**MASENO UNIVERSITY**

**SCHOOL OF COMPUTING AND INFORMATICS**

**Diploma in Information Technology**

1. **INTRODUCTION**

Information Technology (IT) plays a major role in enabling institutions of all kinds to realize their objectives. The Maseno University Diploma in Information Technology seeks to produce graduates who will fit in the various areas of IT in a variety of institutions that tap into the benefits of IT to achieve their goals. The programme is therefore designed to equip students with theoretical and practical knowledge in the broad and fast changing field of Information and Communications Technology. The programme is intended to enable the students to engage in self-employment activities in emerging ICT fields. The graduates from the Diploma programme will also find employment in a wide range of sectors of the economy, including manufacturing, service industry, training institutions, NGOs, and public sector. The graduates from the programme will find employment as Applications software developers, network administrators, systems administrators, ICT officers, support technicians among others.

1. **OBJECTIVES**

The objectives of the programme are to:

1. Impart hands-on skills on programming, networking, databases, web systems and Human Computer Interaction.
2. Impart knowledge on how to analyse problems, and provide solutions to IT-based problems.
3. Train learners to effectively communicate information, ideas, problems and IT-based solutions.
4. Create awareness of professionalism, ethics, legal, social and security responsibilities as well as best practices and standards in the field of IT.
5. Prepare learners for Bachelors level training in IT or related field.
6. **EXPECTED LEARNING OUTCOMES.**

By the end of the programme, graduates are expected to:

1. Demonstrate skills on programming, networking, databases, web systems and Human Computer Interaction.
2. Analyse problems, and provide solutions to IT-based problems.
3. Effectively communicate information, ideas, problems and IT-based solutions.
4. Demonstrate professionalism, ethics, legal, social and security responsibilities as well as best practices and standards in the field of IT.
5. Undertake bachelor’s studies in IT and other related areas.
6. **ADMISSION REQUIREMENTS**

Maseno University Admission policy for undergraduate programmes shall apply.

1. **DURATION OF THE PROGRAMME**

The duration of the programme shall be TWO academic years.

1. **PROGRAMME STRUCTURE**

The programme shall be offered in units as defined in the Common Rules and Regulations for Undergraduate Examinations.

1. **MODE OF DELIVERY**
2. Face to face sessions involving students and lecturers with 42 contact hours
3. e-Learning
4. **EXAMINATIONS**

Maseno University Common Rules and Regulations for Examinations shall apply.

1. **COURSE DISTRIBUTION**

**YEAR ONE SEMESTER ONE**

CDIT 101: Introduction to Information Technology.

CDIT 102: Introduction to Electrical Principles

CDIT 103: Applied Mathematics I

CDIT 104: Communications Skills

CDIT 105: Computer Application Software I

CDIT 106: Introduction to Computer Programming

**YEAR ONE SEMESTER TWO**

CDIT 201: Desktop Publishing

CDIT 202: Applied Mathematics II

CDIT 203: Data and Computer Communication Principles

CDIT 204: Introduction to Operating Systems

CDIT 205: Computer Application Software Packages II

CDIT 206: Visual Programming using VB

**YEAR TWO SEMESTER ONE**

CDIT 301: Object Oriented Programming using Java

CDIT 302: Systems Analysis and Design

CDIT 303: Discrete structures for Information Technology

CDIT 304: Mathematics for Information Technology

CDIT 305: Fundamentals of Programming.

CDIT 306: Introduction to Internet and Internet Technologies.

CDIT 307: Project.

**YEAR TWO SEMESTER TWO**

CDIT 401: Network and Systems Administration

CDIT 402: Data Structures and Algorithms

CDIT 403: Management Information Systems

CDIT 404: Mobile Applications Design and Programming

 CDIT 405: Fundamentals of Database Management Systems

CDIT 406: Web Design and Authoring.

CDIT 407: Project.

1. **COURSE DESCRIPTION**

**YEAR ONE SEMESTER ONE**

**CDIT 101: Introduction To Information Technology**

Information and communications Technology: its concepts and scope. Computers for information processing, storage and transmission. Components of computer system: computer hardware and software; computer data—numeric data, alphanumeric data; concepts of a program and processing. Computer system organization: block diagram of computer, CPU and memory; input devices-keyboard, scanner, mouse, camera, etc; output devices-monitor, printer, plotters, network card, etc. Electrical requirements: interconnection between components, buses, connectors, cables and ports. Secondary storage: magnetic disks and optical disks. Semiconductor memory: ROM, RAM, flash Computer software layers: system and application software. Introduction to operating system such as Windows XP/7. Hands exercises on the chosen operating system on file, memory, device, and I/O management. Familiarization with DOS and various DOS commands. Short cuts with windows OS. Principles of computer communications. Basics of networking. LANs, MANs and WANs. Introduction to the Internet with MS Outlook. The Internet and its importance in data and voice communications. Internet applications and how it affects the way we work, teach/learn, play and interact

**CDIT 102: Introduction to Electrical Principles**

DC circuits and Ohm’s law. Simple series and parallel circuits. Circuit Theorems and laws and application to simple circuits: Superposition theorem; Kirchhoff’s laws; Thevenin and Norton equivalent circuits; Constant voltage and constant current sources; Maximum power transfer theorem. Capacitance and capacitors. Charging and discharging of capacitors. Batteries: construction, operation, characteristics and application of Lead-acid, nickel-cadmium and silver-oxide batteries. Concept and effect of battery internal resistance. Battery charging methods. Basic operation of UPS and inverters. Care and maintenance of batteries. General idea of solar cells, solar panels and their applications. Fundamentals of AC circuits and systems. Description of ac waveform and phasor representation. Ohm’s law of ac circuits. Power in ac circuits; significance of power factor in rating of equipment. Electromagnetic induction and operation of ac motors and transformers. Basic principles of magnetic circuits. Electromagnetism and its applications.

**Lab 1: Resistance:** Color coding of resistors and how they are used in circuit design; symbols associated with resistors; setup lab equipment to measure resistor values in order to compare

measured and rated values; calculate the tolerance levels of various resistors to determine if the measured value is within specifications.

**Lab 2: Laws:** draw and label the parts of a simple circuit; build and test a variety of series and parallel circuits, using simulation software and protoboards; prove the accuracy of Ohm’s and Kirchhoff’s laws; select and utilize electrical meters to determine voltage, resistance and current insimple circuits; calculate the resistance, current and voltage in a circuit using Ohm’s Law.

**Lab 3: Capacitance:** describe the component parts of a capacitor and describe how a capacitor holds a staticcharge; use and understand the units of measurement for capacitors; calculate the value of capacitors mathematically and through the use of instrumentation. familiarize the different types of capacitors and their voltage polarity requirements; calculate the output frequency of circuits using observations and the oscilloscope.

**Lab 4; Data Sheets:** complete an internet search for data sheets for circuits.understand the information contained on a data sheet.

**CDIT 103: Applied mathematics I**

Algebra fundamentals. Complex numbers: representation, modulus and amplitude. Demoivre’s theorem and its application in solving algebraic equation. Geometric and Arithmetic progressions. Introduction to partial fractions. Permutations and combinations. Binomial theorem (without proof) for positive integral index. Introduction to matrices. Determinants up to 3rd order. Crammers rule. Inverse of matrix method to solve a system of linear equations. Trigonometry. Concept of angles and measurement in angles and radians. Conversions from one to another. Trigonometric ratios of allied angles (without proof), sum and difference formulae and their applications. Product formulae. Trigonometric rations of multiple angles and sub-multiple angles. Graphs of sinx, cosx , tan x and ex. Coordinate geometry. Cartesian and polar coordinates. Conversion from one to another. Area of triangle. Equation of straight line, intersection of two straight line and angle between them. General equation of a circle.

**CDIT 104: Communications skills**

Short stories, prose and poems. Grammar and usage: parts of speech, pair of words, translation. Comprehension. Communication: definition, process of communication

**CDIT 105: Computer Application Software I**

Introduction to word processing using MS Word. File management; document editing, formatting, printing, etc. Use of various tools including spell checker, macros, mail merge, etc. Introduction to spreadsheets with MS Excel. Starting Excel; working on an open worksheet: data entry and editing; use of formulae; printing. Managing workbooks, editing worksheets. Working with charts; retrieving data with MS query- creating and customizing a pivot table. Statistical analysis of data. Exchange of data with other applications. Introduction to presentations using MS PowerPoint. Starting PowerPoint. Working environment. Different views of slides. Working with slides. Insertion of other features such as multimedia. Formatting and designing of slides

**Cdit 106: Introduction To Computer Programming**

Algorithm and programming development: Steps in development of a program; flow charts and algorithm development; program debugging.

**Lab**

Program structure: I/O statements and assign statements; constants, variables and data types; operators and expressions; standards and formats. Control structures: decision making with IF statement; IF-Else and nested IF; while and do-while, for loops; break and switch statements. Functions: introduction; global and local variables; function declaration; standard functions; parameters and parameter passing; call by-by value/reference. Arrays: introduction; array declaration; single and multidimensional array; array of characters. Pointers: introduction; address operator and pointers; declaring and initializing pointers; assignment through pointers; pointers and arrays. Structures and unions: declaring structures; accessing structures, structure initialization; arrays of structure; unions. Strings: introduction, declaring and initializing string variables; reading and writing strings; string handling functions. Files: introduction; file manipulation using standard function types.

**YEAR ONE SEMESTER TWO**

**CDIT 201: Desktop Publishing**

Overview of Desktop Publishing: Definition of Desktop Publishing, steps involved in Desktop Publishing, introduction to PageMaker, PageMaker tools, definition of operational terms, launching PageMaker, Creating a publication, saving a publication, working with test, typing text, creating a threaded text, importing text, selecting text ,checking spelling and grammatical error, correcting mistakes, finding and changing words, using bullets and numbering, the control pallet, formatting text, working with graphics, drawing, importing graphics ,text wrap, cropping/trimming graphics ,Navigating through pages. Moving around in a page and pasteboard, moving resizing and rotating objects, reflecting and grouping objects, changing the stacking order of objects. The table editor: creating tables, entering data in the tables, editing and formatting data in the table, Grid manager , columns and ruler guides, The master feature/Pages, Creating the table of content, Formatting a Publication: managing widows and orphans, indexing. Managing the Text Outlook.

**CDIT 202: Applied Mathematics II**

Differential calculus. Differentiation of xn, sin(x), cos(x), tan(x), ex, logax. Differentiation of sum, product and quotient of functions. Differentiation of function of functions. Differentiation of trigonometric, inverse trigonometric equations and Logarithmic and exponential equations. Applications of differentiation: rate measures, errors and increments; maxima and minima. Integral calculus. Integration as an inverse operation of differentiation. Simple integration by substitution, by parts and by partial fractions. Evaluation of definite integrals (simple problems) using formula without proof. Applications of integration: area bounded by a curve; calculation of volume formed by revolution; Calculation of average and root-mean-square value of a function. Differential equations. Solutions of first order and first degree equations by variable separation method for simple problems.

**CDIT 203: Data and Computer Communication Principles**

Introduction. Data communications model. Signals and media. Introduction to the OSI model. Standards in communication. Modulation techniques in a communication system. Concepts of AM, FM, PM, PAM, FSK, PSK and PCM (no mathematical treatment). Concepts of bandwidth, noise and channel capacity of different communication systems. Transmission media: copper, air and optical fibre. Transmission of digital data and use and types of Modems. Transmission of binary data. Concepts of transmission modes of simplex, half duplex and full duplex. Bit level data transfer, rate if data transfer. Serial and parallel data communications. Asynchronous and synchronous serial communication systems. Typical standards: RS-232C and HDLC. Data transfer efficiency; relative advantages and disadvantages. Signal encoding techniques: RZ, NRZ, Manchester and Differential Manchester. Error detection and correction. Sources of error, the effect of error on data rates. Error detection through parity bit, block parity to detect double bit error and correct single bit error. General principles of error detection and correction using cyclic redundancy checks. Communication methods and standards: point-to-point and multipoint lines. Types of multiplexing: TDM, STDM, FDM, WDM. Circuit switching and packet switching principles. Examples: ISDN, Frame and ATM switching.

**CDIT 204: Introduction to Operating Systems**

Overview of operating systems: definition and types of operating systems. Role of operating systems, memory organization, linking, loading and executing control program. Functions of operating systems. Basic principles of process management: job scheduler, process scheduler, and process synchronization. Memory management: introduction, single process system, fixed partition memory, system loading, segmentation, swapping, simple paging system, virtual memory. Principles of I/O management functions: dedicated devices, shared devices, I/O devices, storage devices, buffering, and spooling. Principles of file management systems: types of file systems, simple file system, basic file system, and physical file system. Deadlock: deadlock prevention and deadlock avoidance. Linux operating system: introduction; history of Linux and UNIX; Linux overview, structure and releases; system requirement; file structures; processor scheduling and memory management in UNIX.

**Lab**

Linux commands and filters: shell; concept of command options, input, output redirecting and network file. Process communication commands: mkdir, cd, ls, whoami, cat, more, tail, head, mv, chmod, grep, wc, sort, kill, write, wall mail, news,etc.

**CDIT 205: Computer Application Software Packages II**

Advanced features of MS packages: **MS Word 2007**: Field codes and fill-in forms; forms; linking and embedding; Reference Options; Collaborative Editing and Security; Master documents; **Excel 2007**: Functions; one-input or two-input data tables/what-if tables; Pivot tables; Scenarios; Auditing; Macros. **PPT2007**: Customizing Options; Popular Options; Proofing Options; Save Options; Advanced Options; add-in options; Trust entre options; Resource Options; Preparing presentation for Distribution: properties, document inspector, encryption, digital signatures. Miscellaneous Issues: Wordart, symbols, Comments, Narrations

**CDIT 206: Visual Programming using VB**

Overview of visual programming, advantages of visual programming. Introduction to Visual Basic: Features and applications of VB – concept of integrated development environment –Operating modes, types of file ,Form Design Placing controls ,changing properties ,saving project and form files, code window: Parts, assignment statement (destination= source) comments (Rem or ‘), Entering code, string manipulation, ASC, Len, Trim, Ltrim, Rtirm,Operaqtors: Arithmetic and relational.Declarations of viriables and constantsVB control Structures/flow: – control flow statements – procedures and functions – recursion concept.Messageboxes and inputboxes:Working with date and time Multiple form manipulation, menu design.

**Lab**

Designing the User Interface: Design aspects of VB forms – Elements of user Interface – properties of controls – textbox, label, command button, check box and list box – designing forms and displaying messages using above controls – control arrays. Menus and Common Dialogue Control: Creating menus at design time using menu design window – control menus and runtime – create shortest keys for pull down menus – common dialogue control. Display date, time, string type conversion and printing Information: Data reports and environments – display tabular data in report form – date and time – fundamentals of printing – printing with print form method.

**CDIT 301: Object Oriented Programming using java**

Introduction to Java: A brief history, How Java Works. Java Virtual Machine, Java in time compiler, Java features, using Java with other Tools, Native code, Java Application types, comparison with C and C++. Working with Data types, Control flow statements, Arrays, Casting, command line arguments. Java Classes and Memory Management: Introduction to Classes, inheritance, encapsulation and Polymorphism, constructors and Finalizers, Garbage collection, Access specifier.

**Lab**

Interfaces and Packages: Using Java interface, using Java Packages. Exception Handling and Stream Files: Exception handling: Method to use exception handling, Method available to exceptions (The throw statement, The throws class, Finally class), Creating your own exception classes. Threads and Multi-threading: Thread Basics - Creating and running a thread, The thread control methods, The threads life cycle and synchronization. Applet, Application and JDK: Java Applets Vs Java Applications, Building Application with JDK, Building Applets with JDK, HTML for Java Applets, Managing input-output stream. Java Data Base Connectivity (JDBC).

**CDIT 302: Systems Analysis and Design**

Introduction. Concept of system: types of systems open and closed, static and dynamic, with examples. Overview of systems analysis and design: systems development life cycle, brief introduction to feasibility study, design, implementation, and testing and maintenance. Systems analysis and design stages. Preliminary investigations: project selection, scope definition and preliminary investigation. Feasibility study: technical and economic operational feasibility cost and benefit analysis. Requirements specifications and analysis: fact finding techniques, data flow diagrams, data dictionaries, design trees and tables. Detailed design: module specification, file design, database design. Testing and quality assurance: maintenance, unit and integration testing techniques, design objectives, quality factors such as reliability, etc.

**CDIT 303: Discrete Structures in Information Technology**

Introduction to logic and proofs: Direct proofs, proof by contradiction, mathematical induction. Fundamental structures: (surjection, injections, inverses, composition). Relations (reflexivity, symmetry, transitivity, equivalence relations). Sets( Venn diagrams, complements, Cartesian products, power sets). Pigeonhole principle, cardinality and countability. Boolean algebra values: Standard operations on Boolean values, de Morgan Laws. Propositional logic: Logic gates, flip flops, counters, circuit minimization. Elementary number theory: Factorability, properties of primes, greatest common divisors and least common multiples. Euclid’s algorithm, modular arithmetic, the Chinese remainder theorem. Basics in counting, counting arguments, permutations and combinations, binomial theorem.

**CDIT 304: Mathematics for Information Technology**

Sets , relations, functions, basic logic, Graphs, Trees, Undirected graphs, Directed graphs, Spanning trees, Traversal trees, Traversal strategies, Function calculus: Differentiation, rules of differentiation, Integration: definite and indefinite integrals, rules of integration, role of mathematics in Information Technology

**CDIT 305: Fundamentals of Programming**

History and overview of programming languages, overview of programming paradigm, structured programming, problem solving techniques, algorithms, pseudo code, basic syntax and semantics of high level languages, data type, expressions, statements, input/output, control structures, data structures. Basic sequencing, Iteration and looping control constructs, Subprograms: Functional and procedural abstractions and data abstraction. Introduction to programming can be done using either C, Pascal (Modula-2 Ada, Python etc)

**CDIT 306: Introduction to Internet and Internet Technologies.**

History of the internet :Introduction to World Wide Web and its applications search engines and mail applications, popular web 2.0 communication tools etc

**CDIT 401: Network and Systems Administration**

Introduction: principles of network and system administration. The OSI FCAPS definition. Network operating systems and network infrastructure and architecture. Windows/Linux Network Administration: TCP/IP fundamentals and services. Concepts of resource sharing using various utilities of Windows/Linux, users control, firewall configuration, proxy, DNS, DHCP configuration. File system access. Administering network security. Software management. Administering disaster management: Prevention and Recovery. Network reliability and availability. Server –Client Technology: Introduction, Server management, Raid management, Mirroring. Windows Network Administration: Concepts of domain, active directory, printer and other hardware resources sharing, users and group control, policies, terminal services.

**CDIT 402: Data Structures and Algorithms**

Representation of numeric data: Range precision and rounding errors, Arrays, representation of character data, strings and string processing, runtime storage management, pointers and references, linked structures. Implementation strategies for stacks, queues and hash tables. Implementation strategies for graph an trees, strategies for choosing the right data structure. Recursive mathematical functions, simple recursive functions. Introduction to algorithm analysis. Non linear structures: Trees, Binary Trees, Binary search Trees, Binary heaps. Abstraction to Huffman codes, Heapsort, Treesort, Linear Search, Binary Search.

**CDIT 403: Management Information Systems**

Introduction: Evolution and need for IS systems in enterprises. IS and organizational structure and functions. Components of MIS: Decision support system (DSS), and executive information system (EIS). Need for software integration in business enterprise. ERP software packages. IS ERP Modules: Finance, plant management, quality management, and materials management, etc. Benefits of ERP and implementation challenges. ERP Markets: SAP, Bann, Oracle, PeopleSoft, JD Edwards. IT Project Planning issues and basic approaches.

**CDIT 404: Mobile Applications Design and Programming**

Introduction to mobile and wireless computing: characteristics and features. Types and technologies of modern hand held mobile devices: mobile phones, PDAs, palmtops, tablet PCs, GPS. Technology basics: EDGE, GPRS and 3G. Embedded system concepts and mobile devices hardware architectural and modular design and layout. Design principles, architecture and characteristics of mobile operating systems. Case studies of popular mobile OSs. Mobile applications and types: email, multimedia, office products, 3rd party applications, etc. Application development: mobile programming fundamentals; mobile programming languages Java ME and Python. Application development examples, including sms, web applications, etc. Emerging business applications: m-commerce, billing, etc. Repair and maintenance approaches and practices: hardware and software. Add-on services and capabilities.

**CDIT 405: Fundamentals of Database Management Systems- ACCESS**

**Theory:**

Introduction to database systems and terminologies: data, record, database, architecture and structure of Database management system , data independence, entities, attributes, relationships and their functionality, Entity Relationships diagrams, Data manipulation Language, data Definition Language, distributed database, data base administrator. Database models: relation model, network model, hierarchical model.

**Lab**

* MS Access programming: database terminology; objects in access, working with records in tables; creating a new database; designing and editing of tables; entering and editing data in a table; more about field properties in a table; setting MACRO security.
* MS Access Forms and Basic Queries: creating forms; design view of a form; find, sort and fitter data in forms; create a select query; copying and deleting Access Objects.
* More queries: use of criteria I a query; joining tables; action queries (update queries, make table query, append queries); parameter queries.
* Reports and sharing data: creating a basic report; modifying the query to change the report results; mailing labels, importing data from an Excel spreadsheet; export data to excel; export to word.
* Advanced queries: operators; concatenating in fields; using calculations in a query; creating totals in queries; cross tab queries; types of joins; using the AND operator; using the OR operator; using the AND and OR operators together

**CDIT 406: Web Design and Authoring**

World Wide Web (WWW) and its evolution, web page, web server, HTTP protocol. Examples of web servers. Design and structures of typical web browsers: Firefox and Internet Explorer, Uniform Resource Locator (URL) Hypertext, hyperlinks and hypermedia, URL, its registration, browsers, search engines, proxy servers. Internet Applications: E-mail, Telnet, FTP, IRC, NNTP, Video conferencing, e-commerce.

**Lab**

Developing Portals Using HTML: Basic structure of HTML, designing a web page, inserting links images, horizontal rules, comments. Formatting text, title, headings, colours, fonts, sizes, simple tables and forms. HTML tags, hyperlinks. Adding graphics and images, image maps, image files. Using tables, forms, style sheets and frames. Using Front Page: Front page editor, Front page explorer. Client-side Scripting: VB Scripting Vs Java Script. Introduction to Java Scripts, event handling, verifying forms, working with browser windows, cookies, embedding with HTML. Server-side Scripting: Scripting methods, Java Server Pages (JSP). Active Server Pages (ASP). Text processing using ASP, Handling server/Client requests, Accessing databases, using IIS web server; ASP Objects . Developing Interactive Web Pages using Java scripts/VB Scripts/Java script/ASP/ JSP/CGI

**Certificate in Information Technology**

**INTRODUCTION**

Information Technology (IT) plays a major role in enabling institutions of all kinds to realize their objectives. The Maseno University Certificate in Information Technology programme is designed to equip students with practical knowledge and skills in the broad and fast changing field of Information and Communications Technology (ICT). The certificate holders of this programme may be either self employed or find employment as ICT support staff in areas such as data entry, cyber bureau, Call Centers, Business Process Outsourcing and other ICT support services. The programme also prepares students for further education.

1. **OBJECTIVES**

The objectives of the programme are to:

1. Impart knowledge on provision of ICT support services such as installation configuration and operation of various types of operating systems and other application and system software.
2. Impart hands-on skills on identification and exploitation of various ICT-based small business opportunities for self-employment in areas such as data entry, multimedia and graphics.
3. Train learners to effectively communicate information, ideas, problems and IT-based solutions.
4. Create awareness of professionalism, ethics, legal, social and security responsibilities as well as best practices and standards in the field of IT.
5. Prepare learners for Diploma level training in IT or related field.
6. **EXPECTED LEARNING OUTCOMES**

By the end of the programme, graduates are expected to:

1. Demonstrate skills on ICT support services such as installation configuration and operation of various types of operating systems and other application and system software.
2. Demonstrate hands-on skills for identification and exploitation of various ICT-based small business opportunities for self-employment in areas such as data entry, multimedia and graphics.
3. Demonstrate professionalism, ethics, legal, social and security responsibilities as well as best practices and standards in the field of IT.
4. Undertake Diploma in IT and other related areas.
5. **ADMISSION REQUIREMENTS**

Maseno University Admission policy for undergraduate programmes shall apply.

1. **DURATION OF THE PROGRAMME**

The duration of the programme shall be ONE academic year.

1. **PROGRAMME STRUCTURE**

The programme shall be offered in units as defined in the Common Rules and Regulations for Undergraduate Examinations.

1. **MODE OF DELIVERY**
2. Face to face sessions involving students and lecturers with 42 contact hours
3. e-Learning
4. **EXAMINATIONS**

Maseno University Common Rules and Regulations for Examinations shall apply.

1. **COURSE DISTRIBUTION**

**SEMESTER ONE Credit Units**

CCIT 101: Fundamentals of Information Technology 1C

CCIT 103: Computer Systems Maintenance 1C

CCIT 105: Word processing and Presentation Software 1C

CCIT 107: Spreadsheets 1C

**SEMESTER TWO Credit Units**

CCIT 102: Desktop Publishing 1C

CCIT 104: Database Management Systems 1C

CCIT 106: Basic Mathematics 1C

CCIT 108: Multimedia and Graphics Applications 1C

**10. COURSE DESCRIPTION**

**CCIT 101: FUNDAMENTALS OF INFORMATION TECHNOLOGY**

Definition: Components of computer system: computer hardware and software. Data representation. Computer system organization: block diagram of computer. CPU and memory. Input devices: keyboard, scanner, mouse, camera, etc. Output devices: Monitor, printer, plotters, network card, etc. Secondary storage: magnetic disks and optical disks. Computer software classification: system and application software. Concepts of a program and processing. Basics of networking: LANs, MANs and WANs. The Internet and its importance in data and voice communications. Internet applications. Security considerations. Information search strategies. Keyboard skills. Mouse skills. Resources: Standard Personal Computer, input devices, output devices, storage devices.

**CCIT 103: COMPUTER SYSTEMS MAINTENANCE**

Basic parts of a computer. Configuration of particular computer parts. Concepts of BIOS. Device drivers. Safe handling of hardware components. PC Assembly. Preventive Maintenance of a PC:power conservation**,** hard drive defragmentation, disk compression, hard disk scanning, hard disk performance optimization. Troubleshooting PC-related Problems: diagnostic software, BIOS related problems. Operating systems: Definition. Functions. Types. File systems. Main windows components. Managing: MEM, CPU, time, Loading programs, closing programs, creating folders, saving files, path. File organization, retrieving files, disk partitioning, and disk formatting. OS installation, configuration, up gradation, installing application software. Disk Defragmentation. Disk compression. Disk scanning. Disk Cleanup. Installing device drivers. Resources:Windows XP/7 and DOS.

**CCIT 105: WORD PROCESSING AND PRESENTATION SOFTWARE**

Word Processing: Main window features. Starting a session. Entering text. Saving a file. Closing a session. Retrieving a file. Copy/paste. Formatting: text, styles. Bullets and numbering. Headers/footers. Paragraph formatting: borders and shading. Table creation. Table formatting. Graphical Objects. Mail merge. Review document: editing text, spellchecking and grammar. Print preview/print. Presentation: Main window features. Working with Presentations: open, close presentation. Create new presentation. Save presentation to a drive or another file. Switch between presentations. Setting user preferences. Presentation views: normal view, slide sorter view, outline view, slide show view. Change between view modes. Slides: choose different built-in slide layout. Apply available design template. Change background color. Add a new slide with a specific slide layout: title slide, Master slide. Insert graphical object (picture, image, drawn object). Header/footer. Text Formatting. Lists. Tables. Charts: inserting charts, organizational charts. Prepare outputs: preparation, check and deliver. Resources: Ms Word and Ms PowerPoint or similar software.

**CCIT 107: SPREADSHEETS**

Applications. Main window features. Data types. Working with Spreadsheets: open, close application, Create a new worksheet, Enter data, save worksheet. Cells: select, copy/paste, move, delete, and Edit data, Sort data. Managing worksheets: rows and columns. Managing workbooks: copy/move, rename, insert, and delete worksheets. Formulas: inserting, copying formulas. Type of cell references. Functions: categories, inserting, copying functions. Formatting: numbers/dates, contents, alignment, border effects. Charts: create, edit. Prepare outputs: setup, Change margins, change orientation, adjust page, add, edit, and delete text in headers/footers. Printing. Resources: Ms Excel or similar software.

**CCIT 102: DESKTOP PUBLISHING**

Definition. Types of documents. Main window feature. Starting and quitting publisher. Editing text and graphics. Using Best Fit feature to adjust fonts. Editing a synchronized object (including inserting a hyperlink). Resizing and deleting objects. Designing a newsletter: describing advantages of using a newsletter, identifying steps in the design process of e newsletter, editing a newsletter template, insertion, deletion and navigation of pages in a newsletter. Publishing a tri-fold brochure: using brochure options task pane, grouping and ungrouping objects. Editing placeholder text information. Using photographs and images. Creating a logo from scratch. Printing. Resources: PageMaker or CorelDraw or similar software.

**CCIT 104: DATABASE MANAGEMENT SYSTEMS**

Definitions of key concepts. Advantages. Database organization: tables, fields, data, primary key, index. Relationships and Operations. Using the application. Working with databases: open, save and close a table, query, form report. Tables: design, create, name table and specify fields with their data types like text, number, data/time, yes/no. Switch between view modes in a table, query, form, report. Delete table, form, query, report. Navigate between records in a table, query, form, report. Sort records in a table, form, query output in ascending, descending numeric, alphabetic order. Retrieving information: main operations. Queries: create, add, and use wild card query, edit and run. Outputs: Reports, data export. Printing. Resources: Ms Access or similar software.

**CCIT 106: BASIC MATHEMATICS**

Basic algebra. Expressions and operations. Laws of exponents. Operations with polynomials. Factorize polynomials. Variations. Relations and functions. Linear functions and inequalities. Quadratics equations. Graphs and evaluation of exponential functions. Geometry. Trigonometric ratios and identities. Length, area, volume and arc length. Algebraic methods in geometry problems.

**CCIT 108: MULTIMEDIA AND GRAPHICS APPLICATIONS**

Definition of key concepts. Multimedia hardware. Application areas. Image creation: creating, editing, and optimisation. Audio capture, editing and optimisation. Video capture, editing and optimisation. 2D and 3D graphics. 2D and 3D animations. Multimedia authoring. Resources: Photoshop, Photoshop Elements, Corel Draw, Macromedia flash or similar software.