



रा.इ.सू.प्रौ.सं

# NIELIT National Institute of Electronics and Information Technology, Calicut

CDS/CA/7.5.1/F 40/R11

## COURSE PROSPECTUS

**Name of the Group:** *IT Group*

**Name of the Course:** *Certificate Course in Network Administration and Security*

**Course Code:** *IS701*

**Starting Date:** *23-07-2018*

**Duration:** *6 Weeks*

**Course Coordinator:** *Hari.K, 9446451215*

### **Preamble:**

Data networks are more crucial for businesses than ever before. They are the lifeline to the critical financial, healthcare and information services that need to function at the highest, most secure level. Network administrators are in charge of a company or organization's network and computer systems. They oversee how these systems run and may give technical support or troubleshooting when something doesn't go quite right.

Network administrators install, configure and maintain local area networks (LANs) and wide area networks (WANs). In addition, network administrators also need to secure these systems. This may include installing security devices, configuring network permissions, encrypting network transmissions and monitoring those systems to guarantee their integrity. Network administrators are employed in almost every industry and almost in every company.

### **Objective of the Course:**

The Course is a six weeks program aimed at giving the candidate the basic knowledge and skills needed to configure, manage and troubleshoot the network infrastructure and keep their organization productive. With minimal extra effort, the candidate will be able to appear for Comptia Network+ Certification examination. Also the candidate will get an overview of certifications like CCNA, CCNP, Certified Ethical Hacker etc.

### **Outcome of the Course:**

On successful completion, the candidate will be able to:

- Understand the basics of Linux Operating Systems.
- Understand networking standards and specifications.
- Build a SOHO network.
- Understand TCP/IP, Protocol analysis and IP addressing ( IPv4 and IPv6 )
- Understand the concepts of Subnetting, IP Routing and NAT.



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- Configure Switching and VLANs
- Configure Wireless networking.
- Configure firewalls and basic server applications.
- Understand network security, management and troubleshooting

## Course Structure:

Sl. No.	Topics	Duration
1	Introduction to Linux, Networking & Devices	1 Week
2	TCP/IP, Protocol Analysis, Subnetting & Routing	1 Week
3	Switching & VLANs, Wireless LANs, Authentication	2 Weeks
4	Security & Infrastructure services, Network Management	2 Weeks

## Other Contents

### a. Course Fees:

**General Candidates:** Course fee is ₹15,000/- (Including GST )

**SC/ST Candidates :** Tuition Fee is waived for SC/ST students admitted under SCSP/TSP. However they are required to remit an amount of ₹ 1000/- 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 along with any other caution/security deposits by the student will be forfeited.

**b. Registration Fee:** An amount of Rs.1000/- should be paid at the time of registering for the course. The same will be considered as caution deposit on student joining the course. This advance deposit will not be refunded for a selected candidate who does not join the course.

**c. Course Fee Installment Structure:** Not applicable for this course

### d. Eligibility:

Three year Polytechnic Diploma/any Bachelors Degree. Final year or course completed students can also apply. Candidate should have basic computer concepts and skills, and should have interest in computer networking. Candidates with two year ITI Certificate in relevant areas, with minimum one year experience can also apply.

**e. Number of Seats : 20**

### f. How to Apply :

Students are advised to apply online at <http://nielit.gov.in/content/online-registration>. Payment towards nonrefundable registration fee of Rs.1,000/- (not applicable for SC/ST students) *may be paid through online payment*



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gateway available in the Registration page or through any of the mode of payments specified in <http://nielit.gov.in/calicut/content/mode-payments-0>

The Institute will not be responsible for any mistakes done by either the bank concerned or by the depositor while remitting the amount into our account.

**g. Selection of candidates :**

Based on their marks obtained in the qualifying examination, subject to eligibility and availability of seats.

**h. Test/Interview : Not Applicable**

**i. Counseling/Admission:** Starting Date of the Course

**j. Spot Admission :** Unfilled/vacant seats are filled through spot admission. Spot admission (if open) will close within 5 days of Admission of a particular course. On spot admission, student should provide an undertaking saying that he/she is fully aware that he/she missed so much days of class and will not ask for extra classes or further extension of course.

**k. Admission Procedure :**

Students who have been selected for admission are required to report to the Institute on the prescribed day by 9:30 hrs along with the following

- a. **Original and attested Copies of Proof of Age, Qualifications, etc**
- b. **One passport size photograph and one stamp size photograph for identity card.**
- c. **SC/ST Certificate (Original and two attested copies, if applicable)**

**l. Discontinuing the course:** No fees (including the caution deposit) under any circumstances, shall be refunded in the event of a student discontinuing the course. No certificate shall be issued for the classes attended.

**m. Course Timings :**

9:30 Hrs to 17:00 Hrs (Excluding Saturdays, Sundays and National Holidays - 13:00 Hrs to 14:00 Hrs Lunch break)

**n. Location and how to reach :**

NIELIT Calicut is located very close to NIT campus and is about 22Kms from the Calicut (Kozhikode) city. A number of buses (Buses to NIT via Kunnamangalam) are available from "Palayam Bus Stand and KSRTC Bus Stand". The bus stop at our Institute is called "Panthrand" and is one stop before NIT. The bus fare is around ₹ 17/- from Calicut City to NIELIT.



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Calicut (Kozhikode) is well connected by Rail, Road and Air form different parts of the country. The maximum and minimum temperatures range between 35°C and 20°C.

**o. Course enquiries :**

Students can enquire about the various courses either on telephone or by personal contact between 9.15 A.M. to 5.15 P.M. (Lunch time 1.00 pm to 1.30 pm) Monday to Friday.

**p. Important Dates:**

Starting date: 23.07.18

Last date to submit application form: 16.07.18

Selection intimation in website: 18.07.18

Counseling/Admission 23.07.18

Commencement of class work: 23.07.18

Payment of Fee 23.07.18

**q. Placement :** Support shall be provided

**r. Hostel facilities :**

Hostel accommodation is available for boys and girls on monthly or daily chargeable basis. The hostel fee varies from ₹1400 /- to ₹1500/- per month depending on the type of accommodation. However, students are required to pay the hostel fees for the duration of the course for which they are seeking admission at the time of joining the course.

**s. Boarding facilities:**

Canteen & Mess facility is available for both boys & girls. Students, those who avail mess facility should pay monthly mess fee @Rs.130/\*- per day. An amount of Rs.1,000/- should be paid as mess advance to the Canteen Contractor at the time of joining the mess which will be adjusted in the last month's mess fee.

*\*as per the present rate of contract agreement*

An amount of Rs.3,000/- should be paid as caution deposit (hostel & mess) at the time of joining the hostel which will be refunded/adjusted at the end of the course. For students not availing hostel facility, Rs.1,000/- will be the caution deposit

**t. Lab Facilities :**

For practicing, the course lab is equipped with Cisco Catalyst 3650 L3 Managed Core Switch, L2 Managed switches, Wireless Access Points,



Firewalls and Desktop PCs. IT Lab is equipped with Intel Xeon Dual Processor Rack servers from HP, Lenovo DELL, and more than 100 networked PCs with **1Gbps** Internet connectivity. Software available include various flavors of Windows and Linux Operating Systems and various commercial and open source development tools, database and cloud servers.

#### u. Course Contents :

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| 1  | <b>Operating System Basics</b>                                 | Overview of Linux, Installation of Ubuntu/CentOS, add/remove software, updating, adding users. Basic Linux Commands.   |
| 2  | <b>Introduction to Networks</b>                                | Introduction to LAN, WAN, Peer-to-Peer, Client-Server, topologies and network backbone   |
| 3  | <b>OSI Reference model</b>                                     | Internetworking models, Layered approach, advantages, functions of each layers. Introduction to encapsulation and modulation techniques.   |
| 4  | <b>Networking Topologies, Connectors, and Wiring Standards</b> | Physical media, twisted pair cable, fiber optic cable, cable properties, transmission speeds, distance, wiring standards. UTP cable crimping, termination and testing.                                   |
| 5  | <b>Ethernet Specification</b>                                  | Ethernet basics, collision domain, broadcast domain, ethernet frames, addressing, physical layer.  |
| 6  | <b>Networking devices</b>                                      | Overview of common network connectivity devices – NIC, hub, bridge, switch, router, firewall, IDS/IPS, access points, load balancer, modem, multilayer switch, DHCP server, DNS server, proxy server.    |
| 7  | <b>Introduction to TCP/IP</b>                                  | Overview of TCP/IP protocol stack. TCP, UDP, IP headers. Common application layer protocols.   |
| 8  | <b>Protocol analysis</b>                                       | Protocol analysis with Wireshark. ARP, ICMP, DNS & HTTP  |
| 9  | <b>IP Addressing</b>   | IPv4 and IPv6 Addressing, subnetting, NAT.   |
| 10 | <b>IP Routing</b>  | Routing basics, Static and dynamic routing, Basic static router setup with Linux PC.   |
| 11 | <b>Routing Protocols</b>                                       | Introduction to Internet. Role of routers, routing vs forwarding, Distance vector and Link state protocols, Introduction to common routing protocols ( RIP, BGP, OSPF etc.)                              |
| 12 | <b>Switching and VLANs</b>                                     | Switching services, VLANs  |
| 13 | <b>Wireless Networking</b>                                     | Overview of The 802.11 standards, comparison, components – access points, Wireless NIC, antennas, controllers, mobile hot spots. Site survey, wireless security, RADIUS. Configuration of Access Points. |



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| 14 | <b>Authentication and Access Control</b>    | Overview of filtering, ACLs, tunneling, encryption, remote access, user accounts, password security, PKI, AAA services.  |
| 15 | <b>Network threats mitigation</b>           | Overview of Security threats, denial of service, distributed DoS, authentication issues, viruses, vulnerabilities, malicious users, phishing, forensics, patches, driver updates, configuration backups etc. |
| 16 | <b>Security services and devices</b>        | Firewalls/UTMs, DMZ, Proxy servers, Application layer firewalls, Content filtering, IDS & IPS. Configuration of <b>pfSense firewall</b> .  |
| 17 | <b>Infrastructure services</b>              | Configuring NTP, DHCP, DNS and TFTP on Linux. Overview of LDAP.  |
| 18 | <b>WAN</b>                                  | WAN concepts & Technologies  |
| 19 | <b>Network Troubleshooting</b>              | Common network troubleshooting commands and tools.   |
| 20 | <b>Network Documentation and Management</b> | Tools for Network diagramming and Network monitoring. Concepts of SNMP, RMON, sFlow and NetFlow. Overview of security standards, policies and auditing.  |