BNU-HKBU

UNITED INTERNATIONAL COLLEGE

UNDERGRADUATE HANDBOOK

2016-2017

Division of Science and Technology

Computer Science and Technology Programme

Contents

1. Introduction

This student handbook provides some general information about the **Computer Science and Technology Programme** in 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 talk to their mentors, teachers, Programme Director, or the Division Dean if they have any queries. The content of this handbook is for reference only, and is subject to change without prior notice.

2. 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. Six major programmes are currently offered:

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

3. The Computer Science and Technology Programme

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

3.1. 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 will be used to aid teaching and learning. English is the medium of instruction for lectures, tutorials and laboratory classes.

3.2. Programme Aims, Objectives and Learning Outcomes

The general aim of the Bachelor of Science (Honours) in the Computer Science and Technology Degree

[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 Environmental Science 環境科學理學士（榮譽）; (iv) Bachelor of Science (Honours) in Financial Mathematics 金融數學理學士(榮譽); (v) Bachelor of Science (Honours) in Food Science and Technology 食品科學與工程理學士（榮譽）; (vi) Bachelor of Science (Honours) in Statistics 統計學理學士（榮譽）.

Programme is to prepare students for a career in computer science or information technology related areas. Students will be equipped to work in industry, business, etc., or to pursue postgraduate study in China or abroad. Graduates will have developed learning skills and have the confidence to meet the challenges in the rapidly changing world of information technology.

Specifically, the objectives of the Programme are to equip students with:

(1) A solid and broad foundation in computer science;
(2) An in-depth knowledge in selected computer technology areas;
(3) Good problem solving skills; and
(4) Good communication and interpersonal skills.

In order to achieve the above objectives, the Programme curriculum has been carefully designed to enable students to achieve the following Programme Intended Learning Outcomes (PILOs). Upon completion of the Programme, students will be able to:

PILO 1: **Analyse** the basic principles of computer science and technology;
PILO 2: **Translate** real world problems into IT requirements;
PILO 3: **Design** and **develop** complex software;
PILO 4: **Apply** up-to-date technology to **solve** general problems in specific areas;
PILO 5: **Communicate** effectively and **collaborate** in a team;

As students of the programme will receive HKBU degrees upon successful completing the graduation requirements, the above PILOs are in line 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.

Table 1. The OBTL GAs – PILOs Mapping Matrix

GAs / **PILOs**	Citizen-ship	Know-ledge	Learn-ing	Skills	Creati-vity	Communi-cation	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**
PILO 5						X	X	**2**
No. of PILOs addressing this GA	**0**	**3**	**3**	**2**	**2**	**1**	**2**	

4. Teaching Staff

Full-time teaching staff are recruited from all over the world. All teachers recruited must possess a Ph.D. and have relevant research experience. Experts or specialists in the field of Computer Science and Technology, with exceptional skills and experience, are also recruited.

5. Programme Structure

The Bachelor of Science (Honours) in Computer Science and Technology is a four-year full-time degree programme, with considerable departure from traditional single discipline programmes. In addition to the 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 are required to undertake individual research projects, in which they can gain in-depth knowledge, develop basic research techniques, and experience during the course of thesis preparation.

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

Course Category	Units
Major Required Courses (专业必修课)	42
Major Elective Courses (专业选修课)	18
General Education Required Courses (通识教育核心课)	32
General Education Distribution Courses (通识教育分类选修课)	12
Whole Person Education Experiential Learning Modules (全人教育体验学习课程)	4
Free Elective Courses (自由选修课)	24
Total	**132**

5.1. Major Required Courses

Code	English Title	Chinese Title	Unit(s)
COMP1003	Computer Organisation	计算机组织	3
COMP1013	Structured Programming	结构化编程	3
COMP2003	Data Structures and Algorithms	数据结构和算法	3
COMP2013	Object-Oriented Programming	面向对象编程	3
COMP2023	Software Development Workshop I	软件开发工作坊 I	1
COMP3003	Data Communications and Networking	数据通讯和网络	3
COMP3013	Database Management Systems	数据库管理系统	3
COMP3023	Design and Analysis of Algorithms	算法设计和分析	3
COMP3033	Operating Systems	操作系统	3
COMP3043	Software Development Workshop II	软件开发工作坊 II	1
COMP3053	Software Development Workshop III	软件开发工作坊 III	1

Code	English Title	Chinese Title	Unit(s)
COMP3063	Software Engineering	软件工程	3
COMP3173	Compiler Construction	编译原理	3
COMP4004	Final Year Project I (COMP)	毕业论文 I	3
MATH1003	Linear Algebra	线性代数	3
MATH2003	Discrete Structures	离散结构	3
---	**Total**	**合计**	**42**

5.2. Major Elective Courses

Students are required to take 6 major elective courses (18 units). Out of the 6 major electives, at least 4 courses (12 units) should be selected from one of the following streams: Data Analytic Technology (数据分析技术) or Digital Media Communication Technology (数字媒体通信技术).

Code	English Title	Chinese Title	Units
Data Analytic Technology Stream			
COMP3083	Numerical Computation	数值计算	3
COMP4003	Theory of Computation	计算理论	3
COMP4023	Computer and Network Security	计算机和网络安全	3
COMP4043	Data Mining and Knowledge Discovery	数据挖掘与知识发现	3
COMP4053	Database System Implementation	数据库系统开发	3
COMP4063	Digital Media Computing	数字媒体计算	3
COMP4073	Distributed Computing Systems	分布式计算系统	3
COMP4083	E-technology Architectures, Tools and Applications	E-技术结构、工具和应用	3
COMP4093	Internet and the World Wide Web	互联网及万维网	3
COMP4103	Artificial Intelligence and Machine Learning	人工智能和机器学习	3
COMP4123	Information Retrieval and Search Engine	信息检索及搜索引擎	3
Digital Media Communication Technology Stream			
COMP3083	Numerical Computation	数值计算	3
COMP4003	Theory of Computation	计算理论	3
COMP4023	Computer and Network Security	计算机和网络安全	3
COMP4033	Computer Graphics	计算机图形	3
COMP4043	Data Mining and Knowledge Discovery	数据挖掘与知识发现	3
COMP4053	Database System Implementation	数据库系统开发	3
COMP4063	Digital Media Computing	数字媒体计算	3
COMP4073	Distributed Computing Systems	分布式计算系统	3
COMP4093	Internet and the World Wide Web	互联网及万维网	3
COMP4113	Computer Vision and Pattern Recognition	计算机视觉和模式识别	3
Other Common Major Elective Courses			
COMP3073	Introduction to Robotics	机器人技术导论	3
COMP3103	Design Patterns	设计模式	3
COMP3123	Software Testing	软件测试	3
COMP3163	Mobile Application Development	移动平台应用开发	3

Code	English Title	Chinese Title	Units
COMP3183	Financial Computing	金融计算	3
COMP4003	Theory of Computation	计算理论	3
COMP4005	Final Year Project II (COMP)*	毕业论文 II	3
COMP4133	System Analysis and Design	系统分析与设计	3
MATH1093	Speaking of Mathematics	数学漫谈	3

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

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

5.3. 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 Required (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.

5.4. 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.

5.5. The PILOs – Major Courses Mapping Matrix

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

Table 2. The PILOs – Major Courses Mapping Matrix

PILOs / Courses	PILO 1	PILO 2	PILO 3	PILO 4	PILO 5
Major Required Courses					
COMP1003 Computer Organisation	X	X		X	
COMP1013 Structured Programming	X		X		X
COMP2003 Data Structures and Algorithms	X	X	X		
COMP2013 Object-Oriented Programming	X		X		X
COMP2023 Software Development Workshop I	X	X		X	
COMP3003 Data Communications and Networking	X	X			X
COMP3013 Database Management Systems	X	X			X
COMP3023 Design and Analysis of Algorithms	X	X	X		
COMP3033 Operating Systems	X		X		X
COMP3043 Software Development Workshop II	X		X		X
COMP3053 Software Development Workshop III			X	X	X
COMP3063 Software Engineering	X	X	X		
COMP3173 Compiler Construction	X	X			X

PILOs / Courses	PILO 1	PILO 2	PILO 3	PILO 4	PILO 5
COMP4004 Final Year Project I (COMP)	X	X		X	
MATH1003 Linear Algebra	X	X		X	
MATH2003 Discrete Structures	X	X			
Major Elective Courses					
COMP3073 Introduction to Robotics	X	X			X
COMP3083 Numerical Computation	X	X		X	
COMP3103 Design Patterns			X	X	
COMP3123 Software Testing	X			X	
COMP3163 Mobile Application Development	X	X		X	
COMP3183 Financial Computing	X	X		X	
COMP4003 Theory of Computation	X	X			
COMP4005 Final Year Project II (COMP)		X	X	X	
COMP4023 Computer and Network Security	X	X		X	
COMP4033 Computer Graphics	X	X			X
COMP4043 Data Mining and Knowledge Discovery	X	X	X		
COMP4053 Database System Implementation	X				X
COMP4063 Digital Media Computing	X				X
COMP4073 Distributed Computing Systems	X	X			X
COMP4083 E-technology Architectures, Tools and Applications	X		X		X
COMP4093 Internet and the World Wide Web	X	X			X
COMP4103 Artificial Intelligence and Machine Learning	X	X		X	
COMP4113 Computer Vision and Pattern Recognition	X	X			X
COMP4123 Information Retrieval and Search Engine	X	X		X	
COMP4133 System Analysis and Design	X	X			X
MATH1093 Speaking of Mathematics	X				

6. Four-Year Study Plan

6.1. Year One

Semester 1	Unit(s)	Semester 2	Unit(s)
GCLA1903 English I 大学英文 I	3	GCLA1913 English II 大学英文 II	3
GCCH1003 University Chinese 大学国文	3	GCCH1013 Chinese Thought Through the Ages 中国社会思潮	3
Free Electives 自由选修课	3	Free Electives 自由选修课	3
Foundation Course in a Foreign Language* 外语基础课	3	Foundation Course in Business and Management* 工商管理基础课	3
Information Management Technology* 信息管理技术	3	Numeracy* 数理思维	3
Physical Education* 体育	1	Physical Education* 体育	1

Semester 1	Unit(s)	Semester 2	Unit(s)
WPEX Module I 全人教育体验学习模块 I	1	COMP2023 Software Development Workshop I 软件开发工作坊 I	1
---	---	WPEX Module II 全人教育体验学习模块 II	1
Total	**17**	**Total**	**18**

** 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.*

6.2. Year Two

Semester 1	Unit(s)	Semester 2	Unit(s)
GCLA1923 English III 大学英文 III	3	GCLA1933 English IV 大学英文 IV	3
GCVM1013 Applied Ethics in Science and Technology 应用伦理学（理工科技类）	3	GCCH1023 Selected Themes in Chinese History and Civilisation 中国历史与文明专题	3
COMP1013 Structured Programming 结构化编程	3	COMP2003 Data Structures and Algorithms 数据结构和算法	3
COMP1003 Computer Organisation 计算机组织	3	COMP2013 Object-Oriented Programming 面向对象编程	3
MATH1003 Linear Algebra 线性代数	3	COMP3013 Database Management Systems 数据库管理系统	3
Foundation Course in World History and Civilisation* 世界历史与文化基础课	3	Foundation Course in Humanities and Social Sciences* 人文与社会科学基础课	3
WPEX Module III* 全人教育体验学习模块 III	1	COMP3043 Software Development Workshop II 软件开发工作坊 II	1
---	---	WPEX Module IV* 全人教育体验学习模块 IV	1
Total	**19**	**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.*

6.3. Year Three

Semester 1	Unit(s)	Semester 2	Unit(s)
MATH2003 Discrete Structures 离散结构	3	COMP3173 Compiler Construction 编译原理	3
COMP3033 Operating Systems 操作系统	3	Major Electives 专业选修课	6
COMP3003 Data Communications and Networking 数据通讯和网络	3	Free Electives 自由选修课	6

Semester 1	Unit(s)	Semester 2	Unit(s)
COMP3023 Design and Analysis of Algorithms 算法设计和分析	3	COMP3053 Software Development Workshop III 软件开发工作坊 III	1
Major Electives 专业选修课	3	COMP3063 Software Engineering 软件工程	3
ENG3903 Project Presentation *(FE-Compulsory)* 报告制作与展示技巧 *（自由选修课-必修）*	3	---	---
Total	**18**	**Total**	**19**

6.4. Year Four

Semester 1	Unit(s)	Semester 2	Unit(s)
COMP4004 Final Year Project I (COMP) 毕业论文 I	3	Major Electives** 专业选修课	3
Major Electives 专业选修课	6	Free Electives 自由选修课	3
Free Electives 自由选修课	6	Students may be allowed to take extra units to make up for any unit deficiencies for graduation.	---
Total	**15**	**Total**	**6**

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

Notes:

a. In the event of uneven distribution of staff resources in the two semesters, the actual study plans may vary slightly from the version here.
b. Students are advised to consult their Programme Director for any variation of the study plan.
c. Students will be classified as full-time students when registering for a minimum of 15 units per semester. However, in order to facilitate their 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 students.

7. Internship, Placement and Overseas Visits

In order to provide students with practical experience and broaden their minds and horizons, UIC will try to arrange internships and placement in industries, companies and enterprises, and overseas visits for students.

8. Research Institute

In 2006, the Division of Science and Technology established a Statistics and Computational Intelligence Research Institute (for details, see UIC website). The Director of the Institute is Prof. K. T. Fang (IMS and ASA Elected Fellow).