रा.इ.सू.प्रौ.सं
NIELIT

राष्ट्रीय इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी संस्थान, दमन
National Institute of Electronics & Information Technology, Daman

Course Prospectus

Certified System and Networking Specialist

Dec 2022-Jan 2023

National Institute of Electronics & Information Technology

D A M A N

Achieving Excellence Together

National Institute of Electronics and Information Technology (NIELIT) is an autonomous body of Ministry of Electronics and Information Technology, Govt. of India. It is a premier organization for education, training, R&D and consultancy in IT and electronics.

NIELIT carries out Human Resource Development and related activities in the area of Information, Electronics & Communications Technology (IECT). It is engaged both in Formal & Non-Formal Education besides industry-oriented quality education and training programs in the state-of-the-art areas. NIELIT has endeavored to establish standards to be the country's premier institution for Examination and Certification in the field of Information, Electronics and Communication Technology.

The objective of NIELIT is to bridge the gap between the academic institutions and industries. It is an implementing agency for various Government schemes related to human resource development in the field of IECT.

Main focus of NIELIT is on delivering quality education in the future skills areas including Artificial Intelligence, Internet of Things, Data Analytics, 3D Printing, Cloud Computing, Virtual Reality, Robotic Process Automation & Cyber Security.

A centre of NIELIT is opened in Daman in the Union territory of Daman & Diu Dadra Nagar Haveli with the objective of providing quality education to the student community in DD & DNH, Gujarat and Maharashtra region.

The Course

Name of the Course
Certified System and Networking Specialist

Course Code
2022/ITES/NIELIT/05520

Starting Date
06-12-2022

Duration
9 Weeks. Distribution of training duration into theory/practical/ OJT component

Theory	136 Hrs.
Practical	212 Hrs.
OJT Component /Internship / Project	12 Hrs.

NSQF Level
Level 4

Course Coordinator

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Preamble

Almost Every sector of industry OR education requires networking in some or the other way. In the business sector, networking is applicable from manufacturing to business processing. As organizations and institutions invest in domains like technology, cloud computing, big data, etc. they all depend on a workforce with networking skills to make the most of this technology. Today the supply of networking workforce does not match with the demand, due to which in the future these professionals will discover opportunities for the growing economy.

Objective of the Course

The networking domain is huge with sub-domains like routing and switching, security, service provider, collaboration, etc. Routing and Switching is the pillar of networking. The professionals working in this domain handle the network effectively. Every company will require routing and switching professionals to handle their networks. Same is applicable in the security domain. Every network set up in companies will need to be secured their sensitive data. Hence the job opportunities in this domain multiply day by day.

Outcome of the Course

This course is designed at par with the industry requirements to provide the participants in-depth knowledge and skills required by Networking field around the globe. It provides comprehensive knowledge about the fundamental principles, implementation and troubleshooting in domain of networking and system administration.

Expected Job Roles

Network Administrator,
Network Engineer,
System Administrator,
Network System Administrator,
Self-employed person.

Course Structure

	Formal structure of qualification (NSQF Level 4)	
	Title of component and identification code/NOSs/Learning out comes	Estimated Size (Learning Hours)
1	Develop skills to Design, Configure, Implement, Maintain and Troubleshoot a Network	116 hours
2	Develop skills to implement Client Server Network using Windows Server 2000X	116 hours
3	Develop skills to implement Client Server Network using Linux Operating System	116 hours
4	CCNA based project	12 hours
	Total Duration	360 Hours

I.   Course Fees

General Candidates: Course fee is Rs. *15,000*/- + taxes as applicable (currently GST 18%)

SC/ST Candidates: Tuition Fees is waived for SC/ST students However they are required to remit an amount of **Rs. *3000*/- as Advance caution/security deposit**. This amount will be considered as caution/security deposit and will be refunded after successful completion of the course. If the student fails to complete the course successfully, this amount will be forfeited.

II. Fee payment Schedule

Students can pay the full fees as per schedule below.

Fees	Amount for General Candidates		Amount for SC/ST Candidates.	# Due Date (on or before)
Course Fee, GST & Caution Deposit	Remaining Course fee	Rs 15,000	Rs.3,000 (Refundable after successful completion of course)	06-12-2022
	GST (18%)	Rs 2,700		
	Caution Deposit	Rs 2,000 (Refundable)		
	Total	Rs 19,700		

*Above fee is inclusive of CGST 9%, SGST 9% and revision, if any by Government shall be applicable at the time of payment.

III.   Eligibility:

Final year of 3-year Diploma in (IT / CS / Electronics / Instrumentation) Or 2 years ITI in (IT / CS / Electronics / Instrumentation) after10th
Or Pursuing graduation / Post Graduation in (IT / CS / Electronics / Instrumentation)

IV.   Number of Seats

20 (Twenty, as first come first served)

V.   Selection of Candidates

Selection is based on the marks in the qualifying degree.

VI.   Hostel Facility

Hostel facility available outside campus (not owned by NIELIT)

VII.   Counselling/Admission

06th December 2022

VIII.   Important Dates (if applicable)

- Last date for submitting application: 25-Nov-2022
- Selection intimation through e-mail/website: 28-Nov-2022
- Counseling/Admission:06-Dec-2022

IX.   Course Timings

9.30 am to 5.00 pm on all working days.

X.   Placement:

Placement assistance shall be provided

XI.   Course Registration Link

https://forms.gle/sppJFJdkeanbubpS8

Course Contents

Module 1: Learning skills to Design, Install, Configure, Manage and Troubleshoot a Computer Network Fundamentals Computers associated with Networking	
Topics	**Learning Outcome**
• What is a Computer Network, Network types, topologies, Standards, Concept of Data Centres, SDN and various certification in Computer Networks • What is cloud Computing, types of Cloud, Uses of Cloud Computing, Associated tools and Techniques used in Cloud Computing, Career Certifications in Cloud Computing. • Cyber Security overview, Concept of SOC, SOAR, SIEM etc in Cyber Security, Compliances in Cyber Security, Various Certifications in Cyber Security	✓ Learning Basics of Computer Networks, Cloud Computing and Cyber Security
Learning skills to Design, Install, Configure and Manage Troubleshoot a Computer Network	
• Ethernet Fundamentals and Cabling • Three-Layer Hierarchical Architecture, Networking Basics • ISO-OSI Reference Model • TCP / IP Protocol Model • Introduction to WPAN, LAN, MAN, WAN.	✓ Acquiring skills for Ethernet and Internetworking

• IP Addressing, IP Address Types, • Subnetting and Classless Inter Domain Routing (CIDR), • Variable Length Subnet Masking(VLSM), Practical design problems in networks, • IPV6 Concepts.	✓ Gaining IP Addressing Skillset
• Router architecture, • Switch Architecture, • Working of Router and Switch, • IOS Command line Introduction of Routers and Switches	✓ Obtaining skills in basic Configuration of routers and Switches
• Configuring DHCP Services, • Understanding Address Resolution Protocol (ARP), • Using Cisco Discovery Protocol (CDP), • Telnet, Hostname Resolution, IPV6 implementation	✓ Acquiring Advance Router Configuration Skills
• Basic Routing Process, • Configuring Static Routing, • Dynamic Routing.	✓ Learning Routing Fundamental Skills
• Routing Information Protocol (RIP), RIPv1, RIPv2, RIPng • Enhanced Interior Gateway Routing Protocol (EIGRP) EIGRPv6 • Single Area Open Shortest Path First (OSPF), Multi Area Open Shortest Path First (OSPF), OSPFv3, • Detailed concepts of each of the protocols with their specific Configuration and troubleshooting	✓ Gaining skills in Advance Concepts of Routing
• First Hop Redundancy, Protocol(FHRP) • Hot standby Routing protocol (HSRP)	✓ Acquiring Skills for Advanced Network Concepts

Topics	Learning Outcome
• Gateway Load Balancing protocol (GLBP) • Virtual Router Redundancy Protocol (VRRP)	
• Basic Switch configuration • Catalyst Switches • Port Security Configuration	✓ Conceptual Skill for Layer 2 Switching
• Virtual LAN (VLAN) Basics • Inter VLAN Routing, • VTP • Spanning Tree protocol (STP) • Advance STP Concepts, • Ether Channel • Wireless Networking in detail	✓ Acquiring Skills for Advanced Switching Concepts
• Network Address Translation (NAT) concepts, • Types of NAT, • Introduction to Access Control Lists(ACLs), • Type of ACLs. • Configuring, Testing and Troubleshooting NAT and ACLs	✓ Learning Network Address Translation (NAT)and Security Skills
• Introduction to Wide Area Networks, • High-Level Data-Link Control (HDLC) Protocol, • Point-to-Point Protocol (PPP), • VPN Concepts • Network Security.	✓ Obtaining skills for Wide Area Network**s**

Module 2: Develop skills to implement Client Server Network using Windows Server 200X

Develop skills to implement Client Server Network using Windows Server Administration

Topics	Learning Outcome
• Installing Windows Sever and its Configuration,	✓ Acquiring Skills to Deploy and Manage Windows Server

• Managing Local Storage, • Remote login Management, •Coverage of File and print Services in detail	Roles and features
• Installation of Domain Controllers and its Management, • Installation of Active Directory Services and its Management, • Active Directory Domain Services Object	✓ Acquiring skills to Implement Domain Controllers and Active Directory Services.
• Configuration of Group Policies, • Group Policy Objects, • Group Policy Preferences, • Account Policies, • Security Policies, • Application Security Policies and Windows Firewall.	✓ Obtaining Skills to Implement Group Policy, Account policy and Security
• Windows Deployment Service • Patch Management, • Monitoring events, • Configure Network Monitoring, • Performance	✓ Acquiring Skills to Manage and Monitor Windows Server
• Install and configure File Server Resource Manager, • Bit Locker Encryption and Policies, • Audit Policies and Advance Concepts in Auditing	✓ Gaining skills for File and disk Encryption and Audit policies
• Configuring and managing DHCP Server, • DNS Server, • Network Policy Server • Web Server, • FTP Server and other relevant secure protocols associated. • Configuring VPNs	✓ Acquiring detailed skills about various types of Server Configurations and VPNs in Windows Server
• Configuring and managing Hyper-V in detail,	✓ Learning skills about Virtualization in

• Virtual Machine Storage Concept, • Configure Virtual networks • Backup and Restore	Windows Server

Module 3: Develop skills to implement Client Server Network using Linux Operating System

Develop skills to implement Client Server Network using Linux Operating System

Topics	Learning Outcome
• Shell Prompt and Basic Commands, • Input-output Redirection, • Regular Expressions, • Grep Command usage, • Usage of help / wildcards, • Usage of tar, gzip and bzip2 for compression, decompression, • zip and unzip utilities, • Create, delete, copy, and move files and directories, • Usage of hard links and soft links, File Permissions	✓ Acquiring Basic Linux Skills
• Basics of File System • Creation and deletion of partitions, • Usage of LVM, • Concept of Disk quotas, Swap Space, UUIDs	✓ Acquiring Skills on File System Concepts and Management
• Installing and updating Software packages, • Usage of rpm, yum and apt • Process management in Linux, • At and cron scheduling tasks, • Configuration of time services	✓ Obtaining Skills for Software, Processes and Scheduling Management
• Basic Networking Concept in Linux, • Configure Firewall settings, Using SSH for remote login, • Advance concepts in SSH, • Concept of SELinux,	✓ Gaining Skills in Networking and Security in Linux

• Detailed Usage of SELinux	
• Linux Installation, • Usage of Kickstart in installing Linux, • Advance installation concepts, • Run levels in Linux, • Shell Scripting Concepts, • Virtualization in Linux • Firewalls and ip tables	✓ Acquiring Installation, Run Levels and other Advance Concepts in Linux
• Apache Web Server, • DHCPServer, • DNSServer, • Vsftpd ftp server, • SyslogServer, • PostfixMail Server, • SambaServer, • NFS Server, • Squid Proxy Server and other secure versions of the protocols	✓ Obtaining Detailed knowledge about various Server Configurations

Autonomous Scientific Society of
Ministry of Electronics & Information Technology,
Govt. of India

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