Teacher’s Name :- School :-

Year :- 2022 Subject :- Information & Communication Technology

Grade :- 11

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Competency | Competency Level | Content | Learning Outcomes | No. of Periods | Quality Inputs | Expected Date | Taught Date | Others |
| 10. Writes programs to solve problems | 10.1.Analyzes the problem | * Identification of inputs and outputs * Identification of possible alternate process steps | * Identifies inputs and outputs * Explores solution space | 2 |  |  |  |  |
| 10.2Uses control structures in developing algorithms to solve problems. | * Introduction to algorithms: purpose * Control structures for developing algorithms   o Sequence  o Selection  o Iteration (Repetition) | * Explains purpose of algorithms * Describes control structures * Applies control structures to develop algorithms | 2 |  |  |  |  |
| 10.3Uses different tools to present algorithms. | * Tools for developing algorithms   o Flow charts  o Pseudo codes  o Conversion of flowcharts into pseudo codes | * Identifies symbols of flow charts * Explains structure of pseudo code * Draws flow charts to represent algorithms * Converts flow charts to pseudo code | 4 |  |  |  |  |
| 10.4 Uses data types in programming. | * Identifiers, reserved words and key words in a computer programming language * Variables and constants in computer programming * Description of data types   o Purpose of data types  o Use of meaningful names for identifiers   * Basic Data Types:   o Numeric (integer, floating point)  o Character  o Logical | * Declares identifiers using correct data types * Uses variables effectively in programs | 4 |  |  |  |  |
| 10.5 Uses operators in programming | * Purpose of operators * Basic operators   o Arithmetic operators  o Comparison operators  o Logical operators: AND, OR, NOT   * Operator precedence * Expressions | * Selects correct operators in computations * Applies operators effectively in programs * Evaluate results of expressions | 4 |  |  |  |  |
| 10.6 Develops programs involving selection control structure | * IF-EndIf and If-Else-EndIf statement * Use of switch/case when single variable has multiple conditions * Conversion of flow charts into pseudo codes and subsequent coding into a programming language | * Identifies correct selection control structure. * Identifies correct selection condition. * Uses selection control structure in programs. * Combines selection control structures to meet programming needs. | 5 |  |  |  |  |
| 10.7 Develops programs involving basic iterations. | * Use of iterations (repetitions) in: * Cases where the number of iterations are known * Cases where the number of iterations are unknown * Checking of the condition for iterations   o Beginning of the iteration  o End of the iteration   * Conversion of flow charts into pseudo codes and subsequent coding using a programming language | * Identifies correct iteration structure. * Applies correct condition to control iterations. * Uses iteration control structure in programs. | 7 |  |  |  |  |
| 10.8 Develops programs with nested control structures | * The purpose of using nested control structures * Use of control structures within another control structure   + Selection within selection   + Iteration within iteration   + Iteration within selection   + Selection within iteration * Conversion of flowcharts into pseudo codes and subsequent coding into a programming language | * Identifies cases where nested control structures are required. * Uses nested control structures in programs. | 3 |  |  |  |  |
|  | 10.9 Develops programs using one dimensional arrays. | * The purpose of the use of arrays * Definition of the one dimensional array * Properties of an array * Index * Contiguous locations * Random access * Array Operations * Declaration * Accessing values * Assignment of values | * Describes features of one dimensional arrays. * Carries out operations in arrays. * Uses one dimensional arrays in programs. | 3 |  |  |  |  |
| 10.10 Structures programs through the use of sub-programs. | * The purpose of the use of sub-programs * Improvement of code reusability, * Readability * Maintainability * Types of sub-programs: value turning and not returning * Structuring of programs using sub-programs * Development of basic programs with a single sub-program | * Describes the need of sub-programs. * Demonstrates the use of value-returning and value-not returning sub-programs. * Uses sub-programs in programming. | 2 |  |  |  |  |
| 10.11 Explores the evolution of programming languages. | * Low-level languages * Machine language * Assembly language * High-level languages * Types of high-level languages: * Procedural vs Declarative * Structured vs Object oriented * Programming vs scripting * Methods used to convert source code to machine code * Interpreters * Compilers * Testing and debugging | * Compares and contrasts low-level and high-level languages. * Describes features of high-level languages. * Describes the operation of language translators. | 2 |  |  |  |  |
| 11. Explores the Systems Development Life Cycle of information system development. | 11.1 Describes the concept of information system. | * Definition of a system * Components of a system * Input * Process * Output * Manual systems * Computer based systems * Information systems * Importance of Information in decision making * Inputs, outputs, data-flows and processes | * Describes an information system. * Identifies the relationship between the components of an information system. * Explains the significance of an information system. | 4 |  |  |  |  |
| 11.2 Explains the Systems Development life cycle. | * The system development life-cycle * Identification of requirements * Design of the solution * Implementation of the solution * Testing of the solution * Deployment of the solution * Maintenance of the system. * Difference between phased system development life-cycle and iterative increment life-cycle | * Describes the stages in system development. * Provides examples of each stage. | 3 |  |  |  |  |
| 12. Uses the Internet for information search and communication effectively. | 12.1 Uses the Internet to access information | * Introduction to the Internet:   URL, IP address and domain names.   * Client-server operation:   Bi-directional information flow between browser and the server   * Functions of the Internet:   E-mail, WWW, ftp, remote access, file-sharing, streaming of media, cloud computing, search engines.   * Domain name server and its purpose | * Describes the operation of the Internet. * Explains the services of the Internet * Uses the services to obtain information. | 4 |  |  |  |  |
| 12.2 Uses the Internet for communication | * e-mail accounts:   Sending and receiving mails- to, from, bcc and cc, attachments, subject   * Instant messaging services * Video-based communication * Social media networking | * Communicates via e-mail accounts. * Describes basic communication facilities available on the Internet. | 3 |  |  |  |  |
| 13. Develops Multimedia contents to express ideas effectively. | 13.1 Creates effective still graphics using suitable graphic software. | * Digital image elements: pixel, resolution, size, color * Image capacity and compression: lossy formats lossless formats * Image types: raster and vector * Graphic types: raster and vector * Working knowledge of graphic software to perform the following basic operations * Open, save and edit * Importing images * Sizing and transformation * Selections, cut, crop, replace * Working with layers * Text editing and effects | * Describes properties of digital still images. * Creates images using software tools * Edit digital graphics. * Uses basic text effects. | 6 |  |  |  |  |
| 13.2 Creates effective 2D  animations using suitable  2D animations  software | * Animation basics:   Layers, frames, timing, frame rate   * Geometrical objects and shapes * Frame types: frame, key frame, initial frame, destination frame, blank key frame. * Animations * Frame by frame animation * Basic Tweening * Publishing | * Describes basic features of 2D animations. * Creates basic animations using animation software tools | 4 |  |  |  |  |
| 13.3 Edit Audio and video contents using suitable software | * Recording audio content. * Editing (extracting a relevant segment from original content) | * Carries out basic audio editing using software. * Carries out basic video editing using software. | 2 |  |  |  |  |
| 13.4 Effectively integrates multimedia contents | * Integration of background images with animations * Integration of audio and video | * Designs multimedia according to basic requirements. * Integrate multimedia using software tools. | 2 |  |  |  |  |
| 14. Develops websites incorporating multimedia technology. | 14.1 Structures information for development of websites. | * Contents for websites * Analysis of the purpose and the audience * Organization of the content/messages * Design of the layout and structure: scheme, color, font. * Selection of media assets | * Identifies user needs of the website. * Designs website according to specifications. | 2 |  |  |  |  |
| 14.2 Uses HTML basics. | * Difference between hypertext and normal text. * Features of HTML * HTML document structure – Head, Title, body * HTML basics * Line and paragraph breaks * Text: format and color * Insertion of images * Use of hyperlinks * Lists * Tables | * Explains the use of basic tags in HTML. * Creates web pages using HTML. | 3 |  |  |  |  |
| 14.3 Develops web sites using web development tools | * Web authoring tools * Text Formatting * Page Layout * Use of Multimedia building blocks: text, graphics, audio and video * Hyperlinks * Methods of web development * Static vs dynamic webs * Content managed web development * Content Management Systems (CMS) * The purpose of the process of CMS based web development: * Work-flow and roles in CMS * Content creation, editing, publishing, and use * Roles: Creator, editor, publisher, administrator, user | * Uses web authoring tools to develop websites. * Explains the purpose and the process of content managed websites. * Uses CMS tools to create and manage websites. | 5 |  |  |  |  |
| 14.4 Demonstrates preparedness to publish web sites | * Internet Service Providers for Web hosting: * Maintenance of a website | * Identifies requirements of web publishing. | 1 |  |  |  |  |
| 15. Compares and contrasts benefits and issues related to ICT in society | 15.1. Investigates the contribution of ICT to the health sector | * ICT in Health services * Tele Medicine * Tele monitoring * Computer controlled medical equipment * Computer Axial Tomography (CAT) scanner * Magnetic Resonance Imaging * Maintenance of medical history records. * Clinical history * Medication * Test reports | * Describes the use of ICT in health services. * Describes the use of ICT based medical equipment. * Describes the use of ICT in medical records. | 2 |  |  |  |  |
| 15.2. Investigates the contribution of ICT to education | * ICT Assisted Learning (e-learning) * Interactive teaching and learning material * Web-based learning * Learning Management Systems (LMS) * School Management Information Systems | * Explains the use of ICT in interactive learning. * Describes the use of ICT in LMS. * Explains the use of ICT in school management. | 1 |  |  |  |  |
| 15.3. Investigates the contribution of ICT to agriculture | * Computer controlled agricultural equipment : Green houses * Information searching on agriculture * Virtual competitive market for agricultural products * Optimization of agricultural productivity * Detection and control of pests * Optimization of fertilizer use * Weather prediction | * Explains the use of ICT to enhance productivity in agriculture * Explains the use of ICT in dissemination of information in agriculture. | 1 |  |  |  |  |
| 15.4.Investigates the usage of ICT in different industries. | * Architecture: Computer-Aided Design(CAD) * Manufacturing - Computer Aided Manufacture (CAM)/Computerized machines in production * Production - Robotic | * Explains the use of ICT in engineering designs. * Explains the use of ICT in production. | 1 |  |  |  |  |
| 15.5. Explores the contribution of ICT to Business | * e-Business * Internet based (on-line) shopping * Internet based (on-line) Share market transactions * Safety measures * Advertising * Outsourcing IT-Business Process (IT BPO) | * Explains the use of the Internet in business * Explains the use of ICT in advertising * Explains the use of the Internet in BPO. | 1 |  |  |  |  |
| 15.6 Explores the contribution of ICT to Entertainment | * Movies and cartoon production * Digital sound editing * Games * Simulations | * Describes the use of ICT in movie and game production. * Explains the use of ICT in audio editing. | 1 |  |  |  |  |
| 15.7. Assesses issues related to ICT with respect to ethical and legal aspects | * Legal Issues * Data theft * Unauthorized access to systems * Intelligent property: copyright, patents and piracy. * Privacy * Forgery * ICT legislation framework in Sri Lanka * Ethical issues: Fair use, plagiarism | * Explains legal issues in the use of ICT * Explains ethical issues in the use of ICT | 1 |  |  |  |  |
|  | 15.8. Explores issues and precautions related to ICT infrastructure protection. | * Physical Security * UPS * Hardware firewalls * Restricted access via door-locks * CCTV surveillance * Surge protectors * Logical Security * Passwords * Software firewalls * Backups * Protection against malware: spam, virus, key-loggers * Environmental factors * Dust * Humidity * Temperature * Institutions for information security of Sri Lanka | * Identifies security issues. * Takes precautions to eliminate or minimize security threats. | 2 |  |  |  |  |
| 15.9. Investigates health and safety issues inherent in the use of ICT. | * Ergonomics and Health issues   Repetitive Strain Injury: eye- strain, backaches   * E-waste: Hazardous elements and its impact on the environment. * Safe disposal and destruction of electronic equipment. | * Explains basic health and environmental issues associated with the use of computers. * Explains the precautions to be taken in the use of computers. * Explains safe disposal methods of electronic equipment. | 2 |  |  |  |  |
| 15.10. Assesses issues associated with ICT and society. | * Digital divide * Digital bridge * De-skilling * Techno-rich employment * Equal Opportunities * Misuse of ICT and precautions to be taken (social media) | * Explains problems caused by ICT in society * Explains changes in employment caused by advances in ICT | 1 |  |  |  |  |

Date :- ……………………........ ……………………........ Signature of the Principal