**Course Name: Linux Server Administration**

**Course Code: PGDNA121**

**Objectives:**
Students will learn
- To understand the basic principles underlying Server Software
- Planning and Deploying Linux Server
- Manage the Servers Efficiently

**Prerequisites:**
Fundamentals of Networking, Knowledge of Operating Systems

**Contents:**

1. **Linux Server Introduction:** Overview of Linux Distros, Installation & Package Management, File System Management (Partitioning, LVM, RAID)

2. **Network Related Configurations:** Network Interfaces, Network Management & Configurations, Configuring DHCP, Linux Permissions, Controlling Access to Services, Runlevels, Authentication Configuration,

3. **Linux Services:** Open SSH, DNS Services, HTTP Services, FTP Services, Mail Services (Postfix), Proxy Server

4. **System Configurations:** Boot Sequence, Configuring Environment settings, Process Management, Automated Tasks, System logging & Log Files, Archiving

**Main Reference Book(s):**

2. Colligs T., Wall K., “Red Hat Linux Networking & System Administration”, Wiley India

**Accomplishments of the student after completing the course:**
- Ability to Plan, Deploy and Linux Server
- Ability Monitor and Manage Linux Server.
- Perform the tasks of a Network Administrator.
Course Name: Windows Server Administration

Course Code: PGDNA122

Objectives:
Students will learn
- To understand the basic principles underlying Server Software
- Planning and Deploying Windows Server
- Manage the Servers Efficiently

Prerequisites:
Fundamentals of Networking, Knowledge of Operating Systems

1. **Windows Server**: Introduction, Overview of Windows Server, Installation

2. **Windows Network Infrastructure**: Configuring Addressing and Services, Configuring Name Resolution, Configuring Network Access, Monitoring and Managing a Network Infrastructure, Configuring File and Print Services,


Main Reference Book(s):

    Joel Stidley, “MCTS Windows Server 2008 Applications Infrastructure Configuration Study Guide”, Wily India
Accomplishments of the student after completing the course:
- Ability to Plan, Deploy and Windows Server
- Ability Monitor and Manage Windows & Linux Server.
- Perform the tasks of a Network Administrator.

Course Name: Networking – II

Course Code: PGDNA123

Objectives:
Students will learn
To understand the state-of-the-art in network protocols, architectures and applications.
To study the functionality of various layers of the OSI model / TCP/IP model and understand the interactions between them.
To develop strong analysis, design, implementation, testing and troubleshooting skills regarding TCP/IP based networks and services.
Design and implement customized TCP/IP based application layer services.

Prerequisites:
Fundamentals of Networking

Contents:

1. **Data Communication Fundamentals**
   - Introduction, Bandwidth and Data Rate, Analog and Digital Signaling,
   - Analog and Digital Transmission, Coding mechanisms, Modulation,
   - Modulation in Practice, Multiplexing and De-multiplexing, Time Division Multiplexing, Frequency Division Multiplexing, Switching and Routing,
   - Transmission and Errors.

2. **The Network Layer:**
   - Classful IP Addresses, IPv6, Classless and Subnet Address Extensions,

3. **The Transport Layer:**

4. **The Application Layer:**
   - Bootstrap and Auto-Configuration, Domain Name System, Remote Login and Desktop, File Transfer and Access, Electronic mail, World Wide Web.
5. **TCP/IP Networks:**
Performance Measurement and related tools, Network Simulation, Tools provided by the Operating Systems, Network Management (SNMP).

**Main Reference Book(s):**

10. Snader, J., “Effective TCP/IP Programming”, Addison-Wesley

**Accomplishments of the student after completing the course:**
At the end of the work student will be able to
Analyze and develop solutions to solve networking problems.
Have thorough understanding of TCP/IP based systems, services and related tools and technologies
Effectively use various tools and utilities for TCP/IP networking.

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Course Name: Network Security

Course Code: PGDNA124

Objectives:
Students will learn
- To understand the basic principles underlying Network Security
- To study various standards and technologies in the area of Network Security
- To study network vulnerabilities and their countermeasures
- Develop abilities in defending Computer Networks

Prerequisites:
Fundamentals of Networking and Knowledge of Operating System.

Contents:

1. Introduction

2. Cryptography
   Need of Cryptography, Traditional Cryptography, Symmetric Key Cryptography, Asymmetric Key Cryptography, Overview of PKI.

3. Firewalls
   Planning and Design, Packet Filtering, Working with Proxy Servers and Application-Level Firewalls, Firewall Configuration and Administration.

4. Authentication

5. Private Networks
   Setting up a Virtual Private Network, Tunneling Protocols used within VPN, Enabling Remote Access Connections within VPN.

6. Intrusion Detection
   Intrusion Detection and Prevention Systems, DMZ, Digital Forensics, Contingency Planning.
Main Reference Book(s):

12. Turnbull J., “Hardening Linux”, Apress

Accomplishments of the student after completing the course:
At the end of the work student will be able to

- Appreciate the need of Security mechanisms in Computer Networks.
- Ability in Defending Computer Networks.
- Ability in Planning and Designing a Secure Computer Network.
Course Name: Practicals – II

Course Code: PGDNA125

Objectives:
Students will learn
- To implement network services using MS Windows Server and Linux Server
- To appreciate the use of Shell Scripting for Network Administration
- To prepare a Departmental Server.
- To prepare a Client - Server Network using MS Windows
- To prepare a Client - Server Network using Linux Server

Prerequisites:
Linux OS, Shell Programming, Fundamentals of Hardware

Contents:

1. Linux Server Installation
2. Management of Linux Server
3. Configuring various network & infrastructure services over Linux Server
4. Configuring security over Linux Server
5. Windows 2008 Server Installation
6. Management of Windows Server
7. Configuring various network & infrastructure services over Windows Server
8. Configuring security over Windows Server

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