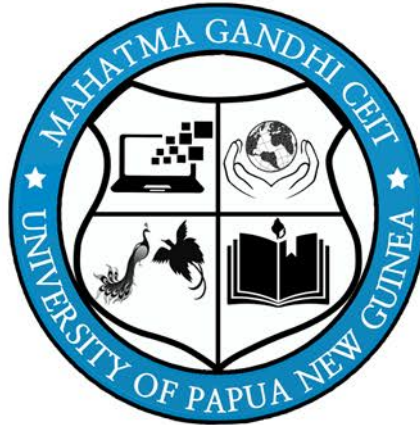




MAHATMA GANDHI CENTRE OF EXCELLENCE IN INFORMATION TECHNOLOGY (MG-CEIT)



UNIVERSITY OF PAPUA NEW GUINEA



CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING

A Scientific Society of Ministry of Electronics and
Information Technology, Government of India

Project funded by



Ministry of External Affairs
GOVERNMENT OF INDIA



Independent State of
PAPUA NEW GUINEA

Mahatma Gandhi Centre of Excellence in IT

A premier institute for training and enhancement of Information Technology skills funded by the Government of the Republic of India in collaboration with the Government of the Independent State of Papua New Guinea and operated in association with University of Papua New Guinea (UPNG) and Centre for Development of Advanced Computing (C-DAC).

Vision

Create a pool of knowledge workers and generate employment opportunities by producing world class IT professionals.

Mission

- To emerge as a premier platform in Information and Communication Technologies in Papua New Guinea country for human advancement.
- To generate knowledge with the dissemination of cutting edge ICT programs, for promoting professional and economic growth.
- To groom the students to work on current technology as well as prepare them to keep pace with the changing face of technology and the requirements of the growing IT industry.
- To create an industry-ready talent pool to cater the Information and communications technology (ICT)

About MG-CEIT

“Mahatma Gandhi Centre of Excellence in IT” in Papua New Guinea- National Capital District at University of Papua New Guinea (UPNG), is the outcome of the interest of the Papua New Guinea government in seeking assistance from India for development of ICT in Papua New Guinea.

A MoU was signed between the two countries for training in the specialized field of IT and expanding the area of cooperation between the two countries in these fields. The Government of India proposed the setting up of MG-CEIT having international outreach for imparting ICT education in Papua New Guinea. The Ministry of External Affairs (MEA), Government of India, entrusted the responsibility for setting up of a MG-CEIT at UPNG in Papua New Guinea- National Capital District, to Centre for Development of Advanced Computing (C-DAC).

MG-CEIT is targeted to offer courses on basic IT education, intermediate and advanced level certificate courses as well as courses to bridge the gap between academia and industry.

MG-CEIT offers latest courseware and reference books for training of Teachers, Students, Government Officials & Working Professionals.

Through its state-of-the-art training methodology, it will fulfill its objective of creating highly skilled IT resources and will be recognized by major corporate in Papua New Guinea. Majority of the students will get placed and shall acquire high positions in the industry. At one front, the Institute will assist Papua New Guinea to leapfrog into IT and at the other hand will bridge the digital divide of urban and rural students.

MG-CEIT will produce value-added human capital for research & software development in Papua New Guinea. The quality of education at other higher learning institutions in the other region of Papua New Guinea will be improved by MG-CEIT educated faculty & trained students.

About C-DAC

Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) for carrying out R&D in IT, Electronics and associated areas.

C-DAC has today emerged as a premier R&D organization in IT&E (Information Technologies and Electronics) in the country working on strengthening national technological capabilities in the context of global developments in the field and responding to change in the market need in selected foundation areas.

As an institution for high-end Research and Development (R&D), C-DAC has been at the forefront of the Information Technology (IT) revolution, constantly building capacities in emerging/enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions for different sectors of the economy, as per the mandate of its parent, the Ministry of Electronics and Information Technology, Ministry of Communications and Information Technology, Government of India and other stakeholders including funding agencies, collaborators, users and the market-place.

Advanced Computing Training School (ACTS)

CDAC had set up the Advanced Computing Training School (ACTS) as the top finishing school in IT training to meet the ever-increasing skilled manpower requirements of the IT industry as well as supplement its intellectual resource base for cutting edge R&D. Through its state-of-the-art training methodology, it is fulfilling its objective of creating highly skilled IT resources and recognized by major corporate in India to be a preferred high-end provider of skilled manpower in areas of ICT.

International Cooperation Division (ICD)

Over the years International Cooperation Division (ICD) CDAC Delhi has progressively grown to build an eco-system and institutional framework and acquired necessary expertise, strength and technical resources by implementing, supervising and managing large bi-lateral projects in developing countries. Till today CDAC-ICD Delhi has successfully implemented over 50 projects in Africa, East Europe, South-East Asia, Central Asia, Middle East, Arab, Latin America and Pacific Island Countries in close association with Ministry of External Affairs (MEA) and Ministry of Electronics & IT(MeitY), Government of India.

About UPNG

The University of Papua New Guinea (UPNG) is a university located in Port Moresby, capital of Papua New Guinea. It was established by ordinance of the Australian administration in 1965.

The UPNG offers various programs in Medicine, Pharmacy, Health Sciences, Physical and Natural Sciences, Law, Business, Humanities, Social Sciences, Sustainable Development fields.

Vision

The Vision of the University of Papua New Guinea is to be the Premier University dedicated to excellence and providing quality education, research, and service to Papua New Guinea and the Pacific.

Mission

The Mission of the University of Papua New Guinea is to deliver excellent education and research results for nation building and global advancement towards an innovative and empowered society.



Mahatma Gandhi Centre of Excellence in IT,PNG
www.ceit.upng.ac.pg

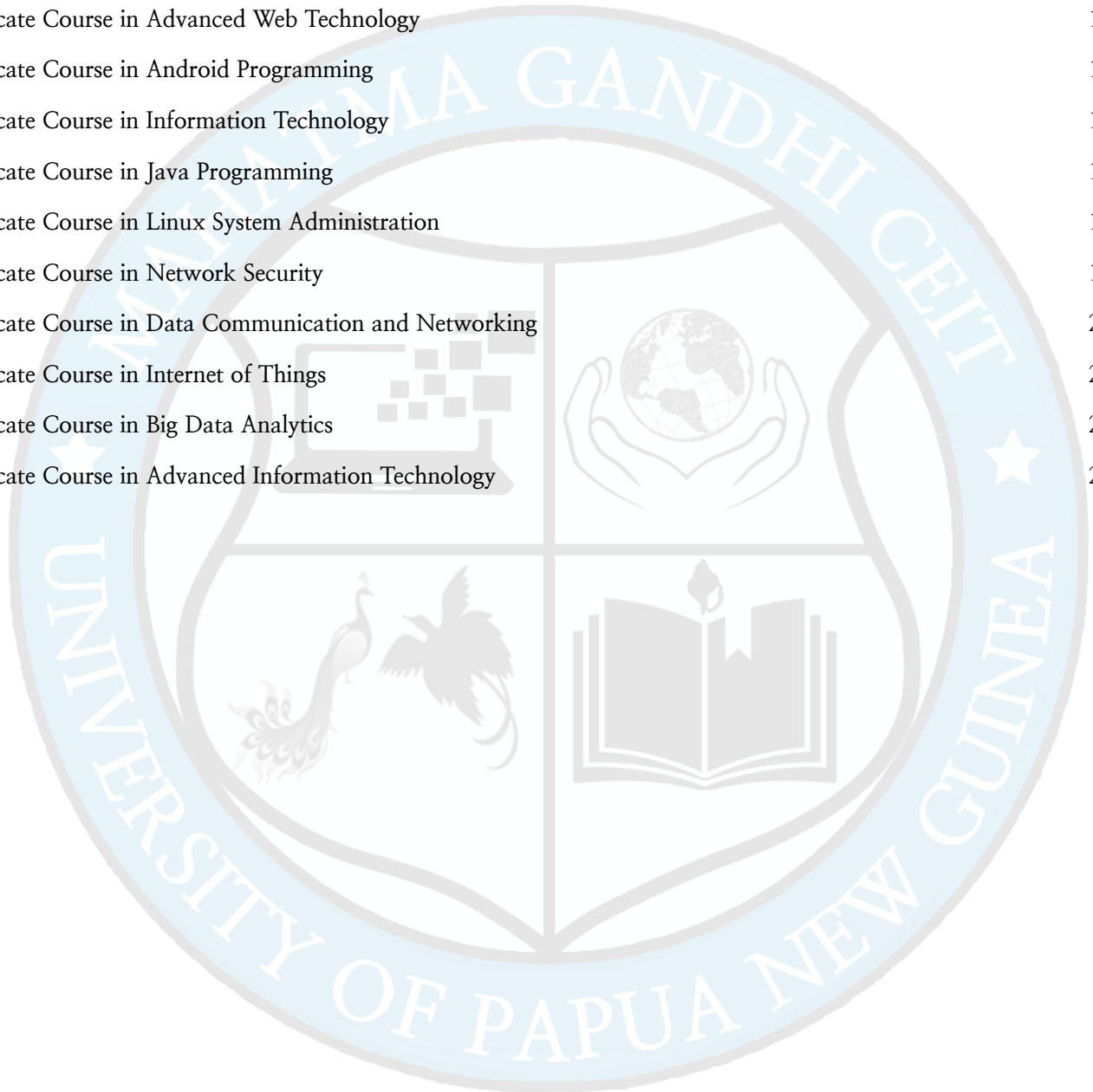
SL No	Certificate Courses	Duration (Hours)	Fee
1	Certificate Course in Office Automation Skills in Operating System, Database concepts and Office Automation tools.	144	K3,850
2	Certificate Course in Information Technology Skills in Office Automation tools, Database and Networking concepts.	180	K4,400
3	Certificate Course in Database Management Expertise in Database Technologies and Administration.	320	K4,982
4	Certificate Course in Advanced Web Technology Expertise in Web development using HTML, CSS, Javascript, PHP and SQL.	320	K5,060
5	Certificate Course in Java Programming Professionalize in Core Java and Enterprise Java for Web Development.	320	K5,060
6	Certificate Course in Android Programming Expertise in Android Programming which includes Core Java and Mobile – Wireless Technologies.	320	K5,720
7	Certificate Course in Linux System Administration Professionalize in OS Administration and Networking.	320	K5,830
8	Certificate Course in Network Security Professionalize in Network Defense and IT Infrastructure Management.	320	K4,982
9	Certificate Course in Data Communication and Networking Professionalize in Networking Concepts and Windows Server Administration.	144	K4,950
10	Certificate Course in Internet of Things Professionalize in technologies such as NodeJS , Python and Embedded Linux to develop IoT.	320	K15,100
11	Certificate Course in Big Data Analytics Expertise in Big Data Analytic domain. Analyze and visualize Big Data using Statistics with R.	320	K6,490
12	Certificate Course in Advanced Information Technology Expertise in Programming using C# .Net and Database concepts.	320	K5,060

Course Syllabus 2020



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Certificate Course in Office Automation

The objective of this course is to enable students to understand the Operating System and Office Automation tools.

Duration : 7 – 8 Weeks (144 Hours)

Fee : PKG 3,850

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Sound knowledge of Basic Computer Fundamentals.

Outcome

The Certificate Course in Office Automation provides essential knowledge on how to work with Office Automation tools and Client Operating Systems.

Course Content

SL No	Modules	Hours
1	Computer Fundamentals	6
2	Client Operating System (Windows 10, Ubuntu)	28
3	Database Concepts	30
4	MS Office 2016	60
5	Database Management using MS Access	20

Detailed Syllabus

Computer Fundamentals

Computer Fundamentals, Uses of Computer, Types of Computer, Functional blocks of a Computer system: CPU, RAM, ROM, Peripherals, Primary and Secondary storage, Input-Output devices, Software, Types of software, Operating Systems- Software used in Academic departments and other areas. Programming Language, Different types of Programming Language, Introduction to Computer Networking- Categories of Networking according to size (LAN, WAN, MAN) Network Classifications (Wired, Wireless), IP Address (Private & Public, Static & Dynamic), Communication Protocols (HTTP, HTTPS, FTP, SMTP).

Client Operating System

Common Operating Systems and their Purposes: Operating System, 32-bit vs. 64-bit Operating Systems, Workstation Operating Systems : Windows 10 and Ubuntu- Compatibility between Operating Systems.

Features of Microsoft Windows and Ubuntu Versions: Windows 8.1 and 10, Ubuntu 18.01- Desktop Styles and User Interface, Corporate vs. Personal Needs.

Windows and Ubuntu OS Installation Considerations and Upgrade Methods: Types of Installations, Prerequisites and Compatibility, Boot Methods- Partitioning, File Systems and Formatting, Post-Installation Tasks.

Using Microsoft Command-Line Tools : Command-line Basics – Navigation Commands, Networking Command, Disk and File Management Commands, Other Administrative Commands, PowerShell.

Using Microsoft OS Features and Tools : Administrative Configuration Tools, Troubleshooting Tools.

Using Windows Control Panel and Settings Utilities: Personalization, Networking, Security- Hardware and Driver Management.

Windows Application Installation and Configuration: System and OS Requirements, Installation and Deployment Methods, Permissions and Security.

Configure Client-side Windows Networking: Network Card Properties, Configuring IP Addresses, Firewall and Discovery Settings- Work-group vs Domain Networking, Mapping Shares and Printers, Establishing Remote

Connections.

Ubuntu – Exploring the GNOME Desktop: Navigating the GNOME desktop– Using the GNOME desktop with Keyboard shortcuts, Exploring the included apps– Working with files and folders, Updating and installing software (Ubuntu Store), Exploring system settings– Managing users, Modifying the GNOME environment.

Ubuntu – Working at the Command Line: Command-line Basics : Navigation Commands, Networking Commands, Disk and File Management Commands, Administrative Commands (User and permissions), Installing Software using dpkg Command.

Ubuntu – Managing the System: Managing software with APT– Managing services, Managing processes, Establishing Remote Connections using SSH.

Database Concepts

Introduction to DBMS – What is DBMS, Its need– Areas where DBMS are used– Types of DBMS, Codd's 12 rules for a Relational Database, Need for Normalization.

Database Design, Relational Model and its Concepts– DBMS Keys, Data Integrity & Integrity Rules– Data Modelling Normalization Techniques, ER Diagrams.

DDL Commands, DML & DCL Commands.

Inbuilt Functions– Grouping Things Together (Group By, Having Clause), Set Operators (UNION, UNION ALL, INTERSECT, MINUS), Sub-Queries, Joins, Indexes and Views.

MS Office 2016

MS Word

Getting Started With Word Processor, Menus and Menu Bars, Drop-Down Menus, Word Processing Terminology– Document Creation, Editing Document, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo– Searching text, Replacing, Find and Replace Font/Character and Paragraph Formatting– Spell Check, replacing texts with synonymous words– Finding meaning of words, Word Dictionary– Headers and Footers– Rulers and Tools of Word– Adding and Removing Page Borders, Inserting Graphics in the Word documents, Formatting the images, Table of Contents, Create a Table of Contents by using Built-in Heading Styles– Printing and Getting Help, Data Documents and Mail Merge– Managing Document Security, Comments, and Tracked Changes Desktop publishing concepts and create business documents and forms, Importing Files.

MS Excel

Introduction MS Excel Basics, Entering and Editing Worksheet Data, The Spreadsheet and the Data sheet. Various Commands for Worksheet / Spread sheet– Essential Worksheet and Cell Range Operations, Formatting Data in Excel– Introducing Formulas and Functions, Working with Dates and Times, Creating Charts and Graphic– Using Custom Number Formats, Using Data Validation, Creating Formulas That Count and Sum, Analyzing Data with Excel, Printing Worksheets / Charts.

MS PowerPoint

Introduction– Creating a Presentation, Slides, and Text– Presentation templates and Presentation layouts. Working with Layouts, Themes, and Masters Working with Tables and Charts, Using Smart-Art Diagrams, Clip Art, and Pictures– Building Animation Effects, Transitions, and Support Materials, Delivering a Live Presentation– Presentation Tips.

MS OneNote

Who Needs OneNote and Why, Touring OneNote, Creating a Notebook, Section, Page– Inserting Notes, Inserting an Outlook Task, Inserting a Picture or File, Inserting a Screen Clipping, Writing on a Page, Using Linked Note Taking, Using Send to OneNote, Organizing, Finding, and Sharing, Working with Notes in the Cloud.

MS Outlook

Fundamentals of E-mail, Processing and Securing E-mail, Working with Contacts– Working with Appointments and Tasks.

MS Project

Navigating in Microsoft Project 2016, Starting Microsoft Project 2016 and Opening a Template– Creating a Project Schedule, Opening a New, Blank Project Schedule, Specifying the Project’s Start Date, Saving the Newly Created Project Schedule, Defining Project Calendars, Entering Tasks and Task Details, Duration, Understanding Manual Scheduling and Automatic Scheduling Creating a Milestone– Using Work Breakdown Structure (WBS)– Organizing Tasks into Phases, Linking Tasks, Linking Phases. Entering Task Notes– Establishing Resources, Establishing Individual People Resources, Establishing Group, Equipment, Material, Cost Resources– Entering Resource Cost Information, Adjusting Resource Working Times– Assigning Work Resources to Tasks, Assigning Cost, Material Resources to Tasks, Refining Your Project Schedule, Splitting a Task, Setting Up a Recurring Task– Applying Task Constraints, Fine Tuning Tasks, Managing Task Constraints and Relationships, Exploring Effects of Constraints and Relationships, Setting Deadline Dates, Establishing Task Priorities, Project Information: Sorting, Grouping, and Filtering Formatting the Gantt Chart, Modifying the Gantt Chart Using the Bar Styles Dialog Box, and Gantt Chart Styles.

MS Publisher

Introducing Publisher Workspace, Working with Text, Graphics and Tables– Adding Special Effects. Using Building Blocks, Updating a Publication, Fine-Tuning Objects, Working with Pages, Checking and Printing, Preparing for Outside Printing, Saving a Publication for Online Photo Centre Printing.

Microsoft Office on the Web

Skype, Forms, OneDrive, OneNote, Outlook, Word, Excel, PowerPoint.

Database Management Using MS Access

Introduction to Database Management, Difference between Excel and Access, Database Functioning, Introduction to Entity and ER Diagram, Designing a Database– Starting MS Access, Access Window, Creating Access Database, Working with form– Creating Database Using Wizards, Discuss Field Properties, Working with tables– Creating Tables, Creating Tables using the Table Wizards Create Table in Data-sheet View, Create Table in Design View, Saving a Table, Adding a Field to Table in Design View– Entering Caption and Default Value for a Field, Setting Field Properties: Size, Format, etc. Viewing a Table– Setting or Changing Primary Key, Entering Data in a Table, Editing Data in a Table, Opening an existing Database– Navigating in Table, Table and Field Specifications, Record Validation Rules, Sorting and Indexing, Discussion on Useful Shortcuts Keys, Sorting and filtering records– Database Queries– Types of Queries, Designing Queries. Relationships, Defining Relationships, Types of Relationships Foreign Key and Referential Integrity, Creating Queries, Creating Select Query through Wizard, Creating Select Query Manually in Design View, Creating Parameter Query, Sorting Records in Queries, Consideration when sorting records in table, query, form, or report– Sort Records by using the Design Grid of a query, Deleting Multiple Records Using Queries, Delete records from one table or tables in a one-to-one relationships, Delete records by using query that includes both in a one-to-one relationships, Reports, Creating reports, Creating report With Report Wizards, Formatting a Report, Creating a Report in Design View, Setting Group Ranges, Mailing Labels, Object Linking and Embedding, Working With Multiple databases, Access Imports and Exports, Printing the Records of database.

Certificate Course in Database Management

The objective of this course is to provide students with expertise in Database Administration.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 4,982

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Candidate should have basic knowledge of computers.

Outcome

The candidates will be trained in Database Technologies and Administration skills.

After the completion of the course, students can work as Database Administrator/Database Developer.

Course Content

SL No	Modules	Hours
1	Fundamentals of Computer and OS concepts	20
2	C Programming	40
3	Software Development Life Cycle	16
4	Database Technologies	80
5	Database Administration	64
6	Management Development Program	40
7	Project	60

Detailed Syllabus

Fundamentals of Computer & OS Concepts

Computer Fundamental: Uses of Computer, Hardware, Accessories, Types of Computer, Hardware and Software, Operating System, Process Management, Threads, Process Scheduling, Memory Management, Virtual Memory, Input Output Management, File Management, Deadlocks, Inter-Process Communication, Classification of Computers, Introduction to Windows and Linux Operating systems, Installing Operating System, Navigation in OS, Performing a New Installation for Windows and Linux, Setting up a printer, Uninstalling software Fundamentals of Computer Networking- Types of Communication Networks, IP Address, Communication Protocols.

C Programming

Introduction to Programming Language, C Fundamentals, Operators and Expressions, Data Input and Output, Control statement, Functions, Arrays, Pointers, Structures and Unions.

Software Development Life Cycle

Software: A Process, Various Phases in s/w Development, Software Life Cycle, Agile model, Introduction to Coding Standards

Database Technologies

Database Concepts: Client/Server Computing, RDBMS Technologies, Codd's Rules, Data Models, Normalization Techniques, ER Diagrams. SQL : Overview of OORD, Introduction SQL *Plus, DDL, DML and DCL, Tables, Indexes and Views, Clusters, Sequences and Snapshots, Cursors, Stored Procedures, Triggers, Packages, Introduction to No SQL, MongoDB (Virtual DB).

Database Administration

Exploring the Oracle Database Architecture: Oracle Database Architecture Overview · Process Architecture · Memory structures · Logical and physical storage structures · Installing your Oracle Software · Tasks of an Oracle Database Administrator · Tools Used to Administer an Oracle Database Installation: System Requirements · Oracle Universal Installer (OUI) Creating an Oracle Database, Managing the Oracle Database Instance, Configuring the Oracle Network Environment, Managing Database Storage Structures Administering User Security: Database User Accounts · Predefined Administrative Accounts · Benefits of Roles · Predefined Roles · Implementing Profiles Database Maintenance · Manage optimizer statistics · Manage the Automatic Workload Repository (AWR).

Management Development Program

Introduction to Communication, Barriers to Communication, Kind of Communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, Group Discussion, Interview skills, Mock interview.

Certificate Course in Advanced Web Technology

The objective of this course is to provide students with expertise in Website development.

Duration	: 16 – 18 Weeks (320 Hours)	Fee	: PKG 5,060
Eligibility	: Minimum of Grade 12 Certificate	NSQF Level	: 7

Course Prerequisite

Sound knowledge of Computing Fundamentals.

Outcome

The Certificate Course in Advanced Web Technology (CCAWT) course aims to groom the students to enable them to work on current web technology scenarios as well as prepare them to keep pace with the changing face of technology and the requirements of the growing IT industry. After the completion of the course, students can work as Web Developer / Web Designer / IT Support Staff.

Course Content

SL No	Modules	Hours
1	Computer and Programming Concepts	40
2	Web Programming –1 (HTML, CSS, XML, Ajax)	70
3	Database Concepts	20
4	Web Programming –2 (PHP, JavaScript)	80
5	Internet Terminologies	20
6	Management Development Program	40
7	Project	60

Detailed Syllabus

Computer & Programming Concepts

Fundamentals of Computers, Uses of Computer, Hardware, Accessories, Interfaces and their functions, Computer hardware connectivity, Primary and Secondary storage, Input–Output devices, Software, Types of Software, Operating Systems, Software used in Academic departments and other areas, Computer language, Different types of Programming Languages, Operating System, Programming concepts, Algorithm, Flow charts, Introduction to loops, functions.

Web Programming – I (HTML, CSS, Ajax)

HTML 5.0 programming, Overview of Internet and Web Pages, Introduction to HTML Tags, Introduction to Web Browser / Composer, Introduction to HTML Editor, CSS Introduction, CSS Syntax, CSS Id & Class, CSS How To, CSS Styling, CSS Box Model, CSS Summary, Introduction to Ajax, Web services and Ajax, Ajax using HTML, CSS.

Database Concepts

Database Concepts, RDBMS Technologies, Codd's Rules, Normalization Techniques, SQL and PL/SQL, Overview of OORD (Oracle), Introduction SQL*Plus, DDL, DML and DCL, Tables, Indexes and Views.

Web Programming – II (PHP, Java scripts)

Java Script Introduction, JS output, JS statement, JS Comments, JS Variable, JS data types, JS Switches, loops, Introduction to PHP, Working with arrays, Functions, Forms, Handling date and Times, Working with Files, Working with database, PHP and AJAX.

Internet Terminologies

Web services, Deployments of application on Internet, Maintenance of application.

Management Development Program

Introduction to communication, Barriers to communication, Kind of communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview.

Certificate Course in Android Programming

The objective of this course is to provide students with expertise in Android Programming. This includes Core Java and Mobile and Wireless Technologies. After doing the course, the student will be able to design, develop and maintain android applications effectively.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 5,720

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Sound knowledge of Computing Fundamentals.

Outcome

The course aims to groom the students to enable them to work on current web technology scenarios as well as prepare them to keep pace with the changing face of technology and the requirements of the growing IT industry. The candidates will be trained in android Programming, Java Programming and Management skills. After the completion of the course, they can start career as Android Developer.

Course Content

SL No	Modules	Hours
1	Fundamentals of Computer	20
2	Java Programming	70
3	Mobile and Wireless Technologies	20
4	Android Programming	110
5	Management Development Program	40
6	Project	60

Detailed Syllabus

Fundamentals of Computer

Uses of Computer, Hardware, Accessories, , Interfaces and their functions, Computer hardware connectivity , Primary and Secondary storage , Input–Output devices , Software, Types of Software, Operating Systems , Computer language, Different types of Programming Languages , Operating System (Introduction, The Need of Operating System, Functions of Operating System User Interface) , Introduction to RDBMS , Overview of OORD (Oracle) , Introduction SQL *Plus , DDL, DML and DCL.

Java Programming

Object Oriented concepts, Classes and Objects Access Specifiers, Overloading, Inheritance, Polymorphism, Data Types, Operators and Language, Constructs, Classes and Objects, Inner Classes and Inheritance, Interface and Package, Exceptions, Threads, Java.lang, Java.util, Java.io, Java.swing, Introduction to servlet & JSP.

Mobile and Wireless Technologies

Basics of Wireless Technologies, Cellular Communication: Single cell systems, multi–cell systems, frequency reuse, analog cellular systems, digital cellular systems, GSM standard: Mobile Station, BTS, BSC, MSC, SMS sever, call processing and protocols , CDMA standard: spread spectrum technologies, 2.5G and 3G Systems: HSCSD, GPRS, W–CDMA/UMTS, 3GPP and international roaming, Multimedia services, CDMA based cellular mobile communication systems , Wireless Personal Area Networks: Bluetooth, IEEE 802.11a/b/g standards, Mobile Handset Device Interfacing: Data Cables, IrDA, Bluetooth, Touch– Screen Interfacing, Wireless Security, Telemetry, Introduction to WAP, WML Script and XHTML, Introduction to Multimedia Messaging Services (MMS), NFC (Near Field Communication).

Android Programming

Introduction of Android, Why develop for Android, Android SDK features, Creating android activities, Fundamental Android UI design, Intents, adapters, dialogs, Android Technique for saving data, Data base in Androids, Maps, Geocoding, Location based services, Toast, using alarms, , Instant messaging, Using blue tooth, Using Telephony, Introducing sensor manager, Managing network and wi–fi connection, Advanced androids development, Linux kernel security, Push Notification in Android, Android cloud.

Management Development Program

Introduction to Communication, Barriers to Communication, Kind of Communication, Confidence building Non–verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, Group Discussion, Interview skills, Mock interview.

Certificate Course in Information Technology

The objective of this course is to provide students with expertise in IT for Management, Office Automation tools, Database and Networking concepts.

Duration : 9 – 10 Weeks (180 Hours)

Fee : PKG 4,400

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Sound knowledge of Basic Computer Fundamentals

Outcome

The Certificate Course in Information Technology provides essential knowledge on how to work in Office Automation Tools and Networking.

Course Content

SL No	Modules	Hours
1	Computer Fundamentals	20
2	Overview of Networking	20
3	IT for Management	50
4	Office Automation Tools	60
5	Database Concepts and MS Access	30

Detailed Syllabus

Computer Fundamentals

Computer Fundamentals, Uses of Computer, Types of Computer, Functional blocks of a Computer system: CPU, RAM, ROM, peripherals– Primary and Secondary storage– Input–Output devices– Software, Types of software, Operating Systems– Software used in Academic departments and other areas. Computer language, Different types of Programming Language Classification of Computers, Introduction to windows and Linux Operating systems, Installing Operating System, Navigation in OS, Performing a New Installation for Windows and Linux, Setting up a printer, Uninstalling software.

Overview of Networking

Introduction to Computer Networking– Categories of Networking according to size (LAN, WAN, MAN) Network Classifications (Wired & Wireless), OSI and TCP/IP Model IP Address (Private & Public, Static & Dynamic), Communication Protocols (HTTP, HTTPS, FTP, SMTP).

IT for Management

Digital Technologies, Data Governance, IT Architecture and Cloud strategies, Data Management, Big data and Business Intelligence , Digital Networks, Cybersecurity, Risk Management and Financial Crime – Internet Technologies and Search Strategies, Social Media Strategies and Metrics Retail, Mobile and E–Commerce – Tactical and Operational Support systems, Strategic Enterprise systems – Data Visualization and Geographic Systems, IT Strategy and Balanced Scorecard, Project Management and SDLC.

Office Automation Tools

MS Word

Getting Started With Word Processor, Menus and Menu Bars, Drop–Down Menus, Word Processing Terminology– Document Creation, Editing Document, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo– Searching text, Replacing, Find and Replace Font/Character and Paragraph Formatting– Spell Check, replacing texts with synonymous words– Finding meaning of words, Word Dictionary– Headers and Footers– Rulers and Tools of Word– Adding and Removing Page Borders, Inserting Graphics in the Word documents, Formatting the images, Table of Contents, Create a Table of Contents by using Built –in Heading Styles– Printing and Getting Help, Data Documents and Mail Merge– Managing Document Security, Comments, and Tracked Changes Desktop publishing concepts and create business documents and forms, Importing Files.

MS Excel

Introduction MS Excel Basics, Entering and Editing Worksheet Data, The Spreadsheet and the Data sheet. Various Commands for Worksheet / Spread sheet– Essential Worksheet and Cell Range Operations, Formatting Data in Excel– Introducing Formulas and Functions, Working with Dates and Times, Creating Charts and Graphic– Using Custom Number Formats, Using Data Validation, Creating Formulas That Count and Sum, Analysing Data with Excel, Printing Worksheets / Charts.

MS PowerPoint

Introduction– Creating a Presentation, Slides, and Text– Presentation templates and Presentation layouts. Working with Layouts, Themes, and Masters Working with Tables and Charts, Using Smart–Art Diagrams, Clip Art, and Pictures– Building Animation Effects, Transitions, and Support Materials, Delivering a Live Presentation– Presentation Tips.

MS OneNote

Who Needs OneNote and Why, Touring OneNote, Creating a Notebook, Section, Page– Inserting Notes, Inserting an Outlook Task, Inserting a Picture or File, Inserting a Screen Clipping, Writing on a Page, Using Linked Note Taking, Using Send to OneNote, Organising, Finding, and Sharing, Working with Notes in the Cloud.

MS Outlook

Fundamentals of E–mail, Processing and Securing E–mail, Working with Contacts– Working with Appointments and Tasks.

MS Project

Navigating in Microsoft Project 2016, Starting Microsoft Project 2016 and Opening a Template– Creating a Project Schedule, Opening a New, Blank Project Schedule, Specifying the Project's Start Date, Saving the Newly Created Project Schedule, Defining Project Calendars, Entering Tasks and Task Details, Duration, Understanding Manual Scheduling and Automatic Scheduling Creating a Milestone– Using Work Breakdown Structure (WBS)– Organising Tasks into Phases, Linking Tasks, Linking Phases. Entering Task Notes– Establishing Resources, Establishing Individual People Resources, Establishing Group, Equipment, Material, Cost Resources– Entering Resource Cost Information, Adjusting Resource Working Times– Assigning Work Resources to Tasks, Assigning Cost, Material Resources to Tasks, Refining Your Project Schedule, Splitting a Task, Setting Up a Recurring Task– Applying Task Constraints, Fine–Tuning Tasks, Managing Task Constraints and Relationships, Exploring Effects of Constraints and Relationships, Setting Deadline Dates, Establishing Task Priorities, Project Information: Sorting, Grouping, and Filtering Formatting the Gantt Chart, Modifying the Gantt Chart Using the Bar Styles Dialog Box, and Gantt Chart Styles.

MS Publisher

Introducing Publisher Workspace, Working with Text, Graphics and Tables– Adding Special Effects. Using Building Blocks, Updating a Publication, Fine–Tuning Objects, Working with Pages, Checking and Printing, Preparing for Outside Printing, Saving a Publication for Online Photo Centre Printing.

Microsoft Office on the Web

Skype, Forms, OneDrive, OneNote, Outlook, Word, Excel, PowerPoint.

Database Concepts and MS Access

Introduction to DBMS – What is DBMS, Its need– Areas where DBMS are used– Types of DBMS, Codd's 12 rules for a Relational Database, Need for Normalization.

Database Design, Relational Model and its Concepts– DBMS Keys, Data Integrity & integrity rules– Data Modelling. Normalization Techniques, ER Diagrams.

DDL Commands, DML & DCL Commands.

Database Functioning, Introduction to Entity and ER Diagram, Designing a Database– Starting MS Access, Access Window, Creating Access Database, Working with form– Creating Database Using Wizards, Discuss Field Properties, Working with tables– Creating Tables, Creating Tables using the Table Wizards Create Table in Data–sheet View,

Create Table in Design View, Saving a Table, Adding a Field to Table in Design View– Entering Caption and Default Value for a Field, Setting Field Properties: Size, Format, etc. Viewing a Table– Setting or Changing Primary Key, Entering Data in a Table, Editing Data in a Table, Opening an existing Database– Navigating in Table, Table and Field Specifications, Record Validation Rules, Sorting and Indexing, Discussion on Useful Shortcuts Keys, Sorting and filtering records– Database Queries– Types of Queries, Designing Queries. Relationships, Defining Relationships, Types of Relationships Foreign Key and Referential Integrity, Creating Queries, Creating Select Query through Wizard, Creating Select Query Manually in Design View, Creating Parameter Query, Sorting Records in Queries, Consideration when sorting records in table, query, form, or report– Sort Records by using the Design Grid of a query, Deleting Multiple Records Using Queries, Delete records from one table or tables in a one-to-one relationships, Delete records by using query that includes both in a one-to-one relationships, Reports, Creating reports, Creating report With Report Wizards, Formatting a Report, Creating a Report in Design View, Setting Group Ranges, Mailing Labels, Object Linking and Embedding, Working With Multiple databases, Access Imports and Exports, Printing the Records of database.

Certificate Course in Java Programming

The objective of this course is to provide students with expertise in Java Programming. This includes both the Core Java and Advanced Java programming. After doing the course, the student will be able to design, develop and maintain web-based enterprise applications effectively.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 5,060

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Sound knowledge of Computing Fundamentals.

Outcome

Java is one of the most popular languages in the IT industry and many existing/upcoming technologies like Android, Hadoop uses java framework, which java assures demand for java professional in the IT market in the coming future. After the completion of the course, students can work as a Software Developer or Programmer / IT Support staff / Trainee / Technical Support in associated service sectors.

Course Content

SL No	Modules	Hours
1	Fundamentals of Computer and OOPs concepts	26
2	Software Development Life Cycle	12
3	Database Technologies	30
4	Foundations of Web Technologies	32
5	Core Java	50
6	Enterprise Java	70
7	Management Development Program	40
8	Project	60

Detailed Syllabus

Fundamentals of Computer & OOPs Concepts

Fundamentals of Computers, Uses of Computer, Hardware, Accessories□ Interfaces and their functions, Computer hardware connectivity, Primary and Secondary storage, Input–Output devices, Software, Types of software, Operating

Systems, Software used in Academic departments and other areas, Operating System (Introduction, The Need of Operating System, Functions of Operating System User Interface), Integer representation and number conversion, Linux Commands, Fundamentals of Algorithms, Mathematical Analysis for recursive and non-recursive algorithm, Object Oriented concepts, Classes and Objects, Access Specifiers, Overloading, Inheritance, Polymorphism.

Software Development Life Cycle

Software Engineering, Brief concept of Software Life Cycle Models, Agile Techniques for Software Development, Software Development Tools & Techniques, Introduction to Coding Standards, Software Testing.

Database Technologies

Database Concepts, Client/Server Computing, RDBMS Technologies, Codd's Rules, Data Models, Normalization Techniques, ER Diagrams.

SQL and PL/SQL, Overview of OORD (Oracle), Introduction SQL*Plus, DDL, DML and DCL, Tables, Indexes and Views, Generic PL/SQL.

Foundations of Web Technologies

HTML 5.0 programming, Overview of Internet and Web Pages, Introduction to HTML Tags, Introduction to Web Browser / Composer, Introduction to HTML Editor, CSS Introduction, CSS Syntax, CSS Id & Class, CSS How To, CSS Styling, CSS Box Model, CSS Summary, Java Scripting, JS Introduction, JS Statements, JS Comments, JS Variables, JS Operators, JS Comparisons, JS Popup Boxes, JS Functions, JS Events, JS Special Text, JS Objects, JS Reg Exp, jQuery, Introducing to jQuery, Selecting the elements, Bringing pages to life with jQuery, JQuery Events, Energizing pages with animations and effects, DOM with jQuery utility functions, The Purpose and Nature of XML, XML Syntax and Structure rules, XML Document Type Declaration, XML and Data Binding XML linking mechanisms, XML style language, XML parser

Core Java

Data Types, Operators and Language, Constructs, Inner Classes and Inheritance, Interface and Package, Exceptions, Threads, Java.lang, Java.util, Java.awt, Java.io, Java.applet, Java.swing.

Enterprise Java

Servlets, Java Server Pages, Remote Method Invocation, JDBC, Java Beans, Enterprise Java Beans, Java Security, Naming Services, Java Mail, Java Messaging Services, Transactions, Introduction to Struts Framework, Introduction to hibernate, HQL, J2EE (struts) and hibernate, Introduction to JSF.

Management Development Program

Introduction to communication, Barriers to communication, Kind of communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview.

Certificate Course in Linux System Administration

The objective of this course is to provide students with expertise in Linux System Administration.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 5,830

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Candidate should have basic knowledge of Computer, Operating System and Networking fundamentals with logical approach.

Outcome

The candidates will be trained in Networking, System Administration and Linux Administration skills. Linux System administrators can work in a variety of industries, ranging from telecommunications to security exchanges. Jobs for Linux System administrators are expected to increase at an average rate over the next several years.

After the completion of the course, students can work as Linux Administrator/Operations Engineer/Site Reliability Engineer/Devops Engineer.

Course Content

SL No	Modules	Hours
1	Basic of Linux Administration	50
2	Fundamentals of Networking	40
3	System Administration	130
4	Management Development Program	40
5	Project	60

Detailed Syllabus

Basic of Linux Administration

Introducing Linux, Installing Linux, History, Distributions, Devices and Drives in Linux, File system Hierarchy, Components: Kernel, Distribution, XFree86, Sawfish, Gnome, GNOME Basics. Changing the desktop background, adding menu items, plugins.

Changing the screen resolution, Evolution – the default e-mail client in Fedora., Mozilla – Web browser, OpenOffice – Productivity tools. Word processor, spreadsheet, presentation software., gaim – Chat application, XScreenSaver.

How user preferences are stored in your home directory, Updating your system with up2date / yum., How to restart X11: Ctrl+Alt+Backspace, The command-line (shells, tab completion, cd, ls), file management: cd, df, find, locate, nano, the text editor that replaces pico. man pages – the help system, ssh – secure text-based connectivity to other machines. Demonstrate X-Forwarding.

Handling compressed archives with zip and tar, GNU screen – The ability to resume command-line sessions from anywhere., Adding users, groups, su – the obsoleted way to become the root user, sudo – the modern way to run processes as another user., Changing users' passwords with the passwd command, Printing with CUPS, Installing new software with yum (if Fedora) or YaST (if SUSE), Installing new software with rpm, Installing webmin for easy web based systems administration.

Fundamentals of Networking

Introduction to Computer Networking, Categories of Networking according to size (LAN, WAN, DAN, MAN), Types of connections, Network classifications (Wired, Wireless) Network Hardware Devices (Hub, Switch, Modem, Router, Bridge, firewall etc), TCP/IP overview, IP addressing, IPv6, Sub-netting, super-netting, Planning and Implementing, Architecture of Internet and intranet, Port Security, Spanning tree Protocol, Troubleshooting.

System Administration

logfiles: Using tail -f to watch /var/log/messages, Configuring Kerberos authentication, Explaining file permissions, including setuid., How to enable and disable services, ntp – Setting up time synchronization, Setting DNS settings by editing /etc/resolv.conf, Changing XFree86 settings in /etc/XFree86/XFree86.conf.

Apache and MySQL administration : About the Apache webserver, about the MySQL database engine, about the PHP scripting language, enabling the Apache with PHP and MySQL services, using MySQL Administrator, PHPMyAdmin – web based administration and query console for MySQL, Adding a MySQL user in phpmyadmin, Installing WordPress – a popular blogging software that uses MySQL, Installing Coppermine – a popular photo gallery software that uses MySQL.

Windows Integration : Connecting to your Linux machine from Windows using PuTTY and WinSCP, WINE – free Windows API compatibility layer, for running Windows applications in Linux. mIRC as a sample application, Samba basics, Configuring Samba to authenticate using ADS, rdesktop – Windows Terminal Server Client, smbclient – an FTP-like client for SMB shares, smbmount – Mounting samba shares to a local directory (explain mount), smb4k.

Automation: cut – cutting out the good parts of your input, sort – sorting files, uniq – finding the unique lines in a set of input, sed – searching and replacing, tail, head, find –exec – running a command on a large set of files, Writing a shell script, Scheduling tasks with cron.

System Administration, Mounting disks, Killing processes with kill, Fetching files with wget.

Compiling software: configure, make, make install, fstab, Reviewing find and du for finding out where your disk space went to, Single user mode, X: Networking Tools, ping – check if a host is online, traceroute – see your hops between hosts, telnet – diagnostics, nmap – seeing what ports are open on a host, xinetd – the “internet super server”, TCP/IP service manager, lsof – list open ports and files, ethereal – Packet Sniffer Extraordinaire.

Customizing your user environment: symbolic links, The Z Shell, aliases, including –s types in zsh, variables, PATH, prompts, Terminal transparency, adding things to your X startup.

Management Development Program

Introduction to Communication, Barriers to Communication, Kind of Communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, Group Discussion, Interview skills, Mock interview.

Certificate Course in Network Security

The objective of this course is to provide expertise in Network Defense and IT Infrastructure Management.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 4,982

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Candidate should have basic knowledge of computer and networking fundamentals with logical approach.

Outcome

The Certificate Course in Network Security (CCNS) course aimed to provide skills on networking and its maintenance and will help the students to make carrier in Network management.

After the completion of the course, students can work as Network Administrator/Operations Engineer/Site Reliability Engineer/security Engineer/ IT Infrastructure Engineer/Information Security Assurance.

Course Content

SL No	Modules	Hours
1	Network Fundamentals	40
2	Network Defense and Countermeasures	100
3	IT Infrastructure Management	80
4	Management Development Program	40
5	Project	60

Detailed Syllabus

Network Fundamentals

Introduction to Computer Networking, Categories of Networking according to size (LAN, WAN, DAN, MAN), Types of connections, Network classifications (Wired, Wireless), Network Hardware Devices (Hub, Switch, Modem, Router, Bridge, Repeaters, firewall, etc) Overview, TCP/IP overview, IP addressing, Sub-netting, super-netting, IPv6, Planning and Implementing, Architecture of Internet and intranet, Port Security, Spanning tree Protocol, Troubleshooting.

Network Defense and Countermeasures

Security Fundamentals, Firewalls, Define the Types of Firewalls, Application Layer Firewalls, Packet Filtering Firewalls, Hybrids, Intrusion Detection And Prevention, Intrusion risks, Security policy, Monitoring traffic and open ports, Detecting modified files, Investigating and verifying detected intrusions, Recovering from, reporting and documenting intrusions, Define the Types of intrusion Prevention Systems, Setup an IPS, Manage an IPS, Understand Intrusion Prevention, Issues with Intrusion Prevention, IP Signature and Analysis, Risk Analysis, Virtual Private Networks, Define Virtual Private Networks, Deploy User VPNs, Benefits of user VPNs, Managing User VPNs, Issues with User VPNs, Deploy Site VPNs, Benefits of Site VPNs, Managing Site VPNs, Issues with Site VPNs.

IT Infrastructure Management

Introduction to ITIL, Service Strategy, Service Design, Service Transition, Service Operation, Continual Service Improvement, Data Centre Management, Introduction to DCM, Data Centre design, Best Practices in IT, Server Security, Storage area network.

Management Development Program

Introduction to Communication, Barriers to Communication, Kind of Communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview.

Certificate Course in Data Communication and Networking

The objective of this course is to enable students to understand the basic networking concepts, to design a local area network and supervise the physical implementation of the same. Also students will be trained on Windows Server 2016.

Duration : 7 – 8 Weeks (144 Hours)

Fee : PKG 4,950

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Basic understanding on peripheral devices, computer hardware and software, memory, storage devices, some common PC utilities, Internet concepts

Outcome

After the completion of the course, Student should be able to perform all administrative operations on a Local Area Network independently, including configuring software in the Windows environment, connecting and configuring peripherals such as printers, scanners etc., granting and restricting access to the network and the internet through a proxy server.

Course Content

SL No	Modules	Hours
1	Introduction to Networking	26
2	Windows Server 2016	54
3	Introduction to Linux OS administration and configuration	48
4	Configuration of Routers and Switches using Simulation Tool	16

Detailed Syllabus

Introduction to Networking

Goals, Applications & Types of Networking, OSI Layers, TCP/IP, Planning the Network, LAN topologies, Cabling considerations, Understanding, Internetworking devices – hubs, switches, bridges, routers etc, Structured UTP cabling.

Windows Server 2016

Part 1: (14 hours) Deploying windows server 2016, Preparing for Installation, Installing Windows Server 2016, Introduction to Administering Accounts and Resources, The Windows Server 2016 Family, Logging on to Windows Server 2016, Installing and Configuring Administrative Tools, Creating User Accounts, Creating Computer Accounts, Creating an Organizational Unit.

Managing User and Computer Accounts

Modifying Users and Computer Account Properties, Enabling and Unlocking User and Computer Accounts, Creating a User Account Template, Locating User and Computer Accounts in Active Directory, Saving Queries, Resetting User and Computer Accounts, Moving Domain Objects.

Managing Groups

Creating Groups, Managing Group Membership, Strategies for Using Groups, Modifying Groups, Using Default Groups, Best Practices for Managing Groups.

Part 2:

Implementing & Managing Printing, File, Mail Installing and Sharing Printers, Managing Access to Printers Using Shared Printer Permissions, Managing Printer Drivers, Implementing Printer Locations, Changing the Location of the Print Spooler, Setting Printer Priorities, Scheduling Printer Availability, Configuring a Printing Pool, Sharing files, folders etc

Part 3:

Networking Windows Server 2016, Windows Server 2016 Networking Environment, Setting up and managing a Network, The Architecture of Active Directory, Using Active directories and domains, How Active Directory Works, Examining Active Directory, The Active Directory Design, Planning, and Implementation Processes, Managing Virtual Private Networks, Managing Advanced Network Services, Using Network Monitor, Managing Routing and Remote Access Services, Managing the Internet Authentication Service.

Part 4:

Communication and the Internet, Networking with TCP/IP, Managing the Domain Name System Service, Managing the Windows Internet Name System Service, Managing Internet Information Services, Managing Web Sites, Managing Routing and Remote Access Services, Managing the Internet Authentication Service, Managing the Dynamic Host Configuration Protocol, Communication and Internet Service.

Part 5:

Administrating Windows Server 2016, Managing Windows Server 2016, Controlling Windows Server 2016 security, Overview of Security in Windows Server 2016, Monitoring Server Memory, Preparing for Disaster Recovery, Backing up Data, Using Security Templates to Secure Computers, Testing Computer Security Policy, Configuring Auditing, Managing Security Logs.

Introduction to Linux OS administration and configuration

Overview of Linux Architecture, Using Linux (commands and utilities), NFS and NIS installation and configuration, Configuring Networks, Shell programming, User Management, Backup and Recovery, Troubleshooting, Security, Perl scripting.

Basic Configuration of Routers and Switches using Simulation Tool

Introduction to Routers, Switches Hands on BOSON Router Simulation Hands on Cisco ConfigMaker tool.

Certificate Course in Internet of Things

Certificate Course in IoT aims to groom the students to enable them to work on technologies such as NodeJS , Python and Embedded Linux to develop IoT.

Duration	: 16 – 18 Weeks (320 Hours)	Fee	: PKG 15,100
Eligibility	: Minimum of Grade 12 Certificate	NSQF Level	: 7

Course Prerequisite

Sound knowledge of Computing Fundamentals.

Outcome

Candidates will be trained in communication protocols, tools such as NodeJS and Python for development and embedded Linux

After the completion of the course, students can work as a Software Developer or Programmer /IT Support staff/ Trainee / Technical Support for the IoT based products and its associated service sectors.

Course Content

SL No	Modules	Hours
1	Fundamentals of IoT	30
2	IoT prototyping using NodeJS	30
3	Python Programming	30
4	Embedded Linux	35
5	Wireless Network	30
6	Communication models and IoT Protocols	30
7	Cloud Platforms for IoT	35
8	Management Development Program	40
9	Project	60

Detailed Syllabus

Fundamentals of IoT

IOT Architecture, building blocks, Things in IOT, Terminology

- end nodes/sensor nodes
- gateways
- servers/cloud platforms

Applications of IOT standards, history, IOT-A Reference model, architecture Enabling technologies talking to environments – available sensors, actuators, sensor nodes, connectivity solutions, gateway solutions cloud platforms, Challenges in IOT – power optimization, mobility, connectivity, security.

IoT prototyping using NodeJS

Nodejs:–Setting up Nodejs, Simple scripts, console operations, variables, data types, operators, control structures, functions, arrays, string handling, classes & objects, event handling, error handling, package management, importing libraries.

NodeRED:–

Setting up nodered on target machine, Available nodes, Inject, Debug, significant function nodes, Creating simple flows, sub flows, Writing functions, Importing, Exporting flows, Context management, Storing Data, Adding additional nodes, UI development using NodeRED.

Python Programming

Setting up python interpreter, Simple programs, console i/o operations Data types, variables, literals, operators, Conditional branching, loops Arrays & Strings, Functions, Modules, Package management, Regular expressions, pattern matching, Error handling, Standard Library.

Embedded Linux

Architecture of embedded linux – kernel, system calls, libraries, Internals – Process, Thread, File Handling, Getting familiar with Linux command line, Environment Variables, Basic Administration, Deploying Linux on target board, rootfs image, File System Hierarchy, Understanding boot loaders for target boards. System Monitoring & Tracing techniques – procs, sysfs.

Package management on Linux, Understanding cross tools, Cross compiling applications, Peripheral interfacing using libraries:

- ADC
- GPIO, PWM
- UART

Wireless Network

Network layer model for IOT, Physical channels for communication (wired/wireless), IPv4 concepts, TCP, UDP Protocols, Socket Programming, IEEE 802.11(WLAN), Bluetooth, Bluetooth Low Energy (BLE) – protocols, profiles, RFID concepts.

IoT Protocols and Communication models

M2M vs IOT, Communication models, Request Response, Publish Subscribe, Push Pull, Exclusive Pair, Communication Protocols: MQTT, CoAP, Websockets, HTTP REST (GET, POST, PUT, DELETE) – Available tools & libraries for above protocols, Protocol Bridging, Interoperability.

Cloud Platforms for IoT

Virtualization concepts, Cloud Architecture, Cloud services – SaaS, PaaS, IaaS, Study of IOT Cloud platforms, Supporting protocols and connectivity, Data Visualization, Dashboards.

Management Development Program

Introduction to communication, Barriers to communication, Kind of communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview.

Certificate Course in Big Data Analytics

The objective of Certificate Course in Big Data Analytics (CCBDA) is to provide students with expertise in Big Data Analytic domain. Analyze the big data using Statistics with R, Data Visualization – Analysis and Reporting, Business Analytics.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 6,490

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Sound knowledge of Computing Fundamentals, Database Technology and Java Programming.

Outcome

After the completion of the course, students can work in domain of Analytics. Also students will be able work in Statics using R, Data Visualization and Business Analytics.

Course Content

SL No	Modules	Hours
1	Big Data Fundamentals	30
2	Statics with R	90
3	Data Visualization – Analysis and Reporting	40
4	Business Analytics	60
5	Effective Communication and Soft Skills	60
6	Project	40

Detailed Syllabus

Big Data Fundamentals

Big Data – Beyond the Hype, Big Data Skills and Sources of Big Data, Big Data Adoption, What is Big Data?, Characteristics of Big Data – The Four V's, Understanding Big Data with Examples, The Big Data Platform, Technical Details of Big Data Components, Text Analytics and Streams, Cloud and Big Data.

Statics with R

Probability & Statistics: Introduction to Statistics– Descriptive Statistics, Summary Statistics Basic probability theory, Statistical Concepts (uni-variate and bi-variate sampling, distributions, re-sampling, statistical Inference, prediction error), Probability Distribution (Continuous and discrete– Normal, Bernoulli, Binomial, Negative Binomial, Geometric and Poisson distribution), Bayes' Theorem, Central Limit theorem, Data Exploration & preparation, Concepts of Correlation, Regression, Covariance, Outliers etc.

R Programming : Introduction & Installation of R, R Basics, Finding Help, Code Editors for R, Command Packages, Manipulating and Processing Data in R, Reading and Getting Data into R, Exporting Data from R, Data Objects–Data Types & Data Structure. Viewing Named Objects, Structure of Data Items, Manipulating and Processing Data in R (Creating, Accessing, Sorting data frames, Extracting, Combining, Merging, reshaping data frames), Control Structures, Functions in R (numeric, character, statistical), working with objects, Viewing Objects within Objects, Constructing Data Objects, Building R Packages, Running and Manipulating Packages, Non parametric Tests– ANOVA, chi-Square, t-Test, U-Test, Introduction to Graphical Analysis, Using Plots(Box Plots, Scatter plot, Pie Charts, Bar charts, Line Chart), Plotting variables, Designing Special Plots, Simple Linear Regression, Multiple Regression.

Data Visualization – Analysis and Reporting

Information Visualization, Data analytics Life Cycle, Analytic Processes and Tools, Analysis vs. Reporting, Modern Data Analytic Tools, Visualization Techniques, Visual Encodings, Visualization algorithms, Data collection and binding, Cognitive issues, Interactive visualization, Visualizing big data – structured vs unstructured, Visual Analytics, Geomapping, Dashboard Design,

Business Analytics

Introduction to Business Analytics using some case studies, Making Right Business Decisions based on data, Exploratory Data Analysis – Visualization and Exploring Data, Descriptive Statistical Measures, Probability Distribution and Data, Sampling and Estimation, Statistical Interfaces, Predictive modeling and analysis, Regression Analysis, Forecasting Techniques, Simulation and Risk Analysis, Optimization, Linear, Non linear, Integer, Decision Analysis, Strategy and Analytics, Overview of Factor Analysis, Directional Data Analytics, Functional Data Analysis.

Effective Communication and Soft Skills

Introduction to Communication, Barriers to Communication, Kind of Communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview.

Certificate Course in Advanced Information Technology

The objective of this course is to provide students with expertise in Programming. Also students will be trained in MS .NET technologies.

Duration : 16 – 18 Weeks (320 Hours)

Fee : PKG 5,060

Eligibility : Minimum of Grade 12 Certificate

NSQF Level : 7

Course Prerequisite

Sound knowledge of Computing Fundamentals.

Outcome

The candidates will be trained in Database and .NET Technologies After the completion of the course, students can work as Software Engineer and associated service sectors.

Course Content

SL No	Modules	Hours
1	Fundamentals of computer and OS concepts	20
2	Advanced MS office with Access	30
3	C Programming	30
4	Software Development Life Cycle	16
5	OOP with C++ with DS	40
6	Database Technologies	30
7	MS.Net using C#	54
8	Management Development Program	60
9	Project	40

Detailed Syllabus

Fundamentals of Computer & OS Concepts

Computer Fundamental: Uses of Computer, Hardware, Accessories, Types of computer, Hardware and Software, Operating System ,Process Management, Threads, Process Scheduling, Memory Management, Virtual Memory, Input Output Management, File Management, Deadlocks, Inter –process Communication ,Classification of ComputersIntroduction to windows and Linux Operating systems, Installing Operating System, Navigation in OS, Performing a New Installation for Windows and Linux , Setting up a printer ,Uninstalling software Fundamentals of Computer Networking– Types of Communication Networks, IP Address, Communication Protocols

Advanced MS office with Access

MS Word 2016 MS PowerPoint 2016 MS Excel 2016 MS Access 2016

C Programming

Introduction to Programming Language, C Fundamentals, Operators and Expressions, Data Input and Output, Control statement, Functions, Arrays, Pointers, Structures and Unions

Software Development Life Cycle

Software: A Process, Various Phases in s/w Development, Software life cycle, Agile model, Introduction to Coding Standards

OOP with C++ with DS

Difference between C and C++ Introduction to C++: Identifier, Keywords, Constants, Operators: Arithmetic, relational, logical, conditional and assignment. Sizeof operator, Operator precedence and associativity. Type conversion, Variable declaration, expressions, statements, manipulators, Input and output statements, stream I/O, Conditional and Iterative statements, breaking control statements. OOP Concepts– Class and Objects, Executing sample C++ programs, Static Member, Inline Function, Access specifiers, String & Streams, Constructors and Destructors, Properties, Types of constructors & destructors, Inheritance, Types of inheritance, Friend functions, Friend

Classes, Polymorphism, Types of polymorphism, Overloading functions, Overloading Operators, Copy Constructors, Run Time Polymorphism, Virtual Functions, Exception Handling, Namespaces, File Handling, Classes for file stream operations, opening and closing a file, detecting end of file, file modes, file pointers and their manipulations, Sequential input and output operations, Random access, File operations error handling, Command line argument, Class and Function Templates, subclass templates, passing template classes to template parameters, Dynamic memory allocation, Allocating a block of memory: MALLOC, Allocating a Multiple blocks of memory: CALLOC, Introduction of REALLOC, Free, Introduction to algorithm, Analysis of algorithm, Space complexity of algorithm, Time complexity of algorithm, Lists (Stacks), Lists (queues), Lists (Singly, Doubly and Circular), Searching (Sequential & Binary), Analysis of sorting & searching algorithms, Sorting (Selection, Insertion, Bubble sort), Sorting (Merge, Heap & Quick).

Database Technologies

Introduction to DBMS Types and Components of DBMS Advantages of DBMS Database Design Codd's Rules Normalization Techniques Introduction to Oracle SQL* Plus DDL, DML and DCL Tables, Indexes and Views PL/SQL Cursors Stored Procedures Triggers.

MS.Net using C#

Introduction to .NET Frameworks, Application Domain, Language Interoperability, .NET Framework Class Library, Assemblies, Introduction of Windows Presentation Foundation, Introduction of Windows Workflow Foundation, Introduction of Windows Communication Foundation, C# .NET – Need of C#, Operators, Namespaces & Assemblies, Arrays, Preprocessors, Delegates and Events, Boxing and Unboxing, Regular Expression, Collections, Exceptions Handling, Introduction to Win Forms, Working with database, Windows Communication Foundation.

Management Development Program

Introduction to communication, Barriers to communication, Kind of communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview.

Contact Us

Why MG-CEIT

Industry valued certificates will be issued in association with C-DAC to the students.

Trending Courses : Certificate Courses in Office Automation, Information Technology, Database Management, Advanced Web Technology, Java Programming and Android Programming.

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UPNG:

University of Papua New Guinea
PO Box 320, University 134
National Capital District
Papua New Guinea
Tel : (675) 326 0900/7200/7201
Web : www.upng.ac.pg

MG-CEIT:

Mahatma Gandhi Centre of Excellence in IT
First Floor, Student Union Building,
Waigani Campus, The University of Papua New Guinea,
P.O. Box 320, Port Moresby Papua New Guinea
Tel : +675 3267424
Email : ceit@upng.ac.pg
Web : www.ceit.upng.ac.pg

CDAC:

Centre for Development of Advanced Computing
H.O.: Pune University Campus, Ganesh Khind,
Pune – 411 001 INDIA
Tel : +(91) 20 25704100
Web : www.cdac.in