## 5. Syllabus of G.C.E. (O/L) ICT: Grade 10

### Subject Content and Time Duration by Competencies and Competency Levels

| Competency | Competency Level | Content | Learning Outcomes | Periods |
|---|---|---|---|---|
| **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<br>• Application of ICT in the society<br>  ○ e-government, agriculture, education, health, industry, entertainment | • Explains the nature of ICT<br>• Elaborates the uses of ICT in various fields of work | 3 |
| | 1.2 **Investigates the computer as a system for converting data into information.** | • Components of a system<br>• Difference between data and information<br>• Data as input and information as output<br>• Processing as the method for converting data into information | • Describes various systems in day to day life<br>• Elaborates functions of an information system in terms of its main components. | 2 |

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|---|---|---|---|---|
| | **1.3 Explores the evolution of computers to identify its major developments** | • Computer generations<br>• Evolution of processor technology<br>  o Vacuum tubes<br>  o Transistors<br>  o Integrated circuits: LSIC,VLIC<br>• Improvements in system characteristics<br>  o Size<br>  o Capacity<br>  o Speed<br>  o Accuracy<br>  o Efficiency | • Explains landmarks in the evolution of computers<br>• Discusses the enhancement in system characteristics with the evolution. | 2 |
| **2. Selects and uses computer hardware.** | 2.1 **Classifies computers using a variety of methods.** | • Computer classifications<br>  o Main frame, Mini, Micro, Super<br>  o Digital, analog and hybrid | • Briefly explains the features of different classes of computers | 2 |
| | 2.2 **Explores computer systems by function.** | • Functions of a computer and its peripherals<br>  o Input<br>  o Processing<br>  o Output<br>  o Storage<br>  o Communication | • Identifies components of a computer system<br>• Describes functions of each components | 3 |

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| | 2.3 **Identifies and connects basic peripherals to the computer.** | • Basic computer components: keyboard, mouse, system unit and monitor<br>• Ports<br>  ○ PS/2 port<br>  ○ Serial port<br>  ○ Parallel port<br>  ○ USB port<br>  ○ RJ 45<br>  ○ Video port | • Describes main physical components of a computer<br>• Describes functions of ports of a computer | 2 |
| | 2.4 **Uses the basic block diagram to demonstrate the computer system** | • ALU and Control Unit<br>• Flow path<br>  ○ Data and instruction signals<br>  ○ Control signals | • Explains the functions of basic components.<br>• Explains the flow of signals in the computer system. | 1 |
| | 2.5 **Investigates benefits and concerns of computer networks for optimal communication.** | • Purpose of computer networks<br>  ○ Data communication<br>  ○ Resource sharing<br>• Components of a network<br>  ○ Network Interface Card<br>  ○ Internal and external devices | • Explains the purpose of networking<br>• Describes physical layout of a network<br>• Discusses the issues in networking. | 3 |

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| | | ○ Transmission media: guided and unguided<br>○ Network cables: twisted pair, co-axial, fiber optics<br>○ Modem, hub, switch, router<br>• Network operating system<br>• Types of computer networks<br>○ LAN<br>○ MAN<br>○ WAN<br>• Advantages and disadvantages of networks | | |
| **3. Investigates the methods used to represent data in computer systems.** | **3.1. Uses the binary number system to represent data in computer systems.** | • Methods of data representations<br>○ 1 and 0 to represent two states<br>• Binary number system | • Explains that data can be represented using two states<br>• Represents positive decimal integers in binary | 2 |
| | **3.2. Converts decimal numbers to Binary, Octal and Hexa Decimal** | • Number systems: Decimal, Binary, Octal, Hexa Decimal<br>• Methods for number systems conversions | • Describes number systems with 8 and 16 as the bases<br>• Computes position values of the numbers converted in each system. | 2 |

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| | **3.3. Converts Binary numbers to Decimal, Octal and Hexa Decimal numbers and vice versa** | • Methods for conversions (positive integers only)<br>  ○ Binary to Decimal<br>  ○ Binary to Octal<br>  ○ Binary to Hexa Decimal | • Converts binary integers to decimals and vice versa<br>• Converts binary integers to octals and vice versa<br>• Converts binary integers to hexa decimal and vice versa<br>• Converts octal integers to hexa decimal and vice versa | 3 |
| | **3.4. Determines the capacity of data storage** | • Units of measurement: Bit, Byte, Kilo Byte, Mega Byte, Giga Byte, Tera Byte<br>• Order of capacities of different storage devices: Cache, RAM, ROM, hard disk, compact disk, USB drives | • Describes storage units in terms of bytes<br>• Compares capacity of various storage devices | 2 |
| | **3.5. Explores coding systems in computers** | • BCD<br>• EBCDIC<br>• ASCII<br>• Unicode | • Explains how different coding systems are used<br>• Explains limitations of each system | 1 |

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| 4. **Uses Boolean logic to work effectively with logic gates** | **4.1. Identifies basic logic operators and draws truth tables to illustrate their functions** | • Operators: AND, OR, NOR, NAND,NOT<br>• Introduction to Truth Tables (maximum of three inputs) | • Explains the action of logic gates<br>• Draws truth tables for logic operations | 2 |
| | **4.2. Applies concepts of Boolean logic to find solutions to simple day-to-day life problems.** | • Design of logic for simple real world applications.<br>o Alarm systems<br>o Selection criteria | • Draws block diagrams of systems using Boolean logic<br>• Draws block diagrams to represent solutions to simple problems involving Boolean logic<br>• Converts block diagrams into logic diagrams | 2 |
| 5. **Works effectively with Operating Systems** | **5.1. Explores operating systems by type, functions, benefits and concerns.** | • Introduction to OS<br>• Evolution of computer/human interface<br>• Types of operating systems: single user, multi user, multi tasking, real time, distributed<br>• Functions of the OS: user interface and resource management<br>o Benefits of the OS<br>o Utilities of an OS: Partitioning,<br>o Formatting, Defragmentation | • Describes the need of an operating system<br>• Explains functions of an operating system<br>• Explains utilities of an operating system | 2 |

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| | **5.2. Handles files and folders in Operating Systems** | • Introduction to the files system<br>  ○ Drives<br>  ○ Folders<br>  ○ Files and file extensions<br>  ○ File and folder operations | • Carries out following operations: creation, deletion, renaming, copying<br>• Organizes documents into folders according to needs | 4 |
| 6. **Uses Wordprocessing Software to Solve Day-to-day problems** | **6.1. Explores the concept and features of wordprocessing** | • Functions of wordprocessing software<br>• GUI of wordprocessing software | • Discusses facilities of wordprocessing software<br>• Explores GUI of wordprocessing software | 2 |
| | **6.2. Performs basic tasks in wordprocessing software** | • Creating new documents<br>• Opening existing documents<br>• Saving and closing of documents | • Creates new documents<br>• Opens existing documents<br>• Saves and closes documents | 3 |
| | **6.3. Uses different types of formatting in wordprocessing** | • Formatting text<br>• Graphics: Insertion and formatting<br>• Shapes : Insertion and formatting | • Applies suitable text formatting<br>• Manipulates graphics and draws simple shapes | 3 |
| | **6.4. Manipulates table feature in wordprocessing software** | • Insertion of tables<br>• Column width and height<br>• Deletion, insertion, splitting and merging of cells | • Creates tables to insert data<br>• Formats tables<br>• Edits tables | 2 |

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| | **6.5. Creates and prints documents** | • Spelling and grammar checking<br>• Find and replace of text<br>• Page setup: paper size, margins, orientation and selection of printers<br>• Print options: copies and page range. | • Checks spelling and grammar of a document<br>• Prints documents with necessary settings | 2 |
| | **6.6. Uses the Mail Merge facility** | • Document types<br>o Common document<br>o Source data | • Creates template document<br>• Creates data tables<br>• Merges data with template | 3 |
| 7. **Uses Spreadsheet to solve simple statistical problems** | **7.1. Explores a Spreadsheet to identify its basic features and functions.** | • Introduction spreadsheets<br>• GUI of spreadsheet software | • Lists functions of an electronic spreadsheet<br>• Identifies features of GUI of spreadsheet software | 2 |
| | **7.2. Moves around the worksheet to gain hands on experience of data entry** | • Worksheet, columns, rows and cells<br>• Moving around worksheet.<br>• Data entry (label, number, formulae) | • Identifies components of a worksheet<br>• Enters and edits data | 2 |

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| | **7.3. Performs basic mathematical operations** | • Simple calculations using values and operators (+, -, *, /,^)<br>• Simple calculations using cell addresses and operators (+, -, *, /,^) | • Carries out calculations using basic operators<br>• Uses cell references in calculations. | 2 |
| | **7.4. Uses inbuilt functions for calculations** | • SUM, AVERAGE, MAX, MIN, COUNT | • Identifies functions and its parameters<br>• Uses basic built-in functions in calculations | 2 |
| | **7.5. Formats a worksheet** | • Font, Font size, Boldface, Italic etc.<br>• Alignment (centre, left, right, justify)<br>• Decimal places (increase and decrease) | • Formats and aligns data in cells<br>• Sets decimal places according to requirements | 2 |
| | **7.6. Uses relative versus absolute cell references appropriately.** | • Absolute and Relative cell references. | • Explains relative and absolute addressing modes<br>• Uses both modes appropriately in calculations | 2 |
| | **7.7. Creates charts using Spreadsheet to explain data** | • Charts: chart type, chart options<br>• Chart types: Bar, column, line and pie | • Identifies the relevant chart type<br>• Present data using suitable built in chart types | 2 |

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| **8. Uses Presentation software to develop electronic presentations.** | **8.1. Produces effective presentations integrating multimedia.** | • Introduction to presentation software<br>• Changing Background, Slide layout, Slide designs.<br>• Inserting text and multi media | • Applies good practices in the use of presentation software<br>• Formats slide layout<br>• Inserts text, images, movies and sounds | 3 |
| | **8.2. Applies suitable animations to enhance the quality of presentations.** | • Slide transitions<br>• Custom animation | • Applies suitable screen transitions<br>• Applies suitable animations on screen objects | 3 |
| **9. Develops simple databases to elicit information.** | **9.1. Explores the Concept of Database** | • Introduction to databases<br>• Definition of a database<br>• Advantages of databases.<br>• Features of databases: Absence of redundancy, Efficiency, Accuracy, Consistency, Security, Validity, Simplicity, integrity<br>• Manual and electronic databases: | • Discusses nature and advantages of databases<br>• Explains the features of relational databases | 3 |

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| | | • comparison and contrast<br>• Introduction to Relational Databases: Tables, records, fields, key fields | | |
| | **9.2. Creates a simple database with a single table, manually.** | • Field name, unique field, data types, field size | • Identifies the purpose of the database<br>• Select suitable fields to create data tables | 2 |
| | **9.3. Converts a manual database into electronic media.** | • Field name, unique field, data types, field size | • Identifies the purpose of the database<br>• Select suitable fields to create data tables | 2 |
| | **9.4. Design a simple relational database.** | • Tables, fields and key fields: Primary key, foreign key, relationships | • Designs simple relational databases manually<br>• Identifies primary and foreign keys | 2 |
| | **9.5. Uses DBMS software to create relational databases** | • Creation of a database<br>• Identification of primary and foreign key<br>• Creation of relationship between tables | • Creates databases using DBMS software<br>• Implements relationships | 2 |
| | **9.6. Uses forms to view and update data** | • Form design<br>• Manipulation of properties of a form<br>• Insertion of controls: Delete button | • Designs data input and editing forms<br>• Inserts suitable controls to manipulate data | 2 |

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| | **9.7. Creates Queries to extract information** | • Design of queries using query tool without using SQL structure<br>• Use of criteria<br>• Sorting of records | • Design queries to meet given criteria<br>• Performs simple queries on the database | 2 |
| | **9.8. Creates reports to present information** | • Use of report Wizard<br>• Printing of reports | • Creates reports for given purposes<br>• Prints reports | 2 |
| | | | Total (Periods) | 90 |