CENTRE OF EXCELLENCE IN INFORMATION TECHNOLOGY (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

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GOVERNMENT OF INDIA

Independent State of
PAPUA NEW GUINEA

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 CEIT

"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 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 CEIT at UPNG in Papua New Guinea- National Capital District, to Centre for Development of Advanced Computing (C-DAC).

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.

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.

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 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.

SL No	Certificate Courses	Duration (Hours)	Fee
1	**Certificate Course in Office Automation** The objective of this course is to understand the Operating System, Database concepts and office Automation tools.	144	K – –
2	**Certificate Course in Information Technology** The objective of this course is to understand office Automation tools ,Database and Networking concepts.	180	K – –
3	**Certificate Course in Database Management** The objective of this course is to expertise in Database technologies and in administration.	320	K – –
4	**Certificate Course in Advanced Web Technology** The objective of this course is to expertise in Web development using HTML,CSS,javascript,PHP and SQL.	320	K – –
5	**Certificate Course in Java Programming** The objective of this course is to expertise in Core Java and Enterprise Java for Web Development.	320	K – –
6	**Certificate Course in Android Programming** The objective of this course is to expertise in Android Programming which includes core java and Mobile – Wireless Technologies.	320	K – –
7	**Certificate Course in Linux System Administration** The objective of this course is to expertise in OS Administration and Networking.	320	K – –
8	**Certificate Course in Network Security** The objective of this course is to provide skills in Network defence and IT Infrastructure Management.	320	K – –
9	**Certificate Course in Data Communication and Networking** The objective of this course is to understand the basic networking concepts and Windows Server Administration.	144	K – –
10	**Certificate Course in Internet of Things** This course aims to expertise on technologies such as NodeJS and Python for development and embedded Linux to develop for IoT.	320	K – –
11	**Certificate Course in Big Data Analytics** The objective of this Course is to expertise Big data analytic domain. Analyze and visualize the big data using Statistics with R.	320	K – –
12	**Certificate Course in Advanced Information Technology** The objective of this course is to expertise in Programming using C# .Net and Database concepts.	320	K – –

Contents

Certificate Course in Office Automation

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

Duration	:	144 Hours	Fee	:	PKG ---
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 in office automation Tools and client operating systems.

Course Content

SL No	Modules	Hours
1	Computer Fundamentals	14
2	Client Operating System (Windows 10, Ubuntu)	20
3	Database Concepts	30
4	MS Office 2016	60
5	Database Management using MS access	20

Certificate Course in Information Technology

The objective of this course is to enable the student to understand office Automation tools, PC and Networking concepts.

Duration	:	180 Hours	Fee	:	PKG ---
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	Selecting Components and Preparing PC	32
3	Office Automation Tools	60
4	Database Concepts and MS Access	14
5	Communication using PC	18
6	Overview of Networking	36

Certificate Course in Database Management

The objective of this course is to provide the student with an expertise in Database Administration.

Duration : 320 Hours
Fee : PKG ---

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

These 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	60
7	Project	40

Certificate Course in Advanced Web Technology

The objective of this course is to provide the student with an expertise in Website development.

Duration : 320 Hours
Fee : PKG ---

Eligibility : Minimum of Grade 12 Certificate
NSQF Level : 7

Course Prerequisite

Sound knowledge of Computing Fundamentals and Fundamentals of Programming.

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, Javascripts)	80
5	Internet Terminologies	20
6	Management Development Program	60
7	Project	40

Detailed Syllabus

Computer & Programming Concepts (40 Hours)

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 area., Computer language, Different types of Programming Languages, Operating System, Programming concepts, Algorithm, Flow charts, Introduction to loops, functions

Web Programming – I (HTML, CSS, Ajax) (60 Hours)

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 (20 Hours)

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) (80 Hours)

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 (20 Hours)

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 Java Programming

The objective of this course is to provide the student with an 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	:	320 Hours	Fee	:	PKG ---
Eligibility	:	Minimum of Grade 12 Certificate	NSQF Level	:	7

Course Prerequisite

Sound knowledge of Computing Fundamentals and Fundamentals of Programming.

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	60
8	Project	40

Detailed Syllabus

Fundamentals of Computer & OOPs Concepts (26 Hours)

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 area. , 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 (12 Hours)

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 (30 Hours)

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 (32 Hours)

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 RegExp, 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 parsers.

Core Java (50 Hours)

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 (70 Hours)

Servlets, Java Server Pages , Remote Method Invocation , JDBC , JavaBeans, 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 Android Programming

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

Duration	:	320 Hours	Fee	:	PKG ---
Eligibility	:	Minimum of Grade 12 Certificate	NSQF Level	:	7

Course Prerequisite

Sound knowledge of Computing Fundamentals and Fundamentals of Programming.

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. These candidates will be trained in android Programming,Java Programming and Management skills. After the completion of the course, They can start career as software Android Developer/Web Developer/ Web Designer.

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	60
6	Project	40

Detailed Syllabus

Fundamentals of Computer (20 Hours)

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 (70 hours)

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 (20 hours)

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 (110 hours)

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 Linux System Administration

The objective of this course is to provide the student with an expertise in OS Administration.

Duration	:	320 Hours	Fee	:	PKG ---
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

These 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	60
5	Project	40

Detailed Syllabus

Basic of Linux Administration (50 Hours)

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 (40 Hours)

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 (130 Hours)

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. We will use 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 skills to those students who want to make a career in Network defence and IT Infrastructure Management.

Duration	:	320 Hours	Fee	:	PKG ---
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	60
5	Project	40

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 the student to understand the basic networking concepts, design a local area network and supervise the physical implementation of the same.

Duration	:	144 Hours	Fee	:	PKG ---
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 (26 hrs)

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 (54 hrs)

Part 1: (14 hours) Deploying windows server 2016, Preparing for Installation, Installing windows installing 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: (8 hours)

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: (12 hours)

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: (8 hours)

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: (12 hours)

Administrating Windows Server 2012, Managing windows server 2012, Controlling windows server 2012 security, Overview of Security in Windows Server 2012, 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 (48 hrs)

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 (16 hrs)

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 and Python for development and embedded Linux to develop for IoT.

Duration	:	320 Hours	Fee	:	PKG ---
Eligibility	:	Minimum of Grade 12 Certificate	NSQF Level	:	7

Course Prerequisite

Sound knowledge of Computing Fundamentals and Fundamentals of Programming.

Outcome

Candidates will be trained in communication protocols, tolls like 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	60
9	Project	40

Detailed Syllabus

Fundamentals of IoT (30 Hrs)

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 (30 Hrs)

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 (30 Hrs)

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 (35 Hrs)

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 Hiearchy, Understanding boot loaders for target boards.System Monitoring & Tracing techniques – procfs, sysfs
Package management on Linux, Understanding cross tools, Cross compiling applications, Peripheral interfacing using libraries:
- ADC
- GPIO, PWM
- UART

Wireless Network (30 Hrs)

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 (30 Hrs)

– 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 (35 Hrs=17 T + 18 L)

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 this course is to provide the student with hands on experience in Big Data Analytics.

Duration	:	320 Hours	Fee	:	PKG ---
Eligibility	:	Minimum of Grade 12 Certificate	NSQF Level	:	7

Course Prerequisite

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

Outcome

The objective of Certificate Course in BigData Analytics (CCBDA) is to provide the student with an expertise Big data analytic domain. Analyze the big data using Statistics with R, Data Visualization – Analysis and Reporting, Business Analytics. After the completion of the course, students can work in Statics with R, Data Visualization, 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 (30 Hrs)

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 (90 Hrs)

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 Liner Regression, Multiple Regression.

Data Visualization – Analysis and Reporting (40 Hrs)

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 (60 Hrs)

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 (60 Hrs)

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 the student with an expertise in Programming. Students who will complete this course will be able to work in ICT industries as a software developer.

Duration	:	320 Hours	Fee	:	PKG ---
Eligibility	:	Minimum of Grade 12 Certificate	NSQF Level	:	7

Course Prerequisite

Sound knowledge of Computing Fundamentals and Fundamentals of Programming.

Outcome

These 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#	74
8	Management Development Program	40
9	Project	40

Contact Us

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