Part 1

Syllabus

Information And Communication Technology

RATIONALE

The Information and Communication Technology sector is acknowledged worldwide as a tool that could be used to increase the productivity, efficiency and effectiveness of work. This technology has enabled dramatic changes in the job market and the way workers communicate with each other and perform job related activities. Every sector of the economy is forced to use this technology to make their work effective and efficient and thereby maintain a competitive edge. Therefore, those who enter the job market should acquire proper IT skills to find employment in the modern business world without much difficulty. However, in Sri Lanka, the level of IT skills of the majority of the students is not adequate to meet the current requirements of business and industry. This is mainly due to lack of opportunities for students to study IT related subjects in the school curriculum. Therefore, it is very important to bridge the gap between requirements of the industry and quality of education standards through the curriculum, providing transferable skills and competencies related to the world of work. Especially, the ICT and entrepreneurial skills of students should be developed. The student should learn at school a wide variety of competencies for different needs of life in the changing world. They should have various views and different ways to continue studies and proceed to employment.

Since Sri Lanka is in the early stages of introducing ICT to the lower grades, the present syllabus does not demand any ICT knowledge as an entry requirement. Therefore, this syllabus is intended to introduce ICT as a technical subject to be offered at the G.C.E (O/L). Examination. The main objective of this syllabus is to develop the competencies to use ICT tools and to build a basic theoretical base for students to pursue higher studies in ICT.

Course Objectives:

Such a surge in the growth, development and the application of Information Communication Technology as today has never been experienced before. The importance and relevance of ICT to almost all walks of life today has made it all the more important that knowledge and expertise, both practical and theoretical, of its application, should begin at the very grass roots level of education.

It with the objective of accommodating this perception that there is the need for ICT to be firmly and pervasively established in the schools system, that the present initiative for the introduction of the ICT–G.C.E. (O / L) syllabus on a competency based format, was taken in keep with curriculum reforms of 2007.

Objectives to be achieved by the course are as follows:

- Inculcate basic computer literacy and develop a base for further pursuit of Information Technology and Communication Technology studies.
- Develop understanding of use and resultant outcomes of use of different types of ICT applications.
- Develop concepts and principles related to ICT.
- Improve skills required for the development of ICT based solutions for real world problems.
- Provide awareness of benefits and problems of ICT use to participants.

Subject Content and Time Duration by Competencies and Competency Levels,

Competency and competency levels	Content	Time minutes
1. Investigates the place of the computer in the world of information.		
1.1 Investigates the contribution of ICT towards national development. .	▪ Definition of ICT ▪ Uses of ICT in society ▪ Importance of ICT	120
1.2 Investigates the computer as a system for converting data into information.	▪ Parts of a system ▪ Difference between Data and Information ▪ Data and Information as input and output ▪ Processing as the method for converting data into information	90
1.3 Explores the evolution of computers to identify its major developments.	▪ Computer Generations ▪ Hardware changes ○ Vacuum Tubes ○ Transistors ○ Integrated Circuits ○ LSIC ○ VLSIC ▪ Related changes in characteristics ○ Size ○ Capacity ○ Speed ○ Accuracy ○ Efficiency	90

Competency and competency levels	Content	Time minutes
2. Selects and uses computer hardware		
2.1 Classifies computers using a variety of methods.	▪ Computer classifications ○ Mainframe/Mini/Micro/Super ○ Digital/Analog/Hybrid ○ General purpose/special purpose	90
2.2 Classifies computer peripherals by function.	▪ Functions of computer peripherals ○ Input ○ Processing ○ Output ○ Storage ○ Dissemination	120
2.3 Identifies and connects basic peripherals to the computer.	▪ Basic computer components Keyboard, mouse, system unit, monitor ▪ Ports ○ PS/2 ports ○ Serial port ○ Parallel ports ○ USB port ○ RJ 45	90
2.4 Uses the basic block diagram to demonstrate the computer system.	▪ Flow path ○ Data/instruction signals ○ Control Signals	80
2.5 Investigates benefits and concerns of computer networks for optimal communication.	▪ Purpose of computer networks ○ Data communication ○ Resource sharing ▪ Components of a network ○ Network Interface Cards ○ Internal/External ○ Transmission Media ○ Network cable ○ Twisted Pair, Co-axial, Fiber optics, ○ Microwaves ○ Client/Server ○ Computers ○ Modems ○ Hub/Switches ▪ Network Operating Systems ▪ Types of computer Networks ○ LAN ○ MAN ○ WAN ▪ Disadvantages of Networks	80

Competency and competency levels	Content	Time minutes
3 Investigates the methods used for data representation in computer systems		
3.1. Uses the Binary number system to represent data in computer systems	▪ Methods for data representation ○ One and zero to represent two states ▪ Binary number system to represent the two states	60
3.2. Converts decimal numbers to Binary, Octal and Hexadecimal	▪ Number systems ○ Decimal ○ Binary ○ Octal ○ Hexadecimal ▪ Methods for related conversions	90
3.3 Converts Binary numbers to Decimal, Octal, Hexadecimal numbers and vice versa	▪ Methods for relevant conversions ○ Binary to Decimal ○ Binary to Octal ▪ Binary to Hexadecimal and vise versa	90
3.4 Determines the capacity of computers in terms of data storage	▪ Bit ▪ Byte ▪ Kilobyte ▪ Megabyte ▪ Gigabyte ▪ Terabyte	90
3.5 Uses coding systems in computers	▪ BCD ▪ EBCDIC ▪ ASCII ▪ Unicode	80

Competency and competency levels	Content	Time minutes
4. Uses Boolean Algebra to work effectively with logic gates		
4.1 Identifies basic logic operators and draws truth tables to illustrate their functions.	▪ Operators ○ AND ○ OR ○ NOT ▪ Introduction to Truth Table (more than two inputs)	80
4.2 Assesses the suitability of basic logic gates to illustrate logic operations.	▪ Identify Basic Logical Gates ○ AND ○ OR ○ NOT	80
4.3 Uses basic laws of Boolean algebra to handle logic gates	▪ Introduction to Boolean Algebra ▪ Introduction to Basic Laws of Boolean Algebra	80
4.4 Integrates basic gates to develop simple circuits	▪ Uses Boolean algebra to simplify problems in designing simple circuits.	80
5.Works effectively with operating systems		
5.1 Explores operating system by type functions benefits and concerns	▪ Manual system and the OS ▪ Functions of the OS ▪ Benefits of the OS	60
5.2 Adopts the graphical user interface to meet ones own need	▪ GUI ▪ Benefits of GUI ▪ GUI components & its features	120
5.3 Handles files and folders in the Windows operating system.	▪ Windows Explorer/ My computer ○ Drives ○ Folders ○ Files and extensions ▪ Manipulating files and folders. ▪ Recycle bin	60

Competency and competency levels	Content	Time minutes
6. Uses Word Processing Software To Solve Day-To-Day Problems.		
6.1 Explores the concept and features of Word Processing	▪ Introduction to Word processing ▪ Components of Word processing Application Window.	120
6.2: Performs basic tasks in Word Processing	▪ Creating a new document ▪ Opening an existing document ▪ Saving and closing	120
6.3 Uses different types of formatting in Word Processing	▪ Formatting text ▪ Drawing, Formatting and Inserting	120
6.4 Inserts tables into documents and acquires the ability of customizing them.	▪ Inserting table ▪ Column width and row height ▪ Deleting, inserting, splitting and merging	60
6.5 Creates documents and obtains printouts.	▪ Spelling and Grammar checking ▪ Find and replace ▪ Page setup (paper size, margins, orientation and selecting printer ▪ Print options (copies and page range)	90
6.6 Uses the mail merge facility.	▪ Document types ▪ Common document ▪ Source data	120

7. Uses Spreadsheet to solve simple statistical problems.		
7.1 Explores a Spreadsheet to identify its basic features and functions.	▪ Introduction to Spreadsheets ▪ Components of Spreadsheets Application Window.	90
7.2 Moves around the worksheet to gain hands on experience of data entry	▪ Worksheet, columns, rows and cells ▪ Moving around worksheet. ▪ Data entries (label, number, formulae)	60
7.3 Performs basic mathematical operations	▪ Simple calculations using values and operators (+, -, *, /) ▪ Simple calculations using cell names and operators (+, -, *, /)	60
7.4 Uses inbuilt functions for calculations	▪ Simple calculations using values and operators (+, -, *, /) ▪ Simple calculations using cell names and operators (+, -, *, /)	60
7.5 Formats a worksheet	▪ Font, Font size, Bold, Italic etc. ▪ Alignment (centre, left, right) ▪ Decimal places (increase and decrease)	90
7.6 Recognizes relative versus absolute cell references.	▪ Absolute and Relative cell references.	90
7.7 Creates charts Using Spreadsheet	▪ Charts, chart type, chart options	90

Competency and competency levels	Content	Time minutes
8. Uses Presentation software to design electronic presentations.		
8.1. Makes attractive presentations using basic features of presentation software	▪ Introduction to presentation ▪ Changing Background, Slide layout, Slide designs. ▪ Inserting Suitable pictures ▪ Customizing animation	120
9. Develops simple databases to elicit information.		
9.1 Explores the Concept of Database	▪ Introduction to database ▪ Tables, Fields, Records, Key field	120
9.2 Creates a simple database with a single table, manually	▪ Field name, unique field, data types, field size	90
9.3 Converts a manual database into electronic media	▪ Field name, data types, field size, Primary key, Field properties	90
9.4: Creates a relational Database manually	▪ Relational DBMS ▪ Primary key, Foreign key, Relationship	60
9.5 Uses DBMS software to convert manually developed relational database into electronic media	▪ Relational DBMS ▪ Primary key, Foreign key, Relationship	120
9.6 Creates Queries to extract information	▪ New query design ▪ Using criteria ▪ Sorting	60
9.7 Uses Forms to append data and view information	▪ New form design ▪ Controls and properties ▪ Header & footer (Form & Page)	60