National School of Business Management

Faculty of Computing

UNDERGRADUATE
PROGRAMME SPECIFICATION

Programme Title: Bachelor of Science (Hons) in Computer Science

Awards: BSc (Hon)in Computer Science

Mode of Study: Full-Time

Date of Production: July 2015

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Contents

1. Educational Aims of the Programme

Computer Scienceaddresses, designing and implementing software, devising new ways to use computers, and devising effective ways to solve computing problems.

The aims of the degree programme in Computer Science(CS) are to provide the students with:

- Technical understanding of computer science Body ofKnowledge.
- Familiarity with common CS themes and principles such as abstraction, complexity, and evolutionary change, and a set of general principles, such as sharing a common resource, security, and concurrency.
- Appreciation of the interplay between theory and practice
- System-level perspective; ability to think at multiple levels of detail andabstraction.
- Problem solving skills
- Project experience
- Commitment to life-long learning
- Commitment to professional responsibility, recognizing the social, legal, ethical, and cultural issues inherent in the discipline of computing.
- Communication and organizational skills
- Awareness of the broad applicability of computing, ranging from embedded micro-sensors to high-performance clusters and distributed clouds.
- Appreciation of domain-specific knowledge

Graduates join industry as entry level professionals in the field of computing and related disciplines asComputing solution Analysts, Designers, Architects, Developers, testing and quality assurance specialists, computing system administrators, business/technology analysts and systems integrators, and software developers.

Graduates who study the four-year degree, can enter the employment market in various sectors. Main employment sectors include:

- Computing industry; state and private, organizations those provide ICT solutions to public and private sectors.
- Large enterprises; Banking, Insurance, Telecommunications, manufacturing, retail and digital services industries
- Education industry
- Government and defence
- Self employment (Entrepreneurs/Computing service providers)

2. Programme Learning Outcomes

At the end of the study programme students should be able to:

Knowledge & Understanding: Demonstrate a systematic understanding of computing concepts and principles. Show mastery of the core Computer Science body of knowledge and awareness of the broad applicability of computing.

Learning: Develop lines of argument and evaluate possible approaches, tools, techniques, platforms and solutions based on knowledge of computing principles and practices, and demonstrate understanding of the uncertainty, ambiguity and limitations of this knowledge.

Enquiry: Ethically gather information pertaining to computing problems, possible solutions, and the success of these solutions. Find, critically evaluate, manage, apply, and understand information from a range of sources, acknowledging the cultural, ethical, economic, legal, and social issues surrounding the use of such information.

Analysis: Critically discuss current research in Computing, and evaluate arguments, assumptions, abstract concepts and data (that may be incomplete) to draw conclusions.

Problem Solving: Design appropriate solutions in one or more application domains using Computing knowledge and skills that integrate ethical, social, legal, and economic concerns. Reconcile conflicting project objectives, finding acceptable compromises within the limitations of cost, time, knowledge, existing systems, and organizations.

Communication: Communicate ideas, problems and solutions to both specialist and non-specialist audiences in a variety of forms, including, but not limited to: written academic reports; verbal presentations; documentation in support of the development of computing solutions.

Application: Demonstrate an understanding of and apply appropriate theories, models, and techniques that provide a basis for problem identification and analysis, design, development, and documentation solutions to substantial computing problems.

Reflection: Critically evaluate your performance as an academic and a computing professional, considering both process and the end result. Plan how to make your performance (process and end result) more relevant and more effective.

Professional Practice: Work both individually and as part of a team to develop and deliver substantial Computing Solutions. Demonstrate an understanding and appreciation of the importance of negotiation, effective work habits, leadership, and good communication with stakeholders. Demonstrate positive attitudes and social responsibility. Exercise initiative, personal responsibility and accountability and undertake further training and develop additional skills as required by the industry.

3. Programme Structure, Modules and Credits

BSc (Hons.) in Computer Science is a 4 year study programme with total credit weighting of 120. Each year students complete 30 credits by following 10 subject modules, each weighing 3 credits, except for the last 2 years where students undertake an Industry placement worth 9 credits in Year 3 and an Award project worth 6 credits in Year 4.

3.1 Year 1 /Level 1 (SLQL 3)

In Year 1, students follow a curricula consisting of eight Computer Science core modules and two foundation (elective) modules. The two Foundation modules are to provide students from diverse backgrounds and social classes with the required foundational knowledge and skills in computing and professional/academic development. Table 1 below, specifies the subject modules students follow at this level.This level of study lays a strong computing foundation to the students on which they develop more specialised learning related to computer science and application specialties.

Table 1 – Level 1 modules for all Computer Science award.

Term	Module Code	Module Name	Credit Value
1 (18 weeks)	CS101.3	Introduction to Computer Science (Foundation/Elective)	3
	MA101.3	Mathematics I (Core)	3
	CS102.3	Programming in C (Core)	3
	CS103.3	Professional Development (Foundation/Elective)	3
2 (10 weeks)	CN101.3	Data communications and networks (Core)	3
	CS105.3	Operating Systems (Core)	3
3 (18 weeks)	CS106.3	Algorithms and Data structures (Core)	3
	CS104.3	Computer Architecture (Core)	3
	SE101.3	Systems Analysis and Design (Core)	3
	SE102.3	Web Based Application Development (Core)	3

Note: Please refer module descriptors for module learning outcomes (and mappings to programme learning outcomes), detailed subject content and teaching & assessment strategies.

3.2 Year 2 /Level 2 (SLQL 4)

In Year 2, students continue to acquire core Computer Science body of knowledge by following 9 core modules. Students also continue leaning one computing elective module that provides them a strong foundation of enterprise application development technologies. Table 2 below specifies the modules for level 2. The waiting of each module is still 3 credits and the students take 10 modules at this level during the 3 terms of the fixed academic calendar of NSBM, with a consistent student workload across the academic year.

Table 2 – Level 2 modules for all Computer Science award.

Term	Module Code	Module Name	Credit Value
1 (18 weeks)	CN201.3	Computer Networks (Core)	3
	MA201.3	Mathematics II (Core)	3
	SE201.3	Object Oriented Programming with Java (Core)	3
	CS201.3	Database Management Systems I (Core)	3
2 (10 weeks)	SE202.3	Software Engineering I (Core)	3
	SE204.3	Development of Enterprise Applications I (Foundation/Elective)	3

3 (18 weeks)	CS202.3	Systems Fundamentals (Core)	3
	CS203.3	Algorithms and Complexity (Core)	3
	SE205.3	Software Architecture (Core)	3
	SE206.3	Human Computer Interaction (Core)	3

Note: Please refer module descriptors for further module specific details.

3.3 Year 3 /Level 3 (SLQL 5)

In Year 3, students continue to follow 5 core modules and the compulsory internship module that weigh 9 credits. Students are also offered 6 elective modules and they should choose a minimum of 2 modules to cover the credit requirement for Level 3.All elective modules will not be offered in a given term. Table 3 below lists down the modules available at level 3.

Table 3 – Level 3 modules for the Computer Science award.

Module Code	Module Name	Credit Value	Type
CS303.4	Computational Theory	3	Core
CS306.3	Information Assurance and Security	3	Core
MA301.3	Mathematics III	3	Core
CS305.3	Programming Languages and Compiler Design	3	Core
SE307.3	Social Issues and Professional Practice	3	Core
SE305.9	Internship	9	Compulsory
CS302.3	Cryptography	3	Elective
SE302.3	Development of Enterprise Applications II	3	Elective
CS304.3	Database Management Systems II	3	Elective
CS301.3	IT Project Management	3	Elective
SE303.3	Mobile Application Development	3	Elective
CN302.3	Wireless Technologies and Network Programming	3	Elective

Notes –
Please refer module descriptors for further module details.

3.4 Year 4 /Level 4 (SLQL 6)

In Year 4, students follow 3 Computer Science core modules and the award specific project that weighs 6 credits and continue throughout the year. To satisfy the credit requirement of Level 4, students have to undertake minimum of 5additional elective modules from a total of 10 offered modules though all elective modules will not be offered in a given term. Table 4 specifies the modules available for level 4. Individual module descriptors provide detailed information on each module.

Table 4 – Level 4 modules for all Engineering awards within the programme.

Module Code	Module Name	Credit Value	Type
BS401.3	Business Policy and Strategy	3	Elective
CS401.6	CS Honours Award Project	6	Compulsory
CS402.3	Computer Graphics and Visualization	3	Core
CS403.3	Intelligent Systems	3	Core
CS404.3	Parallel and Distributed Computing	3	Core
CN402.3	Enterprise Networks	3	Elective

SE403.3	Platform Based Development	3	Elective
CN406.3	Disaster Recovery and High availability Techniques	3	Elective
CS406.3	Bio Informatics	3	Elective
SE404.3	Agent Based Systems	3	Elective
CS407.3	Internet of Things	3	Elective
IS401.3	Management Information Systems	3	Elective
IS402.3	E-Business Application Development	3	Elective
CS405.3	Data Warehousing and Data Mining	3	Elective

In the final year of study, students culminate their learning by acquiring specialized subject content required for diverse industries and knowledge on contemporary developments. Students also get an opportunity to showcase their learning over the years via the award specific project.

4. Admission Criteria

Three Passes in Physical Science streams in a single sitting, at one of the following examinations or equivalent foreign qualifications is the minimum entry requirement. Equivalent foreign qualification is defined as the minimum requirement for admission to the first year of a UGC recognized university in that country.

a. G.C.E. Advanced Level examination conducted by the Department of Examinations, Sri Lanka
b. G.C.E Advanced Level examination conducted by Pearson Edexel, UK (London A/L)
c. International Advanced Level examination conducted by Pearson Edexel, UK
d. G.S.E Advanced Level examination conducted by Cambridge International Examinations, UK

OR

A minimum combined score of 1200 at the Scholastic Aptitude Test (SAT), conducted by the College Board, US.

5. Module Grading, Progression and Graduation

5.1 Module Grading Scheme

The Grading System for study modules of this programme are given in Table 5.

Table 5 – Module Grading Scheme (Source: UGC Circular 901)

Range of Marks	Grade	Grade Point (GP)	Classification
85-100	A+	4.2	First Class
70-84	A	4.0	
65-69	A-	3.7	
60-64	B+	3.3	Second Upper
55-59	B	3.0	Second Lower
50-54	B-	2.7	Pass
45-49	C+	2.3	
40-44	C	2.0	
35-39	C-	1.7	NA
30-34	D+	1.3	
25-29	D	1.0	
00-24	F	0	

5.2 Module Completion

A student requires obtaining a minimum of 40 marks (C Grade/GP 2.0) for a module to be considered as having passed (completed) that module. Students not fulfilling this requirement for a module should retake the failed assessment components or the complete module with attendance as determined by the Module Examination Board. For the referred attempts for modules the marks are capped at 40 (C grade/GP 2.0). A completed module contributes the full credit allocation of that module towards the total credit requirement of the award at a level.

A marginally failed module with a grade point not less than 1.3 could be compensated and awarded a pass (grade C/GP 2.0), on discretion of the award board. However, maximum of one module per level of study can be compensated and the final year project and industry placement modules shall not be compensated.

5.3 Progression

Students should pass all the required modules of a level to fulfill the credit requirement for that level. However, students can progress to study in the next level while having maximum of 3 outstanding modules (failed modules) in the previous levels.

5.4 Graduation and Award Classification

To complete an award and graduate, a student should complete all the module requirement of that award and gain 120 credits in total for BSc (Hons) in Computer Science award.

For the determination of the award classification, a Grade Point Average (GPA) is calculated for each Level as the average of module GPs weighted by the credit value of each module. The GPA of the first year is not considered in determining the Award classification of a graduating student. An overall GPA (OGPA) is calculated as a weighted average of the level GPAs using the weights shown in Table 6 below.

Table 6 - Level weightings for the overall GPA calculation to determine the Award Classification

Level	Weight
1	0%
2	20%
3	30%
4	50%

The award classification is determined by applying the same criteria given for modules, which is shown in Table 5, to the OGPA.