



Information and Communication Technology Project Guide 2024

Module Guide

Bachelor of Information and Communication Technology Honours Degree
Faculty of Technology, University of Sri Jayewardenepura

Version 1.0 September 2021



Table of Contents

1.0 Introduction	1
2.0 Objectives of the ICT Project	2
3.0 Expected Outcomes	3
4.0 Project Team Composition	3
5.0 Project Timeline and Evaluation Steps	3
5.1 Timeline	4
5.1.1 Project Area and Topic Submission	4
5.1.2 Project Proposal Submission	4
5.1.3 Software Development, Testing and Deployment	4
5.1.4 Product Demonstration, Report, Presentation and Viva	5
5.2 Evaluation Steps	5
5.2.1 First Evaluation	5
5.2.2 Second Evaluation	5
5.2.3 Third Evaluation	5
6.0 Allocation of Marks	6
7.0 Deadlines and Late Submissions	7
8.0 Academic Dishonesty	7
9.0 Annexures	8
Annexure 1: Project Topic Submission Form	8
Annexure 2: Sample format of the Project Proposal	8
Annexure 3: Sample format of the Project Report	8



1.0 Introduction

One of the top priority objectives of the Bachelor of Information and Communication Technology (BICT) Honours Degree programme is to prepare graduates for computing and IT-related professions. The BICT Honours degree offered by the Faculty is intended to be accredited by the Computer Society of Sri Lanka in accordance with the SEOUL accord. The Seoul Accord is an international accreditation agreement for professionals in Computing and IT-related degree programmes. Therefore, it is essential that students are exposed to professional computing practice continued throughout the programme to develop the professional approach and ethics expected in the industry. The software development projects with state of art technologies and concepts are significant for ICT students to acquire the knowledge, skills and experience on every aspect of software engineering and to develop the confidence to overcome the barriers in practical applications.

As a technology student, they should have an excellent ability to use the latest technologies and concepts to overcome domain specific practical issues in a smarter way. The students should be motivated to carry out socially relevant software development projects. Further, acquiring hands-on experience on technologies, experiencing the real challenges of development and providing novel solutions for the existing problems will be an added value for you when you are graduating.

The academic module ICT Project with relevant and latest Technologies initiates ideas providing a precious opportunity to all ICT students to practice essential professional skills while combining enthusiasm, innovation, creativity, dedication, team-work and acquiring domain specific knowledge into a substantial product. Further, it provides an arena to showcase their achievements to the academic community and the industry. Moreover, the most outstanding three projects will be selected and awarded with special prizes and certificates.

This module is designed for ICT students who are in third year where the project is assigned to the fifth semester. The project should address an issue/problem in a particular domain specialization area such as Banking, Capital Market, Telecommunication, Retail, Health Care and Tourism etc, so that a ICT solution can be applied. It will give an opening for undergraduates to identify the places where IT solutions can be implemented. The project may incorporate with Artificial Intelligence, Data Science, Microservices and Cloud Computing, Natural Language Processing, Human Computer Interaction, Information Systems, e-Governance and e-Learning, Computer Networks, Internet of Things, Social Sensor Networks, Authorization Policy and Access Control, Wireless and Mobile Technologies, Gaming Technology, Multimedia Data



Processing, Computer Vision, Computer Graphics and Animation, Virtual Reality and many more areas in order to develop a software solution.

The projects are evaluated based on the novelty, quality of the development process and final outcomes. One or two supervisors are allocated to each project from the academic staff of the Department and the industry in line with the scope of the project while continuous monitoring and evaluation is performed based on the guidelines provided. The evaluations are carried out by a supervisor/s and or an examiner.

2.0 Objectives of the ICT Project

The objectives of this module is to enhance the skills and knowledge of the students to meet the requirement of the industry expectation where graduates will be able to have a strong analytical, software development and deployment experience and knowledge with the latest technologies and concepts. In order to achieve the said goal, the proposed module has been designed to improve the critical thinking and analytical skills of the students by identifying an existing problem in a specific domain so that students will be able to absorb hidden opportunities in the real world where IT solutions can be implemented. Moreover, absorbing knowledge and hands-on experience in Software Development Life Cycle (SDLC) such as requirement gathering, project management, coding best practices, software quality assurance and deployment and maintenance will give him/her better opportunities in industry as a fresh graduate. The following list of objectives are to be achieved by the end of this course module.

1. Improve students technical and non-technical skills
2. Practical experience of Software Development Life Cycle (SDLC)
3. Hands on experience in software project management and documentation
4. Communicate and work with different stakeholders and teams
5. Apply industry best practices and standards in software development life cycle

There are a number of other second level objectives that can be expected in addition to above mentioned first level objectives such as remote source code management (Git/Bitbucket), latest software development techniques like Agile (Scrum/Kanban), Distributed system development like Microservices and deployment pipelines (Continuous Integration/Continuous Deployment-CI/CD) with Jenkins etc.



3.0 Expected Outcomes

Learning outcomes that students should have gained at the end of the fifth semester of the third year by the completion of the project successfully are;

1. Perform requirements gathering and create a SRS document.
2. Design the software system followed by industry best practices.
3. Develop, test and deploy the software systems with latest technologies and tools.
4. Perform software project management and documentation.

4.0 Project Team Composition

The software development project can be carried out as a team. A given team can have a maximum of five students and each team will be assigned one lecturer as an academic supervisor from the department and one external or internal supervisor as a co-supervisor considering the scope of the project. It's their own responsibility to manage all the team members skills, knowledge, dedication and commitment equally to achieve the project objectives and final goal. Working in a team with members of different skills and attitudes and tackling disputes to reach the final goal is one of the essential abilities aimed from the project. Depending on the diversity of the project, there can be more than one co-supervisors (internal or external who are experts in specific domains) appointed for a project.

5.0 Project Timeline and Evaluation Steps

The proposed module work plan has been divided into a set of phases so that teams can be guided and evaluated with an effective timeline to monitor each team's progress throughout the course module.

5.1 Timeline

No	Phase	Time Allocation
01.	Project area and topic submission	1 week
02.	Project proposal submission	3 weeks
First Evaluation - Proposal Presentation		
03.	Software development, testing and deployment	10 weeks



Second Evaluation - Progress Review		
04.	Project report and presentation preparation	1 week
Final Evaluation - Project Report, Product Demonstration, Presentation and Viva-voce		

Table 1

5.1.1 Project Area and Topic Submission

This is the first phase of this module where students should investigate and identify specific requirements relevant to the domain. The project topic can be submitted via a web form for acceptance. The submitted topic must be accepted by the reviewer/s, otherwise those teams will not be eligible for the proposal submission. The arrangement of the topic submission web form is available in Annexure 1.

5.1.2 Project Proposal Submission

Students have to go through the requirement gathering in accordance with the software engineering techniques. After that, the requirements need to be documented along with industry standard procedures. UML diagrams such as Use Case, Entity Relation, Activity and Class diagrams etc, should be included in their documentation. Final project proposal need to be created and presented including system requirements, wireframes, project milestones, development and testing task breakdown so that final deliverables can be identified in each milestone. Please refer to Annexure 2 for more details.

5.1.3 Software Development, Testing and Deployment

In this phase of the project, students should work as a team as per the instructions of the supervisor/s. Regular meetings should be arranged with the respective supervisor/s based on their availability by the students so that project development may proceed in an effective manner.

Students learn coding ethics, new technologies, development environments, debugging and issue fixing capabilities, managing source codes in addition to software quality assurance. Furthermore, software deployment processes and devops techniques such as creating pipelines from remote source code to cloud environments can be practiced with the help of Jenkins, Docker, and Kubernetes in cloud environments.



5.1.4 Product Demonstration, Report, Presentation and Viva

The product demonstration, project report and presentation should be prepared and presented by the students for the final evaluation. The Annexure 3 illustrates the mandatory components to be included in the final project report.

5.2 Evaluation Steps

The evaluation process is composed of supervisor/s, examiner and progress review panel. Role of the supervisor/s is to assist students to achieve the highest standards at every stage, starting from identification of the problem to the final presentation. It is to be noted that the management and delivery of the project deliverables are a sole responsibility of the students whereas supervisor/s are only to guide students whenever students seek assistance.

The final grading of this module is determined according to the departmental assessment criteria, which is based on the overall team and individual performance. The project has a series of steps for evaluation, and each step is evaluated in line with the highest standards. The evaluation process is composed of supervisor/s, examiner and the progress review panel.

5.2.1 First Evaluation

The first evaluation is performed at the phase of detailed project proposal presentation where supervisor/s will award a maximum of 10 marks and the examiner will award a maximum of 10 marks. Altogether 20 marks will be awarded.

5.2.2 Second Evaluation

The supervisor/s are responsible for allocating marks for their respective teams/individuals based on their work throughout the project period. Hence, they have the freedom to perform several evaluations during the project lifecycle in order to award marks. The reserved mark for this stage is 30.

5.2.3 Third Evaluation

The third evaluation is also similar to the first evaluation but marks allocation has been increased to 20 for supervisor/s and 30 for examiner respectively. Then a total of 50 marks will be awarded at final evaluation. The examiner may allocate marks according to the first and final presentation with viva-voce by evaluating product demonstration and available documents such as project proposal and final report.



6.0 Allocation of Marks

Since each team contains five members, marks will be allocated on a team and individual basis. Allocation of marks for two evaluation steps and their criteria are given in the following table.

Level of Evaluations	Evaluation		Marks Allocation		
	Criteria	Responsible	Individual	Team	Total
First Evaluation	Perform business analysis and UI/ UX roles	Supervisor/s	5	-	5
	Project proposal	Examiner	-	5	5
	Presentation	Examiner	-	5	5
	Viva-voce	Examiner	5	-	5
20 % of project completion with total marks of 20					
Second Evaluation	Progress review	Supervisor/s	15	15	30
50 % of project completion with total marks of 50					
Third Evaluation	Research & development, coding best practices and standards	Supervisor/s	10	-	10
			10	-	10
	Final Product Demonstration	Supervisor/s	-	10	10
	Project report	Examiner	-	10	10
	Presentation	Examiner	-	5	5
	Viva-voce	Examiner	5	-	5
Total			50	50	100
100 % of project completion with Total marks of 100					

Table 2



7.0 Deadlines and Late Submissions

Learning to meet deadlines and schedules and to work according to procedures, formats, and guidelines are some of the essential things that you will learn and practice throughout the module. A scheme of penalty is applicable for not meeting deadlines according to the allocated time in the project timeline as shown in Table 1. It is highly recommended to maintain your backup of all works regularly not to delay or inhibit submission in case exceptional incidents occur.

8.0 Academic Dishonesty

Academic dishonesty (academic misconduct) is defined as any action or attempted action of cheating that occurs concerning a formal academic exercise. Integrity or being honest is not only crucial in your academic life, but one of the keys to be successful, reputed and happy in your life. The Faculty and the University rules governing plagiarism and other forms of misconduct and malpractices are strictly applied in this module. As mentioned in the first students' Handbook of the Faculty, examples of academic dishonesty include, but are not limited to, the following;

Plagiarism: The adoption/reproduction of works of another person (ideas, words or statements) without acknowledging and showing them as their work.

Fabrication: The misrepresentation of data, information, or citations in any formal academic exercise.

Deception: Providing false information concerning a formal academic exercise (e.g., during an examination) without due acknowledgement.

Sabotage: Acting to prevent others from completing their work (e.g., cutting pages out of library books, willfully disrupting the experiments of others).



9.0 Annexures

Annexure 1: Project Topic Submission Form

1. Title of the project : Maximum of 50 words
2. Summary of the problem to be solved : Maximum of 450 words
3. Technology stack to be used : Maximum of 100 words
4. Details of team
 - Names :
 - Index numbers :
 - University emails :
 - Mobile numbers :
 - Specialized area of the members :

Annexure 2: Sample format of the Project Proposal

1. **Cover Page**
2. **Project Title Page:** should be brief and descriptive.
Project Personnel:
 - Academic Supervisor : Name, Institution, contact details
 - Co-supervisor/s : Name, institution and contact details
 - Team Members : Name, specialized area, faculty, university, index number, email, mobile number
3. **Table of Contents**
4. **Introduction and Background**
5. **System Requirements**
6. **System Design**
7. **System Development, Testing and Deployment Strategies (tools and technologie)**
8. **Project Milestones and Timeline**

Annexure 3: Sample format of the Project Report

1. **Cover page**
2. **Project Title page:**
Project Personnel:
 - Academic Supervisor : Name, Institution, contact details
 - Co-supervisor/s : Name, institution and contact details
 - Team Members : Name, focused area, faculty, university, index number, contact details, email, mobile number



3. Declaration page of the candidates and supervisor/s

I certify that this report does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university, and to the best of my knowledge and belief, it does not contain any material previously developed, published or written by another person except where due reference is made in the text.

4. Acknowledgement

5. Table of contents

6. List of Tables

7. List of Figures

8. List of Abbreviations

9. Introduction and Background

10. Business Analysis Process

11. Software Development Process

12. Software Testing Process

13. Software Deployment Process

14. Discussion

15. Appendix