

BSc Software Engineering (Full Time) – IC320

1. CONTEXT AND OBJECTIVES

The BSc (Hons) Software Engineering degree concentrates more on the skills needed for a career in the software industry by focusing on the process of building software to a specification. Information and Communication Technology (ICT) sector being one of the most knowledge-intensive branches of the economy, there is demand for human resource in the software engineering discipline in both the public and private sectors. Software Engineering is a field that deals with high-level designs and solutions that guide the development of specific software projects or products.

The programme is in line with international recommendations of computing curricula for Undergraduate Degree Programs in Software Engineering and designed in collaboration with software industry.

In Level 1 of Software Engineering, the course will cover all the fundamental topics that any IT students should know to be able to become a professional in the IT sector.

In Level 2, the course concentrates more on technical skills that a software engineer should possess covering aspects like design, implementation and project management. It also brings in real-world concepts like completing work started by other teams, and also working collaboratively with other teams – all of which are things that are common practice in industry.

In Level 3, students undertake a final year project in which the student should implement a software system. They have to do two compulsory modules on Agile methodology and Artificial Intelligence, and choose one elective.

The objectives are to:

- Produce graduates who are proficient in developing software according to industry standards, in terms of methodologies and technologies;
- Provide students with both theoretical knowledge and practical skills in areas such as software development, testing and software project management;
- Inculcate engineering skills required to do analysis, design and implementation of software systems;
- Impart to graduates essential technical and soft skills to seamlessly make the transition from University to the software development industry and adapt to a professional environment.

Competencies and Career Opportunities

After successful completion of this programme, students should be equipped with the following competencies:

- Analytical, problem solving and programming skills
- Effective communication skills, adaptability and flexibility
- Software project management skills
- Business analytics skills

Students who successfully complete the programme may take up a career as:

Software engineer, Software development specialist (Testing, Quality assurance, Maintenance)
Software team leader, Project Manager or any other position requiring a degree in Software Engineering or related field.

2. LEARNING OUTCOMES

After successful completion of this programme, students should be able to:

- Apply knowledge relating to Software Engineering practices
- Demonstrate technical skills related to software development
- Apply problem solving skills for software analysis and design
- Use tools and techniques for producing application software solutions
- Demonstrate ability to work in team environment and communicate computing ideas effectively in speech and in writing.

3. TEACHING AND LEARNING METHODS

The BSc (Hons) Software Engineering programme consists of Teaching Contact Hours, Self-Study and Other Learning Activities. Teaching methods may include face to face lectures, online delivery, tutorials or practical sessions.

For each module, 6 LCCS credits contribute to 30 hrs of direct contact, 60 hrs of self-study and 90 hrs of other activities, except for SIS 3000Y(5), for which the details about the total hours in each category will be specified in the module catalogue

Other Learning Activities may comprise of the following:

- Working on assignments;
- Preparation for Class Tests and Examinations;
- Sitting for Class Tests and Examinations;
- Group work;
- Attending Workshops/Conferences recommended by the Department/Faculty;
- Fieldwork;
- Site Visits/Trips;
- Presentations among peers;
- Experiential Learning;
- Guest lectures.

4. ENTRY REQUIREMENTS

(i) General Entry Requirements

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

(ii) Programme (Specific) Requirements

At least 2 GCE 'A' Level Passes including Mathematics.

5. PROGRAMME DURATION

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

6. MINIMUM LCCS CREDITS REQUIRED FOR DEGREE AWARD:

(i) Degree Award

For the degree award in BSc (Hons) Software Engineering, the student must obtain at least 204 LCCS credits including:

Modules	LCCS Credits
Minimum LCCS Credits for Core Modules	168
Minimum LCCS Credits for Elective Modules	12
Industrial Training	6
Final Year Project	18
TOTAL	204

(ii) Diploma Award

The Diploma is provided as a possible exit point in the programme. To be able to exit with a Diploma in Software Engineering, a student must have attained 120 LCCS credits, which satisfy requirements specified by University regulations for Exit Points. A student may also opt to complete a Diploma project, worth 12 LCCS credits, to attain the 120 LCCS credits. The assessment of the Diploma project will be based on project report, presentation and software/system demo. Written requests to exit with Diploma should be made to the Dean of Faculty.

(iii) For Each Academic Year

Students may register for a maximum of 96 LCCS credits and a minimum of 12 LCCS credits, per year.

7. ASSESSMENT AND DEADLINES

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

- Examination
- Continuous Assessment
- Software Evaluation
- Portfolio Evaluation

Students will be assessed by continuous assessment (CA) and/or formal examination for taught modules. The specific details and/or formula for the calculation of the final mark are provided in the Module Catalogue for each module.

7.1 Examinations: 0% - 60%

Examination may carry up 60% of the total final marks.

7.2 Continuous Assessment: 40% – 100%

The weight of the CA will be at least 40%.

7.3 Submission Deadlines for Dissertation:

Normally, students are to submit their dissertation on the last working day (excluding Saturdays, Sundays and Public Holidays) of March of the academic year by 4.00 p.m. at latest for full-time students.

7.4 Project

Project will carry 18 LCCS credits.

8. LIST OF MODULES

Module Code	Module Name	L*/T*/P* Contact Hours/Week	Self- Study Hours/ Week	Other Learning Hours/ Week	LCCS Credits
SIS 1011Y(1)	Software Analysis and Modelling	2 + 1 + 0	6	9	12
SIS 1012Y(1)	Database Systems	2 + 0 + 1	6	9	12
ICDT 1016Y(1)	Communication and Business Skills for IT	2 + 1 + 0	6	9	12
SIS 1039Y(1)	Software Engineering Principles	2 + 1 + 0	6	9	12
SIS 1040Y(1)	Software Design Fundamentals and Programming	2 + 0 + 1	6	9	12
SIS 1042Y(1)	Discrete Structures	2 + 1 + 0	6	9	12
SIS 2015Y(3)	Object-Oriented Software Development	2 + 0 + 1	6	9	12
SIS 2018Y(3)	Software Verification and Validation	2 + 1 + 0	6	9	12
SIS 2037Y(3)	Data Structures and Algorithms	2 + 0 + 1	6	9	12
SIS 2043Y(3)	Software Project Management	2 + 1 + 0	6	9	12
SIS 2044Y(3)	Interactive System Design	2 + 0 + 1	6	9	12
SIS 2045Y(3)	Web Application Development	2 + 0 + 1	6	9	12
ICDT 2200	Industrial Training		6	9	6
SIS 3000Y(5)	Final Year Project				18
SIS 3114Y(5)	Agile Principles and Practices	2 + 0 + 1	6	9	12
SIS 3119Y(5)	Artificial Intelligence	2 + 0 + 1	6	9	12

ELECTIVES					
ICT 3040Y(5)	Network Technologies	2 + 0 + 1	6	9	12
SIS 3023Y(5)	Web Frameworks and Patterns	2 + 0 + 1	6	9	12
SIS 3088Y(5)	Software Security	2 + 0 + 1	6	9	12
SIS 3115Y(5)	Software Quality Assurance And Configuration Management	2 + 0 + 1	6	9	12
SIS 3117Y(5)	Business Process Management and Enterprise Systems	2 + 0 + 1	6	9	12
SIS 3144Y(5)	Robotic Process Automation Fundamentals	2 + 0 + 1	6	9	12

Note: Contact Hours = L: Lectures, T: Tutorials, P: Practicals

9. PROGRAMME PLAN

YEAR 1

Module Code	Module Name	Hrs/ Wk L/T/P#	Total Self- Study/Hrs	Other Learning Activities/ Hrs	LCCS Credits
SIS 1011Y(1)	Software Analysis and Modelling	2 + 1 + 0	6	9	12
SIS 1012Y(1)	Database Systems	2 + 0 + 1	6	9	12
ICDT 1016Y(1)	Communication and Business Skills for IT	2 + 1 + 0	6	9	12
SIS 1039Y(1)	Software Engineering Principles	2 + 1 + 0	6	9	12
SIS 1040Y(1)	Software Design Fundamentals and Programming	2 + 0 + 1	6	9	12
SIS 1042Y(1)	Discrete Structures	2 + 1 + 0	6	9	12
	Sub Total				72

YEAR 2

Module Code	Module Name	Hrs/ Wk L/T/P#	Total Self- Study/Hrs	Other Learning Activities/ Hrs	LCCS Credits
SIS 2015Y(3)	Object-Oriented Software Development	2 + 0 + 1	6	9	12
SIS 2018Y(3)	Software Verification and Validation	2 + 1 + 0	6	9	12
SIS 2037Y(3)	Data Structures and Algorithms	2 + 0 + 1	6	9	12
SIS 2043Y(3)	Software Project Management	2 + 1 + 0	6	9	12
SIS 2044Y(3)	Interactive System Design	2 + 0 + 1	6	9	12
SIS 2045Y(3)	Web Application Development	2 + 0 + 1	6	9	12
ICDT 2200	Industrial Training		6	9	6
	Sub Total				78

YEAR 3

Module Code	Module Name	Hrs/ Wk L/T/P#	Total Self- Study/Hrs	Other Learning Activities/Hrs	LCCS Credits
SIS 3000Y(5)	Final Year Project				18
SIS 3114Y(5)	Agile Principles and Practices	2 + 0 + 1	6	9	12
SIS 3119Y(5)	Artificial Intelligence	2 + 0 + 1	6	9	12
ELECTIVES	Choose ONE (1) module from:				
ICT 3040Y(5)	Network Technologies	2 + 0 + 1	6	9	12
SIS 3023Y(5)	Web Frameworks and Patterns	2 + 0 + 1	6	9	12
SIS 3088Y(5)	Software Security	2 + 0 + 1	6	9	12
SIS 3115Y(5)	Software Quality Assurance And Configuration Management	2 + 0 + 1	6	9	12
SIS 3117Y(5)	Business Process Management and Enterprise Systems	2 + 0 + 1	6	9	12
SIS 3144Y(5)	Robotic Process Automation Fundamentals	2 + 0 + 1	6	9	12
	Sub Total			54	
	Grand Total			204	

This Programme has been amended as follows: 2017, 2018, 2019, 2020