

BSc (Hons) Computer Science (FT) - IC318

1. Introduction

Computer science is a fast expanding research and application field that nurtures knowledge and skills for developing innovative ways to harness the power of computing to address problems in almost every discipline and industry sector.

Computer science involves both the theoretical and practical disciplines. The theoretical disciplines include the theory of computation, formal specifications of systems, algorithm complexity and principles behind programming languages. The practical aspects involve understanding the concepts, designing and implementing software at various layers of computer systems. Broadly, these consist of the systems layer and the application layer, but each of these is further subdivided. The systems layer consists of operating systems, networks, middleware and support for concurrent, distributed and parallel processing. The application layer consists of tools supporting software development as well as the actual development of software for various disciplines.

The programme of study is oriented towards training students in the scientific design and technical application of computer systems in the different areas specified above. The curriculum content is designed with ICT industry collaboration to prepare future graduates to join the workforce equipped with up-to-date knowledge and problem-solving skills. The programme is in line with international recommendations of computing curricula for Undergraduate Degree Programs in Computer Science.

2. Objectives

The programme has been designed to enable students to:

- have a sound understanding of the theoretical aspects of Computer Science;
- have a strong background in programming to allow them to adapt easily to the development of software in the different systems and application areas;
- understand different types of data structures, use the most appropriate one in a given situation for efficient storage and access of data;
- implement data structures if not directly supported by a programming environment;
- analyse the complexity algorithms and select the most efficient algorithm for a particular situation;
- have a sound understanding of systems level software including the operating systems the computer network software and write programs that interact with these systems;
- analyse, design and implement software in different application areas.

3. General Entry Requirements

As per General Entry Requirements for Admission to the University for Undergraduate Degrees.

4. Programme Requirements

At least 2 GCE 'A' Level Passes including:

- (i) Mathematics
- AND**
- (ii) Computing or a Science subject.

5. Minimum Requirements for Awards

(i) Degree Award

For the degree award in BSc (Hons) Computer Science, the student must obtain at least 108 credits including:

Modules	Credits
Minimum Credits for Core Modules	87
Minimum Credits for Electives	12
Final Year Project	9
Industrial Training	0
TOTAL	108

(ii) Diploma Award

The Diploma is provided as a possible exit point in the programme. A student may opt for a Diploma in Computer Science by making a written request to the Dean. Award of a Diploma will be granted, provided he/she has obtained a minimum of 60 credits, as per University Regulations. A student wishing to exit at Diploma Level, may opt to complete a Diploma Project (worth 6 credits) to attain 60 credits. The assessment of the Diploma project will be based on project report, presentation and software/system demo.

6. Programme Duration

	Normal (Years)	Maximum (Years)
Degree:	3	5

7. Credits per Year

Students may register for a maximum of 48 credits and a minimum of 6 credits, per year.

8. Classification of Awards

The award classification will be based on the CPA (x) at the end of the Programme of Studies as follows:

CPA (Cumulative Point Average)	Classification
≥ 70	1 st Class with Honours

$60 \leq x < 70$	2 nd Class 1 st Division with Honours
$50 \leq x < 60$	2 nd Class 2 nd Division with Honours
$45 \leq x < 50$	3 rd Class with Honours
$40 \leq x < 45$	Pass
< 40	No Awards

9. Pre-Requisite Modules (PR)

A student will be allowed to follow module y of which module x is a pre-requisite (PR) provided he/she has **satisfactorily completed module x with at least a pass grade.**

10. Assessment and Pass Requirements

The assessment mode for each module will be based on one or a combination of the following:

- Examination
- Continuous Assessment (class tests, assignments, practicals, and oral presentations)
- Report Assessment (Final Year Project)
- Software Evaluation (Demo of Final Year Project)
- Portfolio Evaluation (Industrial Training)

An overall total of at least 40% for combined continuous assessment and written examination components would be required to pass the module.

Calculation of the final mark: The continuous assessment must account for no less than 30% and for no more than 50% of final mark, with the exception of modules like Final Year/Diploma Project and Industrial Training. The specific details and/or formula for the calculation of the final mark are given in the MSS for each module. Students have to retake both continuous assessment and exams in the failed modules.

If CPA of a student is less than 40%, the latter will have to repeat the entire academic year, and retake the modules as and when offered. However, students will not be required, if they wish, to retake modules for which Grade C or above has been obtained. Students are allowed to repeat (a year) only once over the entire duration of the Programme of Studies.

Industrial Training will be assessed as either “Satisfactory” or “Unsatisfactory”.

Assessment of module *Writing Case Studies* will be based on the submitted case study and class presentation over 100 marks. The number of words assigned to this case study is between 3000 and 4000 words.

11. Duration of Examinations

The written examination will be of 3 hours duration for yearly modules carrying 6 credits.

12. Termination of Registration

Termination of registration will occur in the following circumstances:

- If the students CPA remains below 40 at the end of an academic year and the student has already repeated one year of study, unless decided otherwise by Senate.
- If the student does not successfully complete all the modules prescribed for the programme in a total of 5 years.

13. List of Modules – BSc(Hons) Computer Science

CORE MODULES

Module Code CORE	Module Name	Hrs/Week L+P	Credits
ICDT 1016Y(1)	Communication and Business Skills for IT	3+0	6
ICT 1017Y(1)	Computer Programming	2+2	6
ICT 1019Y(1)	Computer Architecture	2+2	6
ICT 1022Y(1)	Computation and Formal Systems	3+0	6
ICT 1043Y(1)	Computational Mathematics	3+0	6
ICT 1036Y(1)	Database Design	2+2	6
<i>ICDT- 1200</i>	<i>Practical Training</i>	-	0
<i>ICT 2019Y(3)</i>	<i>Algorithms and Complexities</i>	2+2	6
<i>ICT 2020Y(3)</i>	<i>Object-Oriented Techniques</i>	2+2	6
<i>ICT 2022Y(3)</i>	<i>Operating Systems</i>	2+2	6
<i>ICT 2023Y(3)</i>	<i>User Interface Design and Computer Graphics</i>	2+2	6
<i>ICT 2040Y(3)</i>	<i>Web-Centric Computing</i>	2+2	6
<i>ICT 2042Y(3)</i>	<i>Software Engineering and Project Management</i>	3+0	6
<i>ICDT 2200</i>	<i>Industrial Training</i>	<i>10 weeks</i>	0
<i>WCS 2200(3)</i>	<i>Writing case studies</i>		3
<i>ICT 3000Y(5)</i>	<i>Final Year Project</i>	-	9
<i>ICT 3053Y(5)</i>	<i>Computer Networks and System Administration</i>	2+2	6
<i>ICT 3090Y(5)</i>	<i>Capacity Planning and Intelligent Systems</i>	2+2	6

ELECTIVES MODULES

ICT 3057Y(5)	<i>Parallel and Distributed Systems</i>	2+2	6
ICT 3091Y(5)	<i>Computer Systems Security</i>	2+2	6
ICT 3092Y(5)	<i>Wireless Networking and Ubiquitous Technologies</i>	2+2	6
ICT 3093Y(5)	<i>Computer Vision, Biometrics and Pattern Recognition</i>	2+2	6
ICT 3094Y(5)	<i>Multimedia and Real-Time Systems</i>	2+2	6

14. Programme Plan

Year 1 - Semester 1 & 2				
Module Code CORE	Module Name	Hrs/Week L+P	UoM Credits	PR
ICDT 1016Y(1)	Communication and Business Skills for IT	3+0	6	
ICT 1017Y(1)	Computer Programming	2+2	6	
ICT 1019Y(1)	Computer Architecture	2+2	6	
ICT 1022Y(1)	Computation and Formal Systems	3+0	6	
ICT 1043Y(1)	Computational Mathematics	3+0	6	
ICT 1036Y(1)	Database Design	2+2	6	
ICDT- 1200	<i>Practical Training</i>	-	0	
	Total		36	
Year 2 - Semester 1 & 2				
Module Code CORE	Module Name	Hrs/Week L+P	UoM Credits	PR
ICT 2019Y(3)	Algorithms and Complexities	2+2	6	
ICT 2020Y(3)	Object-Oriented Techniques	2+2	6	
ICT 2022Y(3)	Operating Systems	2+2	6	
ICT 2023Y(3)	User Interface Design and Computer Graphics	2+2	6	

ICT 2040Y(3)	Web-Centric Computing	2+2	6	
ICT 2042Y(3)	Software Engineering and Project Management	3+0	6	
ICDT 2200	Industrial Training	10 weeks	0	
WCS 2200(3)	Writing case studies		3	
	Total		39	
Year 3 - Semester 1 & 2				
Module Code CORE	Module Name	Hrs/Week L+P	UoM Credits	PR
ICT 3000Y(5)	Final Year Project	-	9	
ICT 3053Y(5)	Computer Networks and System Administration	2+2	6	
ICT 3090Y(5)	Capacity Planning and Intelligent Systems	2+2	6	
ELECTIVES	Choose Two(2) modules from:			
ICT 3057Y(5)	Parallel and Distributed Systems	2+2	6	
ICT 3091Y(5)	Computer Systems Security	2+2	6	
ICT 3092Y(5)	Wireless Networking and Ubiquitous Technologies	2+2	6	ICT 2040Y(3)
ICT 3093Y(5)	Computer Vision, Biometrics and Pattern Recognition	2+2	6	
ICT 3094Y(5)	Multimedia and Real-Time Systems	2+2	6	ICT 2022Y(3)
	Total		33	

Note:

- (i) The University reserves the right not to offer a given elective module if the critical number of students is not attained and/or for reasons of resource constraints.
- (ii) ICDT 1200 Practical Training duration is 30 hours.