date IT tools and pedagogy to aid teaching and learning will be used. English is the medium of instruction for lectures, tutorials and laboratory classes.

### *5.2. Programme Aims, Objectives and Learning Outcomes*

The Bachelor of Science (Honours) in Food Science and Technology is launched with the aims and objectives to provide students with:

(1) The relevant scientific principles about food and the food industry;
(2) The ability to apply scientific knowledge to industry for the production and marketing of foods and to communicate knowledge to consumers particularly with regard to nutrition and the safety of food.

[①] The following degrees will be awarded by the Hong Kong Baptist University: (i) Bachelor of Science (Honours) in Applied Psychology 應用心理學理學士（榮譽）; (ii) Bachelor of Science (Honours) in Computer Science and Technology 計算機科學與技術理學士（榮譽）; (iii) Bachelor of Science (Honours) in Data Science 數據科學理學士（榮譽）; (iv) Bachelor of Science (Honours) in Environmental Science 環境科學理學士（榮譽）; (v) Bachelor of Science (Honours) in Financial Mathematics 金融數學理學士（榮譽）; (vi) Bachelor of Science (Honours) in Food Science and Technology 食品科學與工程理學士（榮譽）; (vii) Bachelor of Science (Honours) in Statistics 統計學理學士（榮譽）.

(3) The ability to evaluate health and safety regulations and laws associated with the food industry; and
(4) Management skills in food industries.

By the end of their study in the Programme, students will be able to (Programme Intended Learning Outcomes -PILOs):

PILO 1: Explain relevant scientific principles related to food science and technology;
PILO 2: Apply relevant scientific knowledge and skills to meet the developing needs of the food industry and the consumers for the production and marketing of safe and quality foods;
PILO 3: Communicate effectively with different audiences, such as government, industries and customers;
PILO 4: Conduct research to evaluate the current protocols of health, safety, regulations and standards associated with the food industry.

The above PILOs are in alignment with HKBU's Graduate Attributes (GAs):

GA 1: **Citizenship**: Be a responsible citizen with an international outlook and a sense of ethics and civility;
GA 2: **Knowledge**: Have up-to-date, in-depth knowledge of an academic specialty, as well as a broad range of general knowledge;
GA 3: **Learning**: Be an independent, lifelong learner with an open mind and an inquiring spirit;
GA 4: **Skills**: Have the necessary information literacy and IT skills, as well as numerical and problem-solving skills, to function effectively in work and everyday life;
GA 5: **Creativity**: Be able to think critically and creatively;
GA 6: **Communication**: Have trilingual and biliterate competence in Chinese and English, and the ability to articulate ideas clearly and coherently;
GA 7: **Teamwork**: Be ready to serve, lead and work in a team, and to pursue a healthy lifestyle.

All graduates should have achieved the HKBU Graduate Attributers upon successful completion of the programme (Table 1).

**Table 1: The OBTL GAs – PILOs Mapping Matrix**

| **GAs** / **PILOs** | Know-ledge | Creati-vity | Learn-ing | Communi-cation | Skills | Citizen-ship | Team-work | **No. of GAs addressed by this PILO** |
|---|---|---|---|---|---|---|---|---|
| PILO 1 | X | | | X | | | | **2** |
| PILO 2 | X | X | | | X | | | **3** |
| PILO 3 | | | | X | | X | X | **3** |
| PILO 4 | X | X | X | | | | | **3** |
| **No. of PILOs addressing this GA** | **3** | **2** | **1** | **2** | **1** | **1** | **1** | **---** |

## 6. Teaching Staff

Full-time teaching staff members are recruited from all over the world. All teachers recruited possess a Ph.D. and have relevant research experience. Experts or specialists with exceptional skills and experience in the fields of Food Science, Food Technology, Food Safety, and Nutrition are recruited.

## 7. Programme Structure

The Bachelor of Science (Honours) in Food Science and Technology is a four-year full-time degree programme. In addition to the major courses of the main discipline, students are required to take supporting, interdisciplinary, General Education (GE) Courses and the Whole Person Education Experiential Learning Modules (WPEX) of their own choice. In the final year of study, students take individual final year projects in which they gain in-depth knowledge, basic research techniques, and training in thesis writing.

Students are expected to complete 132 units within the curriculum structure below:

| Course Category | Units |
|---|---|
| Major Required Courses<br>(专业必修课) | 48 |
| Major Elective Courses<br>(专业选修课) | 12 |
| General Education Core Courses<br>(通识教育核心课) | 32 |
| General Education Distribution Courses<br>(通识教育分类选修课) | 12 |
| Whole Person Education Experiential Learning Modules<br>(全人教育体验学习课程) | 4 |
| Free Elective Courses<br>(自由选修课) | 24 |
| **Total** | **132** |

### *7.1. Major Required Courses*

| Code | English Title | Chinese Title | Units |
|---|---|---|---|
| BIOL2003 | General Biology | 生物学 | 3 |
| BIOL2013 | General Biology and Chemistry Laboratory | 生物和化学实验 | 3 |
| BIOL2033 | Food Microbiology | 食品微生物学 | 3 |
| BIOL2063 | Biochemistry | 生物化学 | 3 |
| CHEM2003 | General Chemistry | 化学 | 3 |
| CHEM2033 | Analytical Chemistry | 分析化学 | 3 |
| FOOD2003 | Introduction to Food Science | 食品科学概论 | 3 |
| FOOD2013 | Food Chemistry | 食品化学 | 3 |
| FOOD3003 | Food Analysis | 食品分析 | 3 |
| FOOD3013 | Nutrition | 营养学 | 3 |
| FOOD3023 | Food Toxicology | 食品毒理学 | 3 |
| FOOD3033 | Chemical and Food Analysis Laboratory | 化学与食品分析实验 | 3 |
| FOOD3053 | Food Materials Science | 食材科学 | 3 |
| FOOD3063 | Food Process Engineering | 食品加工工程 | 3 |
| FOOD3073 | Food Science Laboratory | 食品科学实验 | 3 |
| FOOD4004 | Final Year Project I (FOOD) | 毕业论文 I | 3 |
| --- | **Total** | **合计** | **48** |

### *7.2. Major Elective Courses*

Students are required to select at least 4 courses (12 units) from the lists below:

*7.2.1. Science and Technology*

| Code | English Title | Chinese Title | Units |
|---|---|---|---|
| BIOL2073 | Physiology | 生理学 | 3 |
| FOOD3043 | Life Cycle Nutrition | 生命周期营养学 | 3 |
| FOOD4003 | Food Safety and Quality Management System | 食品安全和质量管理体系 | 3 |
| FOOD4005 | Final Year Project II (FOOD) | 毕业论文 II | 3 |
| FOOD4013 | Meat and Dairy Science | 动物性食品与乳制品科学 | 3 |
| FOOD4023 | Functional Foods | 功能食品 | 3 |
| FOOD4033 | Grain and Cereal Science | 谷类食品 | 3 |
| FOOD4043 | Food Biotechnology | 食品生物技术 | 3 |
| FOOD4053 | Food Waste Management | 食品废料管理 | 3 |
| FOOD4063 | Food Product Development | 食品产品开发 | 3 |
| FOOD4073 | Fruit and Vegetable Science | 水果与蔬菜科学 | 3 |
| FOOD4083 | Introduction to Human Pathophysiology and Pharmacology | 基础病理生理学及药理学 | 3 |
| FOOD4093 | Nutrition and Disease Prevention | 营养与疾病预防 | 3 |
| FOOD4103 | Nutrition in Medical Therapy | 营养医疗学 | 3 |
| FOOD4113 | Food Microbiology and Food Safety Laboratory | 食品微生物和食品安全实验 | 3 |
| FOOD4123 | Food Packaging | 食品包装 | 3 |
| FOOD4133 | Wine and Cheese Science | 葡萄酒与奶酪科学 | 3 |
| FOOD4143 | Nutrition in Practice | 实用营养学 | 3 |

*7.2.2. Business and Management*

| Code | English Title | Chinese Title | Units |
|---|---|---|---|
| ACCT2003 | Principles of Accounting I | 会计学原理 I | 3 |
| ACCT2013 | Principles of Accounting II | 会计学原理 II | 3 |
| BUS2013 | Principles of Law | 法律原理 | 3 |
| ECON2003 | Principles of Macroeconomics | 宏观经济学原理 | 3 |
| ECON2013 | Principles of Microeconomics | 微观经济学原理 | 3 |
| ECON3053 | Foundations of Chinese Economy | 中国经济概论 | 3 |
| FIN2003 | Financial Management | 财务管理 | 3 |
| MHR3003 | Human Resource Management | 人力资源管理 | 3 |
| MKT2003 | Principles of Marketing Management | 市场管理导论 | 3 |
| MKT4023 | Marketing Management in China | 中国市场营销管理 | 3 |

The availability of major elective courses each semester is subject to minor changes and adjustments depending on staff availability.

### *7.3. General Education Programme*

All students should complete 48 units of General Education (GE) Courses to fulfil the graduation requirements. The GE Programme consists of (a) 32 units of GE Core (GEC) Courses, (b) 12 units of GE Distribution (GED) Courses, and (c) 4 units of Whole Person Education Experiential Learning Modules (WPEX). Please see Appendix I for detailed information about the GE Programme.

### *7.4. Free Elective Courses*

The 24 units of Free Electives could be used by students to (a) spend a semester abroad; (b) take a minor or (c) take more courses offered by Divisions and teaching units.

### *7.5. The Mapping Matrix of Major Food Science Courses with PILOs*

Each course offered by the Food Science and Technology Programme, either a core course or an elective course, is designed to meet certain PILOs as listed in Table 2.

**Table 2: Courses - PILOs Mapping Matrix**

| PILOs / Courses | PILO 1 | PILO 2 | PILO 3 | PILO 4 |
|---|---|---|---|---|
| **Major Required Courses** | | | | |
| BIOL2003 General Biology | X | X | | |
| BIOL2013 General Biology and Chemistry Laboratory | X | X | X | |
| BIOL2033 Food Microbiology | X | X | X | |
| BIOL2063 Biochemistry | X | X | X | |
| CHEM2003 General Chemistry | X | X | | |
| CHEM2033 Analytical Chemistry | X | X | | |
| FOOD2003 Introduction to Food Science | X | X | X | |
| FOOD2013 Food Chemistry | X | X | X | |
| FOOD3003 Food Analysis | X | X | X | |
| FOOD3013 Nutrition | X | X | X | |
| FOOD3023 Food Toxicology | X | X | X | |
| FOOD3033 Chemical and Food Analysis Laboratory | X | X | X | |
| FOOD3053 Food Materials Science | X | X | | X |
| FOOD3063 Food Process Engineering | X | X | X | |
| FOOD3073 Food Science Laboratory | X | X | X | |
| FOOD4004 Final Year Project I (FOOD) | | X | X | X |
| **Major Elective Courses** | | | | |
| BIOL2073 Physiology | X | X | X | |
| FOOD3043 Life Cycle Nutrition | X | X | | X |
| FOOD4003 Food Safety and Quality Management System | | X | X | X |
| FOOD4005 Final Year Project II (FOOD) | | X | X | X |
| FOOD4013 Meat and Dairy Science | X | X | | X |
| FOOD4023 Functional Foods | X | X | X | |
| FOOD4033 Grain and Cereal Science | X | X | | X |
| FOOD4043 Food Biotechnology | X | | X | X |
| FOOD4053 Food Waste Management | | X | X | X |
| FOOD4063 Food Product Development | X | X | X | |

| PILOs / Courses | PILO 1 | PILO 2 | PILO 3 | PILO 4 |
|---|---|---|---|---|
| FOOD4073 Fruit and Vegetable Science | X | X | | X |
| FOOD4083 Introduction to Human Pathophysiology and Pharmacology | X | X | X | |
| FOOD4093 Nutrition and Disease Prevention | X | X | X | |
| FOOD4103 Nutrition in Medical Therapy | X | X | X | |
| FOOD4113 Food Microbiology and Food Safety Laboratory | | X | X | X |
| FOOD4123 Food Packaging | X | X | | X |
| FOOD4133 Wine and Cheese Science | X | X | X | X |
| FOOD4143 Nutrition in Practice | X | X | X | X |

## 8. Four-Year Study Plan

### *8.1. Year One*

| Semester 1 | Unit(s) | Semester 2 | Unit(s) |
|---|---|---|---|
| GCLA1903 English I<br>大学英文 I | 3 | GCLA1913 English II<br>大学英文 II | 3 |
| GCCH1003 University Chinese<br>大学国文 | 3 | GCCH1013 Chinese Thought Through the Ages<br>中国社会思潮 | 3 |
| Foundation Course in a Foreign Language*<br>外语基础课 | 3 | Foundation Course in Business and Management*<br>工商管理基础课 | 3 |
| Information Management Technology*<br>信息管理技术 | 3 | Numeracy*<br>数理思维 | 3 |
| Physical Education*<br>体育 | 1 | Physical Education<br>体育 | 1 |
| BIOL2003 General Biology<br>生物学 | 3 | CHEM2003 General Chemistry<br>化学 | 3 |
| WPEX Module I<br>全人教育体验学习模块 I | 1 | FOOD2003 Introduction to Food Science<br>食品科学概论 | 3 |
| --- | --- | WPEX Module II<br>全人教育体验学习模块 II | 1 |
| **Total** | **17** | **Total** | **20** |

** This denotes a category in which a list of courses may be developed for students' selection. Students are expected to refer to the Online Course Selection System for courses available under each category.*

### *8.2. Year Two*

| Semester 1 | Unit(s) | Semester 2 | Unit(s) |
|---|---|---|---|
| GCLA1923 English III<br>大学英文 III | 3 | GCLA1933 English IV<br>大学英文 IV | 3 |
| GCVM1013 Applied Ethics in Science and Technology<br>应用伦理学（理工科技类） | 3 | GCCH1023 Selected Themes in Chinese History and Civilisation<br>中国历史与文明专题 | 3 |

| Semester 1 | Unit(s) | Semester 2 | Unit(s) |
|---|---|---|---|
| BIOL2063 Biochemistry<br>生物化学 | 3 | BIOL2033 Food Microbiology<br>食品微生物学 | 3 |
| BIOL2013 General Biology and Chemistry Laboratory<br>生物和化学实验 | 3 | FOOD3013 Nutrition<br>营养学 | 3 |
| Foundation Course in World History and Civilisation*<br>世界历史与文化基础课 | 3 | FOOD2013 Food Chemistry<br>食品化学 | 3 |
| Free Electives<br>自由选修课 | 3 | Foundation Course in Humanities and Social Sciences*<br>人文与社会科学基础课 | 3 |
| WPEX Module III*<br>全人教育体验学习模块 III | 1 | WPEX Module IV*<br>全人教育体验学习模块 IV | 1 |
| **Total** | **19** | **Total** | **19** |

** This denotes a category in which a list of courses may be developed for students' selection. Students are expected to refer to the Online Course Selection System for courses available under each category.*

### *8.3. Year Three*

| Semester 1 | Unit(s) | Semester 2 | Unit(s) |
|---|---|---|---|
| CHEM2033 Analytical Chemistry<br>分析化学 | 3 | FOOD3053 Food Materials Science<br>食材科学 | 3 |
| FOOD3033 Chemical and Food Analysis Laboratory<br>化学与食品分析实验 | 3 | FOOD3073 Food Science Laboratory<br>食品科学实验 | 3 |
| FOOD3003 Food Analysis<br>食品分析 | 3 | FOOD3063 Food Process Engineering<br>食品加工工程 | 3 |
| Major Electives<br>专业选修课 | 3 | FOOD3023 Food Toxicology<br>食品毒理学 | 3 |
| Free Electives<br>自由选修课 | 3 | Major Electives<br>专业选修课 | 3 |
| Free Electives (ENG)<br>自由选修课 | 3 | Free Electives<br>自由选修课 | 3 |
| **Total** | **18** | **Total** | **18** |

### *8.4. Year Four*

| Semester 1 | Unit(s) | Semester 2 | Unit(s) |
|---|---|---|---|
| FOOD4004 Final Year Project I (FOOD)<br>毕业论文 I | 3 | Major Electives**<br>专业选修课 | 3 |
| Major Electives<br>专业选修课 | 3 | Free Electives<br>自由选修课 | 3 |
| Free Electives<br>自由选修课 | 9 | Students may be allowed to take extra units to make up for any unit deficiencies for graduation. | --- |
| **Total** | **15** | **Total** | **6** |

*** Students who would like continue with the final year project in the second semester of Year 4 should register Final Year Project II (FOOD) as a major elective during the Online Course Selection (or Course Add/Drop) period as informed by the Academic Registry.*

Notes:

a. Due to actual distribution of staff resources, the final study plans may vary slightly from the versions here.
b. Students are advised to consult their Programme Director for any variation of the study plan.
c. Students should pay special attention to the pre-requisites of courses they intend to register, please check syllabus of each course for the requirements on pre-requisites.
d. A student will be classified as full-time when registering for a minimum of 15 units per semester. However, in order to facilitate students' job hunting in the second semester of Year 4, some courses of that semester are taught in earlier semesters. Under such circumstances, Year-4 students with a study load of less than 15 units are also classified as full-time.

## 9. Teaching and Learning

The teaching philosophy and method adopted are the same for all the programs offered by the Division of Science and Technology in order to achieve a certain pattern of uniformity and common standard between programmes to facilitate ease of unit transfer and interdisciplinary learning for students. Most core courses will be taught via formal lectures that are supplemented by small group tutorial classes. While basic principles and theoretical concepts are expounded in formal lectures, problem-solving exercises will be the main activity in the tutorial classes. For the more advanced or topical courses, a more interactive style of teaching will be adopted where formal lecturing will be punctuated by ample discussion. The lecturing part is aimed at motivating a particular topic and providing pertinent information, including the basic theory, for the subsequent open discussion among students and the instructor. Case studies, when available, will be used both to reinforce the theoretical concepts learnt as well as to illustrate how basic principles can be applied in solving real-life problems. This teaching method is intended to stimulate critical thinking and to foster the development of problem-solving skills. Oral or poster presentations will be used to allow students to sharpen their communicative and presentation skills.

The sequence of courses is arranged in such a way that fundamental concepts and basic principles in various supporting disciplines of food science and engineering are covered first. Courses that are of more advanced, specialised or topical nature are offered in the 3$^{rd}$ and 4$^{th}$ years. In addition, relevant laboratory exercises are designed to complement key core lecture courses.

All students are expected to complete a research project in their final year of study. This final year project is regarded as a capstone course in the curriculum. By working through an independent research project, under the close supervision of academic staff, a student can apply the knowledge he/she has learnt in class, and put it into real practice in food science and engineering. Through this experience, he/she can gradually evolve to become a professional; one who is able to integrate knowledge acquired from various disciplines to analyse a problem systematically and devise a creative and effective solution.

## 10. Internship, Placement and Overseas Visits

### *10.1. Internship, Placement*

In order to provide students with practical experiences and broaden their minds and horizons, UIC will try to arrange internships, placements in industries, companies and enterprises, and overseas visits. The details (e.g. the structured arrangement) will be announced on the UIC web site each year. Internship is compulsory.

### *10.2. Cooperative Programmes with Food Industry*

Specific cooperative programmes with food industry will also be arranged for students to participate and learn under a real life situation or environment.